

Vaccine uptake in the general population

[B] Evidence review of the barriers to, and facilitators for, vaccine uptake

NICE guideline <number>

Evidence review underpinning research recommendations in the NICE guideline

November 2021

Draft for Consultation

These evidence reviews were developed by Guideline Updates Team

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1

1 Identification of the barriers to, and 2 facilitators for, routine vaccine uptake

3 1.1 Review question

4 What are the barriers to, and facilitators for, increasing the uptake of routine vaccines?

5 1.1.1 Introduction

6 The UK has a routine vaccination schedule covering key vaccinations for different stages in
7 life including childhood, adolescence, pregnancy, and old age (65 years and older). Current
8 practice is for healthcare professionals to advise people to accept these vaccinations at the
9 relevant times unless contraindicated. However, the incorrect linking of the MMR vaccine to
10 autism resulted in a reduction in MMR vaccination which is now being reflected in an
11 increase in the number of cases of measles. There were 991 confirmed cases of measles in
12 England in 2018 compared with 284 in 2017 and the World Health Organization no longer
13 considers measles 'eliminated' in the UK. Although vaccination levels in general in the UK
14 are relatively high, levels of uptake vary between vaccines and the age groups they are
15 targeted at. For example, 5-in-1 coverage of children measured at 5 years was 95.2% in
16 2019/2020, while 83.9% of Year 9 females completed the 2-dose HPV vaccination course in
17 2018/19. By contrast, from April 2018 to March 2019, shingles vaccine uptake for the 70-
18 year-old routine cohort was only 31.9%, pneumococcal vaccine uptake for all people aged 65
19 years and over was 69.2%, and pertussis vaccine coverage in pregnant women was 68.8%.
20 However, vaccination rates need to be actively maintained and ideally increased in the face
21 of increasing vaccine scepticism and misinformation. The COVID-19 pandemic has also
22 reduced routine vaccination rates and is likely to continue to disrupt routine vaccinations in
23 the foreseeable future. In addition, certain population groups (such as some Travellers and
24 migrants) have lower levels of vaccination than the general public and additional or different
25 actions may be required to increase their vaccination rates.

26 Reasons for low uptake may include poor access to healthcare services; inaccurate claims
27 about safety and effectiveness, which can lead to increased concerns and a reduction in the
28 perceived necessity of vaccines; and insufficient capacity within the healthcare system for
29 providing vaccinations. In addition, problems with the recording of vaccination status and
30 poor identification of people who are eligible to be vaccinated may have contributed to this
31 problem. While some barriers to vaccine uptake are obvious, others remain unclear and
32 there are likely to be additional barriers that affect specific population groups, such as
33 Travellers and migrants. In addition, less is known about the facilitators for vaccine uptake.
34 Information about facilitators and the acceptability of interventions are needed to support the
35 successful implementation of these interventions to increase uptake. This review therefore
36 aims to examine the barriers to and facilitators for increasing vaccine uptake. It follows the
37 protocol detailed in [Appendix A](#) and summarised in [Table 1](#).

38 1.1.2 Summary of the protocol

39 **Table 1 SPIDER table for identification of the barriers to, and facilitators for, vaccine**
40 **uptake**

Sample	
	<ul style="list-style-type: none">• People who are eligible for vaccines on the routine UK immunisation schedule and their families and carers (if appropriate).• Staff including, but not limited to, those providing advice about or administering vaccines and those people with relevant administrative or managerial responsibilities.

Phenomenon of interest	Vaccinations on the NHS routine schedule
Design	<p>Studies using qualitative methods:</p> <ul style="list-style-type: none"> • Systematic reviews of included study designs • Qualitative studies that collect data from focus groups and interviews • Qualitative studies that collect data from open-ended questions from questionnaires/ surveys • Mixed method study designs (qualitative evidence that matches the above study designs only)
Evaluation	<p>Including, but not limited to:</p> <ul style="list-style-type: none"> • Thoughts, views and perceptions of individuals, parents or carers and staff • Issues relating to acceptability • Issues relating to accessibility • Issues relating to infrastructure • Issues relating to mis-information or a lack of information and communication of information • Issues relating to informed refusal • Collective benefit / altruistic motives
Research type	Qualitative and mixed methods

1 1.1.3 Methods and process

2 This evidence review was developed using the methods and process described in
3 [Developing NICE guidelines: the manual](#). Methods specific to this review question are
4 described in the review protocol in appendix A and the methods document. Please note that
5 the review protocol also includes a quantitative question about interventions to increase
6 uptake. This part of the work is presented in evidence reviews C to I to ensure the size of the
7 evidence reviews remains manageable.

8 The following additional methods apply to this qualitative review:

- 9 1. This review refers to the UK [routine vaccination schedule](#). The November 2019 schedule
10 was used for these reviews and is available with the current version of the [complete](#)
11 [routine immunisation schedule](#).
- 12 2. In this guideline, the term pregnant woman is used to include women who are pregnant
13 as well as transgender or non-binary people who are pregnant. This terminology is used
14 to maintain consistency with NHS websites.
- 15 3. A date limit of 1990 was used for all reviews because the vaccination schedule for babies
16 changed in 1990. This will include papers published after the MMR scandal of 1998 when
17 attitudes to vaccinations changed in the UK and the numbers of vaccine related studies
18 increased greatly.
- 19 4. The committee decided to include qualitative studies from the OECD (Organisation for
20 Economic Co-operation and Development) countries because less economically
21 developed countries are likely to have different reasons for low levels of vaccine uptake
22 associated with less well-developed healthcare systems such that interventions to
23 improve uptake in these countries are less likely to be relevant for the UK.
- 24 5. They agreed that UK studies could be prioritised if a large number of studies are
25 identified. Where there was insufficient evidence from the UK alone this prioritisation was
26 extended to include studies based in Australia, Canada, Ireland, the Netherlands and
27 Scandinavia (Denmark, Norway, and Sweden) because they also have universal
28 healthcare and similar populations to the UK. These countries are referred to as the
29 OECD subset in this review. The rest of the OECD, minus the UK and OECD subset
30 studies, is referred to as OECD remaining.
- 31 6. The decision to only look at UK evidence or the OECD subset was made at the subgroup
32 level so, for example, if sufficient evidence for the views of parents concerning HPV
33 vaccinations was found in terms of UK studies, papers were not looked for on this topic in

- 1 the wider OECD literature, but far fewer studies were identified for the pregnancy
2 subgroup and so this part of the review required studies from the OECD subset and
3 remaining categories. The decision that there was sufficient evidence was based on the
4 number and richness of the included studies in consultation with the committee to ensure
5 that they were able to make recommendations. If insufficient evidence was available from
6 the UK and OECD subset then studies were included from the OECD remaining
7 category. At the end of the analysis, studies from the OECD subset or remaining
8 categories that met the inclusion criteria for this review were excluded if they were not
9 required.
- 10 7. To make analysis clearer the review work was divided into categories based on
11 subgroups listed in the protocol. These were: pregnant women; people aged 65 years
12 and older; 0-5 year olds and 11-8 year olds. Some references could not be easily
13 assigned to a category as they looked at the views of parents or staff about childhood
14 vaccination (0-18 years) or looked at the views of immigrants about vaccinations in
15 general (covering childhood and adult vaccinations). These references were analysed
16 separately (under the heading of studies spanning multiple age/ life stage categories),
17 and their findings related to the findings of the reviews of the views about vaccinating 0-5
18 years old, 11-18 years old, the elderly and pregnant women where relevant during
19 committee discussions.
- 20 8. For the review of the views of pregnant women, elderly, their carers (where appropriate)
21 and staff involved in the care of these groups of people very few UK studies were
22 identified and, as a result, studies were included from the OECD subset and remaining
23 categories.
- 24 9. For the review of the views of parents/carers or staff concerning the vaccination of
25 children aged 0-5 years, all UK studies were included. In addition to this, OECD subset
26 and remaining studies were included if they had the views of staff or included vulnerable
27 groups of people of particular interest in the protocol. This is because there were limited
28 numbers of UK studies covering these groups.
- 29 10. For the review of the views of young people, parents/ carers and staff concerning the
30 vaccination young people aged 11-18 years all UK studies were included plus OECD
31 subset papers for parents and for the subgroups of particular interest in the protocol
32 (including migrants, children/ young people not attending school). All OECD remaining
33 studies were excluded as there sufficient UK or OECD subset papers to cover the
34 required viewpoints.
- 35 11. Some studies were partially extracted:
- 36 a. If they had a mixed population of eligible and non-eligible people (for example
37 non-parents who were too young or old to receive the vaccine themselves). In this
38 instance, we extracted data for the eligible people where possible and did not
39 downgrade for relevance. Where the results could not be separated, we included
40 the data and downgraded the study for relevance unless the vast majority of
41 participants matched the review protocol where downgrading was not applied.
42 Our rationale is detailed in the evidence tables.
- 43 b. If they include vaccines that were not on the UK routine schedule (or included the
44 flu vaccination which is covered by another guideline and out of scope of this
45 review), then the data was only extracted for the eligible vaccines, without
46 downgrading for relevance. If the themes referred to vaccinations in general, the
47 studies were not downgraded.
- 48 c. For some studies, the population was relevant, but we did not extract all
49 viewpoints if we did not need them (for example, we included OECD subset and
50 remaining studies to capture staff views, but had sufficient studies for the UK with
51 parents' views that they were not extracted from OECD subset and remaining
52 papers). This is reported in the evidence tables.
- 53 12. Based on committee input and the shortage of studies looking at the views of people 65
54 years and older about shingles and pneumococcal vaccines, this review included studies
55 with people aged 50 years and over. Downgrading for relevance was applied for studies

- 1 with people aged 50 years and older, but not those with people aged 60 years and older
2 (see quality of the evidence in the committee discussion for more details)
- 3 13. A group of studies were concerned with the views of people about interventions aimed at
4 increasing vaccine uptake. These studies were analysed separately and included for all
5 categories (UK, OECD subset and remaining) only if the intervention, study design and
6 outcomes met the inclusion criteria for evidence reviews C to I. They were presented to
7 the committee with the relevant intervention study and are covered in evidence review J.
- 8 14. For studies looking at specific vaccines to be considered for inclusion, the vaccinations
9 included in the study must be in the routine vaccination schedule of the UK and the
10 country where the study was conducted.
- 11 15. The committee noted that it was the presence of a vaccination against a disease on the
12 routine schedule rather than the formulation of the vaccination that was important and
13 therefore studies would not be excluded for using different formulations to the UK.
- 14 16. If a study is conducted in a country which has some differences in routine vaccine
15 schedule compared to the UK but reports on barriers and facilitators to vaccine uptake in
16 general, rather than a specific vaccine, it will be included. However, it may be marked
17 down for indirectness based on the opinion of the guideline committee.
- 18 17. Routine vaccination schedules of countries other than the UK will be checked using the
19 [WHO vaccine-preventable diseases: monitoring system](#) unless a more up-to-date,
20 approved, national/regional immunisation schedule is identified online.
- 21 18. Where indirect evidence was required, it was obtained by looking at the NICE guideline
22 on [Flu vaccination: increasing uptake](#). This evidence was limited to that covering routine
23 flu vaccination, not vaccination of high-risk groups (that are not covered by the routine
24 schedule) or vaccinations that are purchased privately. Where the flu guideline did not
25 address the review question directly, we referred to any relevant recommendations the flu
26 committee made instead.
- 27 19. The routine vaccination schedule covers all routine vaccines from 8 weeks to 70 years
28 old and includes the pertussis vaccine for pregnant women. People who are also eligible
29 for selective immunisation programmes (e.g., high-risk groups) or additional vaccines will
30 be included for routine vaccines only.
- 31 20.
- 32 21. This review does not present a list of findings as separate barriers or facilitators, but
33 rather has integrated the findings where possible or grouped them by topic.
- 34 22. This review includes the thoughts of patient/carers and staff on faith leader/policy maker
35 messaging rather than views of the faith leaders/ policy makers themselves because the
36 committee agreed that it was the impact of these messages on the person being
37 vaccinated/ making the decision to vaccinate or in the case of staff promoting and
38 administering vaccines that was more directly linked to vaccine uptake.
- 39 23. Finding from open ended questions from questionnaires were only included in the
40 qualitative review where insufficient evidence was available from studies using focus
41 groups and interviews because these usually provide a much richer source of data than
42 open-ended questions in surveys.
- 43 24. Findings from the quantitative and qualitative reviews will be triangulated where possible
44 using a mixed methods approach (see evidence reviews C to I for the mixed methods
45 work).
- 46 25. The committee agreed not to include grey literature in the search for this topic because
47 they thought it would be time consuming to identify and that it would be hard to find
48 relevant literature. They agreed that if insufficient evidence is identified from the included
49 study types, they would consider a focused call for evidence instead or look at indirect
50 evidence.
- 51 26. Catch up campaigns include opportunistic campaigns for people who missed a
52 vaccination, and catch-up campaigns in under-vaccinated groups. These are included as
53 a subgroup analysis in the protocol.
- 54 27. The committee agreed that studies from the OECD would be judged as highly relevant
55 initially and then downgraded at the study level if there was a reason to believe that the
56 individual study was not completely relevant to the UK population. In addition, a finding

- 1 identified from an otherwise highly relevant or relevant study could be downgraded if it
2 was not relevant to the UK population. Committee input was used to determine where it
3 was appropriate to downgrade in this manner.
- 4 28. References included as part of the search update prior to consultation were included in
5 addition to the previously included references. This might mean that certain references
6 would not have been included in the analysis due to our UK, then OECD subset
7 prioritisation rules if all of the references had been available at the start of the review
8 process.
- 9 29. The themes from included studies were extracted into separate Nvivo databases for each
10 age/life stage category and are available on request. Themes were synthesised into
11 findings using word or excel.
- 12 30. Higher level meta-findings were developed based on the initial discussions we had with
13 the committee during protocol development when they summarised the key areas of
14 interest and modified considering the evidence we identified, and the individual findings
15 generated from it. To do this we grouped similar findings together under the higher-level
16 areas identified by the committee (such as information/ education) and then divided them
17 into a number of more discrete sections where there were large numbers of findings that
18 related to a more specific issue (such as lack of information, or different sources of
19 information). These lower-level headings were also informed by earlier committee
20 discussions. In some cases where there were relatively few themes within a section
21 these were not subdivided (for example in the case of access findings). We tried to use
22 similar headings, where possible, across the reviews to help orientate the committee and
23 allow comparisons of findings between reviews.
- 24 31. Summary diagrams were generated by taking the highest level of issues identified by the
25 committee (including infrastructure, access, education/information shown in blue in the
26 diagram) and then linking them to boxes containing brief summaries of the key points
27 identified in the findings. Similar higher and lower-level headings were used across
28 diagrams for each age/ life stage where possible to aid with consistency and make
29 comparisons of the issues between groups easier. The highest-level headings also match
30 the titles of some of the intervention reviews.
- 31 32. The scope of this guideline does not include flu vaccination as that is covered by another
32 guideline ([NICE flu guideline NG103](#)).

33 Declarations of interest were recorded according to [NICE's conflicts of interest policy](#).

34 **Protocol deviation**

35 This review only included studies where the vaccines of interest were on both the UK routine
36 schedule and that of the country the study was conducted in. If the study was conducted
37 before a vaccination was introduced, it was not included in most cases. The exception being
38 studies focusing on HPV vaccination in boys. This has only recently been added to the UK
39 schedule and no UK specific papers were identified. Only 1 study (Perez 2015) from Canada
40 met the review protocol but this was based on analysis of an open-ended questionnaire
41 question and was not considered a rich source of information. Three other papers were
42 conducted before HPV vaccination was extended to boys and the papers specifically focused
43 on people's attitudes and beliefs towards HPV vaccination of boys (Grandahl 2019, Gottval
44 2017) or mentioned vaccination of boys as part of a more general discussion (Dube 2019).
45 These were therefore included after discussion with the committee but downgraded once for
46 relevance.

47 An additional paper was included from the COVID-19 call for evidence (Skirrow 2021b). This
48 paper looked at childhood vaccinations during the lockdown and, although published after
49 the search dates, was considered highly relevant and therefore included in the review. Other
50 papers from the COVID-19 call for evidence are included in the COVID-19 review (see
51 evidence review K), as these reported information about COVID-19 vaccinations rather than
52 routine vaccinations.

1 **1.1.4 Qualitative evidence**

2 A literature search was conducted which identified 9,141 articles. An additional 46 articles
3 were identified from citation searching, systematic reviews and other sources. Of these, 468
4 potentially relevant qualitative studies were identified after screening the titles and abstracts
5 against the review protocol. Once assessed in full 313 studies matched the review protocol.
6 Of these 53 papers were associated with interventions and analysed separately for inclusion
7 in evidence review J on the acceptability and effectiveness of specific interventions.

8 The remaining 260 studies were classified by age/ life stage, study location (UK, OECD
9 subset or OECD remaining) and subgroups in the protocol (for example, migrants or
10 travellers) and a decision was made about the final references to include (see methods and
11 processes for details). This reduced the numbers to 116 papers (covering 114 studies). The
12 process of study identification is summarised in the PRISMA diagram in [Appendix C](#).

13 The systematic review search and the primary searches were rerun at the end of the
14 guideline development process to identify any newly published references that were relevant
15 for this and other reviews. Of the 1642 new references, 72 were ordered at full text to screen
16 for inclusion in the intervention reviews. Of these, 18 additional primary studies were
17 included at this stage. Therefore, this review consisted of a total of 134 included papers
18 (covering 192 studies).

19 **1.1.4.1 Included studies**

20 ***Babies and children aged 0-5 years old***

21 For babies and children aged 0-5 years, 60 qualitative studies were included which used
22 semi-structured interviews, focus groups and unstructured interviews.

23 These studies were divided as follows:

- 24 • Forty-two studies were conducted in the UK, with the remaining carried out in Norway,
25 Canada, Sweden, The Netherlands, Australia, Denmark, New Zealand, USA and Israel.
- 26 • Thirty-six studies examined people's views about multiple vaccines including DTaP
27 (Diphtheria, tetanus, pertussis), IPV (inactivated poliovirus vaccine), Hib (Haemophilus
28 influenzae type b), HepB (Hepatitis B), MenB (Meningococcal B), rotavirus, PCV
29 (Pneumococcal conjugate), MenC (Meningococcal C) and MMR (Measles, mumps and
30 rubella).
- 31 • Twenty-four studies examined people's views about single vaccines, with 18 studies
32 looking at MMR, 3 studies for PCV, and only 1 study each for MenB, rotavirus and HepB.
- 33 • Forty-four studies explored the views of parents (including subgroups listed below)
- 34 • Twenty-two studies explored the views of staff including GPs, practice nurses, practice
35 managers, public health nurses, health visitors, obstetrics and gynaecology staff and
36 immunisation committee members (from the National Advisory Committee on
37 Immunization, the Quebec Immunization Committee and the Canadian Immunization
38 Committee in Berman 2017).
- 39 • All of the studies were carried out in the community.

40 A number of papers looked at groups of people who were identified as being of particular
41 interest in the review protocol:

- 42 • Three studies explored the views of parents who are Jewish, and their GPs.
- 43 • Eight studies looking at immigrant parents
- 44 • Two studies looking at parents who have anthroposophic beliefs
- 45 • Three studies looking at parents who are from the Gypsy, Roma and traveller
46 communities.

- 1 • One UK-based study looked at parents' perspectives on accessing childhood
2 vaccinations during the COVID-19 pandemic.
3 • One additional relevant study was identified from the COVID-19 call for evidence (Skirrow
4 2021b). Although this was published after the search dates it was considered highly
5 relevant and was included in the review.

6 See [Table 2](#) for a summary of the characteristics of these included studies.

7 ***Young people aged 11-18 years old***

8 For young people aged 11-18 years old, 33 qualitative studies were included. The studies
9 comprised of a mixture of focus groups, interviews, semi-structured interviews, and an open-
10 ended survey questions and covered the following groups and settings:

- 11 • Eighteen studies were conducted in the UK and 15 were conducted in OECD subset
12 countries with similar healthcare systems to the UK (The Netherlands, Australia,
13 Canada, Ireland and Sweden).
14 • All but one of the studies investigated participants views on the HPV vaccination and
15 3 of these also looked at other vaccinations for 11-18 year olds. One study only
16 investigated participants views in relation to the MenACWY (Meningococcal A, C, W
17 and Y) vaccine.
18 • Eight recorded the perspectives of young people aged 11-18, 17 recorded the views
19 of parents, and 15 recorded the views of vaccine providers, nurses or school staff.
20

21 A number of papers looked at groups of people who were identified as subgroups of
22 particular interest in the review protocol. (The references are included here to aid
23 identification because there are cases where these groups are not mentioned directly in
24 the objectives of the study and/or are not clear from the population details.)

- 25 • One study looked at issues affecting children excluded from mainstream education
26 and non-attenders (specifically, homeless people and people in custody) (Boyce
27 2012)
28 • Five studies looked at issues affecting travellers, migrants and asylum seekers
29 (Boyce 2012, Mupandawana 2016, Forster 2017, Rubens-Augustson 2019, Salad
30 2015) although the migrants were not necessarily recent in all studies.
31 • One study looked at issues affecting looked after children, (Boyce 2012)
32 • Two studies looked at issues affecting religious groups or groups with special beliefs
33 (Gordon 2011, the British Jewish community; Salad 2015, a Somali community in the
34 Netherlands (Muslim community)).
35

36 See [Table 3](#) for a summary of the characteristics of these included studies.

37 ***Pregnancy***

38 For pregnant women, 15 qualitative studies were included which used semi-structured
39 interviews, focus groups and unstructured interviews.

40 These studies were divided as follows:

- 41 • They all explored barriers and facilitators to pertussis vaccination.
42 • The studies were conducted in the UK, Australia, New Zealand, USA, Canada and
43 Ireland.
44 • Nine studies examined the views of women who were pregnant or recently pregnant
45 • Eight studies examined the views of staff including midwives, obstetricians and
46 gynaecologists, GPs, maternity assistants and paediatric nurses. Some of the studies
47 looked at multiple view-points.
48 • Settings included the community, hospitals, pharmacies, clinics (antenatal and
49 others) and general practice.
50

1 See [Table 3](#) for a summary of the characteristics of these included studies.

2 **People aged 65 years and over**

3 For people aged 65 years and over, 11 qualitative studies were included which used semi-
4 structured interviews and focus groups.

5 Only 3 studies were identified that recruited people aged 65 years and older. Based on
6 committee input and the shortage of studies looking at the views of people 65 years and
7 older, this review was expanded to include studies with people aged 50 years and over (see
8 the methods and process section above for more details).

9 These studies were divided as follows:

- 10 • They all explored barriers and facilitators to pneumococcal vaccination.
- 11 • Three of these studies also explored barriers and facilitators to shingles vaccination.
- 12 • The studies were conducted in the UK, Switzerland, Australia, USA and the Netherlands.
- 13 • Seven studies examined the views of people aged 50 years. Of these, 2 studies included
14 people aged 50 years and over, 1 study included people aged 60 years and older, 1 had
15 mixed ages but a mean age of 62 years, and 3 studies included people aged 65 years
16 and over.
- 17 • Three studies examined the views of staff (including nurses in emergency departments
18 and GPs) and
- 19 • One study examined the views of a focus group that consisted of healthcare
20 professionals and people in the pharmaceutical industry.
- 21 • Settings included general practice, the community, primary care clinics, pharmacies,
22 hospital in patients, senior adult residential facilities and churches.

23 See Table 5 Summary of characteristics of included studies involving people aged 65 years
24 and over [Table 5](#) for a summary of the characteristics of these included studies.

25 **Studies spanning multiple age/ life stage categories**

26 The 17 papers (15 studies) comprised of a mixture of focus groups, interviews and semi-
27 structured interviews where the studies could not be clearly assigned to an age category/ life
28 stage. The studies included:

- 29 • Four UK studies looking at the views of Polish and/or Romanian immigrants about
30 routine vaccinations or childhood vaccinations where the ages of the children were
31 not specified; three of which also included healthcare staff who work with them.
- 32 • Three publications relating to one study looking at the views of Travellers and
33 healthcare staff who work with them about UK routine vaccinations in general
- 34 • Four studies involving religious groups:
 - 35 ○ Two studies looking at the views of religious Protestant parents about
36 childhood vaccinations in general (from the Netherland and USA), one of
37 which covered parents who home school their children (USA). The ages of the
38 children were not specified.
 - 39 ○ One study looking at the views of Israeli Ultra-Orthodox Jewish parents about
40 childhood vaccinations
 - 41 ○ One study looking at the views of healthcare staff who interact with religious
42 Protestant parents in the Netherlands (accompanies the study from the
43 Netherlands above).
- 44 • Four studies looking at the views of managers of immunisation provisions and
45 healthcare providers at the national and/or local level.
- 46 • Two studies looking at the views of the providers of complementary and alternative
47 medicine.

48 See [Table 6](#) for a summary of the characteristics of these included studies.

1 The references for included studies are listed in included studies [Section 1.1.14](#)

2 **1.1.4.2 Excluded studies**

3 The reasons for excluding studies at the full text stage are detailed in [appendix J](#). Common
4 reasons for excluding studies were ineligible study designs and participants with age ranges
5 that did not overlap age ranges within the routine immunisation schedule.

1 **1.1.5 Summary of studies included in the qualitative review**

2 **Babies and children aged 0-5 years old**

3 **Table 2 Summary of characteristics of included studies for vaccination of babies and children aged 0-5 years old**

4 Abbreviations: DTaP=diphtheria, tetanus, acellular pertussis vaccine; IPV=inactivated polio vaccine; Hib=Haemophilus influenzae type b vaccine;
5 HepB=hepatitis B vaccine, MenB=meningitis B vaccine; RV=rotavirus vaccine, PCV=pneumococcal conjugate vaccine, MenC=meningitis C
6 vaccine, MMR=measles, mumps and rubella (German measles) vaccine

Author	Design and type of analysis	Country	Setting	Sample size	Objective	Population	Vaccine(s)
Austin 2001	Semi-structured interviews with phenomenological method	UK	Community	15	To understand parents' experiences of deciding to have their child immunised.	Parents	DTaP, Hib, MMR
Austin 2008	Focus groups with thematic analysis	UK	Community	25	To hear parents' stories about immunising their children, and to compare the views of parents of completely and incompletely immunised children to understand better how and why they made their decisions.	Parents	Childhood vaccines (primary and pre-school boosters)
Austvoll-Dahlgren 2010	Focus groups with grounded theory	Norway	Community	16 nurses	To identify parents' decision-making processes in relation to childhood vaccinations, including barriers and facilitators to searching for information.	Public health nurses (and parents ⁶)	Childhood vaccines (Norwegian Childhood vaccines)
Bell 2020c	Semi-structured interviews with thematic analysis	UK	Community	19	To provide recommendations to inform the way that childhood vaccinations are communicated and delivered during the COVID-19 pandemic	Parents and carers	Childhood vaccines (not specified) ⁹
Berman 2017	Semi-structured interviews with	Canada	Community	21	To assess the perceptions of frontline healthcare workers and immunization experts on whether PCV10 is	Immunisation committee members and	PCV

Author	Design and type of analysis	Country	Setting	Sample size	Objective	Population	Vaccine(s)
	thematic analysis				considered an acceptable alternative to PCV13, as well as factors offered in support of their opinions.	healthcare professionals ⁷	
Bolsewicz 2020	Semi-structured interviews and focus groups with thematic analysis	Australia	Community	10	To gain a greater understanding of factors that influence childhood immunisation in areas of low vaccine coverage	Service providers	Childhood vaccines (not specified)
Brown 2012	Semi-structured interviews with grounded theory	UK	Community	24	To obtain an up-to-date, comprehensive and methodologically robust picture of general factors underlying parents' decision-making about the first dose of MMR.	Parents	MMR
Brownlie 2005	Focus groups, unstructured interviews with thematic analysis	UK	Community	11 focus groups and 15 interviews with GPs	To explore the trust of parents with regards to the MMR vaccine.	Parents, health visitors, practice nurses, GPs	MMR
Brownlie 2006	Semi-structured interviews and focus groups with governmentality and Lam's typology	UK	Community	21	To gain an understanding of trust and child immunisations from the perspective of staff working at general practices (health visitors, practice nurses, GPs)	GPs, health visitors	DTaP, IPV, Hib, PCV, MenC, MMR
Bystrom 2014	Semi-structured interviews with thematic analysis	Sweden	Community	20	To explore facilitators and barriers to MMR vaccination among parents living in anthroposophic communities in Sweden.	Parents (anthroposophic followers)	MMR
Casiday 2006	Semi-structured interviews and focus groups with thematic analysis	UK	Community	87	To explore parental decision making with regards to MMR.	Parents	MMR

Author	Design and type of analysis	Country	Setting	Sample size	Objective	Population	Vaccine(s)
Casiday 2007	Semi-structured interviews and focus groups with thematic analysis	UK	Community	87	To explore the decision making of parents with regards to the MMR vaccine.	Parents	MMR
Condon 2002	Semi-structured interviews and focus groups with thematic analysis	UK	Community	21	To explore the attitudes of ethnic minority parents to preschool immunisations, particularly first MMR.	Parents from ethnic minorities (Pakistani, Somali and Afro-Caribbean)	Childhood vaccines (including MMR, others not specified)
Condon 2020	Focus groups with thematic analysis	UK	Community	28	To explore parents' experiences of using child health services for their pre-school children post-migration	Parents who have migrated to the UK (from Romania, Poland, Pakistan, or Somalia)	Childhood vaccines (not specified)
Cotter 2003	Semi-structured interviews and focus groups with thematic analysis	Ireland	Community	68	To explore knowledge, attitudes and practices with regards to immunisation	Public health nurses, midwives, practice nurses, GPs	DTaP, IPV, Hib, PCV, MenC, MMR
Davis 2001	Semi-structured interviews with thematic analysis	USA	Community	24	To characterize the obstacles faced by physicians regarding administration of a pneumococcal vaccine.	Paediatricians and family physicians	PCV
Ellis 2020	Semi-structured interviews and focus groups with thematic analysis	UK	Community	7	To explore the interaction between Gypsy, Roma and Traveller mothers, health professionals and their communities and how this impacts upon their decision-making around childhood immunisations.	Mothers and grandmothers	Childhood vaccines (not specified)
Evans 2001	Focus groups with grounded theory	UK	Community	48	To investigate factors that influenced parents' decisions about MMR, with emphasis on the impact of the then recent Wakefield MMR controversy.	Parents	MMR

Author	Design and type of analysis	Country	Setting	Sample size	Objective	Population	Vaccine(s)
Fredrickson 2004	Focus groups with thematic analysis	USA	Community	19 focus groups	To explore reasons for immunisation refusal.	Healthcare providers (and parents ⁶)	DTaP, IPV, Hib, HepB, RV, MMR
Gardner 2010	Focus groups with a realist epistemological stance	UK	Community	28	To identify and describe beliefs underpinning parents' responses to possible MMR uptake interventions ¹ .	Parents	MMR
Godoy-Ramirez 2019	Semi-structured interviews with thematic analysis	Sweden	Community	7 parents, 3 nurses	To explore determinants to vaccination among undocumented immigrants.	Nurses and immigrant parents (undocumented migrants from Africa, S. America and Middle East)	Childhood vaccines (not specified)
Guillaume 2004	Semi-structured interviews with thematic analysis	UK	Community	17	To identify the information needs of parents in relation to measles, mumps and rubella (MMR) vaccination in young children.	Parents	MMR
Harmsen 2012	Focus groups with thematic analysis	The Netherlands	Community	16	To gain more insight into parents' experience at an anthroposophical child welfare centre (CWC), the factors that influence their vaccination decision-making and their need for information.	Parents (anthroposophic followers)	DTaP, IPV, Hib, HepB, PCV, MenC, MMR
Harmsen 2015	Focus groups with thematic analysis	The Netherlands	Community	33	To explore factors that influence decision-making among parents with different ethnic backgrounds in the Netherlands.	Parents from a wide range of ethnic minorities including Morocco and Turkey	DTaP, IPV, Hib, HepB, PCV, MenC, MMR
Henderson 2008	Semi-structured interviews with grounded theory	UK	Community	25	To assess reasons for low uptake of immunization amongst orthodox Jewish families.	Parents (Jewish)	Hib, MenC, PCV, MMR, DTaP, IPV
Hill 2013	Semi-structured interviews with grounded theory	UK	Community	5	To provide the foundation for a larger study that will discern influencing factors in parental decision making associated with the MMR vaccine.	Parents	MMR

Author	Design and type of analysis	Country	Setting	Sample size	Objective	Population	Vaccine(s)
Hill 2021	Semi-structured interviews with thematic analysis	UK	GP surgeries	15	To explore which aspects of their role practice nurses' perceive to be most influential and the strategies they employ to promote the MMR vaccine.	Practice nurses	MMR
Hilton 2006	Focus groups with thematic analysis	UK	Community	72	To explore parents' concerns about immune overload and examine how parents relate this concept to their own children's health and vaccine decision-making	Parents	DTaP, IPV, Hib, PCV, MenC, MMR
Hilton 2007a	Focus groups with thematic analysis	UK	Community	66	To explore parents' understandings of the diseases included in the current UK Childhood Immunization Programme (CIP), and the role of first- and second-hand experiences of these diseases in assessments of their severity.	Parents	DTaP, IPV, Hib, MenC, MMR
Hilton 2007b	Focus groups with thematic analysis	UK	Community	64	To examine parents' views on the role the media, politicians and health professionals have played in providing credible evidence about MMR safety.	Parents	MMR
Hilton 2007c	Focus groups with thematic analysis	UK	Community	10	To explore how the MMR vaccine controversy impacted on the lives of parents caring for children with autism.	Parents	MMR
Jackson 2017b	Semi-structured interviews and focus groups with thematic analysis	UK	Community	60	To explore existing knowledge of, and attitudes, to group B meningococcal disease and serogroup B meningococcal (MenB) vaccine among parents of young children. To seek views on their information needs.	Parents	MenB
Jama 2018	Unstructured interviews with	Sweden	Community	13	To explore factors influencing the decision of Somali parents living in the Rinkeby and Tensta districts of	Parents (Somali immigrants)	MMR

Author	Design and type of analysis	Country	Setting	Sample size	Objective	Population	Vaccine(s)
	thematic analysis				Stockholm, Sweden, on whether or not to vaccinate their children with the measles, mumps and rubella (MMR) vaccine.		
Jama 2019	Semi-structured interviews with thematic analysis	Sweden	Community	11	To explore the perceptions, views, and experiences of CHC nurses related to vaccine hesitancy among parents in an area with low vaccination coverage	Nurses responsible for vaccination programmes	MMR, diphtheria, tetanus, pertussis, polio, and Hib
Johnson 2014	Focus groups analysed with a feminist and post-structuralist perspective	UK	Community	5	To explore the ways in which mothers make sense of, and work with, varying advice and information in relation to the MMR and vaccinations, and identify how this is mediated by positionings, practices and relationships.	Parents	MMR
Kennedy 2014	Semi-structured interviews and focus groups with thematic analysis	UK	Community and education	51 health professionals, 15 parents, [8 teenage girls]	To explore parents', teenage girls' and health professionals' views about three vaccines in Scotland: the previously controversial MMR vaccine and two newly introduced vaccines at the time of the study, the H1N1 vaccine and the HPV vaccine. The purpose was to determine views across the three vaccines and consider contextual influences on decision making.	Health professionals including managers involved in the organisation of the three vaccines, general practice nursing, health visiting and school nursing teams. Mothers with children of any age. [Teenage girls ⁴ aged 12-15.]	HPV, MMR, H1N1 influenza ^{3,4}
Kowal 2015	Semi-structured interviews with thematic analysis	Canada	Community	23	To understand how immigrant women accessed information and used it to make vaccination decisions for themselves and their children.	Parents (S Asian, Chinese and, Bhutanese immigrants)	DTaP, IPV, Hib, HepB, RV, PCV, MenC, MMR

Author	Design and type of analysis	Country	Setting	Sample size	Objective	Population	Vaccine(s)
Lewendon 2002	Semi-structured interviews and focus groups with thematic analysis	UK	Community	3 focus groups of 6-8 participants	To identify local factors contributing to poor immunisation uptake.	Parents and health visitors	Childhood vaccines (not specified)
Loewenthal 1996	Semi-structured interviews and focus groups with thematic analysis	UK	Community	2 focus groups with GPs, 10 parent interviews	To identify beliefs about immunisation and reasons for uptake and non-uptake.	GPs and parents (Jewish orthodox)	DTaP, IPV, Hib, MMR
McMurray 2004	Semi-structured interviews with thematic analysis	UK	Community	69	To explore parents' accounts of decision making relating to the MMR vaccine controversy, identifying uptake determinants and education needs.	Parents, GPs, practice managers, immunisation coordinators	MMR
McNaughton 2016 (and Adam 2015)	Focus groups and unstructured interviews with framework analysis	UK	Community	115	To gather and synthesise data about the views of parents and health professionals in relation to preschool vaccinations and to examine reactions to the hypothetical introduction of financial incentive or quasi-mandatory schemes ² .	Parents and healthcare providers	DTaP, IPV, Hib, PCV, MenC, MMR
Mixer 2007	Focus groups with thematic analysis	UK	Community	37	To investigate whether ethnicity is associated with uptake of the first dose of MMR vaccination.	Parents of different ethnicities (Asian Indian, Afro-Caribbean, White British)	MMR
Moran 2008	Focus groups with thematic analysis	15 countries including the UK ⁸	Community	96 focus groups	To explore whether the decision to vaccinate should be left to the parents or be enforced by the government in order to keep diseases out of society as a whole.	Parents and non-parents ⁸	Childhood vaccines (not specified)
New 1991	Semi-structured interviews with	UK	Community	253	To explore the reasons underlying missed vaccination appointments and parental knowledge of, and	Parents	DTaP, IPV, Hib

Author	Design and type of analysis	Country	Setting	Sample size	Objective	Population	Vaccine(s)
	thematic analysis				attitudes towards immunisation including the type of advice that parents had received.		
Newton 2017	Focus groups with thematic analysis	UK	Community	16	To explore views on childhood immunisation	Parents (English Gypsy, Irish Traveller and Roma communities)	MMR
Payne 2011	Focus groups with thematic analysis	USA	Community	45	Rotavirus vaccines contain fragments from Porcine circovirus. The aim was to understand paediatricians' perspectives on this finding.	Paediatricians (and parents ⁶)	Rotavirus
Pearce 2008	Semi-structured interviews with thematic analysis	Australia	Community	6	To gain understanding of attitudes and perceptions among midwives towards administering and promoting the neonatal dose of the hepatitis B vaccine.	Midwives	HepB
Pederson 2018	Semi-structured interviews with thematic analysis	Denmark	Community	12	To examine determinants of non-compliance with a focus on the vaccination providers.	GP practice staff	Hib, PCV, MMR
Petts 2004	Unstructured interviews with thematic analysis	UK	Community	64	To explore how parents use information to make sense of health risk issues, particularly MMR.	Parents	MMR
Poltorak 2005	Unstructured interviews with thematic analysis	UK	Community	11	To explore how parents in Brighton think about MMR for their own children.	GPs and practice nurses	MMR
Raithatha 2003	Unstructured interviews with interpretive phenomenological analysis	UK	Community	15	To assess parents' vaccine risk perception and thereby to identify strategies to prevent further deterioration in uptake.	Parents	Childhood vaccines (not specified)

Author	Design and type of analysis	Country	Setting	Sample size	Objective	Population	Vaccine(s)
Redsell 2010	Semi-structured interviews with thematic analysis	UK	Community	22	This study explored health visitors' perception of their role in the universal childhood immunisation programme with particular emphasis on influencing factors and communication strategies.	Health visitors	DTaP, IPV, Hib, PCV, MenC, MMR
Skirrow 2021b	Semi-structured interviews with thematic analysis	UK	Healthcare	14	To understand how GPs in London adapted their delivery of routine childhood immunisations during the COVID-19 pandemic and to examine how practice adaptations and innovative delivery models could support future routine immunisation services.	GP staff	Childhood vaccines (not specified)
Smailbegovic 2003	Unstructured interviews with thematic analysis	UK	Community	10	To explore the knowledge, attitudes and concerns with respect to immunization and vaccine-preventable infections in a group of parents resident in Hackney whose children had not completed the recommended course of immunisation.	Parents	DTaP, Hib, MenC, MMR
Smith 2017	Focus groups with thematic analysis	UK	Community	16	To investigate why vaccination rates are relatively low among Gypsy, Roma and traveller communities in the UK.	Parents (Gypsy, Roma and traveller communities)	MMR
Sporton 2001	Semi-structured interviews with thematic analysis	UK	Community	13	To explore the decision-making process of parents who have chosen not to have their children immunised	Parents	Childhood vaccines (not specified)
Stein 2017	Focus groups and semi-structured interviews with grounded theory	Israel	Community	87	To explore the perceptions, knowledge and attitudes about childhood vaccinations acceptance and timeliness among mothers in	Parents (Jewish ultra-orthodox)	DTaP, IPV, Hib, HepB, RV, PCV, MMR

Author	Design and type of analysis	Country	Setting	Sample size	Objective	Population	Vaccine(s)
					communities with low immunization coverage in the Jerusalem district.		
Thomas 2018	Focus groups and semi-structured interviews with thematic analysis	Australia	Community	59	To gain a deeper understanding of the factors influencing immunisation in order to develop tailored strategies for increasing immunisation coverage.	Health service providers (and parents ⁶)	DTaP, IPV, Hib, HepB, RV, PCV, MenC, MMR
Tickner 2007	Semi-structured interviews with grounded theory	UK	Community	24	To explore parents' attitudes towards the five-in-one vaccine, including how they make vaccine decisions for young babies.	Parents	Hib, DTaP, IPV
Tickner 2010	Semi-structured interviews with grounded theory	UK	Community	19	To identify possible reasons for lower uptake of pre-school immunisations, compared with the primary course.	Parents	Hib, MenC, PCV, MMR, DTaP, IPV
Tomlinson 2013	Semi-structured interviews analysed using an idiographic approach	UK	Community	23	To explore the views of immigrants to ensure a culturally appropriate service.	Parents who are Somail immigrants	DTaP, IPV, Hib, PCV, MenC, MMR
<ol style="list-style-type: none"> 1. This study was included because it examined the beliefs underpinning parents' responses to possible rather than actual interventions to increase MMR uptake. The findings were presented as general themes covering parental views about vaccinations and were not directly related to the proposed interventions. 2. This study was included because it covers views relating to the acceptability of financial incentives or quasi-mandatory schemes based on broad scenarios rather than actual interventions, which are covered separately in another evidence review. 3. Kennedy 2014 is included in the analysis for both 0-5 and 11-18 year olds. Data on the views of parents and healthcare professionals regarding MMR was extracted here. The views of teenage girls concerned HPV vaccination and are included in the 11-18 findings. 4. Themes specific to influenza vaccination were not extracted as this is covered by another guideline and is out of scope for this review. 5. This study aimed to examine views concerning PVC vaccination but was conducted before PCV was on the UK routine schedule. However, since most of the results concerning vaccination in general and MMR vaccination in particular, this paper was not excluded but data was not extracted for PCV. 6. Data from parents was not extracted because sufficient data was available from UK studies. 7. Berman 2017 Immunisation Committee Members included 9 people on the National Advisory Committee on Immunization (NACI), 3 on the Quebec Immunization Committee (Comité sur l'immunisation du Québec, CIQ), 5 from the Canadian Immunization Committee (CIC) as well as 4 front line healthcare providers, which included paediatricians and family physicians. 							

Author	Design and type of analysis	Country	Setting	Sample size	Objective	Population	Vaccine(s)
<p>8. Only data from the UK has been extracted from Moran 2008. It was not possible to separate parental and non-parental data. Therefore, the findings from this study have been downgraded once for relevance.</p> <p>9. Childhood vaccines not specified but study only included parents with children under 18 months and was discussing routine vaccinations.</p>							

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1 **Young people aged 11-18 years old**

2 **Table 3 Summary of characteristics of included studies for vaccination of young people aged 11-18 years old**

3 Abbreviations: HPV=human papilloma virus vaccine; MMR=measles, mumps and rubella (German measles) vaccine; HepB=hepatitis B vaccine.

Author	Design and type of analysis	Country	Setting	Sample size	Objective	Population	Vaccine(s)*
Albert 2019	Semi-structured interviews with thematic analysis	Canada	Community	28	To explore parents' views of the HPV vaccine.	Mothers of girls aged 11 to 17 years of age who had either made a decision about HPV vaccine or were about to.	HPV
Batista Ferrer 2016	Semi-structured interviews and participant observation ⁵ with thematic analysis	UK	Education	23 young women; 6 key informants	To identify the barriers and facilitators to uptake in an ethnically diverse group of young women, with previously identified lower uptake, and to make recommendations to increase uptake.	Young women aged 12 to 13 years; the lead school nurse and a key staff member at 3 schools.	HPV
Boyce 2012	Semi-structured interviews with thematic analysis	UK	Education and healthcare	80	To confirm or challenge existing findings and identify additional and as yet unidentified issues related to the delivery of the HPV vaccine programme and health inequalities.	School nurses and other health professionals including practices nurses, administrators, civil servants, health visitors and pharmacists	HPV
Brabin 2011	Semi-structured interviews with thematic analysis	UK	Education	15	To assess the impact of HPV vaccination on school nurses' roles	School nurses	HPV
Burns 2021	Semi-structured interviews with thematic	Australia	Education	22	Exploring barriers and enablers to vaccine coverage in schools in Western Australia	Parents of year 8 students	HPV
Chantler 2019a	Semi-structured interviews with thematic analysis	UK	Education and healthcare	39	To examine the practice of obtaining informed consent in adolescent immunisation	Immunisation providers and managers	HPV

Author	Design and type of analysis	Country	Setting	Sample size	Objective	Population	Vaccine(s)*
					programmes. (Part of a service evaluation of the HPV vaccine programme. See Paterson 2019 for another publication from study.)		
Cooper Robbins 2010a ¹⁰	Semi-structured interviews with thematic analysis	Australia	Education	38 parents and 130 adolescent girls] ⁸	To explore the knowledge of teenage girls and their parents with regards to the HPV vaccine.	Parents of girls aged 9 to 10 years of age (and adolescent girls ⁸)	HPV
Cooper Robbins 2010b ¹⁰	Semi-structured interviews with thematic analysis	Australia	Education	38 parents, 130 adolescent girls] ⁸ , 10 teachers and 7 immunisation nurses	To explore experiences, knowledge, attitudes, decision-making processes, and contextual factors related to consent to HPV vaccination.	Parents who had girls 12 to 15 years of age, teachers, (adolescent girls ⁸ and immunisation nurses ⁹)	HPV
Coper Robbins 2010c ¹⁰	Semi-structured interviews with thematic analysis	Australia	Education	38 parents, 130 adolescent girls] ⁸ , 10 teachers and 7 immunisation nurses	To examine the factors perceived to impact optimal vaccination experience.	Parents who had girls 12 to 15 years of age, teachers, (adolescent girls ⁸ and immunisation nurses ⁹)	HPV
Creed 2021	Semi-structured interviews with thematic analysis	Republic of Ireland	Healthcare	18	To address the gap identified in the literature about parental views on HPV vaccination in Ireland and to provide insights that may help develop strategies to improve HPV vaccination uptake	Parents of female patients aged 11–13 years, registered to the practice, who had not yet been offered the HPV vaccine.	HPV
Dube 2019	Interviews and focus groups with thematic analysis	Canada	Education	70 people in total ¹¹	To understand the determinants of low HPV vaccine uptake and identify strategies to enhance vaccine acceptance.	Parents of 9-year-old girls who were eligible to receive the HPV vaccine, teachers (and healthcare professionals ⁹)	HPV
Forster 2017	Interviews with thematic analysis	UK	Community	33	To explore the	Parents of 13 to 16-year-old girls (including	HPV

Author	Design and type of analysis	Country	Setting	Sample size	Objective	Population	Vaccine(s)*
					factors that have prevented parents from ethnic minority backgrounds from vaccinating their daughters against HPV	people who were born in the UK or abroad from Bangladeshi (largest group), African (unspecified), Caribbean, Somali, Indian or Pakistani backgrounds and White British parents)	
Gordon 2011	Semi-structured interviews with thematic analysis	UK	Education (Jewish schools)	20	To explore attitudes to HPV vaccination in British Jewish mothers who had recently made a decision about vaccinating their daughter in the context of the national vaccination programme.	Mothers of girls in year 8 (age 12-13) from the British Jewish community. Equal proportion of vaccine-acceptors and vaccine-decliners.	HPV
Gottval 2017	Semi-structured interviews with thematic analysis	Sweden	Education	42	To explore parents' views of extending the HPV vaccination programme to also include boys.	Parents of girls who have been offered the HPV vaccine	HPV
Grandahl 2014	Semi-structured interviews with latent content analysis	Sweden	Education	25	To explore why parents refused to allow their daughters to receive the HPV vaccination.	Parents of 10 to 12-year-old girls. The parents had refused HPV vaccine.	HPV
Grandahl 2019	Semi-structured interviews with thematic analysis	Sweden	Education	31	To explore awareness and thoughts about HPV and HPV vaccination, information sources, perceived benefits of vaccinating men, and intention to be vaccinated in a group of male upper secondary school students	Boys in the third year of upper secondary school	HPV
Henderson 2011	Semi-structured interviews with thematic analysis	UK	Education	26 parents; 9 girls	Aim not clearly specified but it is implied that the paper is trying to look at parents' and girls' understandings of the	Parents of 12 to 13-year-old girls who had been offered the HPV	HPV

Author	Design and type of analysis	Country	Setting	Sample size	Objective	Population	Vaccine(s)*
					protection offered by the vaccine, and the need for future screening because little is known about these issues.	vaccine and girls aged 12–13 who had been offered the HPV vaccine	
Hilton 2011a	Semi-structured interviews with thematic analysis	UK	Education	30	To investigate school nurses' assessment of the HPV vaccine, their experiences of delivering the school based programme in its first year, and their views on parental decision-making about HPV vaccination which may help guide its future implementation.	School nurses delivering the HPV immunisation programme	HPV
Hilton 2011b	Focus groups with thematic analysis	UK	Community	87	This study explores adolescent girls' understandings of HPV and its link with cervical cancer, and their experiences of vaccination in the year following the introduction of the vaccination programme, in order to identify gaps in knowledge which could have important implications for future cervical cancer prevention in the UK	Schoolgirls aged between 12 and 18	HPV
Hilton 2013	Focus groups with thematic analysis	UK	Community	59	To explore teenagers' understandings, beliefs and experiences of nine diseases routinely vaccinated against (HPV, meningitis, tetanus, diphtheria, polio, whooping cough, measles, mumps and rubella) and two vaccine-preventable diseases that, it has been suggested, should	Teenage girls and boys, aged 13-18.	HPV, meningitis, tetanus, diphtheria, polio, whooping cough, MMR, hepB and chickenpox ⁶

Author	Design and type of analysis	Country	Setting	Sample size	Objective	Population	Vaccine(s)*
Kennedy 2014	Focus groups and semi-structured interviews with thematic analysis	UK	Community and education	51 health professionals 15 parents, 8 teenage girls	be added to the UK's teenage immunisation programme (hepatitis B and chickenpox). To explore parents', teenage girls' and health professionals' views about three vaccines in Scotland: the previously controversial MMR vaccine and two newly introduced vaccines at the time of the study, the H1N1 vaccine and the HPV vaccine. The purpose was to determine views across the three vaccines and consider contextual influences on decision making.	Health professionals including managers involved in the organisation of the three vaccines, general practice nursing, health visiting and school nursing teams. Mothers with children of any age. Teenage girls aged 12-15.	HPV, MMR, H1N1 influenza ^{2, 7}
Mupandawana 2016	Semi-structured interviews with thematic analysis.	UK	Community (an African social club)	10 (as 5 couples)	1. To explore whether African parents in the UK have an awareness of what HPV vaccine is, and how the virus is transmitted and also to identify their sources of information. 2. To explore the attitudes towards and acceptability of HPV vaccination by UK based African parents. 3. To explore whether mothers and fathers have similar views about their daughters having HPV vaccination.	UK based African parents of daughters aged 8-14. No details provided about where the parents came from in Africa, but quotes attributed to parents from Zambia, Zimbabwe, Nigeria, South Africa and Kenya.	HPV
Paterson 2019	Participant observation ⁵ and semi-structured interviews with thematic analysis	UK	Education and healthcare	39	To explore the views and perspectives of service commissioners and providers to identify factors contributing to high- and under-performance of school-based	Commissioners and service providers of immunisation programmes	HPV

Author	Design and type of analysis	Country	Setting	Sample size	Objective	Population	Vaccine(s)*
Perez 2015	Open ended question from a survey or questionnaire ³ with thematic analysis	Canada	Community	2,874	HPV vaccination.(HPV service evaluation. See also Chantler 2019, which is a related study.) To examine parents' reasons for their decision to vaccinate their 9–16 year old sons with the human papillomavirus vaccine.	Parents with at least one 9–16 year old son	HPV
Racktoo 2009	Focus groups with framework analysis	UK	Education	21	To explore the knowledge and attitudes of 12–13-year-old females regarding HPV and the HPV vaccine. In particular: 1. To generate ideas about the most beneficial and effective methods of education and circulation of good information. 2. To make recommendations based on findings regarding the best ways to educate and inform 12–13-year-old females about HPV and the HPV vaccine.	Female students in school year 8 (12-13 years old)	HPV
Rockliffe 2018	Focus groups with thematic analysis using the competing demands model	UK	Education	28	To explore the barriers and facilitators to delivering the HPV vaccination within the school environment reported by immunization nurses.	Nurses and administrative and managerial staff who are members of vaccination teams	HPV
Rubens-Augustson 2019	Semi-structured interviews with qualitative content analysis	Canada	Education and healthcare	10	To explore the experiences and perceptions of healthcare providers who administer the HPV vaccine to newcomers in Ottawa, Ontario	Healthcare providers working with new immigrants (unspecified origins)	HPV

Author	Design and type of analysis	Country	Setting	Sample size	Objective	Population	Vaccine(s)*
Salad 2015	Focus groups and semi-structured interviews with thematic analysis	The Netherlands	Community	Interviews: 14 young women; 6 mothers. Focus groups: 26 mothers	To explore the perceptions of Somali women living in the Netherlands regarding measures to prevent cervical cancer	Young Somali women aged 18–21 years and Somali mothers aged 30–46 years ⁴	HPV
Seale 2012	Semi-structured interviews with thematic analysis	Australia	2 tertiary referral children's hospitals	27	To document the knowledge and attitudes of parents/guardians of immunosuppressed children and adolescents towards HPV infection and the vaccine	Parents or guardians of children who were participating in a clinical study of HPV vaccination in immunosuppressed children	HPV
Seok 2018	Semi-structured interviews with thematic analysis	UK	Healthcare	10	To explore general practice nurses' perspectives on offering Men ACWY vaccine to the London school leaver population	Practice nurses from GP practices in 3 London CCGs	Men ACWY
Stretch 2009	Semi-structured interviews with thematic analysis using Ajzen's theory of planned behaviour	UK	Education	15	To interview school nurses to ascertain their views on assessing Gillick competence and vaccination of girls whose parents had not given consent for the HPV vaccine.	School nurses	HPV
Wood 2011	Semi-structured interviews with thematic analysis	UK	Healthcare	14 developers; 11 implementers	To examine whether the HPV vaccine should be given when there is a difference of opinion between daughters and parents or guardians.	Professionals involved in the development and implementation of HPV vaccination programmes	HPV
Wilson 2021	Semi-structured interviews with thematic analysis	Canada	Community	7	To better understand the knowledge, attitudes and beliefs of newcomers (people born outside Canada) surrounding HPV and the HPV vaccine	Young Adults: Between the ages of 16 and 27, any gender, did not have children, and were either newcomers or the children of newcomers.	HPV

Author	Design and type of analysis	Country	Setting	Sample size	Objective	Population	Vaccine(s)*
						Caregivers: Over the age of 18, any gender, born outside of Canada, and had one or more children under the age of 18.	
<ol style="list-style-type: none"> 1. Study looks at vaccination as a general concept rather than any specific vaccines 2. Themes specific to influenza vaccination were not extracted as this is covered by another guideline and is out of scope for this review. 3. Open ended survey question was included to ensure the views about vaccinating boys for HPV was included 4. The views of mothers were extracted separately from young women outside the target age range (12-18) for individual vaccination where possible. 5. Data concerning the results of participant observations were not extracted. 6. Themes specific to Hepatitis B and chickenpox vaccination were not extracted because these vaccinations were not part of the UK routine schedule at that time. Hepatitis B is now part of the schedule for babies. 7. Kennedy 2014 is included in the analysis for both 0-5 and 11-18 year olds. Data on the views of teenage girls, parents and healthcare professionals regarding HPV were extracted here. Views around MMR vaccination are included in the findings in the 0-5 category. 8. Data from adolescent girls was not extracted because sufficient data for this population was available from UK studies. 9. Data from healthcare professionals were not extracted because sufficient data for this population was available from UK studies. 10. The studies by Cooper Robbins 2010 appear to use the same participants across the three studies to address slightly different but related aims. The studies are included separately because they have different aims and findings. 11. There were 70 participants in the study, but this included parents, teachers, head teachers and school nurses and the study did not specify what proportion were parents. 12. The data from the questionnaire part of the study was not extracted. 							

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2 **Pregnancy**

3 **Table 4 Summary of characteristics of included studies on vaccinating pregnant women**

Author	Design and type of analysis	Country	Setting	Sample size	Objective	Population	Vaccine(s)
Donaldson 2015	Open ended question from a survey with content analysis*	UK	Clinics	166	To evaluate attitudes towards the pertussis vaccination programme	Pregnant women	Pertussis

Author	Design and type of analysis	Country	Setting	Sample size	Objective	Population	Vaccine(s)
Frawley 2019	Semi-structured interviews with thematic analysis	Australia	Hospitals and clinics	23	To understand midwives' experiences of engaging with women and their families about immunisation	Midwives	Pertussis
Gauld 2016	Structured interviews with thematic analysis	New Zealand	Pharmacies	37	To understand the barriers and facilitators for uptake of pertussis vaccine by pregnant women	Women who had given birth to a child in the last 12 months	Pertussis
Gauld 2020	Semi-structured interviews with thematic analysis	New Zealand	Community	53	To explore the effect of funding maternal Tdap vaccinations through community pharmacies	Pregnant women, midwives, pharmacists, GP staff	Pertussis
Kaufman 2019	Semi-structured interviews with thematic analysis	Australia	Hospitals	12	To understand how midwives think and feel about vaccination	Midwives	Pertussis
Maisa 2018	Focus groups with thematic analysis	UK	Community	16	To explore how to improve a vaccination programme	Pregnant women	Pertussis
Mehrotra 2017	Semi-structured interviews with grounded theory	USA	Hospitals	24	To inform new strategies to increase uptake of the Tdap vaccine	Obstetricians and gynaecologists	Pertussis
Mijovic 2020	Semi-structured interviews with thematic analysis	Canada	Health care providers	44	To examine health care providers' perceptions of what influences their ability to recommend and provide antenatal Tdap vaccine	GPs, midwives, nurses, obstetricians	Pertussis
O'Shea 2018	Semi-structured interviews with thematic analysis	Ireland	Tertiary referral maternity hospital	17	To explore women's perception of vaccination in pregnancy	Post-partum women within one month of delivery	Pertussis
Skirrow 2021a	Semi-structured interviews with thematic analysis	UK	Midwife-led vaccination clinic	10	To explore the decision-making process of women who used a midwife-led vaccination clinic	Women who were receiving (or had recently received) antenatal care at the hospital and	Pertussis

Author	Design and type of analysis	Country	Setting	Sample size	Objective	Population	Vaccine(s)
						been seen by the vaccine midwives	
Webb 2014	Semi-structured interviews with thematic analysis	Australia	Hospitals and general practices	GPs (3), obstetricians (6), and midwives (6)	To explore the current practice of healthcare professionals	GPs, obstetricians, and midwives	Pertussis
Wiley 2015	Semi-structured interviews with grounded theory	Australia	Antenatal clinics	20	To understand how women constructed notions of risk	Pregnant women	Pertussis
Wilson 2019	Unstructured interviews with thematic analysis	UK	Parent-toddler groups, community centres, migrant support groups, general practices	Pregnant and recently pregnant women (47), GPs (6), midwives (2), practice nurses (2)	To gain an understanding of attitudes towards maternal vaccination	Pregnant and recently pregnant women, healthcare professionals	Pertussis
Winslade 2017	Semi-structured interviews with thematic analysis	UK	Baby clinics	42	To explore the views of mothers on being offered the pertussis vaccine during pregnancy	Mothers who had a baby and were attending a baby clinic (age of babies not mentioned)	Pertussis
*Included because this study collected data from open-ended questions from questionnaires/surveys and there was a shortage of studies reporting on data from focus groups and interviews.							

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1 **People aged 65 years and over**

2 **Table 5 Summary of characteristics of included studies involving people aged 65 years and over**

3 Abbreviations: PPV=pneumococcal polysaccharide vaccine; HZV=herpes zoster vaccine (shingles)

Author	Design and type of analysis	Country	Setting	Sample size	Objective	Population	Vaccine(s)
Badertscher 2012	Semi-structured interviews with thematic analysis	Switzerland	General practices	20	To investigate why the pneumococcal vaccination is so rarely provided by GPs	General practitioners	PPV
Briggs 2019	Semi-structured interviews with thematic analysis	Australia	Medical centres, sporting clubs and community centres	36	Understanding the perspective of older people on vaccination.	People aged 65 years or older	PPV
Daniels 2004	Focus groups with thematic analysis	USA	Catholic community churches in San Francisco	22	Do African-American and Latino adults perceive faith-based organisations as suitable settings to receive immunisations?	Church-going African-American and Latino adults who have a mean age of 62 years	PPV
Eilers 2015a	Focus groups with thematic analysis	The Netherlands	Community	80	To explore the motives to accept or refuse vaccination	People aged 50 years or older up to 92 years old (71/80 were older than 60 years)	PPV
Eilers 2015b	Semi-structured interviews with thematic analysis	The Netherlands	General practices	10	To explore GPs' attitudes regarding vaccination	General practitioners	PPV
Harris 2006	Semi-structured interviews with thematic analysis	USA	Senior adult residential facilities, community health centres and a Black church	20	To understand the role of trust of medical institutions in the decision by elderly Black Americans to receive vaccinations.	People aged 65 years or older who are Black Americans	PPV
Kaljee 2017	Focus groups with thematic analysis	USA	Primary care clinics	48	To explore barriers and facilitators for older adults in relation to pneumococcal vaccine	People aged 65 years or older	PPV

Author	Design and type of analysis	Country	Setting	Sample size	Objective	Population	Vaccine(s)
Pattin 2018	Focus groups with thematic analysis	USA	Pharmacies	15	To examine the experiences of older adults in relation to pharmacy-based services	People aged 50 years or older (over 50% were 65 years and older)	PPV, HZV
Ridda 2009	Semi-structured interviews with thematic analysis	Australia	In-patients receiving care in the Geriatric, Cardiology and Orthopaedic Departments of a tertiary referral hospital	24	To explore the influences experienced by the elderly in deciding whether to accept or refuse the pneumococcal vaccine	People aged 60 years or older	PPV
Scrutton 2014	Focus groups with thematic analysis	UK	A think tank focus group	17	To demonstrate how access to vaccination for older people can be improved and used as a tool for healthy ageing	Members of the think tank focus group. This included healthcare professionals and people from pharmaceutical companies	PPV, HZV
Zaouk 2019	Semi-structured interviews thematic analysis	Australia	Emergency departments of hospitals	9	To understand what nurses know about vaccination in the elderly and examine the practices and attitudes surrounding immunisation status screening	Registered nurses working in the emergency department of a large suburban Local Health District	PPV

1 **Studies spanning multiple age/ life stage categories**

2 **Table 6 Summary of characteristics of included studies that span multiple age/ life stage categories**

Author	Design and type of analysis	Country	Setting	Sample size	Objective	Population	Vaccine(s)
Bell 2019	Semi-structured interviews with thematic analysis	UK	Community	20 Polish and 10 Romanian immigrants and 20 healthcare workers	To explore vaccination attitudes and behaviours among Polish and Romanian community members in England, and related access to primary healthcare.	Polish and Romanian immigrants and healthcare workers	All vaccines on the UK routine schedule including influenza ¹ .
Bell 2020a	Semi-structured interviews with thematic analysis	UK	Community in Leeds, Liverpool and Birmingham	9 community members, 33 healthcare providers	To explore factors contributing to vaccination uptake amongst these communities.	Romanian and Roma Roma community members; healthcare workers	All vaccines on the UK routine schedule including influenza ¹ .
Bell 2020b	Semi-structured interviews with thematic analysis	UK	Community in Leeds, Liverpool and Birmingham	33 healthcare providers	To explore the approaches taken by responders in the public health management of measles outbreaks in Birmingham, Leeds and Liverpool, three cities in which Romanian and Roma communities were particularly affected by measles outbreaks. ⁴	Healthcare workers who work with the Romanian and Roma Roma community.	All vaccines on the UK routine schedule including influenza ¹ . Focus on measles.
Chantler 2016	Semi-structured interviews and observations with thematic analysis ⁶	UK	National and local level organisation and delivery	19 national decision makers and 56 local implementers	To determine how a large-scale re-organisation of the English health and social care system (April 2013) affected a well performing, vertically oriented public health programme with a clear chain of command and implementation	National decision makers and local implementers	All vaccines on the UK routine schedule including influenza ¹ .

Author	Design and type of analysis	Country	Setting	Sample size	Objective	Population	Vaccine(s)
Chantler 2019b	Semi structured interviews, survey and observations with thematic analysis ⁵	UK	A large (unspecified) metropolitan area	9 immunisation board members; (199 immunisation providers and managers)	structures. To understand how partnership working was helping to streamline and reintegrate the delivery of the immunisation programme following the fragmentation, which was a by-product of the 2013 NHS reorganisation.	Immunisation board members (for the qualitative work); (immunisation 'managers' and service 'providers' for the survey) Members of the immunisation board interviewed: NHS England representatives, PHE representatives, Academic, lay person, CCG member, provider, member of a local authority PH team, local council member	All vaccines on the UK routine schedule including influenza ¹ .
Deml 2019	Semi-structured interviews with thematic analysis	Switzerland	Complementary and alternative medicine clinics	17 participants (15 were licensed doctors with additional training in complementary and alternative medicine).	To understanding complementary and alternative medicine providers' roles in vaccine hesitancy	Complementary and alternative medicine providers	Childhood vaccinations (not specified)
Gorman 2019	Focus groups with thematic analysis	UK	Community health projects with Polish services	13	To explore Polish migrant women's views on the childhood vaccination programme in Edinburgh, Scotland, in the context of the trust held in various aspects of the programme and with a	Polish parents and caregivers	Childhood vaccines including HPV and influenza ¹

Author	Design and type of analysis	Country	Setting	Sample size	Objective	Population	Vaccine(s)
					specific focus on influenza and HPV vaccination.		
Jackson 2016, Jackson 2017a, Mytton 2020*	Semi-structured interviews with framework analysis	UK	Community (travellers) and healthcare (staff)	174 travellers, 22 frontline staff and 17 people in strategic roles	To investigate the barriers to and facilitators of acceptability and uptake of immunisations among six Traveller communities across four UK cities; and identify possible interventions to increase uptake of immunisations in these Traveller communities that could be tested in a subsequent feasibility study.	Travellers (Roma gypsies, Scottish showpeople, Irish travellers and English gypsies) Frontline healthcare staff and people in more strategic roles in the NHS and local government.	Focus was on all childhood vaccines, but the following were also covered: pertussis during pregnancy and the influenza vaccination in pregnancy and for older and at risk adults ^{1,2} .
Keshet 2021	Semi-structured interviews with thematic analysis	Israel	Israeli Ultra-Orthodox Jewish community	10 Israeli Ultra-Orthodox Jewish women	To examine the role attributed to religious leaders by Israeli Ultra-Orthodox Jewish parents when making decisions about childhood vaccinations	Ultra-Orthodox Jewish parents	Childhood vaccinations (not specified)
McCoy 2019	Semi-structured interviews with thematic analysis	USA	Community	14	To use qualitative methods to examine the vaccination perceptions and practices of Christian homeschooling families in Pennsylvania.	Homeschooling parents from an evangelical Protestant Christian community	Childhood vaccinations (not specified)
McGeown 2018	Unstructured interviews with thematic analysis	UK	Healthcare (CQC 'outstanding' GP practices in London)	12	To explore what learning could be extrapolated from the CQC-classified 'outstanding' practices in relation to their vaccination services.	Healthcare workers (GP, practice nurses) and practice managers/ senior administrative staff	All routine vaccinations
Mittring-Junghans 2021	Semi-structured interviews with	Germany	Healthcare practices	18	To investigate the concepts, thoughts and beliefs of physicians practicing conventional, homeopathic or	Physicians practicing conventional, homeopathic or	Childhood vaccinations (not specified)

Author	Design and type of analysis	Country	Setting	Sample size	Objective	Population	Vaccine(s)
Ruijs 2012a	grounded theory Semi-structured interviews with thematic analysis	The Netherlands	Community	21 mothers, 3 fathers and 3 couples from 27 families	anthroposophic medicine concerning childhood illnesses To gain insight into how orthodox protestant parents - without the immediate threat of an epidemic - decide to vaccinate or not vaccinate their children.	anthroposophic medicine Orthodox Protestant parents	Childhood vaccinations (not specified)
Ruijs 2012b	Semi-structured interviews with thematic analysis	The Netherlands	Healthcare	22 Healthcare professionals with different professional backgrounds (7 child healthcare clinic doctors, 5 child healthcare clinic nurses and 10 GPs)	To gain insight into how healthcare professionals respond to parents with religious objections to the vaccination of their children.	Healthcare professionals who work with Orthodox Protestant parents	Childhood vaccinations (not specified)
Wiot 2019	Focus groups with thematic analysis	UK, India, Germany and USA ³	Healthcare	75 in total (10 GPs and 10 nurses in the UK; 10 paediatricians, 10 GPs / family physicians and 8 nurses in the USA; 9 paediatricians and 8 GPs in Germany and in India 10 paediatricians)	To investigate perceived gaps between the expectations of healthcare professionals in their role as vaccinators and the reality of the world they operate in.	Nurses, GPs and paediatricians	Childhood vaccinations (not specified)

*Collectively called Jackson 2016 in the rest of the review.

1. Themes specific to influenza vaccination were not extracted as this is covered by another guideline and is out of scope for this review.
2. Where possible the views of high-risk adults eligible for the flu vaccine who are not pregnant, grandparents or parents were not extracted as they do not match the populations of interest for this review.
3. Data was only extracted for the UK specifically or as it applied to all countries as there were sufficient studies looking at the views of staff in UK and OECD subset countries that it was not necessary to include data from Germany and USA. India is not a country of interest for this review.
4. The majority of the themes in this study were out of scope as they focused on the response to a measles outbreak (a catch up campaign), but where the healthcare workers discussed barriers to vaccination that could have led to the outbreak these findings have been extracted.
5. This study also included a questionnaire component and observations which were not extracted.

Author	Design and type of analysis	Country	Setting	Sample size	Objective	Population	Vaccine(s)
6. This study also included observations which were not extracted.							

1

1 **1.1.6 Summary of the qualitative evidence**

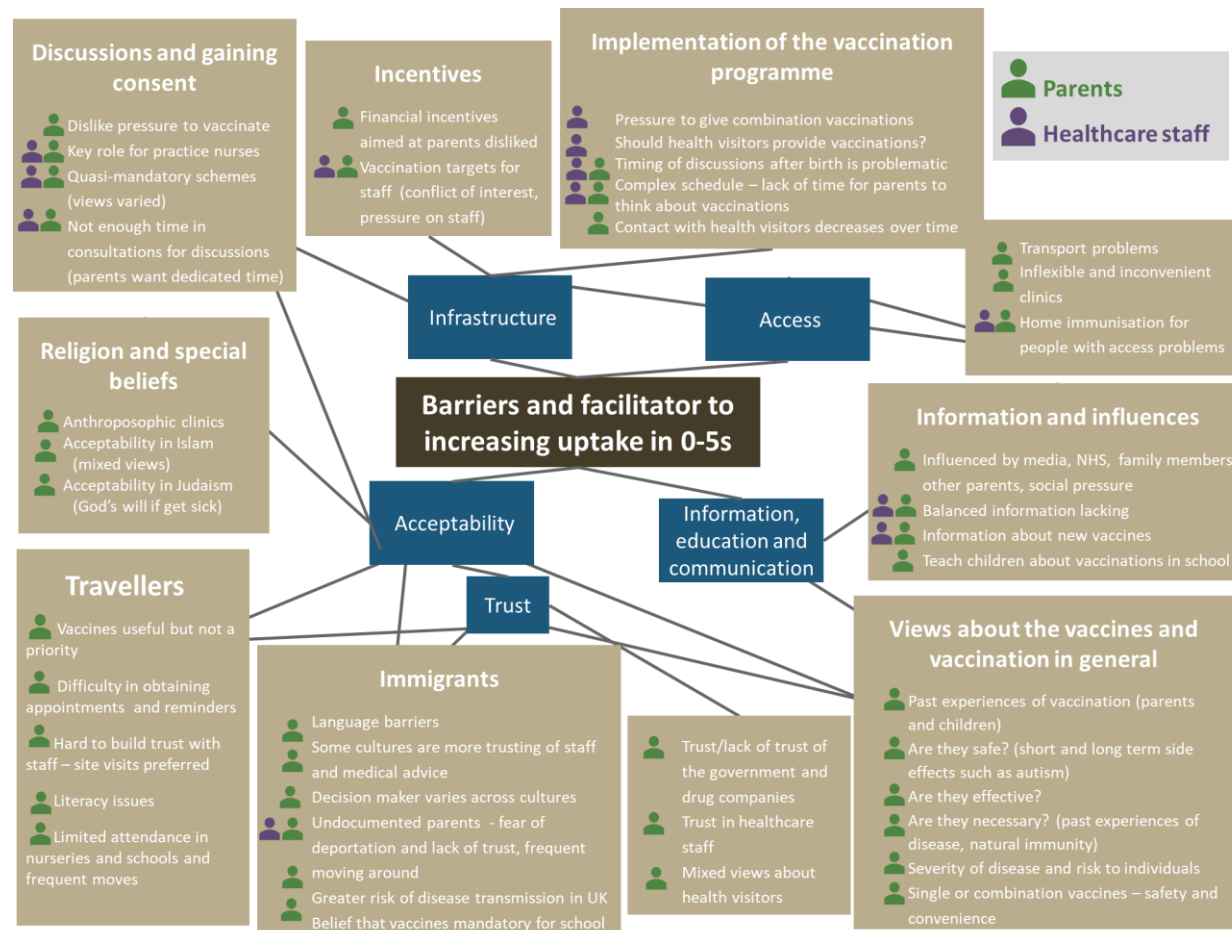
2 Notes:

- 3 1. On the interpretation of the findings: these reflect the opinions of the studies listed for each finding. Where the opinions of groups of
4 interest (such as Travellers, Gypsies, Roma, immigrants, asylum seekers and people with religious or special beliefs) coincide with the
5 general population they have been included in the findings in the main body of the section. Where they are specific to a particular group,
6 they are presented separately at the end of the findings for each age/life stage. However, although a finding may not mention immigrants,
7 for example, it does not mean that they do not have this opinion, but rather that it was not mentioned in any of the studies that recruited
8 these participants specifically. Although it is possible that the studies that recruited people from the general population also included some
9 people from the population subgroups of interest, but it is not always possible to tell this as the studies do not often provide detailed
10 information about their participants.
- 11 2. Immigrants- where possible the nationality of the immigrants is specified in the findings below and if the participants were recruited for their
12 ethnicity rather than nationality this is made clear.
- 13
- 14

1 **Babies and children aged 0-5 years old**

2 **Figure 1 Summary of the main concepts identified in the qualitative evidence for vaccination of babies and children aged 0-5 years old**

3 See the findings in [Table 7](#) for more details.



4

1 **Table 7 Summary of the barriers to and facilitators for vaccinations for children aged 5 years and under**

2 Where findings relate to people who are immigrants, the country which people had migrated from, and the length of time that they had been living
3 in a new country, will be stated at the end of the finding (where this information is available).

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
Access issues				
8 (Lewendon 2002, New 1991, Thomas 2018, Tickner 2010, Harmsen 2015*, Loewenthal 1996, Newton 2017, Smith 2017)	Some parents (including parents who are immigrants*, orthodox Jewish, travellers and gypsies) experienced difficulty in getting to the clinic to have their child vaccinated. Parents and health service providers said that if the child welfare centre or GP's surgery is a long distance away, they are less likely to travel there for vaccination, especially if they do not have access to a car. Parents viewed public transport as infrequent, unreliable, crowded, difficult to use with a pram and expensive. Walking was slow and time-consuming. This issue also applies to women living on caravan sites (such as travellers and gypsies). They may not have access to vehicles during the day and caravan sites are usually at remote locations with no public transport or other services. * Immigrants were people who had lived in the Netherlands for at least 1 year – mostly people from Morocco, and Turkey, as well as some from Afghanistan, Somalia, Poland and Belgium)	"I have to take other children along with me and it's very hard work. The fact that I've got to cart three of them up there, leave one in the pram, take one in, take one back out ... I hate going to the clinic with them. It was too cold to go out and the hills around here are steep; pushing a pram with other children is difficult. My husband was at work, and it's a lot of messing taking the other children with me." (parent)	No downgrading necessary	High
3 (New 1991, Stein 2017, Sporton 2001)	Inflexible and inconvenient clinic hours make it harder for parents, including Jewish ultra-orthodox parents) to bring children to be vaccinated. For women working in full time employment, attendance usually involved taking formal leave. Even women working part-time did not always find it easy to attend appointments.	-	Downgraded once for adequacy	Moderate

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
	This may also be more of a problem for parents from lower socioeconomic groups who are less able to afford to take time off work or work unpredictable hours.			
3 (Newton 2017, Smith 2017, Thomas 2018)	Many parents, including those from gypsy, Roma and traveller communities), and health service providers said that home immunisation could increase vaccine uptake for people who have access issues.	“The only way you’ll get that cohort you’re focusing on is to have opportunistic immunisation. There’s no problem with home visits, having vaccines in the car and saying the child is overdue and asking if they’d like me to do it now. No-one ever says no. It’s not a barrier if you can get the vaccine to them.” (public health professional)	Downgraded once for adequacy	Moderate
Acceptability				
7 (Evans 2001, Austin 2008, Guillaume 2004, Tickner 2007, Brown 2012, Harmsen 2012, Newton 2017)	Opinion is divided between parents (including parents with anthroposophical beliefs) whether single or combination vaccines are best in terms of convenience and safety. There is a perception that single and combination vaccines can have differing contraindications and/or side effect characteristics. Some parents prefer combination vaccines because they are convenient (including fewer needles) but for others this is not an issue.	“Well it’s all over and done with then isn’t it. It’s all out the way, so you haven’t got to think I’ve got an injection this week and another one next week.” (parent)	No downgrading necessary	High
Trust				
23 (Jackson 2017b, Brown 2012, Gardner 2010, Guillaume 2004, Smailbegovic 2003, Brownlie	Parents (including immigrants* and people with anthroposophical beliefs) have mixed views about trusting the government and pharmaceutical companies. Some parents and GPs do not trust the government due to perceived lack of integrity. For example, mishandling of vaccine scares, such as the	“[GPs] have targets, if they don’t vaccinate everyone in their patient list then I think they lose money. So the, if they’re using targets rather than looking at it on a child-by-child basis and whether or not the child should have it,	No downgrading necessary	High

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
2005, Bystrom 2014, Austin 2008, Casiday 2006, Casiday 2007, Evans 2001, Hill 2013, Hilton 2007b, Johnson 2014, Kowal 2015*, Moran 2008, Petts 2004, Poltorack 2005, McMurray 2004, Harmsen 2012*, Condon 2002, Sporton 2001, Cotter 2003)	<p>Wakefield incident, and other health issues (such as BSE). They agreed that the government should use experts guide their decisions and explain the reasons in a transparent way. In addition, some parents think the government colludes with pharmaceutical companies in order to increase their profits and do not trust the research on vaccine effectiveness and safety. In contrast, other parents, (including those who are immigrants or refugees), remain positive about vaccination and accept of the vaccination schedule because they trust that it is informed by sound research and therefore safe.</p> <p>* Immigrants include people who had lived in the Netherlands for at least 1 year (mostly people from Morocco, and Turkey, as well as some from Afghanistan, Somalia, Poland and Belgium) and people born in India, China or Bhutan, who had moved to Canada in the previous 8 years.</p>	then I think the motivations are money ultimately.” (parent)		
25 (Brown 2012, Brownlie 2006, Casiday 2006, , Gardner 2010, Guillaume 2004, Hilton 2007b, Hill 2013, Jama 2018*, Johnson 2014, McMurray 2004, New 1991, Petts 2004, Poltorack 2005, Raithatha 2003, Smailbegovic 2003, McMurray	Parents (including parents with anthroposophical beliefs, and immigrant parents*) trust healthcare professionals because of their training, codes of practice, experience, and history of providing impartial advice to the parents. Building up trust generally involved discussions between the healthcare professional and parents and trust was increased if the parent thought the benefits of vaccination were considered for each child individually rather than at a population level. Health visitors said they aim to build trust by conducting home visits and providing written and verbal advice.	“My partner and I decided together. We brought it up with the nurse before we had it... I think just from hearing doctors in interviews and health officials kind of saying that it was safe, and it's a really difficult thing because as a parent you want to make your decisions based on what medical experts say.” (parent)	No downgrading necessary	High

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
2004, Tickner 2007, Brownlie 2005, Mixer 2007, Harmsen 2015*, Loewenthal 1996, Austin 2008, Bystrom 2014, Harmsen 2012, Fredrickson 2004)	* Immigrants include people who had lived in the Netherlands for at least 1 year (mostly people from Morocco, and Turkey, as well as some from Afghanistan, Somalia, Poland and Belgium) and Somali immigrants living in Sweden.			
10 (Casiday 2007, McMurray 2004, Tickner 2007, Brownlie 2006, Hilton 2007b, Johnson 2014, Redsell 2010, Brownlie 2005, Mixer 2007, Henderson 2008)	Some parents trust health visitors with regards to vaccines, but others view them as part of the mistrusted government machine. Parents said they trust health visitors and place a high value on being respected by them. This is especially the case if health visitors are parents themselves. However, other parents do not trust health visitors if they are perceived as enforcing distrusted government policy rather than having their best interests at heart.	“All the information that you get from the surgery and from the health visitors is quite biased because they support the MMR.” (parent)	No downgrading necessary	High
Vaccine safety, effectiveness and assessment of risk				
1 (Tickner 2007)	Parents were comfortable having their children vaccinated because they were vaccinated as children themselves and did not experience any side effects.	-	Downgraded twice for adequacy	Low
3 (Tickner 2010a, Brownlie 2005, Newton 2017)	Parents (including parents who are travellers, gypsies or Roma) had mixed views about vaccinations based on their previous experience of vaccinating their children. Some parents were comfortable having their children vaccinated because their children’s previous experiences of vaccination were good. However, parents whose children had bad experiences of vaccination in the past were more likely to reject subsequent vaccines.	“... he didn’t have any reaction whatsoever, so I’m more than happy to give him the booster one.” (parent)	Downgraded once for adequacy	Moderate

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
11 (Jackson 2017b, New 1991, Tickner 2007, Tickner 2010, Austin 2001, Harmsen 2015*, Kowal 2015*, Stein 2017, Newton 2017, Smith 2017, Godoy-Ramirez 2019*)	<p>Parents (including immigrants*, travellers, Roma, gypsies and Jewish parents) demonstrated a spectrum of opinion with regards to concerns about short-term or mild side effects of vaccination. Some parents said that a short-term fever caused by vaccination would not affect their decision to have their child vaccinated. This is because a fever is less severe than the disease the vaccine aims to prevent. However, other parents were worried that their child might develop a fever because their children were infants, so they would not be able to give much paracetamol. Additionally, some parents were worried about the discomfort the needles might cause or about unexpected side effects, such as hair loss.</p> <p>* Immigrants include people who had lived in the Netherlands for at least 1 year (mostly people from Morocco, and Turkey, as well as some from Afghanistan, Somalia, Poland and Belgium), people born in India, China or Bhutan, who moved to Canada in the previous 8 years, and undocumented parents living in Sweden for less than 3 years (from Africa, South America, Asia, and the Middle East)</p>	<p>“See that's, the only, the only problem that you have with that is that when they're eight weeks old, no, four weeks old, anything under the, under the age of three months you have to be careful how much Calpol and stuff you can give them, and the only thing you can give them is Calpol. So they are really careful, they, they do tell you to be really careful, but. So if they get a really bad fever, you can only give them one dose of Calpol in a 24 hours period, and that's the 2.5. I mean that should work, but if it didn't you're a bit stuck as a parent as to what you can do to help baby settle down.” (parent)</p>	No downgrading necessary	High
36 (Austin 2008, Brown 2012, Brownlie 2008, Casiday 2006, Casiday 2007, , Evans 2001, Gardner 2010, Guillaume 2004, Hill 2013, Hilton 2006, Hilton	<p>Parents (including those with anthroposophical beliefs, immigrants*, travellers, Roma, gypsies and Jewish parents) and GPs were worried that vaccines could cause long-term or serious adverse events and that they would feel guilty for consenting to something that had harmed their child. Some parents and GPs thought that vaccines contained substances that could aggravate allergies or sensitivities such as mercury, thimerosal and aluminium. Others were</p>	<p>“... well I'm concerned about the link with autism and bowel disorder...I'm worried for my son... because I'd never forgive myself... his future...his health is in my hands and I've got to make the right decision...but I also do feel quite angry...” (parent)</p>	No downgrading necessary	High

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
2007b, Hilton 2007c, Jackson 2017b, Johnson 2014, Kowal 2015*, Lewendon 2002, Moran 2008, New 1991, Pedersen 2018, Petts 2004, Poltorak 2005, Raithatha 2003, Smailbegovic 2003, Tickner 2007, Austin 2001, Brownlie 2005, Kennedy 2014, Bystrom 2014, Harmsen 2012, Jama 2018*, Henderson 2008, Stein 2017, Loewenthal 1996, Tomlinson 2013, Newton 2017, Smith 2017 Sporton 2001)	<p>concerned that vaccines could permanently alter their child's personality, temperament and intelligence, or cause them to develop chronic conditions such as multiple sclerosis, autism or Parkinson's disease. Parents were also worried that their child's immune system might not be able to cope with vaccination, particularly if they had a medical condition, illness or were born prematurely. They believed that older children would be better able to cope, so they would prefer to postpone vaccination.</p> <p>* Immigrants include people born in India, China or Bhutan who moved to Canada in the previous 8 years and Somali immigrants living in Sweden.</p>			
4 (Evans 2001, Hilton 2007a, New 1991, Brown 2012)	Some parents had concerns about the effectiveness of vaccines. They said that the need for vaccine boosters raises doubts about long-term effectiveness and that they knew of children who were vaccinated against a disease and yet later caught it. Some also believed that new disease strains could appear and then the vaccine would be ineffective.	"The thing about boosters is I don't know if there's a way that his immunity could be checked prior to having a booster. Because if he was immune anyway, I don't see the point in him having a booster and bombarding his immunity again with something he doesn't need." (parent)	Downgraded once for adequacy	Moderate

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
14 (Evans 2001, McMurray 2004, Poltorak 2005, Tickner 2007, Moran 2008, New 1991, Pearce 2008, Tickner 2010, , Brown 2012, Bystrom 2014, Harmsen 2012, Henderson 2008, Newton 2017, Sporton 2001)	Some parents (including Jewish parents and those with anthroposophical beliefs) and midwives think that vaccines are unnecessary. The parents thought that breast feeding confers natural immunity or that maintaining general health would be sufficient protection. They were unafraid of the diseases, unaware of their severity and risks, and considered them to be easily treatable. They often felt that diseases were natural, and (along with midwives) felt that exposing children strengthens their immune system. They recalled having measles or mumps when they were young and being unharmed. Some midwives believed that improved living conditions and sanitation made vaccination less important.	“I think there can be positive things about them catching measles, mumps, and rubella. They’re not as serious as the government makes out ... If children get measles, mumps, and rubella it helps build up their natural immunity, and that’s better than the immunity built up by vaccines.” (parent)	No downgrading necessary	High
24 (Austin 2008, Berman 2017, Brownlie 2006, Bystrom 2014, Casiday 2006, Casiday 2007, Gardner 2010, Harmsen 2012, Hill 2013, Hilton 2007a, New 1991, Petts 2004, Poltorak 2005, Tickner 2007, Tickner 2010 Austin 2001 Brownlie 2005, Harmsen 2015, Henderson 2008, Tomlinson 2013, Newton 2017,	Parents (including parents who have anthroposophical beliefs, are Jewish, travellers, gypsies, Roma or immigrants) GPs, and health visitors believe that vaccination is the right thing to do if there is a greater risk of harm from the disease compared to the risk of side effects from vaccines. Their decision-making included consideration of disease severity, the chance of catching the disease and occurrences that would increase this, such as a local outbreak or socialising with unimmunised children. Parents were particularly concerned about disease severity if they had a child with a medical condition that might make them more vulnerable. In addition, parents said that if their child became ill, they would feel guilty if they had not agreed to the vaccination.	“A couple of years ago, there was an outbreak of measles. People weren’t having their kids immunised. I just think it is best to have all their immunisations, rather than just leave it.” (parent)	No downgrading necessary	High

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
Smith 2017, Sporton 2001)				
12 (McMurray 2004, Tickner 2007, Tickner 2010, Hill 2013, Hilton 2007a, New 1991, Harmsen 2012, Tomlinson 2013, Newton 2017, Smith 2017, Mixer 2007, Sporton 2001)	Assessment of disease impact and risk is affected by experience and may make some parents (including parents with anthroposophical beliefs and parents who are immigrants, travellers, gypsies or Roma) more accepting of vaccines or more likely to reject them. Experience of mild disease may make some parents more likely to reject vaccines. In contrast, immigrants who have first-hand experience of disease are more likely to accept vaccines because they know how serious the diseases can be.	“Everyone you spoke to then, someone had it. It was like wildfire wasn’t it going through the travellers. It spread so fast.” (traveller on a caravan site in the UK talking about measles)	No downgrading necessary	High
Discussions with healthcare professionals and gaining consent				
10 (Austin 2008, Brown 2012, Hilton 2007a, Hilton 2007b, Evans 2001, Harmsen 2012*, Bystrom 2014, Jama 2018*, Lowenthal 1996, Smith 2017)	Parents (including immigrants*) said pressure to vaccinate made them feel negatively about vaccinations. Some parents did not like having to justify why they declined a vaccination as it felt intrusive. They felt this made their relationship with their GP feel adversarial. * Immigrants include people who had lived in the Netherlands for at least 1 year (mostly people from Morocco, and Turkey, as well as some from Afghanistan, Somalia, Poland and Belgium), and Somali immigrants living in Sweden	“[The doctor] was so insistent that I should have her immunised. The more insistent he was, the less I wanted to have it done.” (parent)	No downgrading necessary	High
2 (Thomas 2018, Hill 2013)	Health service providers and parents agree that practice nurses can play an important role in promoting vaccination. Parents said that the practice nurse is important for discussing vaccines and administering them, but deference to the practice nurse ends if the nurse has	“Yes...when I come for the immunisation, she [practice nurse] will always tell me how important it is.” (parent)	Downgraded twice for adequacy	Low

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
	incorrect knowledge of the child. Some health service providers said that it is important to have nurses who are committed to immunisation because they will go the extra mile to chase families.			
13 (McMurray 2004, Petts 2004, Poltorak 2005, Tickner 2007, Jama 2018*, Loewenthal 1996, Harmsen 2015*, Brownlie 2006, Casiday 2007, McMurray 2004, Johnson 2014, Hill 2013, Cotter 2003)	<p>Parents (including parents who are immigrants* and orthodox Jews) and GPs view GPs as experts, and they agree that there is not enough time allowed in consultations to discuss vaccination satisfactorily. Parents and GPs felt reluctant to initiate discussion about vaccines during consultations because of the rushed nature of general practice, but parents liked being able to ask questions about vaccines. Some parents preferred to seek information at children’s centres, where they can discuss vaccines with other parents.</p> <p>* Immigrants include people who had lived in the Netherlands for at least 1 year (mostly people from Morocco, and Turkey, as well as some from Afghanistan, Somalia, Poland and Belgium), and Somali immigrants living in Sweden</p>	<p>“It is mainly the [GP]. And they are my first point and if they are busy then it is the nurse. And she would provide me with the information that I need. Because I trust them; because I know what they are doing and I can ask them anything. And they will give me the honest answer. And that is what I am after.’ (parent)</p>	No downgrading necessary	High
2 (Evans 2001, Jackson 2017b)	Parents would like to receive information before their immunisation appointment, and they would appreciate designated times for discussions about vaccination with healthcare professionals.	“I might not have had the MMR vaccination, I was given the fact sheet after my son had had it, which I was a bit cross about.” (parent)	Downgraded once for adequacy	Moderate
1 (Hill 2021)	Practice nurses were aware of factors that can influence parents’ decisions to vaccinate their children and they were keen to ensure that parents were aware of any information that highlights the importance of vaccination. They thought it was important to highlight the benefits to the individual as well as to the wider community.	<p>“...the one thing I do talk about as well is how there have been several outbreaks of measles as a result of poor uptake of the vaccine”</p> <p>“it’s a national programme...it’s trying to keep society safe, so that [the] majority, those who slip through the net will be</p>	Downgraded twice for adequacy	Low

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
		protected by the greater majority of people, who are vaccinated”		
Incentives aimed at parents or staff				
2 (McNaughton 2016, Stein 2017)	Parents (including orthodox Jews) and commissioners have varying opinions with regards to the acceptability of quasi-mandatory vaccinations. All parents thought that this was preferable to financial incentives and some parents and commissioners agreed that these schemes seem fair and that children who are at risk of transmitting disease should be excluded from school or childcare. However, other parents and commissioners believed that this would not allow free will, would be unfair on the child and could cause greater problems, such as the prosecution of parents. Parents also discussed whether this would cause a divide between parents who could and could not choose to home school their children, as those that could home school would still be able to make a choice about vaccinations.	<p>“That’s not actually how our country works. And as much as I’ve got my child immunised, and I believe in vaccination, I don’t think you can start telling people they don’t have the choice.” (parent)</p> <p>“I prefer this idea to the last one [financial incentive], I think it’s more inclusive. And OK, yes fair enough it’s implying that if you don’t have the vaccinations your child can’t go to the school, but I think it’s probably fair from the school’s point of view that they should be able to exclude people who are at risk of transmitting these diseases through the school. So, in that respect, I think it is fairer than the other one.”</p>	Downgraded once for adequacy	Moderate
1 (McNaughton 2016)	Many parents thought that quasi-mandatory vaccination would be useful in day care settings, where children of different ages will be mixing but some of the younger children will not have had all of their vaccinations yet. However, this would not apply to parents of all children because some families do not use day care and so a mandate may not increase vaccination in these children.	<p>“Because, obviously, you’re more strongly [concerned] about your own child but obviously, you still want to protect other children. You don’t want to see someone else go through something that you wouldn’t want to go through yourself.”</p> <p>“All the ones that can’t be immunised because they’ve not reached the right age yet, or just the fact that there are a lot of 3-year-olds and like 2-year-old, and a baby is a lot more susceptible to complications than older kids”</p>	Downgraded once for adequacy	Moderate

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
2 (McNaughton 2016, Stein 2017)	Parents (including ultra-Orthodox Jewish parents) do not like the idea of financial incentives being provided to them in order to encourage vaccination. Almost all parents disagreed with the idea of financial incentives being used to encourage vaccination. Some parents believed that this could cause a divide between rich and poor because richer parents would have more autonomy as they could afford to disregard a financial incentive. However, this incentive could facilitate increased vaccine uptake by parents from lower socioeconomic groups. There were some concerns that schemes that provided incentives for parents whose child had yet to be vaccinated was rewarding bad behaviour and could encourage parents to delay their child's vaccinations so that they could receive the incentive. In addition, some parents believed that an incentive scheme would be too costly to administer if it was universal and would be hard to enforce.	<p>"Put the money to better use. Build parks for the kids to go and play. Don't pay a parent to vaccinate." (parent)</p> <p>"People would wait longer on purpose to get the vaccinations. And the ones who've done it on time would feel as if they were penalised"</p>	Downgraded once for adequacy	Moderate
6 (Evans 2001, Lewendon 2002, McMurray 2004, Brownlie 2005, Condon 2002, Sporton 2001)	Healthcare professionals think that vaccination targets are unhelpful in certain circumstances but parents (including immigrant parents) do not like them. Some parents felt that advice about vaccines is motivated by money and access to funding instead the child's best interests. They would like payments for meeting vaccination targets to be removed. Health visitors said that targets put them under additional pressure, and they are concerned that children who should be exempted are included in the target population. However, in general they find targets helpful because they are a surrogate for 'health'. GPs said that they are punished by target-setting if they have parents who will not accept vaccines.	"Because the GP's funding is based on their quota of immunised children that's something that made me very suspicious about the whole thing. I've got to have immunisation for my child because otherwise they won't get their funding, that's already weighted isn't it." (parent)	No downgrading necessary	High

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
Process and implementation issues				
1 (Brownlie 2006)	GPs and health visitors felt pressured to administer combination doses of vaccine. They felt their clinical autonomy was being eroded when they were told they were “not covered” to give single doses.	“A lot of faxes were coming up saying that the doctors were not covered for giving single doses. I felt that it was the big brother watching you, “you will do it this way and you really don’t have a choice” (health visitor)	Downgraded twice for adequacy	Low
3 (Redsell 2010, Thomas 2018, Brownlie 2005)	Health visitors have divided opinions about whether they should be administering vaccinations. Some health visitors have the skills to administer a vaccine, but others do not.	“If I’m not doing it on a regular basis which I’m not because basically I would refuse to do it because I don’t see it as part of my role and therefore I’m unsafe.” (health visitor)	Downgraded twice for adequacy	Low
5 (, Evans 2001, Jackson 2017b, Johnson 2014, Tickner 2007, Redsell 2010)	Health visitors and parents agree that discussing vaccinations soon after birth is problematic as parents have other priorities at that point. Health visitors said that they are required to discuss vaccinations when the child is 14-28 days old. They would like to have additional visits to discuss vaccines. Parents of new babies would like vaccination appointments rearranged to a later date because they are overwhelmed at that stage and unable to think about vaccinations.	“... when your child's eight weeks old you're just like, you're like a zombie, and you're told to go to the clinic to get your injections so you go to the clinic and get your injections and really you're not, I wouldn't say you're in a fit state at eight weeks, as a new mum, to start questioning and to sort of think rationally really.” (parent)	No downgrading necessary	High
4 (, Jackson 2017b, Johnson 2014, Tickner 2007, Redsell 2010)	Parents and health visitors felt that parents are overwhelmed by the complex vaccination schedule and would prefer to have more time to consider vaccination with reminders to prompt them.	“I’m a bit unorganised at the best of times and I need reminding otherwise I’d forget to be honest. So yeah the surgery sends out reminders, so that would definitely help erm. . . and also it stays on my mind.” (parent)	No downgrading necessary	High
1 (Tickner 2010a)	Low levels of contact with health visitors during the preschool years (once the child is no-longer a baby) can negatively affect vaccination levels. Parents said that health visitors have a good level of early contact, but this is not the case so once the child is no longer a baby. The lack of	“They only seem to talk about it when they’re a little baby... after a year it doesn’t seem important to have those done.” (parent)	Downgraded twice for adequacy	Low

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
	contact during the pre-school period leads some parents to question the importance of pre-school vaccines.			
1 (Bolszewicz 2020)	Collaborative working between different vaccine providers can be a good way to improve access and achieve high vaccination rates.	If I know that [out of home care] children are not up to date with their immunisations and the carers struggle to get to the GP or a child health centre, the immunisation nurse will come with me [on a home visit]. So, we do work together. We want to get the children up to date	Downgraded twice for adequacy	Low
1 (Hill 2021)	Practices nurses felt that there was often not enough time for discussions with parents about vaccinations, particularly in relation to the MMR vaccine. They tried to make additional appointments and referrals to overcome this.	I think [I] could potentially change their minds more often if we spent more time with them	Downgraded twice for adequacy	Low
Sources of information and influence: family, other parents and the media				
31 (Brown 2012, Brownlie 2006, Evans 2001, Gardner 2010, Guillaume 2004, Hill 2013, Hilton 2007b, Johnson 2014, Lewendon 2002, McMurray 2004, Petts 2004, Tickner 2007, Henderson 2008, Hill 2013, New 1991, 2010a, Poltorak 2005, Brownlie 2005, Jama 2018, Loewenthal 1996, Tomlinson 2013,	Parents (including Jewish people, travellers, migrants and anthroposophic followers) use multiple sources of information in their decision making and can be influenced by family members, other parents, NHS websites and leaflets, online forums, healthcare professionals perceived social pressure and the media. Some parents believe that the media is a valuable information provider. However, others believe that the media is irresponsible and unbalanced. Some GPs said that adverse publicity was a key factor in poor vaccine uptake (for example, decreased MMR uptake following the Wakefield incident). (The studies did not mention social media, possibly due to their age.)	“I think that’s where most of the advice comes through [from other mothers] ... cause I ... look up to other people who’ve got kids who are older ... I look to them for advice about what they’ve done because they’re right in front of me I can see how well rounded their child is (laughter).” (parent) “] hmmm some respond to me that they absolutely believe that they would like to vaccinate but are afraid that their children will become autistic and won’t start to talk. And they say that they would never in their wildest imagination give such a vaccine with side effects. They say, “It is not possible you think I could do that!” I try to influence them to	No downgrading necessary	High

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
Newton 2017, Smith 2017, Austin 2001, Bystrom 2014, Harmsen 2012, Harmsen 2015, Newton 2017, Casiday 2007, Sporton 2001, Cotter 2003)	Other parents were also seen as a good source of advice because the parents developed relationships with each other at children's centres, and they viewed each other as impartial and trustworthy. Some parents said that their relatives had influenced their decision to vaccinate. In addition, parents said getting vaccinated was the perceived social norm and thought that there was social pressure to accept vaccination. They were concerned about being judged by others if they rejected vaccines such as the MMR. However, in some communities the social circle can influence people to decide against vaccinations. Nurses highlighted how, in the Somali community in Sweden, the opinions of friends and family result in a low uptake of the MMR vaccine because of their beliefs in its link with autism.	think otherwise but they have a very strong idea. So it has to come from within them, I think [...]."		
Information needs				
29 (Evans 2001, Guillaume 2004, McMurray 2004 Thomas 2018, Brown 2012, Casiday 2007, , Evans 2001, Gardner 2010, Guillaume 2004, Hilton 2007a, Jackson 2017b, McMurray 2004, Petts 2004, Poltorak 2005, Smailbegovic 2003, Tickner 2007, Tickner	Parents (including those with anthroposophical beliefs, immigrants* and Jewish parents) and GPs said they would like balanced information about vaccines that address parental concerns about safety as well as effectiveness. Parents said that they felt well informed, but the information did not address their concerns fully because they lacked information about potential adverse events, the rationale for combination vaccines, how the vaccines were tested, where else they had been used, and the vaccine ingredients. They thought that the information they received was written to purposefully avoid these issues and did not present a balanced picture.	"I struggled to find the information that I wanted... about autism and all the rest of it. [...] People don't have time to wade through tons of stuff." (parent)	No downgrading necessary	High

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
2010a, Berman 2017, Brownlie 2006, Austin 2001, Bystrom 2014, Harmsen 2012, Harmsen 2015*, Stein 2017, Loewenthal 1996, Tomlinson 2013 Smith 2017, Fredrickson 2004, Cotter 2003)	GPs agree that the information they provide to parents downplays the potential side effects to such a degree that they vaccines are presented as being 100% safe and that this can dissuade parents from having their children vaccinated. However, doctors and public health nurses said that most parents with concerns agree to vaccination after they have discussed the evidence with them. * Immigrants include people who had lived in the Netherlands for at least 1 year (mostly people from Morocco, and Turkey, as well as some from Afghanistan, Somalia, Poland and Belgium)			
5, Tickner 2007, Guillaume 2004, Hilton 2007b, Jackson 2017b, Harmsen 2015*)	Parents (including immigrant parents*) were concerned about the introduction of new vaccines, such as MMR or MenB, but were reassured if they were informed about vaccine safety and benefits and persuaded that it was aimed at protecting their child's health rather than cutting costs. They were also more trusting if they could be persuaded that enough research had been done to evaluate safety. * Immigrants include people who had lived in the Netherlands for at least 1 year (mostly people from Morocco, and Turkey, as well as some from Afghanistan, Somalia, Poland and Belgium)	"I'd like to be convinced that there was a need for it first." (parent)	No downgrading necessary	High
1 (Hill 2021)	Practice nurses were aware that it is easy for a parent to forget about immunisations and thought it was important for the practice to send reminder letters about appointments	-	Downgraded twice for adequacy	Low
Themes that are specific to people with anthroposophical beliefs				
2 (Harmsen 2012, Bystrom 2014)	Parents with anthroposophical beliefs liked anthroposophic child welfare clinics because	"In that regard I have chosen to live here to be surrounded by people who have	Downgraded once for adequacy	Moderate

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
	they felt that these clinics dedicate more time to informing parents about vaccinations, they could phone them at any time with questions and they perceived the advice they were given as being balanced. [However, it is unclear whether these clinics are facilitators to increase vaccine uptake or whether the lack of pressure to vaccinate had a negative effect on uptake.]	similar beliefs so that I do not have to stand up for myself all the time.” (parent)		
Themes that are specific to immigrants				
5 (Harmsen 2015*, Skirrow 2021b*, Tomlinson 2013*, Thomas 2018*, Kowal 2015*)	<p>GPs who worked with immigrant populations and immigrant parents* said that language barriers meant some parents were not able to read literature on vaccines or understand an English-speaking healthcare professional. They said that it would be helpful if information was provided in their own language.</p> <p>* Immigrants were people who had lived in the Netherlands for at least 1 year (mostly people from Morocco, and Turkey, as well as some from Afghanistan, Somalia, Poland and Belgium), people born in China or South Asia who had moved to Canada in the previous 8 years, immigrant populations in London (from local GP's perspectives) or immigrants living in Australia.</p>	‘There are many people here in the district who can't speak the Dutch language and are not able to read it. So, I think when you give a leaflet, it is important to give it in their own language too’ (parent from Morocco in the Netherlands)	No downgrading necessary	High
2 (Condon 2002*, Kowal 2015*)	Immigrant parents* from Pakistan, Somalia, China and South Asia had a trusting attitude towards healthcare professionals and were more passive in gathering information. They had universally favourable opinions of healthcare professionals and received information almost exclusively from healthcare professionals during visits to clinics. These parents said that healthcare professionals had the best interests of their children at heart and that medical advice	“Doctors are God!” (A South Asian parent and a Bhutanese parent both together in Canada)	Downgraded once for adequacy	Moderate

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
	<p>was based on research, which they generally perceived as impartial and valid.</p> <p>* Moved to Canada in the previous 8 years or living in the UK for an average of 11 years.</p>			
2 (Kowal 2015, Condon 2002*)	<p>In immigrant families* the decision to vaccinate is sometimes made by the mother alone or by both parents/ the family as a whole. In South Asian, Chinese, Somali and Afro-Caribbean families, the mother decides whether the child is to be vaccinated. However, Pakistani women described the decision to vaccinate as one made by the whole family or by the husband and wife.</p> <p>* Moved to Canada in the previous 8 years or living in the UK for an average of 11 years.</p>	<p>“My husband says it’s a woman thing - health, education, everything.” (parent from Somalia in the UK)</p>	Downgraded once for adequacy	Moderate
1 (Godoy-Ramirez 2019*)	<p>Undocumented migrants* can be afraid of visiting healthcare facilities where they do not feel safe and trust the staff. This lack of trust is based on previous experiences such as being incorrectly turned away from clinics because the accompanying parent did not have ID cards, despite these not being required. Nurses agreed that it was difficult to persuade undocumented migrants to attend child health centres, but they noted that these parents often completed the immunisation schedule if they felt safe and able to attend them.</p> <p>* Undocumented parents living in Sweden for less than 3 years (from Africa, South America, Asia, and the Middle East)</p>	<p>“I’m so scared and so ashamed that I don’t have a residence permit. It’s difficult to seek health care. I’m always so scared because I have no address, I’m afraid of what will happen and I feel constant fear of being discovered.” (Parent)</p>	Downgraded once for methodological limitations and once for adequacy	Low
1 (Godoy-Ramirez 2019*)	<p>Nurses said that undocumented migrant families* moved frequently because of their</p>	-	Downgraded once for methodological	Low

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
	<p>illegal status acting as a barrier to vaccination. However, despite their lack of knowledge they tried to follow the schedule where possible.</p> <p>* Perspectives about undocumented parents living in Sweden for less than 3 years (from Africa, South America, Asia, and the Middle East)</p>		limitations and once for adequacy	
1 (Harmsen 2015*)	<p>Immigrant parents* that were referred to child welfare centres when they arrived (in the Netherlands) reported that it was easy to obtain vaccinations for their children and that vaccinations were easy to reschedule if missed.</p> <p>* People who had lived in the Netherlands for at least 1 year (mostly people from Morocco, and Turkey, as well as some from Afghanistan, Somalia, Poland and Belgium)</p>	'No, it was not a problem. I was instantly referred to the child welfare centre when I came from Barcelona to the Netherlands' (Parent from Morocco)	Downgraded once for adequacy	Moderate
1 (Condon 2002*)	<p>Afro-Caribbean and Somali parents* tolerated repeated opportunistic invitations to vaccinate or reminder cards for missed vaccinations because they realised that it was in the best interests of their child.</p> <p>* People who had lived in the UK for an average of 11 years.</p>	-	Downgraded once for adequacy	Moderate
1 (Tomlinson 2013)	<p>Somali parents thought that it was more important to be vaccinated in the UK compared to Somalia. They said that the population density of the UK is greater than that of Somalia, so there is a greater risk of disease transmission. They also believed that people in the UK are more susceptible to disease due to the colder weather and less healthy diet.</p>	"When it was our country [Somalia] ... you've got big country ... it was healthy, every day what you eating, it's healthy ... and we don't do injection, but if you come here you have to do it because the environment ... the ground is small and the people, population is big ... and here it's cold country – you have to!" (parent)	Downgraded once for adequacy	Moderate

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
1 (Tomlinson 2013)	Somali parents believed that if their child was not up to date with their vaccinations, the school would prevent them from attending. They were also worried that not being vaccinated would prevent their child from attending university later in life.	“When your child starts school they check the red book ... if the child doesn’t have all these immunisations then obviously the school is not going to take them.” She then talked about the problems her child might face “when he grows up or when he decides to go to university ... they might just check up on his past health and if they see there on his record that the child didn’t have the MMR or any ... he might have a problem.” (parent in the UK)	Downgraded once for adequacy	Moderate
1 (Condon 2020*)	Some parents* perceived vaccination reminders as pressure to comply and thought they had no choice in vaccination * Parents from Pakistan or Somalia who had lived in the UK for an average of 11 years	‘Immunisation here like, for example you get reminders, you have to immunise your children, but back home you have a choice; you can take only if you want, nobody would push you to do that, so it’s just like, take or not take’ (Somali mother)	Downgraded twice for adequacy	Low

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
1 (Condon 2020*)	<p>Difficulties registering a child with a GP was raised by some parents* as an issue which could delay vaccinations</p> <p>* Parents from Pakistan or Somalia who had lived in the UK for an average of 11 years</p>	<p>We found it difficult to register our boy to a GP in Scotland...we tried online, and I had to take a lot of time off from work to be able finally to do it...[This was] because I wasn't noticed, I wasn't given importance. (Romanian father)</p>	Downgraded twice for adequacy	Low
Themes that are specific to immigrants: religious considerations				
3 (Harmsen 2015*, Tomlinson 2013*, Jama 2018*)	<p>Muslim immigrant parents* had different opinions on whether vaccinations were acceptable in Islam. Somali immigrant parents* who vaccinated on time had confidence because they trusted God and believed that anything that happened to their child was according to the will of God. Some Turkish immigrant parents* said that according to Islam, vaccination was considered beneficial because they must protect their health.</p> <p>However, others believed Allah determined whether their child became sick, so vaccines did not prevent disease. In addition, some Somali migrants who were Muslim were anxious that the MMR vaccine contained gelatine, a pig-based product forbidden in Islam. However, others held the view that it was only an injection and not food eaten every day.</p> <p>* People who had lived in the Netherlands for at least 1 year (mostly people from Morocco, and</p>	<p>"I believe that God has given you your child yesterday and can as quickly give him something tomorrow. He can give him something after twenty years or when he is little. One should believe in God, that is very important". (parent from Somalia in Sweden)</p> <p>"Our faith tells us that we must protect our body well. That is our starting point." (Parent from Turkey who was a Muslim)</p>	No downgrading necessary	High

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
	Turkey, as well as some from Afghanistan, Somalia, Poland and Belgium), people living in the UK who were born in Somalia and Somali immigrants living in Sweden.			
Themes that are specific to Jewish people				
1 (Henderson 2008)	Some Jewish parents said that they did not vaccinate their children because of lengthy waiting times and because of their belief in complementary medicine.	-	Downgraded once for adequacy	Moderate
1 (Henderson 2008)	Some Jewish people believed that Judaism supported their decision not to vaccinate: they said God decides whether a child will get an illness.	"I feel that if God wants her to get it [an illness] she will get it." (Jewish parent in the UK)	Downgraded once for adequacy	Moderate
1 (Loewenthal 1996)	Practice staff say that Jewish parents often do not read the available literature on vaccines. This may be because they are busy coping with their many children.	-	Downgraded once for methodological limitations and once for adequacy	Low
1 (Stein 2017)	Orthodox Jewish parents said they would not discuss vaccines with other parents, because they said that other parents are not professors, doctors or rabbis.	"I am not a professor or a doctor or a rabbi, why should they listen to me?" (Jewish parent in Israel)	Downgraded once for adequacy	Moderate
Themes that are specific to travellers, gypsies and Roma				
2 (Newton 2017, Smith 2017)	Parents who live on caravan sites believe that vaccinations are useful, but some do not see them as a priority. Travellers said that diseases are common and spread easily on caravan sites because there is a high population density, visits from family and friends are frequent and hygiene may be poor due to lack of clean water. However, for some people who live on caravan sites, good hygiene and clean water are a greater priority for staying healthy than vaccinations.	"...[H]ygiene and clean water has got more to do with us being alive ..." (G&T parent on a caravan site in the UK)	Downgraded once for adequacy	Moderate

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
1 (Smith 2017)	Parents who live on caravan sites and travel frequently have difficulty obtaining vaccination appointments. People on caravan sites said that appointment cards and information on vaccines does not reach them. This is a particular problem for people living on illegal camping sites who must change location every few weeks. Some have also been told by the surgery that they need a fixed address to secure an appointment.	“You get an appointment and then when you get to the appointment you’re moved on again. Then if you do get the appointment and you’re booked in you’ll be moved on again because you never get longer than a week or two weeks is the very most you’ll get to stay in one place.” (G&T parent on an unauthorised caravan site in the UK)	Downgraded once for adequacy	Moderate
2 (Newton 2017, Smith 2017)	Parents who live on caravan sites and travel frequently do not have the opportunity to develop a trusting relationship with healthcare professionals and seek advice from other travellers instead. They said it would be useful if healthcare professionals visited to give vaccinations or advice and that would help increase trust in healthcare professionals. The parents ask other people on caravan sites for advice about vaccination or may place more trust in mother-nature because they “know her personally”.	“They [health professionals] don’t care they don’t really care about this population. If they would care about this population they will make the effort to pop along.” (G&T parent on a caravan site in the UK)	Downgraded once for adequacy	Moderate
1 (Newton 2017)	Some parents living on caravan sites have difficulty reading leaflets and letters that encourage vaccine uptake. They also found it difficult to remember when and where they should be vaccinated.	“There are letters and things, I can read a little bit but I still don’t understand what they are going on about.” (G&T parent on a caravan site in the UK)	Downgraded once for adequacy	Moderate
1 (Smith 2017)	Parents living on caravan sites noted that their children were less likely to be vaccinated because the children did not spend as much time in schools [and nurseries etc] and frequently moved schools.	“A lot of travelling children don’t go to school for as long as other children. I don’t think they are offered the same information and awareness and what have you.” (G&T parent on a caravan site in the UK)	Downgraded once for adequacy	Moderate
1 (Ellis 2020)	Mothers felt that they had a good understanding of their bodies and their children and valued this above the knowledge and experience of	“The way I look at it, if you don’t have it, if they did get something, it’s your fault not getting this to save this baby. That’s	Downgraded twice for adequacy	Low

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
	healthcare professionals. However, mothers did ensure their children had vaccinations as this was associated with staying healthy. However, many followed advice from friends and family to delay the MMR vaccine until their child was older.	<p>the way I look at it, one way or the other. It's like measles, everything can be dangerous, can't it?"</p> <p>"I was 12, so I was, like, he can have it at any point in life, so let's get over the curve that I went through with development. When he's three or four and he's up doing everything he's meant to be and I can literally sit there and say, "okay, he's not autistic", let's go for it then."</p>		
Themes that are specific to vaccinations during the COVID-19 pandemic				
1 (Skirrow 2021b)	Nurses had to phone parents during the pandemic to encourage them to attend vaccination sessions as many were worried about attending practices during the lockdown. Some nurses reported that this was time consuming. However, they also thought it was beneficial because they could discuss other concerns that parents had about immunisations	"...we had to work really, really hard...a day or so a week just ringing parents...to encourage them to bring their children in..."	Downgraded twice for adequacy	Low
1 (Skirrow 2021b)	Providers adapted their models to fit with the safety requirements for the pandemic. Some, used innovative methods such as outdoor or drive-through immunisation services, and these were reported to be generally well received by people attending vaccination appointments	appointments "they've actually loved it. It's surprising because initially we weren't sure whether it would work ... but because now that they've been quite used to the idea ... with the pandemic everything has changed. So, this is the norm now"	Downgraded twice for adequacy	Low
1 (Skirrow 2021b)	Participants identified a local transient population as a barrier to some people accessing vaccinations	"We've got a very transient population and in the local area of the Primary Care Network one of the practices is just for homeless people...(and) One of the practices... (has high numbers of) university (students)...we have to take that into consideration"	Downgraded twice for adequacy	Low

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
1 (Skirrow 2021b)	<p>Participants suggested that some of the new delivery models could be used for larger scale vaccination programmes. Some areas used adapted versions of the new models to deliver the flu vaccine.</p> <p>However, some people thought that vaccinations at mass clinics could affect uptake because people have more trust in their local GP. They also thought it might restrict access for some people if the clinics are further from their homes than their local GP practice</p>	<p>“The reason it worked quite easily is because we had done that in COVID. We'd been a green practice and they'd been a red practice. So, their GPs were used to working in our building. So, we just thought... Everything's set up to do that again and have our flu clinics there so that we can have the whole building to do...socially-distanced flu clinics”</p> <p>“...it may be better as a mass flu clinic...but you might lose some of the trust a GP surgery would have”</p>	Downgraded twice for adequacy	Low
1 (Bell 2020c)	<p>During the COVID-19 pandemic, parents found it difficult to register their child at a GP practice and would have preferred to be able to do this remotely. Others had difficulties booking vaccination appointments, with some reporting that GP receptionists were unsure of whether childhood vaccinations were still taking place during the lockdown. Most reported they were only aware of ongoing vaccinations because of information from family, friends and social media.</p>	<p>“If anything, that [registering child at practice] was quite a stressful thing and I think that if I was somebody maybe who was finding parenting in general harder at that point in time or had a lot more on in life, that would, you know, it potentially could've resulted in either, you know, not getting the jabs in a timely manner. . . If I wasn't as passionate about, yeah, about the fact that I want these vaccinations to happen. Yeah, would I have let it go? And well, I'll sort it out in a few weeks.’</p>	Downgraded once for methodological limitations and once for adequacy	Low
1 (Bell 2020c)	<p>Some parents discussed how the risk of their child getting an infectious disease was low during the lockdown and they therefore delayed vaccinations because they had greater concerns about the risk of contracting COVID-19 while visiting their GP. However, those that did attend a vaccination appointment reported positive experiences and said this led them to encourage other parents to do the same.</p>	<p>“At the moment, you know, we're not going anywhere that she could pick up anything including measles or mumps or whatever. So, I'm okay with her holding off until we're going to be out and about but when we are going to out and about again because obviously, we can't stay inside forever, it will have to be a priority. Because the last thing we need is for her to pick up something else</p>	Downgraded once for methodological limitations and once for adequacy	Low

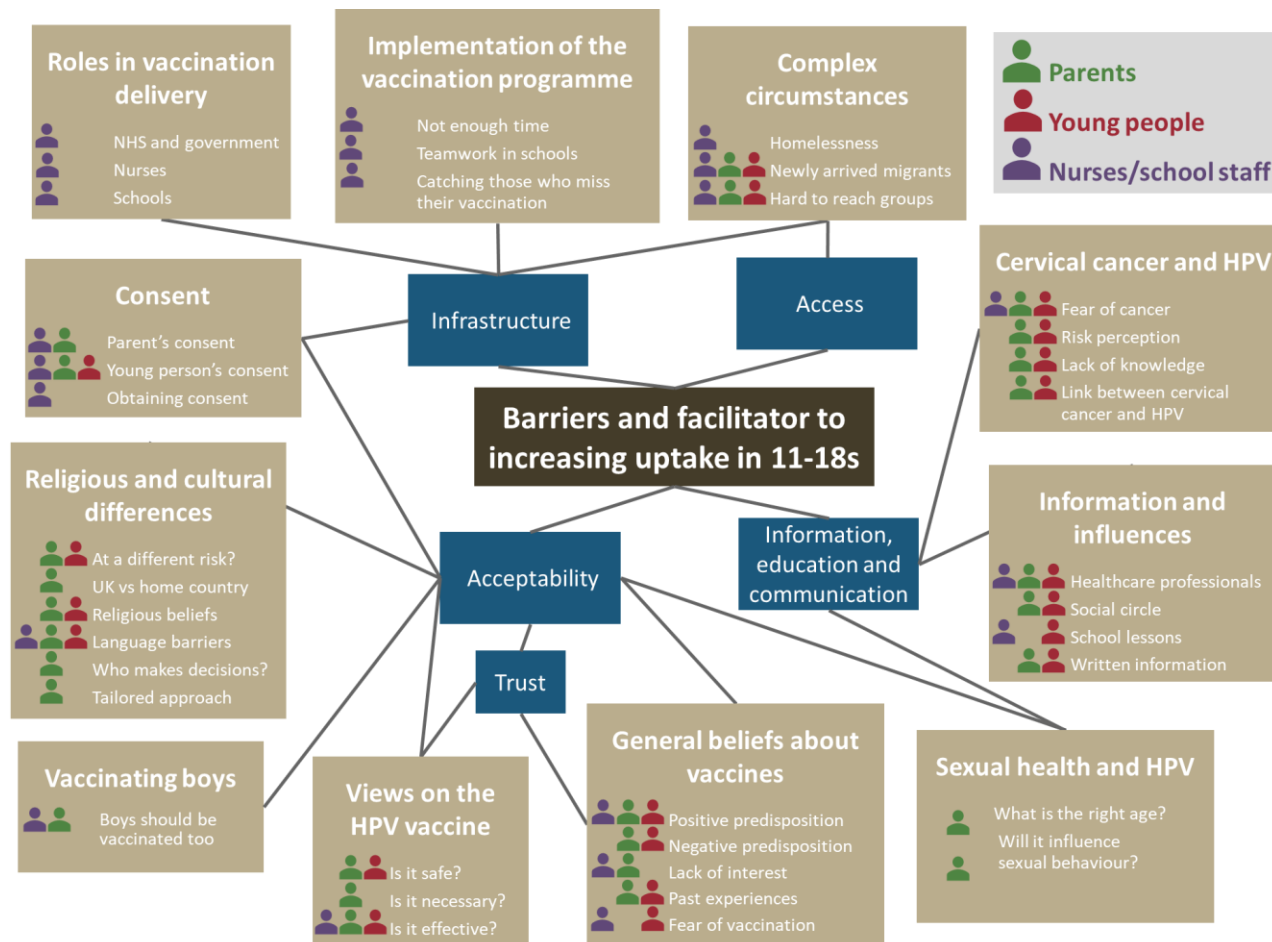
Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
		awful [laughs]. But it's just, it's, we're trying to sort of balance it, you know, we don't want to go anywhere to risk her getting anything at the minute and the GP's surgery just feels like—I could be wrong, but it just feels like the sort of place that you really want to avoid.”		
1 (Bell 2020c)	Parents whose children were eligible for vaccinations during the COVID-19 pandemic reported that a lack of information about the new safety measures in place at their GP surgery made them more hesitant about booking vaccination appointments. Others wanted more information about the side effects of vaccination and how they could be distinguished from those of COVID-19	<p>“ . . .if you knew in advance what had been done in the surgery and how the rooms were set out and things like that, that would sort of make you feel a bit more comfortable about it”</p> <p>“[I would like] maybe an information sheet or something from the nurses to say if there was anything, yeah, I don't know. Well, I think we all know the symptoms of Covid and what to look out for, but it's difficult because, you know, there's like how do you determine the difference? I know it's very rare but there's that Kawasaki syndrome is it that can be a, I don't know. A friend of mine actually like shared the symptom list and sort of pictures on Facebook earlier and I was like maybe if they'd had something like that. Because if you've got a fever you might be having some reactions because the vaccine can give some funny reactions and they can get a rash and things like that as a reaction to the vaccine, but it's like how do you tell the difference between a reaction to the vaccine and, you know, potentially something different, something more sinister?”</p>	Downgraded once for methodological limitations and once for adequacy	Low

1 See [Appendix F](#) for full GRADE-CERQual tables

1 **Young people aged 11-18 years old**

2 **Figure 2 Summary of the main concepts identified in the qualitative evidence for vaccination of young people aged 11-18 years old**

3 See the findings in [Table 8](#) for more details.



4

1 Note: the majority of studies in this section that looked at the views of young people recruited adolescent girls because they were interested in
2 HPV vaccination, which was only available for girls at the time the study was carried out. Where the findings refer to young people the supporting
3 studies included adolescent boys or reflect providers' views that could be applicable to both girls and boys. When findings specifically refer to the
4 views of adolescent girls, or providers' experiences of vaccination programmes which only included girls, they will be referred to as adolescent
5 girls. However, some of these findings may be generalisable to adolescent boys. In addition, although most studies focused on HPV the findings
6 may be generalisable to other vaccinations if the finding is not related to a specific characteristic of the HPV vaccination. Where findings relate to
7 people who are immigrants, the country which people had migrated from, and the length of time that they had been living in a new country, will be
8 stated at the end of the finding (where this information is available).

9 **Table 8 Summary of the barriers to and facilitators for vaccinations for young people aged 11-18 years old**

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
General beliefs about vaccines				
9 (Burns 2021, Cooper Robbins 2010a, Cooper Robbins 2010b, Gordon 2011, Hilton 2011a, Hilton 2013, Racktoo 2009, Rockcliffe 2018, Stretch 2009)	Parents (including Jewish parents), adolescent girls and nurses conveyed generally positive views on vaccination. They considered the protection offered by vaccinations to be a benefit to both individuals and society. Some participants felt that accepting vaccinations was the default choice and reported having accepted all vaccines they had been offered. This default acceptance was linked to a tendency to defer responsibility to trusted sources like healthcare workers and the government vaccination schedule.	<p>“People have a responsibility to receive vaccines if they want to keep themselves safe and not pass it on to the others” (young person)</p> <p>“I think vaccines against anything preventable is worthwhile” (parent)</p> <p>“I guess only since receiving this [information during the study], in that it has reminded me that we said ‘yes,’ and it’s a bit after the horse has bolted sort of thing... But I think it’s just because it’s lumped in, it’s another vaccination in the blue book – you do this at age 2, at age 5 you do this. I’ve never questioned the blue book” (parent).</p> <p>“I trust the school so whatever the school is giving to any of my children, I trust them, that’s good for them so I let them”</p>	No downgrading necessary	High

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
9 (Batista Ferrer 2015, Cooper Robins 2010b, , Dube 2019, Forster 2017*, Grandahl 2014, Hilton 2011a, Hilton 2011b, Kennedy 2014, Stretch 2009)	<p>Negative views on vaccination were also expressed by some parents and adolescent girls (immigrant parents*). Some parents strongly rejected all vaccinations. They often did not fully understand how vaccinations work and did not trust vaccine providers (pharmaceutical manufacturers and/or the government). Other parents believed that vaccines were unnatural and that their child's immune system would be strengthened by having the disease.</p> <p>Nurses and school staff described encountering these views as a barrier to their work because they couldn't enter into a dialogue with parents who were resistant. However, some school nurses had reservations about vaccinating their own children.</p> <p>* Immigrants included people living in the UK who were born in Bangladesh, Africa, Caribbean, Somalia, India or Pakistan</p>	<p>"You get people who buy into it, and people who don't, you know. "Oh, it's all mumbo jumbo, I'm never going to give my child a vaccination ever"" (school staff member)</p> <p>"[A parent] had already made her mind up that her daughter was not going to have the vaccine and just came along simply to be controversial and to simply cause trouble" (nurse)</p> <p>"...if you get diseases then the body's own immune defence will build much better defence afterwards than a vaccine can ever do" (mother)</p>	No downgrading necessary	High
4 (Batista Ferrer 2015, Brabin 2011, Forster 2017*, Hilton 2011a)	Nurses described some parents (including immigrant parents*) as being indifferent or uninterested in vaccination. Some nurses described parents who did not, in their opinion, appreciate the importance of the HPV vaccine and were not motivated to seek more information. They found these parents difficult to engage with, particularly when consent forms were not returned.	<p>"Health isn't a priority. It's just getting by in life sort of thing, you know, so they don't bother returning the form, they lose the form and they don't bother getting another one" (nurse)</p> <p>"We have a lot of parental apathy, rather than a parent ringing us up and saying: 'Oh, I'm not very happy about this injection,' we don't really get that side of it. It's more they don't</p>	Downgraded once for adequacy.	Moderate

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
	* Immigrants included people living in the UK who were born in Bangladesh, Africa, Caribbean, Somalia, India or Pakistan	make any decision and don't bother signing the form." (nurse)		
2 (Batista Ferrer 2015, Forster 2017)	Parents recalled previous experiences of vaccination and this influenced their decision to be vaccinated. Parents with negative experiences were often hesitant to accept further vaccinations, whereas those with positive experiences were more relaxed about the prospect.	"[My daughter] was asthmatic ... her symptoms started to worsen a little bit ... and I think the second dose was one or two months after this ... I just couldn't psychologically take it, so I thought, err, you know, with her symptoms, with her immune system, I'd rather not go ahead" (parent)	Downgraded twice for adequacy	Low
8 (Cooper Robbins 2010c, Grandahl 2014, Hilton 2011a, Hilton 2011b, Hilton 2013, Kennedy 2014, Racktoo 2009, Rockcliffe 2018)	<p>Many adolescent girls and their parents described the young person's fear of the vaccination experience as a barrier to vaccination. The adolescent girls were particularly afraid of needles and of the vaccination being painful or embarrassing. Nurses attempted to overcome these problems with reassurances. A few adolescent girls described their concerns that the vaccination environment was inadequate, unclean and lacking in privacy. They felt a different set up would make them more comfortable having the vaccination. Teachers could help by having the adolescent girls wear suitable clothes on the day.</p> <p>Some parents reported that they had decided against vaccinating their daughter because it would not be possible without sedation or force due to needle phobia. They suggested that more individual treatment in a calm environment with a parent present might be more effective at overcoming this fear.</p>	<p>"It's to have a nice, quiet area with, and also an area, when you've got the really nervous ones, where you can take them over as well, because those, y'know, don't forget, these kids haven't had a vaccine without their mum for years, y'know. A lot of them, y'know, they're mature, but some of them are very immature" (nurse)</p> <p>"It wasn't very private or anything. It was like, there was a like a pin board and then you behind, not very private, especially with the first one when you're a bit worried" (young person)</p> <p>"Some folk were quite embarrassed about 'cause like if you've got a long sleeved shirt on, which most of us did have, cause we wear white shirts, then you had to actually take their shirt off to get the jag, cause you couldn't roll your sleeves up" (young person)</p>	No downgrading necessary	High

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
Views on the HPV vaccine-safety, effectiveness and usefulness				
18 (Albert 2019, Batista Ferrer 2016, Cooper Robbins 2010b, Creed 2021, Dube 2019, Forster 2017*, Gordon 2011, Grandahl 2014, Hilton 2011a, Hilton 2011b, Hilton 2013, Kennedy 2014, Mupandawana 2016*, Racktoo 2009, Rockliffe 2018, Salad 2015*, Seale 2012,	<p>Many parents (including immigrant parents* and Jewish parents) and adolescent girls expressed concerns about the safety of the HPV vaccine or vaccines in general, however others were unconcerned and trusted their school, health care providers and the government. The most common concerns were that there may be unknown side effects of HPV vaccination in the short term, and that we do not yet know its effects on a young, growing body or if the vaccine will cause health problems later in life such as reduced fertility. They felt that they needed to weigh these risks against the benefits of the vaccination.</p> <p>Several of the studies were conducted when the HPV vaccine was relatively new, so some parents were concerned that it may not have been fully tested at that point. Several of these said that they did not want their children to be used as 'guinea pigs' in the first few vaccination cohorts. Nurses and managers were aware of parents' views concerning this issue.</p> <p>In contrast, other parents (including some school nurses) had little concern about side effects and agreed that the vaccine would not be available if there were serious concerns about its safety.</p>	<p>"Have they tested it enough? Can they guarantee that it's not going to have long-term effects when you're 40?" (parent)</p> <p>"I kept thinking that my arms felt numb because it had happened to this girl in a magazine after she had it. I thought I might die because they hadn't given it to many people before" (young person)</p> <p>"She would have been in one of the first tranches to be vaccinated and I thought she's not going to be sexually active to my knowledge in the immediate future and therefore I didn't want her to be a guinea pig" (parent)</p>	No downgrading necessary	High

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
Stretch 2009)	* Immigrants included people living in the UK who were born in Bangladesh, Africa, Caribbean, Somalia, India or Pakistan and mothers from Somalia who had a migration date from 1990 or 2006 migration waves.			
2 (Grandahl 2014, Seale 2012)	Parents of immunosuppressed children were concerned about potential adverse effects being exaggerated in immunosuppressed patients, while other parents whose children had medical issues such as diabetes, asthma and allergies or had previously been exposed to numerous medical procedures were concerned that the vaccination would worsen these conditions.	“Obviously any immune-suppressed person, you need to be careful about what you’re introducing into their system. Whether her system could cope, firstly; whether it would affect her current medications and whether it might trigger some reaction from her disease that she had anyway. As long as I could be reassured that none of those things would occur, I thought whatever other risk was involved was worth taking”. (parent)	Downgraded once for adequacy	Moderate
7 (Albert 2019, Cooper Robbins 2010b, Forster 2017, Gordon 2011, Grandahl 2014, Hilton 2011b, Mupandawana 2016)	Some parents (including Jewish and African parents and those from other ethnic minorities) questioned whether the vaccine was necessary. Some parents felt that because HPV is transmitted through sexual activity it could be prevented through abstinence, contraception or by only having one partner. Others believed that good general health and alternative medicine provided sufficient protection. In addition, some parents noted that they had not been vaccinated when they were younger and had come to no harm. Other parents thought that vaccination was unnecessary because cervical cancer could be detected using normal screening methods and treated.	<p>“As long as we lead a healthy lifestyle without any bad habits... I should be able to protect myself from any kind of illness. Like ... cancer and stuff like that” (parent)</p> <p>“I also knew a little bit about how it was transmitted and how you could catch it... you know it’s not like other cancers. There is a way of sort of developing it through specific behaviour” (parent)</p> <p>“If we want to avoid HPV, let’s go out there and use condoms... It’s good sexual dialogue with your teenagers. I think that’s more important for them than having a vaccination” (parent)</p>	No downgrading necessary	High
6, Forster 2017, Gordon	Parents (including immigrants* and Jewish parents) and adolescent girls often felt that the vaccine was not effective enough to be	“At the end of the day it’s only against one form of cervical cancer isn’t it? It’s only a minor prevention really.” (parent)	No downgrading necessary	High

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
2011, Grandahl 2014, Henderson 2011, Hilton 2011a, Hilton 2011b)	worth risking any side effects. The HPV vaccine does not prevent all forms of HPV and does not provide completely protection against cervical cancer; some parents and adolescent girls felt this was not sufficient protection. Others questioned how long the vaccine would remain effective. * Immigrants included people living in the UK who were born in Bangladesh, Africa, Caribbean, Somalia, India or Pakistan			
Cervical cancer and HPV				
13 (Albert 2019, Batista Ferrer 2015, Cooper Robbins 2010b, Creed 2021 Gordon 2011, Henderson 2011, Hilton 2011a, Hilton 2013, Mupandawana 2016*, Racktoo 2009, Rockcliffe 2018,	Parents (including Jewish and immigrant parents* and parents of immunosuppressed children), adolescent girls and nurses were all worried about cervical cancer. Most participants described their fear of cervical cancer and related this to their own or their loved ones' experiences of cancer or their awareness of the death of Jade Goody from this form of cancer. They often expressed these views in conjunction with willingness and enthusiasm for the HPV vaccine. School nurses took pride in the programme as a way of providing long lasting protection against cervical cancer. However, other parents were less concerned because they believed that cervical cancer is slow growing and treatable.	<p>"She [mother] said it was a good thing to have after her [cervical cancer] scare" (young person)</p> <p>"I'm so pro this vaccine it's not true because, obviously, it's the first one we've got against cancer and we can help protect these girls long-term" (nurse)</p> <p>"I'm very happy to have the vaccine so I won't get cervical cancer as my grandmother had it and my mum had it [cervical cancer]" (mother)</p>	No downgrading necessary	High

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
Seale 2012, Stretch 2009)	* UK-based African parents from Zambia, Zimbabwe, Nigeria, South Africa and Kenya			
6 (Cooper Robbins 2010a, Gordon 2011, Hilton 2011b, Hilton 2013, Racktoo 2009, Seale 2012)	Many adolescent girls and parents (including Jewish parents and parents of immunosuppressed children) did not fully understand the link between HPV and cervical cancer. Some participants expressed confusion when they were presented with information about HPV. Many did not know whether the vaccination was against HPV or cervical cancer. There was also a lack of understanding about how HPV is transmitted and causes cervical cancer and how the vaccine protects people against this. Some parents attributed HPV infection to having a high number of sexual partners. Some parents explained their lack of knowledge by the tendency to defer responsibility to trusted sources.	<p>“I thought it was just like any cancer, like kind of like lung cancer, it just kind of appears... like one minute you’re all right and the next minute it’s like you’ve got cancer. I thought it was like that, I thought cancer was one of those random things. I didn’t know cancer could be caught like sexually transmitted at all” (young person)</p> <p>“I thought HPV and cervical cancer were the same thing. We should have been told about this properly.”</p> <p>“I’m worried now, I thought HPV was just the name of the jab.” (young people)</p>	No downgrading necessary	High
6 (Albert 2019) Batista Ferrer 2015, Hilton 2011b, Hilton 2013, Mupandawana 2016, Seale 2012)	Parents’ (including African immigrant parents and parents of immunosuppressed children) and adolescent girls’ perception of the risk of developing cervical cancer was mixed. Some parents believed the risk of cervical cancer was too low to be worth the risks of vaccination and it could be detected and treated if it did occur. Others felt that their child’s specific risk was lower than most because they did not have a family history of this cancer or it was a disease seen in old women in their country of origin. Very few adolescent girls were aware that HPV	<p>“No one in my family has ever had [cervical cancer] and I have never heard of anyone getting it” (parent)</p> <p>“I just think that it’s better to have the vaccine than not have it, like, at least with the vaccine you’ve got a chance, like, to slightly lower the risks, whereas without the vaccine you don’t really know” (young person)</p>	No downgrading necessary	High

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
	<p>was highly prevalent in the UK and they thought the threat was historical and/or low in the UK compared to developing countries.</p> <p>Some parents and adolescent girls however felt that any reduction in the risk of developing cancer was desirable.</p>			
<p>12 (Cooper Robbins 2010a, , Dube 2019 Forster 2017*, Gordon 2011, Henderson 2011 Hilton 2011a, Hilton 2011b, Mupandawana 2016*, Racktoo 2009, Rockcliffe 2018, Salad 2015*, Seale 2012)</p>	<p>Many parents (including immigrant* and Jewish parents and parents of immunosuppressed children) and adolescent girls lacked knowledge about how HPV vaccination protects against cervical cancer. They incorrectly believed that the vaccine was fully effective and did not realise that cervical smears are still required. In contrast, other parents (including some Jewish parents) and adolescent girls demonstrated knowledge and understanding of these issues.</p> <p>* Immigrants included people living in the UK who were born in Bangladesh, Africa, Caribbean, Somalia, India or Pakistan</p>	<p>“It must be spread like any other virus.”</p> <p>“Yeah like the flu virus. We catch flu from breathing in the virus don’t we?”</p> <p>“So we can breathe in HPV too?” (young people)</p> <p>“t sounded very positive! (the HPV vaccine) . . . If it meant that people didn’t have to have smear tests when they were older that was great! . . . I don’t like smear tests!” (mother)</p>	<p>No downgrading necessary</p>	<p>High</p>
Sexual health and HPV				
<p>12 (Batista Ferrer 2015, Burns 2021,</p>	<p>Parents (including immigrant* and Jewish parents) often felt uncomfortable discussing sexuality with their child and questioned the age chosen for the HPV vaccine, although they disagreed about</p>	<p>“She’s nearly 15 so in three years’ time she would be 18, I’d have to have a frank discussion with her. I think it would depend on whether they’re having sexual relations with somebody or not. I think that’s where I</p>	<p>No downgrading necessary</p>	<p>High</p>

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
Cooper Robbins 2010a, Cooper Robbins 2010b, Creed 2021, Dube 2019, Forster 2017*, Grandahl 2014, Gordon 2011, Hilton 2011a, Mupandaw ana 2016*, Racktoo 2009, Wilson 2020)	<p>what would be a more appropriate age. They also underestimated the prevalence of HPV infection.</p> <p>Some parents felt that their children were too young and not sexually active, and that the vaccination should be given at an older age when parents could more easily discuss sexual health risks with their children. Others felt that it should be given at a younger age, so they could avoid any discussion of sex or because they were aware of younger girls having sex.</p> <p>Few understood the reason for the vaccination being given to the specific age group on the routine schedule. In addition, some parents thought the vaccine was for older girls, who had already had sex, while other parents thought girls could not get the vaccine after becoming sexually active.</p> <p>School nurses thought that targeting girls as young as 12 was appropriate as some became sexually active at this age, but they were in favour of extending the upper age to the early twenties for young women who had not been vaccinated.</p> <p>* Immigrants included people living in the UK who were born in Bangladesh, Africa, Caribbean, Somalia, India or Pakistan</p>	<p>would sort of think well maybe I would take her to go and have it done" (parent)</p> <p>"It's not the like the usual ones you hear about like chlamydia or gonorrhoea"; "I would say 1% of population"</p>		
10 (Albert 2019, Batista Ferrer 2015, Burns	Parents (including Jewish and immigrant parents*) linked HPV vaccination to sexual activity and this negatively affected their decision to vaccinate their child. Many parents predicted that adolescent girls would have more sex and take more	"Some people will say that because they fear it will encourage their young girls to be sexually active, and they endorse marriage and sex after marriage... they really don't want this influence on their child" (nurse)	No downgrading necessary	High

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
2021, Cooper Robbins 2010b, Forster 2017*, Gordon 2011, Grandahl 2014, Hilton 2011a, Mupandawana 2016*, Rockliffe 2018	<p>sexual risks if they believed they were protected against HPV. They feared that vaccination would encourage unsafe sexual practices or a false sense of security about other sexually transmitted infections. School nurses were aware of these parental concerns. Many immigrant parents believed that their child would have few sexual partners or would not be sexually active until they were older, therefore reducing the need to vaccinate. However, other parents did not think about HPV vaccination in relation to their daughter's morals but recognised that they could be infected with HPV by their partner and consented to vaccination to protect their daughter from male promiscuity.</p> <p>* Immigrants included people living in the UK who were born in Bangladesh, Africa, Caribbean, Somalia, India or Pakistan</p>	<p>"These children nowadays read things on the internet, so if she finds out what the vaccine really does, she might see it as a green card to have sex" (father)</p> <p>"I don't want my children to feel that they can literally be, I always say that word wrong, promiscuous (Parent)."</p>		
Information and influences				
6 (Batista Ferrer 2015, Forster 2017, Hilton 2011a, Mupandawana, 2016, Paterson 2019,	<p>Healthcare professionals are willing to provide information and advice about vaccinations and this is taken up by some parents (including immigrant parents) and adolescent girls where it is available.</p> <p>School nurses noted that when they offered to discuss vaccinations few parents contacted them. They also thought that parent information sessions in schools would be ineffective because these would be attended by those least in</p>	<p>"I have had a few [parents] that have been thinking they're going to say no [to HPV vaccine], but then we've had a conversation and it's actually allayed their fears and... they actually go 'okay, yes, we'll have it.'" (nurse)</p> <p>"And often they [parents] will say, you know, it's good to talk rather than read the leaflet 'cause the questions aren't often on the leaflet that they want to discuss properly" (nurse)</p>	No downgrading necessary	High

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
Rockliffe 2018)	need of information while the hard to reach parents would not attend.	"I expected to be sitting here at my desk absolutely inundated with calls and I was really not" (nurse)		
1 (Creed 2021)	Parents reported that GPs are the strongest positive influence on their decision to vaccinate. Many said they would prefer advice from their GP than other healthcare professionals	"it's the person you rely on the most and trust their opinion."	Downgraded once for methodological limitations and twice for adequacy	Very low
1, Gradahl 2014)	Some parents did not trust or feel supported by the school nurse and wanted more information than they felt the nurse was competent to provide.		Downgraded twice for adequacy	Low
5 (Albert 2019, Batista Ferrer 2015, Dube 2019, Kennedy 2014, Racktoo 2009)	Adolescent girls and their parents want and expect that information about HPV vaccination will be covered in school lessons. School staff and nurses described how they present information about HPV and the vaccine to adolescent girls through school assemblies and in health and sex education lessons. However, some teachers were not comfortable talking about the vaccine, promoting its use or able to answer students' questions. Some adolescent girls reported receiving information about HPV vaccination at school and finding it useful, but others did not feel that school lessons had been sufficiently informative, and the amount of information provided appears to be highly variable between schools.	"They [Social Education classes] don't actually like tell you about smear stuff and cancer and that they just go on about smoking, drugs, alcohol and sex" (young person)	No downgrading necessary	High
10 (Batista Ferrer 2015,	Written information about HPV vaccination is often perceived to be inadequate by parents and adolescent girls (including	"Well they gave us like a bunch of papers, but then, personally I didn't really read it. It was so long! Yeah, and I didn't really care"	No downgrading necessary	High

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
Burns 2021, Gordon 2011, Grandahl 2014, Henderson 2011, Hilton 2011b, Kennedy 2014, Mupandawana 2016*, Racktoo 2009, Rockliffe 2018)	immigrant* and Jewish parents). Some people found the written information provided for by schools and the NHS website useful, but many parents and adolescent girls criticised it for being uninformative, unengaging, or pro-vaccine biased and some thought it left them with more questions than answers. It was suggested that information should be provided in different formats, such as videos, podcasts and via social media. Some parents looked for more information elsewhere. Parents also complained that the information provided by the school was mainly concerned with logistics of the vaccination process rather than about the vaccine and why it was needed. * Immigrants included people living in the UK who were born in Zambia, Zimbabwe, Nigeria, South Africa and Kenya	<p>“Often they [parents] will say, you know, it’s good to talk rather than read the leaflet ‘cause the questions aren’t often on the leaflet that they want to discuss properly” (nurse)</p> <p>“We haven’t received any explanation... no information about HPV has been given. The only thing we got was a vaccination appointment” (mother)</p> <p>“Why is this the optimum age?”, “Why two doses at 12 and three doses at 15 or older?”</p>		
13 (Batista Ferrer 2015, Cooper Robbins 2010b, Creed 2021, Dube 2019, Forster 2017*, Gordon 2011, Hilton 2011b,	Family, friends and the media can influence parents’ decisions to vaccinate their children. Some parents (including immigrants* and Jewish parents) discussed the decision to vaccinate with the child’s other parent, or their own parents and other family members or sought the opinions of other parents they knew, or friends in their community to guide them. Adolescent girls reported that familial indifference was a barrier to vaccination. They also reported feeling social pressure to be vaccinated.	<p>“Anna: I think she [Goody] hadnae been for a smear or something. Beth: But I would never no’ go for one, though... it would be quite embarrassing. Sheona: You need to go. Lily: Well if I didn’t go, I’d feel dead like guilty, like it would be like eating away at me. And then imagine if you didnae go for it and that happened? Like, that’s quite bad... she could’ve stopped that a lot sooner. Sheona: Especially like her when you’ve got children Olivia: Like I don’t understand why she wouldn’t go if it was going to help her, I think she was a bit stupid. (young people)</p>	No downgrading necessary	High

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
Hilton 2013, Kennedy 2014, Mupandawana 2016*, Paterson 2019, Racktoo 2009, Rockliffe 2018)	<p>The media was also influential, as there had been a lot of media coverage when the vaccine was introduced. School nurses, parents (including immigrant and Jewish parents) and adolescent girls made references to Jade Goody, a celebrity who died of cervical cancer in 2009. Parents also cited the death of a schoolgirl following HPV vaccination as influential in their decision making (her death was later shown to be unrelated to the vaccination). However, other parents recalled positive messages they had heard in the media. Some thought that although media coverage is often negative, it is now starting to become more positive.</p> <p>* Immigrants included people living in the UK who were born in Bangladesh, Africa, Caribbean, Somalia, India or Pakistan</p>	<p>“...talking to other mums, no-one wants their 12 year old vaccinated” (parent)</p> <p>“Some people might still feel like because the majority maybe do get it, they might still feel pressured or feel like, you know, why are you not?... There’s still quite an expectation for you just to get it.” (young person)</p>		
Consent				
10(Albert 2019, Batista Ferrer 2015, Chantler 2019a, Gordon 2011, Grandahl 2014, Hilton 2013, Kennedy	<p>The young person’s consent is considered important but may not be possible to obtain fully in practice. Many parents (including Jewish parents), adolescent girls and nurses felt that the young person’s views should be part of the decision to vaccinate. Many advocated giving the young person the choice and some parents made a conscious effort to help their daughters make an informed choice by discussing the issues with them. However, some parents felt their daughter may not have the maturity to understand their choice, and other parents talked</p>	<p>“My mum used to be a nurse so she knows everything about the vaccine. She said it was a good idea but left it to me to decide”</p> <p>“So she actually gave you the choice. My mum didn’t. She said you are having it.” (young people)</p> <p>“We’ve introduced Gillick competence for year 10s for the first time ever and school nurses are really uncomfortable about it.” (nurse)</p>	No downgrading necessary	High

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
2014, Racktoo 2009, Rockliffe 2018, Stretch 2009)	<p>about the importance of gaining consent but made the decision themselves in the end. Some parents wanted to give their daughter the choice but postponed the decision (and vaccination) because they thought she was too young and would decide for herself later on.</p> <p>Gillick and Fraser competency was discussed by nurses and vaccine providers, who felt that it was difficult to judge clearly whether a young person met the criteria to consent for themselves.</p>			
8 (Batista Ferrer 2015, Cooper Robbins 2010b, Gordon 2011, Hilton 2011a, Hilton 2011b, Hilton 2013, Kennedy 2014, Stretch 2009)	<p>The parent's consent is considered crucial. Many parents (including Jewish parents) and healthcare professionals felt that the parent's views are the most important factor. Some parents consider it to be solely their decision and did not discuss it with the young person. Others viewed it as a collaborative decision in discussion with their daughters. However, when disagreements arose, they were most often resolved by the parent's decision.</p> <p>Gillick and Fraser competency were discussed by healthcare professionals. Most felt these would not be sufficient for a vaccination to go ahead against the parent's wishes.</p>	<p>"There is no way you can be giving a vaccination to a child without their parents' consent. That is beyond crazy!" (school staff)</p> <p>"I didn't discuss it with the girls, I merely told them of my decision afterwards. I didn't feel that they were in a position to make a decision for themselves . . . they are relatively sheltered and therefore it wouldn't have been relevant to ask them what they thought" (parent)</p> <p>"Unless we've got parental consent, or which we hope that that's the parent's signature that is on there, we don't do Fraser competence, we say that they have to go to their GP surgery" (nurse)</p>	No downgrading necessary	High
6 (Batista Ferrer 2015, Cooper Robbins	Obtaining written consent for vaccination from parents can be difficult. Nurses and healthcare professionals often described difficulties in obtaining written consent from parents as a barrier to vaccination.	"One of the biggest issues, is not getting the forms returned. So, it's not actually a positive refusal, but it's not a positive consent either." (service provider)	No downgrading necessary	High

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
2010c, Dube 2019, Grandahl 2014, Paterson 2019, Rockcliffe 2018)	<p>In these cases it is not clear whether a parent refuses to give consent or has not had the option to consent because there are many opportunities for the consent form to be misplaced in transit between the school, the young person and the parent or there may be a lack of communication if parents are working long hours.</p> <p>If the parent does not consent this may be due to a lack of understanding of the information provided; short decision times (linked to parent feeling rushed and unable to seek out more information); low levels of literacy and language issues. In other cases, incorrectly completed consent forms can cause delays in vaccination.</p> <p>In contrast, some parents give consent passively and this response may be due to competing demands on their time.</p>	<p>"I can't remember discussing it. I think it was just the case that she brought it home, fill this out. But in the business of life, forms come home and you just complete them" (parent)</p> <p>'We realised [as consent forms were coming in] that half of [the consent forms] hadn't been completely filled in so it would take time for the nurses. What we did was we had a whole pile of pens and just got the girls [to complete their details that hadn't been fully completed by their parents]. It did entail me having to check through them and find the incomplete ones. It is a lot of paperwork.' (teacher)</p>		
Implementation of the vaccination programme				
5 (Brabin 2011, Dube 2019, Hilton 2011a, Paterson 2019, Stretch 2009)	<p>Nurses struggle with competing time commitments that reduce their ability to promote and provide vaccinations. Nurses frequently described lacking time to engage fully with the vaccination programme including delivering educational/information sessions and chasing up consent forms. Some nurses provided many different services within schools and felt they lacked the capacity to provide vaccinations as well. Others felt their primary nursing duties suffered when</p>	<p>"At the moment, [the HPV vaccination programme] it's sitting within a wider programme 0-19 [years] and school nursing broadly... we've got immunisations to deliver, but at the same time, we've got emotional health and wellbeing work to do, we've got safeguarding work to do... which compete for the time" (nurse)</p> <p>"... A logistical nightmare... kids are used to knocking on our door and me being here, if</p>	No downgrading necessary	High

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
	they were dedicating a large portion of their time to delivering vaccines.	you're not here, they feel you're not here for them, then they want you less, that's the relationship that I have. It will take a knock" (nurse)		
5 (Batista Ferrer 2015, Boyce 2012, Brabin 2011, Paterson 2019, Rockliffe 2018)	Nurses actively tried to ensure that adolescent girls did not miss their opportunity to be vaccinated. These actions included following up families that did not return consent forms and signposting adolescent girls who missed their vaccination to other services that could provide it. Nurses felt these actions improved uptake, but they did not always have time to do it. In some cases, the nurses also reported holding additional clinics for girls who were not in school or poor attenders off the school premises or outside of school hours.	"The students that are away are contacted by myself to make sure that they wanted the injection. If they did... I'll ring their parents, they have to contact their GP" (nurse)	No downgrading necessary	High
3 (Brabin 2011, Hilton 2011a, Rockliffe 2018)	Teamwork and good working relationships were important for successful vaccination programmes. Teamwork was frequently alluded to by nurses as having a large influence on their ability to deliver the vaccination programme effectively. Those who had a good relationship with schools and their staff felt they were more effective than those who experienced barriers in coordinating with colleagues. However, some nurses reported that some schools could be uncooperative and unsupportive of the vaccination programme.	"Some schools... as our relationships gained with them, the uptake has got better and how they work in the school with getting these girls ready and getting consent forms for us has, like, increased the uptake." (nurse) "I think the success of the programme will be demonstrated by the commitment of the school nurses and their willingness to put the perceived needs of the children and families above their own... bottom line is, as a team we've got together and thought 'well this has got to be done... let's just get on and do it'" (nurse)	Downgraded once for adequacy	Moderate
1 (Paterson 2019)	Having dedicated administrative staff within teams was also viewed as key to effective HPV programme delivery, as were good working relationships within the	None	Downgraded once for adequacy	Moderate

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
	CHIS team, and between the CHIS and the immunization team.			
1 (Rockliffe 2018)	Some girls do not receive both doses of the HPV vaccination. School nurses thought this could be for a number of reasons including girls being absent on the day of vaccination; having a negative reaction after the first dose (e.g., feeling unwell or developing a rash); having a particularly negative experience (e.g., experiencing a lot of pain) or moving schools or areas between doses. They also thought that some parents may change their mind between doses as they do more research into the topic.	None	Downgraded twice for adequacy	Low
1 (Cooper Robbins 2010c)	Levels of anxiety can be reduced by identifying and vaccinating anxious adolescent girls early, by reducing the numbers waiting and having supportive teachers and nurses. Some schools identified anxious girls based on their previous experiences or parent's report and vaccinated them early in the day. This prevented them making their peers anxious too. In addition, having fewer girls waiting reduced noise and anxiety and meant they waited for less time. This was achieved by having someone (a teacher or student) let the next class know when it was time to arrive. Finally, nonchalant attitudes to the vaccination process can also increase anxiety and this is reduced if teachers and nurses appear more caring and supportive.	'By dose two, we had a list of about 30 [anxious] girls who came in [for vaccination] during home room [the classroom girls go to each morning for attendance and announcements] before the whole vaccination thing [started] at about quarter to nine. That worked much better [to ease overall anxiety levels and keep the vaccination experience more positive].' (teacher)	Downgraded twice for adequacy	Low

Roles in the vaccination programme

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
2 (Hilton 2011a, Rockcliffe 2018)	Nurses expect support and transparent decisions from the NHS and the government about vaccinations. They expressed frustration when they perceived decisions to be unclear or inappropriate and wanted support from the local authority.	“I don’t think the planners realised that three weeks after they told us which vaccine they were using, the school nurses were going off for their six week break” (nurse)	Downgraded twice for adequacy	Low
3 (Boyce 2012, Brabin 2011, Hilton 2011a)	Nurses and school staff felt that nurses were best placed to implement vaccination programmes because they have built a relationship with the school and students. They thought that having a dedicated school nurse improved the vaccination programme and increased uptake.	“They are all dead keen to have a dedicated immunisation team, but I think you still need your named nurse for each school because the links are so important for them to set up the sessions, and liaise with staff, and help you get consents back” (nurse)	Downgraded once for adequacy	Moderate
6 (Batista Ferrer 2015, Brabin, 2011, Cooper Robbins 2010c, Dube 2019, Paterson 2019, Rockcliffe 2018)	Some nurses felt that schools should take an active role in implementing the vaccination programme by providing staff to attend the vaccination sessions. Having a nominated person was highlighted as important in promoting and facilitating the vaccination sessions and it was helpful to have school staff to collect and supervise the children while they wait for their vaccinations The nurses felt that vaccination was a shared responsibility between themselves and the school staff. They reported that some schools were unsupportive and less willing to facilitate the vaccination programme. In addition, they mentioned that they sometimes encountered difficulties in securing appropriate facilities to run immunisation clinics.	“I think it’s a joint responsibility between the school nurse and the school, definitely,” (nurse) “... And they won’t release other members of staff to be with us during the vaccination session, so we have to allow more members of staff in that school and rely on a person who’s already very busy and stressed during that time” (nurse) “In terms of space, sometimes we are not able to find a place to vaccinate.[...] We want to be part of the school life, but we are not within the school, so that’s difficult.” (school nurse) ‘There is a lot going on in schools, especially with seniors [year 12 students]. For example, if you lose a maths period with a senior kid, you mightn’t see them for another week	No downgrading necessary	High

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
	However, school staff reported difficulties in scheduling time for multiple vaccination clinics in the school calendar and with the minimum disruption to lessons. There were also competing demands on suitable rooms to hold the vaccinations (due to exams for example).	[because of all the other activities and priorities Year 12 students are a part of]. So [teachers] have genuine concerns.’ (teacher)		
1 (Copper Robbins 2010c)	Teachers and schools can play an important role in communicating information about vaccinations to girls and parents, helping ensure consent forms are completed and that the girls wear suitable clothes to make vaccination easy on the day.	‘You just need to circulate the information in different channels, like the school newsletter and... daily notices to remind them to bring their [consent forms] back. I spoke at assembly, and they had year group meetings where the information was distributed and making sure the classes and teachers are informed of what’s happening.’ (teacher)	Downgraded twice for adequacy	Low
2 (Cooper Robbins 2010b, Cooper Robbins 2010c)	Parents appreciated the convenience of having their children vaccinated at school and were influenced positively if the school was committed to the vaccination programme.	“The advantages for me at school were that the organizing was taken away. All I had to do was sign the form and I knew it was taken care of. It wasn’t something I had to then think about having to do after school or make an appointment. It wasn’t anything extra. It was something that was done” (parent)	Downgraded twice for adequacy	Low
Religious and cultural differences				
7 (Batista Ferrer 2013, Burns 2021, Forster 2017*, Gordon 2011, Mupandawana 2016*,	Some parents (including immigrant* and Jewish parents) felt that people from their culture are at a lower risk from HPV. Some parents cited cultural practices or traditions as protective against HPV, or simply felt that the prevalence was lower in their ethnic group. In particular, several of these parents believed that their daughters or sons would be less likely to engage in risky or pre-marital sexual activity due to their culture being more	“I’ve also been told that Jewish women are less likely, one of the cancers we’re less likely to get, if you sleep with men who’ve been circumcised, or use a condom or both, and stay with the same partner who is hopefully not fooling around, you’ve got less chance of getting, not no chance, but it’s lowered” (parent) “... Children from different ethnic backgrounds behave differently. The white	No downgrading necessary	High

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
Rubens-Augustson 2019, Salad 2015*)	sexually conservative than western culture. * Immigrants included people living in the UK who were born in Bangladesh, Africa, Caribbean, Somalia, India or Pakistan and mothers from Somalia who had a migration date from 1990 or 2006 migration waves.	girls tend to be sexually active early, whilst African and Asian girls tend to do so later” (parent)		
2 (Mupanawana 2016*, Salad 2015*)	African immigrant parents* reported that decisions to vaccinate are frequently made solely by one parent, usually the father. In some cultures, the decision to vaccinate may not be discussed within the family or with others outside the community. The young person’s consent was considered less important in these instances. * Immigrants included African parents living in the UK and mothers from Somalia who had a migration date from 1990 or 2006 migration waves.	“All decisions are mine; everybody who lives under my roof does what I say” (father) “If I consented against his wish and something happened to her, or he found out about it, he would divorce me. Accuse me of being promiscuous and rebellious” (mother)	Downgraded once for adequacy	Moderate
4 (Batista Ferrer 2015, Mupandawana 2016*, Rubens-Augustson 2019, Salad 2015*)	Immigrant parents* often compared the UK to their country of origin when forming opinions. Some parents were mistrustful and believed conspiracy theories about vaccines making people sterile and AIDS being imported to Africa from white countries. However, healthcare providers noted that newly arrived in particular were more open to vaccination perhaps due to their more recent experience of infectious diseases.	“Let them vaccinate their own children first, then after 20 years if nothing happens, we will also vaccinate our own” (parent)	Downgraded once for adequacy	Moderate

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
	* Immigrants included African parents living in the UK and mothers from Somalia who had a migration date from 1990 or 2006 migration waves.			
5 (Forster 2017*, Gordon 2011, Mupandawana 2016*, Rockcliffe 2018, Salad 2015*)	<p>Parents (including Jewish and immigrant* parents) use their religious beliefs as part of the decision-making process. Some parents' religious beliefs influenced them to accept the vaccination, citing reverence for life as a key belief. Others felt that vaccinations conflicted with their religion because health and illness are determined by God, or that their religion made the HPV vaccination unnecessary because it prohibits pre-marital sex.</p> <p>* Immigrants included people living in the UK who were born in Bangladesh, Africa, Caribbean, Somalia, India or Pakistan and mothers from Somalia who had a migration date from 1990 or 2006 migration waves.</p>	<p>"It seems to me that Judaism suggests protecting your health is a good thing and it wouldn't have occurred to me that there was any way it could conflict religiously" (parent)</p> <p>"... And all my children are growing up in the church; in the Christian way. The school said it's [HPV] caused by sex, so my children won't have sex until they're married" (parent)</p>	No downgrading necessary	High
5 (Boyce 2012, Gordon 2011, Mupandawana 2016*, Rockcliffe 2018, Rubens-Augustson 2019)	<p>A tailored approach to vaccination would benefit parents including Jewish and immigrant* parents. Some parents from religious or cultural backgrounds would prefer to receive information tailored to their community. They felt that guidance from people within their community would be better suited to address their specific concerns.</p> <p>* Immigrants included African parents living in the UK</p>	"I think possibly the school could have provided more information of that nature . . . possibly a covering letter saying you know you may have some misgivings about this because of its nature but maybe consider these factors... I think maybe from a GP that people know, one of the orthodox GPs possibly explaining what they thought of it might have really helped people" (parent)	No downgrading was necessary	High

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
6 (Batista Ferrer 2015, Cooper Robbins 2010b, Dube 2019 Rockliffe 2018, Rubens-Augustson 2019, Salad 2015*, Wilson 2020)	Language and literacy can be a barrier to accessing written information and gaining informed consent. Immigrant parents* who spoke English as a second language stated that they were unable to understand the written information they were given about the vaccine. Some relied on their child to explain it while others sought information in their own language. Parents may also be unaware of the availability of information in languages other than English if this not publicised. * Immigrants were mothers from Somalia who had a migration date from 1990 or 2006 migration waves.	“Here there are 38 languages... so what parents are very good at doing here is they’ll get a letter in English and they’ll find a friend to interpret it for them, which I don’t think is good enough...there needs to be more translations into general languages” (school staff member)	No downgrading necessary	High
Barriers arising from complex circumstances				
1 (Boyce 2012,	Homeless young people face specific barriers to vaccination. Homeless young people often missed school-based vaccinations as many were unable to attend school regularly or at all. Nurses considered them to be hard to reach.	“We do not currently have a programme for pupils not in school as we are a school-based service” (nurse) “That is not, like, your focus. Sometimes your focus is the place to sleep, the place to get food. You do not worry about anything but taking care of yourself. That [immunization] is not on your mind. You have got something else on your mind.” (young person)	Downgraded once for adequacy	Moderate
1 (Rubens-Augustson 2019)	Nurses recognise that newly arrived migrant parents and young people in Canada face numerous barriers to vaccination. They often do not have records of their medical history and lack knowledge of what healthcare is available and how to access it. Language difficulties also exist, and some nurses had difficulty	“I have some families that have very limited past education. They might have spent most of their life in a refugee camp... I’ll say “do you have any family history of cancer?” And even the interpreter will tell me “...they wouldn’t know cancer” right. So then you have to re-kind of think how you’re going to present the education piece, right.” (nurse)	Downgraded once for adequacy	Moderate

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
	communicating information about vaccinations and therefore obtaining informed consent. The nurses felt they did not have time to dedicate to this issue amongst other priorities.	“I think always time is a factor, so there are so many millions of things that a primary care provider is trying to cover. So I think not having time to discuss is number one.” (nurse)		
1 (Boyce 2012)	Young people in complex circumstances can be difficult to reach for vaccination and extra effort is required from nurses. Nurses felt that young people with learning difficulties, looked after children, and the children of travellers and gypsies are particularly difficult to reach and so often miss out on vaccinations. Nurses noted that additional efforts were needed to build trusting relationships with parents and young people and encourage them to accept the vaccination. This required persistence, flexibility, and co-ordination with social services colleagues.	<p>“Parents think the HPV vaccine is unnecessary as they [young people with learning difficulties] will not be sexually active” (nurse)</p> <p>“[Delivering the HPV vaccine to travellers] when I can, not according to the programme. It’s hit or miss” (nurse)</p> <p>“[Young people held in custody are] the most vulnerable girls and I want to ensure they get them” (nurse)</p>	Downgraded once for adequacy	Moderate
Vaccinating boys				
1 (Grandahl 2019)	Boys believed that girls were prioritised for vaccination due to the risk of cervical cancer but thought that boys should also be offered the vaccine if it could benefit them too. Some also thought that there was a responsibility for them to protect their partner against STIs.	““If boys can be affected by HPV, then I do not understand why they are not yet offered [the vaccine]. Yes, if the vaccine has a better effect in girls, I may understand that boys are not given priority, but if the vaccine is effective in both ... or if both may get ill, then it is clear that both should have access to the vaccine. Anyway, that’s what I think.”	Downgraded once for adequacy	Moderate
1 (Grandahl 2019)	Boys had limited knowledge of HPV and the vaccine and stated that they wanted more information. They wanted the information to be from someone they trust, such as the school nurse and school	“That’s fine, here at school or... I know that we have been given lots of information about other sexually transmitted infections, but this has sort of... because this, by you, was the first time I got to know about this so it’s hardly	Downgraded once for adequacy	Moderate

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
	health services. There were mixed views on the best way to present this information, whether it was face-to-face, in individual sessions or in writing. They thought that education about HPV should begin from an early age, starting in primary school.	anything that's... then also, I don't think you easily stumble upon it on the internet in that way. It's more like something you need to tell the full population about so that they know it. So at school I think surely, it's a very good place for that."		
1 (Grandahl 2019)	There were mixed views about the HPV vaccine. Some boys were happy to have the vaccine while others were concerned about side effects	"...in that case I only see the benefits. As long as the effect is proven and there are no harmful side effects, then I have nothing against it. It's just fine then, so I am in favor."	Downgraded once for adequacy	Moderate
2 (Perez 2015 Gottvall 2017)	Many parents were unaware that HPV vaccination could be given to boys. Similar to parents considering vaccination for girls, some were distrustful of pharmaceutical companies and wanted more information about the side effects and/or long-term effects having heard negative stories in the media. They also discussed a lack of need due to their son not being sexually active yet, refusal on religious or moral grounds and some general anti-vaccine sentiments.	"This is the first time I have heard about this vaccination for boys... I didn't know males could get it. Now I need to look into it." (father) "The vaccine is not researched long enough to make statements of future effects on people's health." (mother)	Downgraded once for methodical limitations and once for adequacy	Low
3 (Perez 2015 Gottvall 2017, Grandhal 2019)	Some parents thought that vaccinating boys for HPV was unnecessary as they cannot have cervical cancer. Very few seemed aware that HPV could cause cancer in boys too and that they could transmit the virus to their sexual partners. However, some parents felt that vaccinating all young people would offer greater protection against cervical cancer in the population were aware that vaccinating both sexes would reduce HPV related disease such as throat and oral cancers, in boys.	"So, it is about cervical cancer, and a guy cannot get that, so there's not so much to think about." (mother) "So, there's the risk of cancer for girls and that is a greater risk. And I know too little about what it would mean for men. So, if men were to also get vaccinated, it's about...if it's some kind of disease transmission then or if there are types of cancers that may arise. I know too little about it." (father)	Downgraded once for methodical limitations and once for adequacy	Low

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
		“As a dental hygienist I am aware of several cases of throat/oral cancers in male clients which are related to the HPV. I feel I should do all that I can to keep my son safe and healthy.” (mother)		
2 (Dube 2019, Gottvall 2017)	<p>Many of the parents were in favour of a gender-neutral vaccination programme for HPV. Some parents thought that a female only programme pushed the responsibility for sexual and reproductive health onto girls. Parents who had declined to vaccinate their daughters said they might be persuaded to vaccinate girls (and boys) if offered to both.</p> <p>Healthcare staff reported that making the HPV programme gender neutral facilitated vaccination of girls because there was less stigma attached to a programme targeting both sexes, but that they had to more parents to talk now and had to spend time justifying why boys were included.</p>	“I think boys should also be vaccinated, because, I mean, if a girl does not get vaccinated and she has it and the boy transmits it to someone else. I mean, I don't get it really, when you can vaccinate both sexes.” (mother)	Downgraded once for adequacy	Moderate
Catch up campaigns				
1 (Seok 2018)	Practice nurses felt unsupported after being delegated responsibility for the Men ACWY catch-up campaign. Other staff either were not aware of the campaign or did not give it priority because it is not a targeted vaccine.	“It's not a targeted vaccine, so they don't have to meet a certain percentage to receive the funding... So, there's no real incentive to bring in those patients.”	Downgraded twice for adequacy	Low
1 (Seok 2018)	One of the main issues identified with the campaign was getting young people into the practice as many people were unaware of the opportunity for vaccination, particularly as the campaigns often highlighted it as a vaccine for people	<p>“...whatever we're doing, the message is not getting across”</p> <p>“I think, you know, because it hasn't been publicised as much as you would expect for</p>	Downgraded twice for adequacy	Low

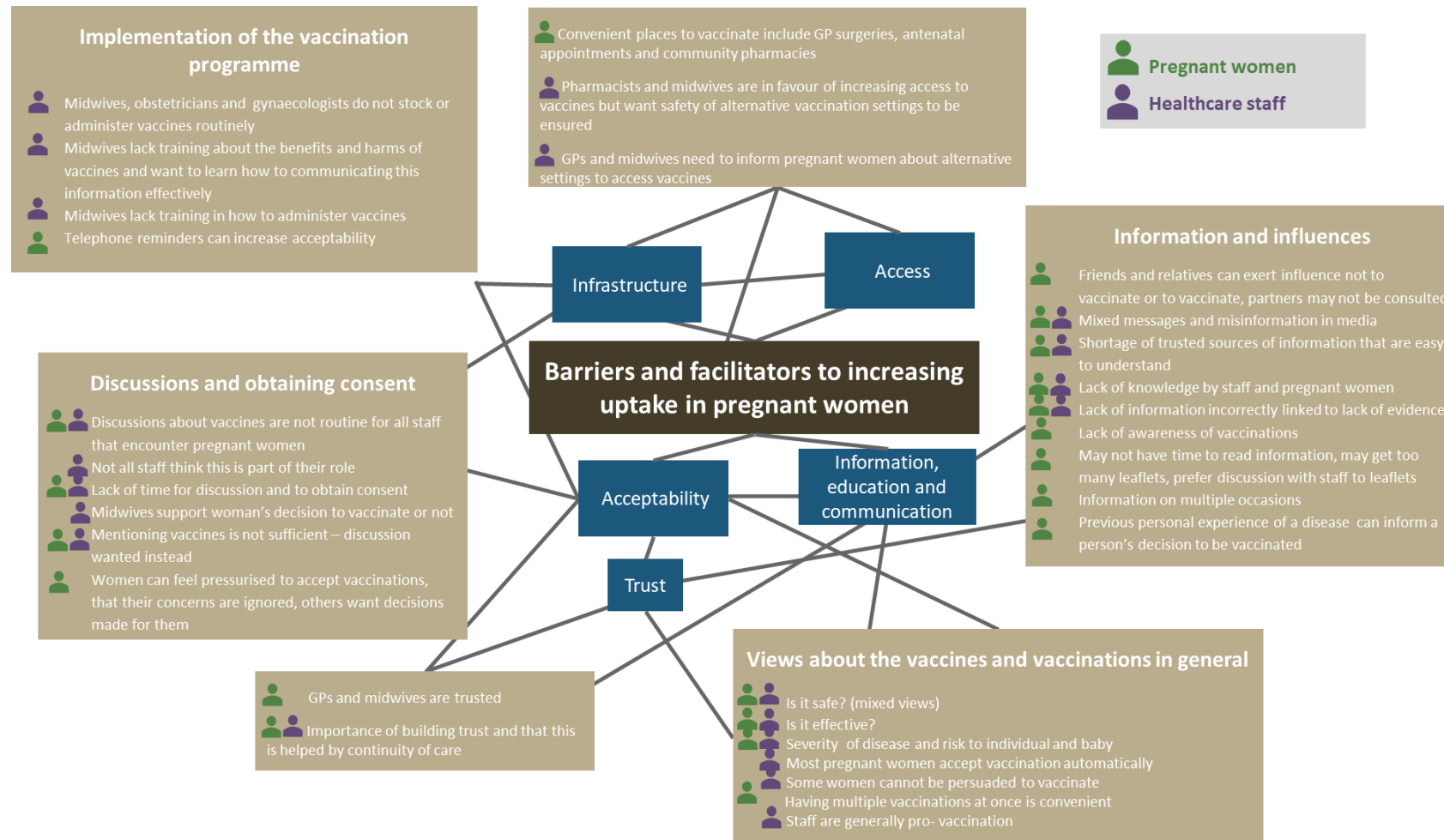
Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
	<p>starting university. Some also thought that the vaccine catch-up can easily be overlooked because it is offered at a time when a young person can be going through a lot of life changes.</p> <p>Some nurses had concerns about the use of opportunistic vaccination as this gave limited time for discussion with the young person.</p>	<p>such a horrible disease. I think it's just slipped in, and it's not really there."</p> <p>"I suppose lots of them see things written down and think, well I'll do that. But it's such a big time in their life, leaving home, coming to university. They've so many things to contend with, and probably having an injection is the last thing that they think is more important... When I talk to the young people they say, yes there was one young person died because they didn't have... They know it, but it's somewhere in the recesses of their memory and it's when you bring it up to the fore then, they say 'oh yes I'll have it'."</p>		
1 (Seok 2018)	<p>Practice nurses reported that school leavers tended to accept the Men ACWY vaccine when they were offered it in the GP practice. However, they stated that some young people still preferred to discuss the vaccination with their parents or carers, and this could lead to them leaving the practice and not returning to be vaccinated.</p>	<p>"Once you've explained to them why they're having it done, some of them have read the leaflet, and you go through it with them again, they're fine with it."</p> <p>"So, for a few people, there's a little bit of a quandary in terms of they want to go and check with their family first. Because, when you start university, you're quite inexperienced, you're quite young... And so, we encourage them to think that they're actually young adults now, and it's for them to make that decision but, obviously, they want to discuss it with their parents"</p>	Downgraded twice for adequacy	Low

1 See [Appendix F](#) for full GRADE-CERQual tables

1 **Pregnancy**

2 **Figure 3 Summary of the main concepts identified in the qualitative evidence for vaccination of pregnant women.**

3 See the findings in [Table 9](#) for more details.



4

1 Note: in this review the term pregnant woman is used to include women who are pregnant as well as transgender or non-binary people who are
2 pregnant. This terminology is used to maintain consistency with NHS websites.

3 **Table 9 Summary of the barriers to and facilitators for vaccination of pregnant women**

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
Access				
4 (Gauld 2016, Gauld 2020, Maisa 2018, Winslade 2017)	Some pregnant women say that getting vaccinated at their GP's surgery is convenient because they attend for other reasons too. Other pregnant women say that having the vaccinations at antenatal appointments or at a community pharmacy would be more convenient than attending a GP surgery, but not all women believe that vaccines can be delivered at community pharmacies.	<p>"...going to the pharmacy is generally a lot easier and way more convenient than the doctors..." [Participant, 29 years old]</p> <p>"vaccine is something that you do at the doctors not at the chemist" but appeared open to pharmacy vaccination."</p> <p>" through the GP it's a bit of a pain to make an appointment and go in and with a pharmacy you basically just walk in. Which is quite easy."</p>	Downgraded once for adequacy	Moderate
1 (Gauld 2020)	GPs and midwives not informing pregnant women about all the available locations to access maternal vaccinations (such as at a pharmacy) could reduce access to vaccinations	-	Downgraded twice for adequacy	Low
Acceptability				
1 (Gauld 2016)	Pregnant women say that telephone reminders from midwives are influential in convincing them to accept vaccines.	"The nurse from the clinic rang up and said we'd just been told you're pregnant, you could come in for whooping cough vaccination... and so I did.... I wasn't actually going to get it and then I decided to. I don't know why. Well, my friends actually don't vaccinate anybody so me vaccinating my kids is kind of a big deal and vaccinating myself I just thought uh whatever, but then I	Downgraded once for methodological limitations and twice for adequacy	Very low

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
		thought about him..." [Participant, 35 years old]		
1 (Kaufman 2019)	Midwives say that most pregnant women automatically accept the vaccines that they discuss and/or offer.	"A lot of women seem to actually know about two things, the flu vaccine and pertussis. I've very rarely had to kind of counsel a woman about why we recommend it."	Downgraded once for methodological limitations and twice for adequacy	Very low
1 (Gauld 2016)	A pregnant women's occupations can influence vaccine acceptability (for example, a teacher could be exposed to pertussis by pupils, which might make her more likely to accept vaccination, and hospital employees can discuss vaccines with colleagues).	-	Downgraded once for methodological limitations and twice for adequacy	Very low
2 (Maisa 2018, Winslade 2017)	Having more than 1 vaccination at once during pregnancy is more convenient and could increase uptake.	-	Downgraded twice for adequacy	Low
1 (Frawley 2019)	Midwives say that nothing will persuade some pregnant women to accept vaccinations if they have already made up their mind. This is the case even when there is continuity of care and advice is given by a midwife who the pregnant woman is used to seeing.	"People who come in with very alternative views that are not based in any evidence at all, that's quite a difficult situation to deal with, and there are times when the bottom line is that they're going to decline and there's nothing you can do about it, you do your best."	Downgraded twice for adequacy	Low
Trust				
10 (Frawley 2019, Gauld 2020, Maisa 2018, Mijovic 2021,	Pregnant women say that they trust their GP, midwives and pharmacists. Midwives and pregnant women say that continuity of care is beneficial in building trust which helps with discussing vaccines and having them administered. Midwives say this is the most persuasive method they are aware of. A lack of continuity of care can	"I've got a good [general practitioner], so I would also talk to her if I were unsure" "Like you never see the same midwife, you never, you're booking in appointments, you're there about two and a half hours when you are booking in, and I really think that the	No downgrading necessary	High

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
O'Shea 2018, Skirrow 2021, Webb 2014, Wilson 2019, Wiley 2015, Winslade 2017)	waste time by repeating discussions or reducing time for discussions and this can make midwives feel rushed.	midwife that books you in that she should pop in and see you every now and again..." "It comes down to having a good relationship with people, and having that trust over time and being in the community for [many] years now and knowing all these families for such a long time, following them through their pregnancies, seeing them with other kids."		
Vaccine safety, effectiveness and assessment of risk				
6 (Gauld 2016, Maisa 2018, O'Shea 2018, Winslade 2017, Donaldson 2015, Wilson 2019)	Some pregnant women believe that vaccines could harm their unborn child. In addition, some staff had reservations about the safety of the dTaP/IPV vaccine. However, other women, maternity assistants, midwives, and neonatal care nurses trust that vaccines would not be offered to pregnant women unless they were safe.	"I think the risks of vaccination in pregnancy are huge. I think if you interfere with pregnancy at all, you're asking for trouble." "Sure the baby gets vaccinated anyway. So if you are going to have your child vaccinated does it matter if it's during pregnancy or not? If it is that big of a risk, then they wouldn't offer it you."	No downgrading necessary	High
7 (Maisa 2018, Wiley 2015, Winslade 2017, O'Shea 2018, Wilson 2019, Donaldson 2015,	Some pregnant women, maternity assistants, midwives, paediatric nurses, obstetricians and gynaecologists think vaccines are effective and were concerned that if pregnant women did not get vaccinated, their unborn child might come to harm. Midwives, obstetricians and gynaecologists agree that vaccines are effective..Some pregnant women think that there is insufficient evidence for vaccine effectiveness. In addition, some	"That's why I went for it, because I had listened to so much information, and my gut was telling me so. Because of the baby inside me, I couldn't take the risk of anything happening and then me blaming myself ... I didn't really want to know anything else about it, because too much information was going to confuse me." "I knew that if I didn't have the vaccine my baby would be at more risk, so, I felt the risk	No downgrading necessary	High

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
Skirrow 2021)	pregnant women think that vaccines affect different populations of people differently.	of the baby actually getting the whooping cough and the impact of that far outweighed any risk from the vaccine”.		
3 (Mehrotra 2017, Gauld 2016, Donaldson 2015)	Parents, obstetricians, gynaecologists, maternity assistants, midwives, and neonatal care nurses agree that pertussis infection is potentially lethal, but some physicians thought that the prevalence of pertussis was low within their communities and therefore did not warrant the same degree of attention as other vaccinations..	“I think the main importance of the vaccine is to confer immunity, you know, in the newborn, before they can be vaccinated, because, again, newborns are very susceptible to pertussis and it’s potentially a lethal disease.” “.I just don’t feel as adamant about it [vaccinating against pertussis] just because of the relative infrequency that we’ve seen the problem arise in the community.”	Downgraded once for methodological limitations and once adequacy	Low
1 (Skirrow 2021)	Some pharmacists and midwives were in favour of wider access to vaccinations but were unsure of the safety of providing vaccines in other settings, such as pharmacies	“I think it’s great because it improves access, so long as they’re safe you know and they’re obviously educated to do it, I assume they have oxygen on hand”	Downgraded twice for adequacy	Low
1 (Gauld 2020)	Some participants had previous experience of a disease and this informed their decision to be vaccinated	“I remember my mum had whooping cough years ago, it was awful and I know that it can be deadly for little ones, so, I just wouldn’t want to put my baby through that or myself ... you know It’s like self-preservation and baby preservation ... it just makes sense to me to have the vaccine”	Downgraded twice for adequacy	Low
Gaining consent and vaccination delivery				
4 (Frawley 2019, Wilson 2019, Kaufman 2019, Winslade 2017)	Midwives and pregnant women agree that time pressures make it harder to discuss, gain consent for and carry out vaccinations. Some midwives say they lack dedicated time for obtaining consent.	“Then they go oh, we’re going to bring in this vaccination thing, and we’re like who’s going to give that? . . . They’re like you’ll have to give it. I said where do we get the — what that means is a major disruption. We have to leave our work area. . . . We have to get a consent first, fill out all the forms, go get it out of the fridge, come back, get consent from a doctor, come back and give it. Then we still	Downgraded once for adequacy	Moderate

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
		do the same clinic visit that we've done . . . It's not like they made extra time for us to do it, so that really annoyed us as well. . . . They didn't say we're going to introduce this in six months, here's some education about it. It's like no, it's starting next week."		
2 (Mehrotra 2017, Kaufman 2019)	Midwives are not equipped to routinely vaccinate pregnant women and obstetricians and gynaecologists do not stock and administer vaccines. The obstetricians and gynaecologists refer pregnant women to GPs to get vaccinated	-	Downgraded once for methodological limitations and twice for adequacy	Very low
1 (Wilson 2019)	In some cases, midwives and GPs wrongly assume that another healthcare professional has administered the vaccine.	-	Downgraded twice for adequacy	Low
Training needs				
3 (Frawley 2019, Kaufman 2019, Mijovic 2020)	Midwives believe that discussing vaccines with pregnant women requires good knowledge and communication skills. They feel that they are not adequately trained with regards to the benefits and potential harms of vaccines and that communication skills training would be useful in helping them effectively communicate this information.	"I know the pros about it but I wouldn't mind having a bit more information about the cons about it. Whether we have an in-service. Like because now I've finished uni — I definitely could not get trained in the uni setting. At least if we could have an in-service on it at work to go okay, these are the concerns parents have or what do you say in these things. I think that would be really good."	Downgraded twice for adequacy	Low
1 (Wilson 2019)	Midwives say that they are not trained to administer vaccines.	-	Downgraded twice for adequacy	Low
Lack of information, timing and information overload				
3 (Wiley 2015 and O'Shea 2018, Donaldson 2015)	Some pregnant women are not aware that vaccines are part of routine healthcare during pregnancy.	One woman did not see vaccination as part of the pregnancy plan: "So I think giving them a plan at the start that it would be additional, you know the way, when you go and you get your booking visit and they check your blood group and they say, you know, 'You're rhesus positive and you should get anti-D'	Downgraded once for adequacy	Moderate

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
		and all. You know, I got that plan from very early on. They booked me and everything, so in the same way, you know, the patient should be told: these two injections, like vaccinations, you should get and then you know.”		
5 (Wilson 2019, Kaufman 2019, Winslade 2017, Donaldson 2015, Mijovic 2020)	Some maternity assistants, midwives, and paediatric nurses say they lack knowledge about maternal vaccines including the diseases they prevent and side effects, and do not have access to easily understandable information to give to pregnant women. Some pregnant women also think that midwives do not know enough about vaccines in order to adequately discuss them or answer questions.	“I think we did a bit at uni [university] for half an afternoon or something.”	No downgrading necessary	High
2 (Maisa 2018, Mehrotra 2017)	Some obstetricians and gynaecologists, maternity assistants, midwives and paediatric nurses believe that there is not enough evidence to recommend vaccines to pregnant women and some pregnant women believe that the reason healthcare professionals do not give information about vaccines is because there is not much information on vaccines to be had.	<p>“Well, there’s studies actually in the, in the CDC report, there’s actually a reference to a study that indicated that the benefit if anything was a very, very negligible or slight benefit for the patient receiving it to protect her baby. It’s, you know, when you use this product I would imagine you’re using it more with the intention of protecting the mother, not with the intention of, of providing passive immunity to the baby.”</p> <p>“That’s why they aren’t giving you information out because they don’t have enough information themselves. Like even today when I just got the Whooping one... my arm’s getting sore now, like I wasn’t told that was the way it would go, that there are side effects or what to look out for or anything.”</p>	Downgraded twice for adequacy	Low

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
1 (Winslade 2017)	Pregnant women say that they liked to idea of being given a pregnancy checklist to help them keep track of things they need to do, such as having vaccinations.	A number of interviewees suggested the idea of a 'pregnancy checklist' that was small and could be carried in a wallet or 'that somebody can stick on their fridge or in their diary with milestones and a box to tick off to know that you've done it' (mother).	Downgraded once for methodological limitations and twice for adequacy	Very low
1 (Kaufman 2019)	Some midwives say that pregnant women want to know whether they should have vaccines, when they should have them and who will be giving them.	-	Downgraded once for methodological limitations and twice for adequacy	Very low
3 (Kaufman 2019, Winslade 2017, Donaldson 2015)	Some pregnant women say that information on vaccines should be given to them throughout pregnancy so they have time to read them and organise vaccinations, while others say that they are so busy that they often do not have time to look at information on vaccines that is given to them. Some midwives say that pregnant women are given a lot of information during pregnancy.	-	Downgraded once for methodological limitations and once for adequacy	Low
Sources of information: official sources				
3 (Kaufman 2019, Wiley 2015, Frawley 2019)	Midwives say that they direct pregnant women to evidence-based information on vaccines and that they would like an official website to be created that has appropriate information on vaccines for pregnant women. Some pregnant women say they trust official sources of information more than others.	"I believe that they [the government] would, like, source the right information, and they would look into it a little bit more and tell me what's right and what's wrong."	Downgraded once for adequacy	Moderate
Sources of information: the media and online, including social media and apps				
4 (Gauld 2016, Wilson 2019, Kaufman)	Midwives and pregnant women agree that the TV and news reports can be a source of positive messages to encourage vaccination. However, some pregnant women say that other media stories	"What I've seen on the news, and what stayed with me, is the footage of these tiny little babies, you know with the full on body, um, coughing, and it, it, I just think, oh how dreadful."	Downgraded once for adequacy	Moderate

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
2019, O'Shea 2018)	suggest vaccines do harm and discourage vaccination.	"It's a story but it's a real life story, it's the truth, so I mean that girl is crucified for the rest of her life now, and it's not just her and I know because her mum is in a group of mums and dads who are trying to bring a case to the government, to answer for the result the effect this vaccine has had on all of the children. There's a whole group of them, it's not just one person; there's a whole movement that has been affected by narcolepsy in particular with relation to the swine vaccine."		
2 (Wiley 2015, Maisa 2018)	Pregnant women say that they use Google to search for information about vaccines, but they do not trust advice on the internet that appears to be biased too heavily either in favour or against vaccines. They would prefer a balanced account.	"There's no impartial advice about vaccinations there, either, if you go in the internet, its either very positive or very negative. There's no, ok, this is exactly what could happen..."	Downgraded twice for adequacy	Low
1 (Kaufman 2019)	Some midwives say that there is a lot of mis-information on vaccines that saturates social media, while others are unaware of this problem.	"It's hard because there is so much anti-vaccine stuff saturating social media."	Downgraded once for methodological limitations and twice for adequacy	Very low
Sources of information: printed materials, such as leaflets				
4 (Frawley 2019, Wilson 2019, Webb 2014, Kaufman 2019)	Midwives say that being able to give leaflets about vaccines to pregnant women is useful and that they have they have leaflets and other materials. However, some midwives do not give these leaflets out because pregnant woman are given many other leaflets.	"We've got information sheets we hand out to people... we've got one that's headed pertussis and then a separate one for influenza." "I think if you have a look at what's happening at that first triage visit in a clinic, it's just horrendously busy. And there's a million people and a lot of information being given out. so I think to add something else in there is possibly not a good idea..."	Downgraded once for adequacy	Moderate

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
2 (Maisa 2018, Winslade 2017)	Not all pregnant women say that they read the leaflets they have been given and some would prefer the opportunity to discuss vaccines with healthcare professionals rather than being given information.	“Speak to us more instead of just giving you a leaflet, because no matter who you see, be it a doctor or a midwife, it’s flooded with leaflets, they are rushed to get you in and out that door as quickly as possible...”	Downgraded twice for adequacy	Low
Sources of information and influence: discussing vaccination with healthcare providers				
3 (Kaufman 2019, Webb 2014, Winslade 2017)	Some midwives agree that discussing maternal vaccines are an important part of their role and are willing to spend time doing this, while others think this is a topic for doctors to deal with or that discussing vaccines with pregnant women made them appear less trustworthy. Pregnant women say that they would like the opportunity to discuss vaccines with a midwife.	“I think it’s a really important role for us to educate the women about [maternal vaccines].”	Downgraded once for adequacy	Moderate
2 (Mehrotra 2017, Webb 2014)	Some obstetricians and gynaecologists do not routinely discuss vaccinations with pregnant women and say that vaccines are not on their list of top priorities or that they do not feel responsible for vaccinating pregnant women.	“I think that with everything else that we have to worry about taking care of these patients and their unborn children, the last thing on my mind is this vaccine. So I really think we’re making a huge deal out of something that is not life threatening and earth shattering.”	Downgraded twice for adequacy	Low
1 (O’Shea 2018)	Pregnant women say that midwives and obstetricians do not discuss vaccines enough in hospitals.	“I received the information, I learned about the vaccine at the GP not in the hospital so maybe the doctors in the hospital could tell people about the vaccine.”	Downgraded twice for adequacy	Low
6 (Maisa 2018, Wilson 2019, Gauld 2016, O’Shea)	Pregnant women say that healthcare professionals do not initiate conversations about vaccines or discuss vaccines, including the pertussis vaccine, with them very much or at all.	One participant who was not vaccinated during pregnancy knew about vaccinating adults in contact with their child, but not about its use during pregnancy: “I’ve seen fliers through doctors...in the doctor’s rooms, but I haven’t had anyone discuss it with me,	No downgrading necessary	High

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
2018, Winslade 2017, Donaldson 2015)		not even when I was pregnant. My midwife didn't tell me either..." [26 years old] "I was reading on a website and I had to go and ask for it myself, that was it. So nobody mentioned anything, not even the midwives or anything, I was completely unaware of it and then I happened to read and I went to get it last minute, again at my GP, that one."		
2 (Wilson 2019, O'Shea 2018)	Healthcare professionals mention vaccines to pregnant women rather than discuss them but pregnant women who did not discuss vaccines with a healthcare professional were unlikely to be vaccinated.	-	Downgraded twice for adequacy	Low
1 (Kaufman 2019)	Midwives say that they discuss vaccines many times throughout each woman's pregnancy and they also discuss childhood vaccines. However, they discuss vaccines for childhood less frequently because they feel that mothers will have further opportunities to discuss childhood vaccines.	"Because we know that the baby does have it in the community as well, I think that's another reason why we don't probably push it any further."	Downgraded once for methodological limitations and twice for adequacy	Very low
4 (Wilson 2019, Frawley 2019, Winslade 2017, Kaufman 2019)	GPs, midwives, and practice nurses said that they are generally pro-vaccine. Obstetricians and gynaecologists recommend vaccines to pregnant women. However, some midwives believe that other midwives are against vaccines. Pregnant women agree that midwives encourage them to be vaccinated.	"I would say it's a minority [of midwives] that are against vaccines, and I wouldn't know who they are, it's only from what I've heard from women. I would say that ... most midwives do advocate for it."	Downgraded once for adequacy	Moderate
1 (Frawley 2019)	Midwives say that they support the decisions that pregnant woman make – even if they do not want to be vaccinated.	"I make it very clear to them that I'm here to help them through this journey. It's my job to outlay all that information, but at the end of the day it's their choice in what they want to	Downgraded twice for adequacy	Low

Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
		do. It's my job to support them whether I agree with it or not. It's my job to advocate for them and I guess immunisations fall into that."		
2, (Maisa 2018, Winslade 2017)	Pregnant women say that midwives can discourage them from being vaccinated by being too relaxed about the importance of being vaccinated.	"...My midwives weren't pushy or anything towards it. 'You get vaccinated at this stage and you make your appointments.' They were quite laid back about it all, and I think that's what made me laid back about it all. ... No one was forcing me to make the appointments to have it ... So I didn't think that it was very important..."	Downgraded twice for adequacy	Low
1 (Wilson 2019)	Pregnant women who are young, single and/or unemployed sometimes report feeling judged by healthcare professionals or feel that their concerns are dismissed. Others say they feel pressurised to accept the vaccines because midwives sometimes mention social workers. However, other pregnant women who are in precarious or marginalised situations want healthcare professionals to make decisions on their behalf because they feel unable to do so themselves.	Haadiya, a young unemployed Nigerian mother, who had recently moved to the UK said, "my first midwife... said just use NHS [website] otherwise its confusing, and I do. It's... just all so contradictory. Someone has got to make a decision for you".	Downgraded twice for adequacy	Low
Sources of information and influence: friends and relatives				
4 (Wilson 2019, Winslade 2017, Gauld 2016, Maisa 2018)	Pregnant women say that friends and relatives sometimes recommend vaccination, but in other cases they can influence them not to vaccinate. The reasons for this include the belief that pertussis is a harmless disease, the vaccines are untested or poorly tested and may do harm, or cultural reasons.	"I wouldn't be so worried about it, vaccines and that, but he [partner] would be. ... And because of where he is from [Jamaica], he doesn't like them [participant's children] having it."	Downgraded once for adequacy	Moderate

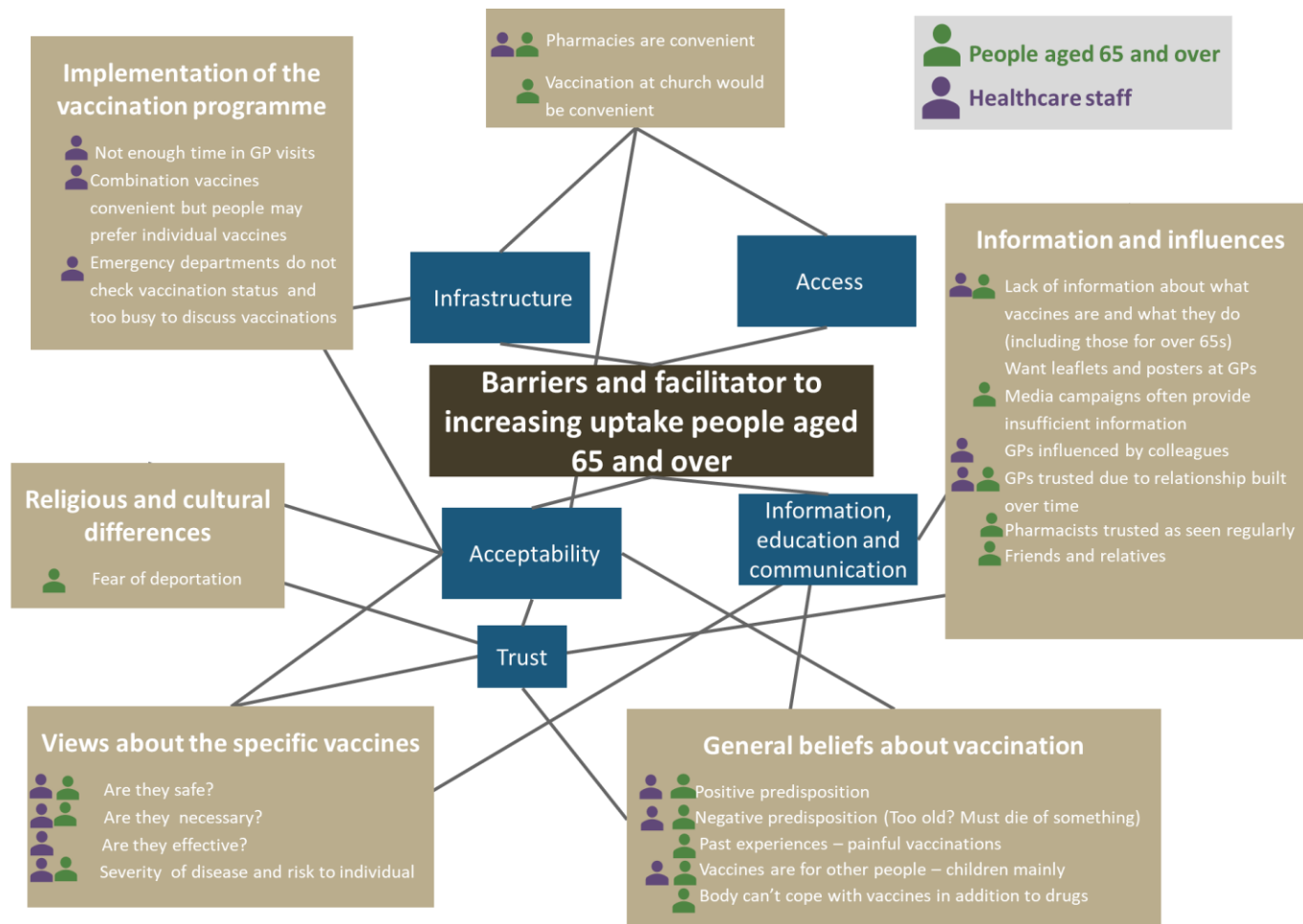
Studies	Finding	Illustrative quotes (where available)	CERQual explanation	Confidence
1 (Wilson 2019)	Pregnant women sometimes say that they are unlikely to discuss vaccines with their male partner and that he is too busy to discuss vaccines with them.	“My partner doesn’t factor in... When it’s inside me, it’s my baby” (White/Jewish British mother).	Downgraded twice for adequacy	Low

1 See [Appendix F](#) for full GRADE-CERQual tables

1 **People aged 65 years and over**

2 **Figure 4 Summary of the main concepts identified in the qualitative evidence for vaccination of people aged 65 years and older**

3 See the findings in [Table 10](#) for more details.



4

1 **Table 10 Summary of the barriers to and facilitators for vaccinating people aged 65 and over**

Studies	Theme	Illustrative quotes (where available)	CERQual explanation	Confidence
Access				
3 (Daniels 2004, 2019, Scrutton 2014, Pattin 2018)	People aged 65 years and over and pharmacists say that community pharmacies would be convenient places for people aged 65 years and over to get vaccinated. This is because they are sometimes nearer to home and open at convenient times. Pharmacists believe that giving people aged 65 years and over the choice between their community pharmacy and their GP to receive their vaccine should increase vaccine uptake.*	"They're [the patients] also comfortable getting them [immunizations] from the pharmacy, so they are the really easy converters."	Downgraded once for adequacy	Moderate
1 (Daniels 2004)	People aged 65 years and over who go to church say that being vaccinated after the Sunday service would be very convenient. However, vaccinations after the Sunday service would require coordination between the church and the health service.	"I think that church is a good place for vaccinations because a lot of people go there." (Latino participant)	Downgraded twice for adequacy	Low
Acceptability				
2 (Eilers 2015b, Badertscher 2012)	GPs say that it would be very convenient, save time and increase uptake if they could give multiple vaccines within a single injection. This would be made easier if these vaccines all had the same criteria for prescribing. However, other GPs say that if people aged 65 years or over only wanted certain vaccines but not others, this might make combination	"If the criteria would be the same that would make it a lot easier, and of course it would be best if they would both be simultaneous, like in both arms or as a cocktail vaccine like with hepatitis A and B. That would be handy, from a logistic point of view." (GP) "Well, see, assume that you could give it as one shot, then that would be easier, it would be less work, but then there might be people	Downgraded twice for adequacy	Low

Studies	Theme	Illustrative quotes (where available)	CERQual explanation	Confidence
	doses difficult to implement and could lead to reduced uptake.	who say they want the one shot but not the other. I could imagine that that would complicate things." (GP)		
Vaccine safety				
1 (Kaljee 2017)	People aged 65 years and over trust that vaccines they are offered are safe.	"The doctor wouldn't even offer it to you if he or she thought it was going to bring harm to you..."	Downgraded twice for adequacy	Low
1 (Eilers 2015a)	People aged 65 years and over believe that naturally occurring things are better for them. They do not trust manufactured drugs and think their body cannot cope with a vaccine in addition to all the medications they are taking. *	"I just happen to think that I might be getting too much, these are all kinds of chemicals that your body has to deal with, and then you get something like this on top of it all." (female, sheltered housing)	Downgraded once for relevance and once for adequacy	Very low
1 (Badertscher 2012)	GPs say that they have not experienced any patients having adverse events caused by a pneumococcal vaccine.	-	Downgraded twice for adequacy	Low
Assessment of risk and the benefits of vaccination				
3 (Daniels 2004, Ridda 2009, Eilers 2015a)	People aged 65 years and over are in favour of getting vaccinated and receiving advice about them. However, there are differing opinions as to how beneficial they are. *	"I normally get the tetanus booster every 10 years as it comes up. And I can see the benefits of the pneumonia, the pneumovac. for older people."	Downgraded once for adequacy	Moderate
2 (Eilers 2015a, 2019, Kaljee 2017)	The more severe a disease is, the more likely people aged 65 years and over are to accept a vaccine – even if it is not completely effective. They are also more likely to accept a vaccine if they have seen the disease first-hand before or if there is an epidemic. This is because they are more aware of how severe it can be. *	"...they ask me to get (shingles vaccine), I told them no. They asked me to take influenza, I said no. They asked me to take pneumonia, I said yes...because I had pneumonia..."	Downgraded twice for adequacy	Low

Studies	Theme	Illustrative quotes (where available)	CERQual explanation	Confidence
3 (Eilers 2015a, Kaljee 2017, Harris 2006)	People aged 65 years and over are more likely to accept a vaccine if they feel elderly, chronically ill, or unhealthy because they are concerned that they are less able to recover from disease. However, they also believe that when a person is in the last weeks or days of life, there is no point in having a vaccine because there is no more life to prolong, *	<p>“What matters is your general state of health. Are you already chronically ill with one thing or another?” (female)</p> <p>“And it makes a difference how you age. And let’s face it, there comes a time when death can be a blessing.” (female)</p>	Downgraded once for adequacy	Moderate
1 (Eilers 2015a)	Some people aged 60 years and over take a more fatalistic view and think that they might as well die of the diseases that the vaccines are trying to prevent.*	“You have to die of something.” (female)	Downgraded once for relevance, and twice for adequacy	Very low
2 (Daniels 2004, Kaljee 2017)	People aged 65 years and over realise that many people die from pneumonia every year and know from experience how painful shingles can be. However, they believe that pneumonia is something that is likely to happen to other people but not them. *	<p>“My husband and I were part of...the study about zoster, the shingles...I have a lot of people in my family who had the shingles and I know how painful it is. So, I was very interested in preventing that...”</p> <p>"I've never been afraid of dying from the flu. I suppose... it has occurred to me that if you are much older, and in ill health, and in a fragile condition, that you could die from the flu. But at this stage, I'm not worried about dying from the flu...I am aware that people can die from pneumonia ... but I also feel that most people who are sick will eventually get to the doctor or to the hospital, and they will be treated. And unless they're severely weakened, they will get their antibiotic or whatever else they need from the providers of health-the doctor, the hospital and they will</p>	Downgraded twice for adequacy	Low

Studies	Theme	Illustrative quotes (where available)	CERQual explanation	Confidence
		survive. It's not a fear of mine that I would die of pneumonia."		
4 (Daniels 2004, Harris 2006, Kaljee 2017, Ridda 2009)	People aged 65 years and over believe that vaccines may cause serious side effects, which outweigh potential benefits. *	"Frankly, a lot of people don't get them (immunizations) because they are scared, and some others because they tell them that they will have fever, they are shivering and they say, no, it's better if I don't get it." (Latino participant)	Downgraded once for adequacy	Moderate
2 (Daniels 2004, Eilers 2015a)	Some people who are 65 years and older think that vaccines will cure existing infections rather than prevent them. Others believe that vaccines could make them less ill or reduce the amount of time they would be sick.*	"The vaccine is good, really, so that it will take out all the infection that you have, like that, really!"	Downgraded twice for adequacy	Low
1 (Kaljee 2017)	Some people believe that pneumonia is another word for flu. Therefore, a vaccine against one protects against the other.	"I figure if the flu causes the pneumonia, if you take a flu shot why would you need to take the pneumonia shot?"	Downgraded twice adequacy	Low
1 (Briggs 2019)	People aged 65 years and over with anti-vaccine beliefs do not support vaccination despite knowledge of disease and its consequences.	-	Downgraded twice for adequacy	Low
1 (Harris 2006)	People aged 65 years and over sometimes have memories of painful vaccinations done during childhood. This can put them off from having a vaccination.	"I remember when I was a boy in the South, we had to take shots for everything right until the fifth grade. And the nurse down there treated you like you were an animal. They did not care. They were not sensitive. They would just jab you in your arm like you were an animal. That's how they treated us, you see. So I don't want any shots. I still have those memories." (70-year-old male)	Downgraded twice for adequacy	Low
1 (Daniels 2004)	People aged 65 years and over who are in countries illegally believe that the vaccination documentation could	"Yes, yes. I have heard commentaries that they don't get near the vaccines because: 'I am illegal.' Now, yes and they are distrustful,	Downgraded twice for adequacy	Low

Studies	Theme	Illustrative quotes (where available)	CERQual explanation	Confidence
	be used to trace them, and they could be deported as a result. *	really, because you have to sign papers with your name." (Latino participant)		
2 (Badertscher 2012, Eilers 2015b)	GPs agree that the effects of pneumonia are severe enough that appropriate people should be vaccinated against it. However, GPs say that vaccines for pneumococcal disease do not seem very effective from their personal experience, although they are willing to change this view if shown evidence to the contrary. In addition, they do not see many patients with proven pneumococcal disease in their own practices. This is because the tests required to confirm this are difficult to do and highly inaccurate.	"I can't say anything about the effectiveness of the vaccination from my daily experience, because I don't know, if a patient really had a pneumococcal disease and if this would have been preventable with the vaccination." (male)	Downgraded twice for adequacy	Low
1 (Eilers 2015b)	Some GPs say that shingles is so chronically painful that it is worth vaccinating appropriate people against it. However, other say that because shingles is not life-threatening, they do not agree with prescribing a shingles vaccine to people aged 65 years and over. This is because they believe that vaccines should only be given for 'serious' illnesses.	"Essentially, the number of complaints that people have while they are suffering from that seems to be reasonable, as far as I can tell, but what counts is the number of complaints afterwards." (GP, male, Northern region of the Netherlands, practice in academic hospital) "Yes, and I also think, like from the moment that you offer vaccinations for shingles that – oh, so shingles is apparently a serious illness. What I mean to say is that people's perception will change." (GP, male, Central region of the Netherlands, own practice).	Downgraded once for relevance and twice for adequacy	Very low

Studies	Theme	Illustrative quotes (where available)	CERQual explanation	Confidence
1 (Zaouk 2019)	Emergency department nurses say that people aged 65 years and over would benefit from being vaccinated.	"The elderly have more medical problems . . . It's important that they keep updated with their vaccines to stop them getting sick"	Downgraded twice for adequacy	Low
2 (Briggs 2019, Harris 2006)	People aged 65 years and over are aware of 'herd immunity'.	"I think there's a social responsibility too, not to pass it on to other people"	Downgraded twice for adequacy	Low
3 (Daniels 2004, Eilers 2015a, Harris 2006)	People aged 65 years and over want to stay as healthy as possible in order to be able to do the things they want to do. They also believe they have a responsibility to stay healthy so they do not take up resources in hospital, for example. Therefore, they are willing to accept a vaccine. *	"Well yes, but if you feel your life is not yet complete, that there are still things you need to do for yourself, then I think it is alright to try to stretch it with an injection of something or other." (female, residential group) "If the black community were more aware of these free vaccines - I mean, it's going to be cost effective for them health-wise, and also for HMOs, because you don 't need to fill up a hospital with a bunch of people with pneumonia."	Downgraded once for adequacy	Moderate
Vaccines are for other people				
3 (Briggs 2019, Harris 2006, Eilers 2015a)	People aged 65 years and over say that vaccines are not for them, they are either for children or for people older than they are. Also, if they agree to a vaccine, that is an admission of illness or old age. Therefore, they reject vaccines. *	"I associate [pneumonia] with old people. And I'm not that." (73yrs) "I believe in them. All my kids was vaccinated... kids, they don't know enough ... specially like catching colds and flus, they don't know enough about taking care of themselves,. I think kids are exposed to more, especially the ones that go to school and the nursery, I think they're exposed more than adults." (74-year-old female, less-than-high-school educated, unvaccinated)	Downgraded once for adequacy	Moderate
3 (Briggs 2019, Daniels 2004, Eilers 2015b)	People aged 65 years and over say that GP's can be openly against vaccines and that GPs never mention the pneumonia vaccine to them. They also report that nurses	-	Downgraded once for adequacy	Moderate

Studies	Theme	Illustrative quotes (where available)	CERQual explanation	Confidence
	express their anti-vaccination beliefs to them. The GPs say they do not agree with vaccinating people who are aged 65 years and over because they do not have immune systems that will be able to cope with vaccines.*			
1 (Badertscher 2012)	GPs say that people who are aged 65 years and over do not request pneumococcal vaccines.	-	Downgraded twice for adequacy	Low
1 (Zaouk 2019)	Emergency department nurses say that they associate vaccines with children rather than with older people. Although it is routine to check whether children have had vaccines, it is not routine to check adults.	"It [vaccination screening] is drummed into us more about children than it is the elderly, basically. You know, all through your triage courses they throw it at you about making sure your children's immunisation status is up to date, but there's nothing thrown at you about the elderly. So I think, it's just a matter of, we don't think about it"	Downgraded twice for adequacy	Low
Lack of information				
4 (Briggs 2019, Daniels 2004, Ridda 2009, Badertscher 2012)	People aged 65 years and over may not necessarily know what a vaccine is or do not realise that vaccines are available to them until someone discusses the topic with them. They say that there are no posters in GP waiting rooms that say they should ask for vaccines for people in their age group. GPs agree that people aged 65 years and over are not aware that vaccines are available for them and say that more information would be useful. *	"I don't know there is a vaccine for pneumonia".	Downgraded once for adequacy	Moderate
1 (Zaouk 2019)	Emergency department nurses say that their usual training does not include vaccines for people aged 65 years and over. As a result, they do	"I think that if I knew there were certain vaccinations that older people were supposed to have then that in itself would make me think that it was important."	Downgraded twice for adequacy	Low

Studies	Theme	Illustrative quotes (where available)	CERQual explanation	Confidence
	not know enough about vaccines for people aged 65 years and over in order to advise them and administer vaccines. They also say that they do not have information to hand about the relevant vaccines for people aged 65 year and over.			
Sources of information: official sources, posters, and the media				
2 (Badertscher 2012, Scrutton 2014)	GPs and people aged 65 years and over believe that campaigns to increase the vaccination rates of people aged 65 years and over are best conducted by official government organisations that have credibility. These sources of information should be easier to read than the Green Book.	"I think if you had multiple sources of information - if you had it through the church, the announcements at church or in the bulletin, on TV, on the radio, in the newspapers... then you could remember where and when."	Downgraded twice for adequacy	Low
4 (Daniels 2004, Ridda 2009, Badertscher 2012, Briggs 2019)	GPs and people aged 65 years and over believe that multi-media campaigns increase vaccine uptake by raising awareness. However, the media do not provide enough coverage of the consequences of diseases that vaccines aim to prevent.*	-	Downgraded once for adequacy	Moderate
1 (Scrutton 2014)	In vaccine advertising campaigns, people are more receptive to positive messages compared to negative messages.	"We need to find a 'tipping point'. Don't tell people the bad things – tell people that most people are getting the vaccine already. That sends a powerful message."	Downgraded twice for study limitations, once for relevance and once adequacy	Very low
1 (Ridda 2009)	People aged 65 years and over say that placing literature such as posters in GP's waiting rooms should make people more aware that there are vaccines available.*	"I could say information is easier to get out so putting information in GPs waiting area in language that older people understand, as in lay language."	Downgraded twice for adequacy	Low

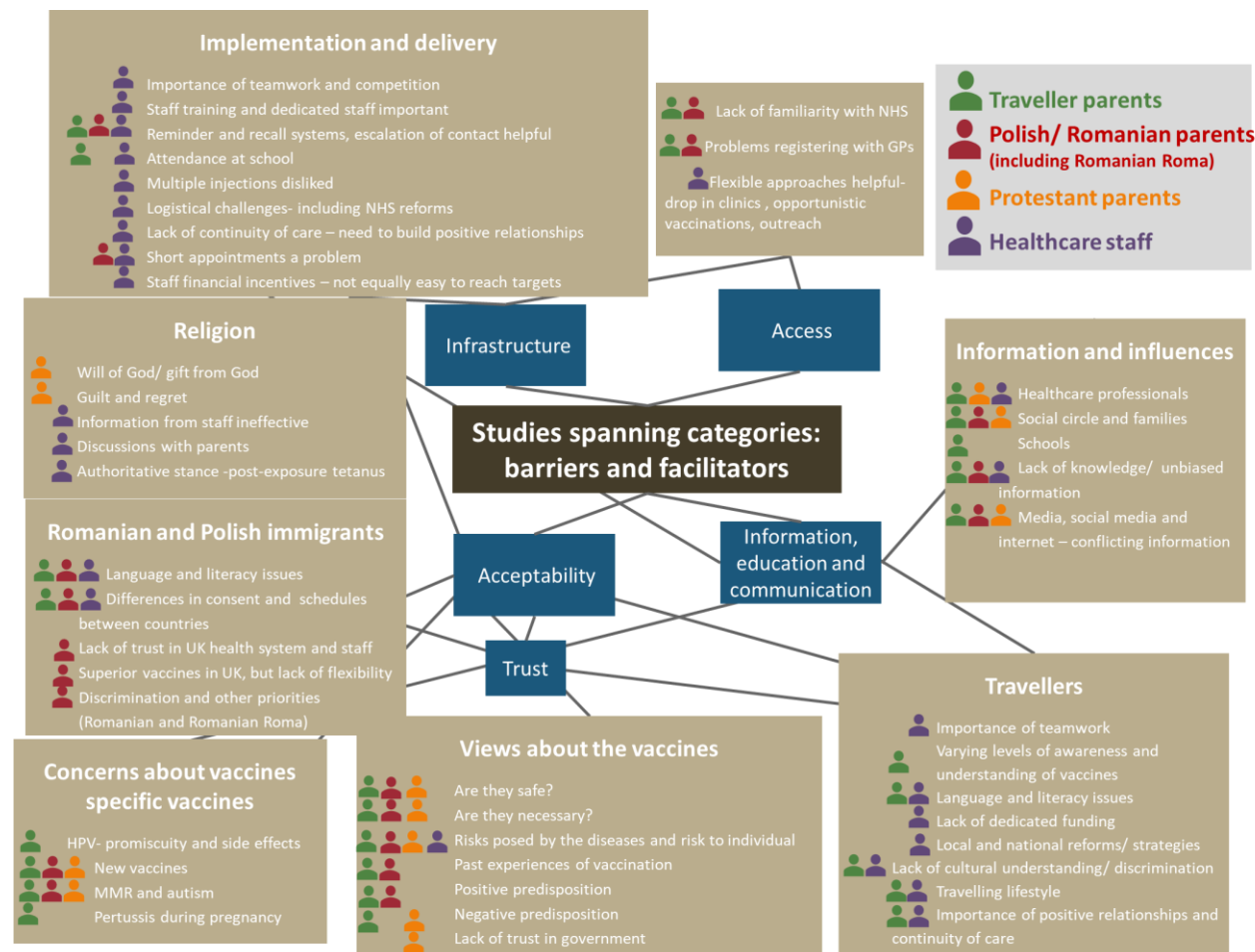
Studies	Theme	Illustrative quotes (where available)	CERQual explanation	Confidence
1 (Badertscher 2012)	GPs say that they are more influenced by the opinions of colleagues than by evidence-based sources.	-	Downgraded twice for adequacy	Low
Sources of information and influence: discussing vaccination with healthcare providers				
4 (Kaljee 2017, Briggs 2019, Harris 2006, Eilers 2015b)	GPs and people aged 65 years and over say that people aged 65 years and over trust their GP because they have developed a relationship with them.	<p>"...if I've never heard of it, I don't care what it is, a pop or a medicine... a TV ad is not going to make me use it. On the other hand, if I go to see my doctor and he says, 'listen you really need to take this shot, this is the information on this shot', then I'll read it...but if you just hand me a paper, that is like somebody handing me a flyer as I'm walking up the street..."</p> <p>"But well, I believe we can deliver that message – like hey, it's useful, just do it, yes – better, I think, than anyone else in primary care, than the district health team. In general, we will have been in touch with the elderly for years, have treated them for years, so yes, alright, that implies we have built up trust, and that makes it rather easy to advise them, or means, for instance, that such advice will be taken. And that is what you see happen with the influenza vaccination." (GP, male, Central region of the Netherlands, own practice).</p>	Downgraded once for adequacy	Moderate
2 (Briggs 2019, Ridda 2009)	Some people aged 65 years and over will not be put off by a healthcare professional who has a negative opinion about them receiving a vaccine. However, others say that they will follow their GP's advice – even if they incorrectly advise against a vaccine – until a	"My chiropractor is always going on about it [not having vaccinations] ...But if you're coming from one side you're often not open to the reasons on the other side, so I think I probably make more of my own informed decision given all the information I get from other people."	Downgraded twice for adequacy	Low

Studies	Theme	Illustrative quotes (where available)	CERQual explanation	Confidence
	different healthcare professional discusses it with them later on. *			
1 (Badertscher 2012)	GPs say that when they discuss pneumococcal vaccination with people who are aged 65 years and over, they usually agree to having the vaccine.	-	Downgraded twice for adequacy	Low
1 (Eilers 2015b)	GPs agree that preventing disease is part of their job and they are keen to provide advice – particularly if the guidelines say they should do this.	“Once more, I believe it to be a very effective, inexpensive method to prevent lots of trouble and suffering.” (GP. Male, Central region of the Netherlands, own practice).	Downgraded once for relevance and twice for adequacy	Very low
1 (Zaouk 2019)	Emergency department nurses say that they are usually too busy with emergency work to discuss vaccines with people aged 65 years and over and they assume that these people will take responsibility for themselves and seek vaccination. However, emergency department nurses say that people aged 65 years and over would be vaccinated by them if that was on their routine.	There was also a reluctance to initiate any care that wasn't predominantly emergency based or part of routine work, “. . .we don't consider it as an emergency. . . it goes to the bottom of our list of things to do.”.	Downgraded twice for adequacy	Very low
2 (Badertscher 2012, Eilers 2015b)	GPs say that they are very busy. This is why vaccines for people aged 65 years and over are not often administered.	Second, with most of the patients, other diseases, problems, or even other vaccinations were more important and had to be solved or discussed first: “For me, it's just a question of priorities. . . There are many issues that are much more important than the pneumococcal vaccination.” (GP)	Downgraded twice for adequacy	Low
1 (Pattin 2018)	Some people aged 65 years and over say that they have a better relationship with their pharmacist compared to their GP because they see them more regularly.	“Yes, I always see mine. The same people are there every time since I been taking medication, anas seed it's been some years. I just	Downgraded once for relevance and twice for adequacy	Very low

Studies	Theme	Illustrative quotes (where available)	CERQual explanation	Confidence
		go to one pharmacist and the same people; they haven't switched. They might bring every now and then someone in there new, a new student, then they might leave, but in the process the main ones been in there for a while and, like you say, get some input on the medication that I be taking, you know."		
Sources of information and influence: friends and relatives				
1 (Harris 2006, Briggs 2019)	People aged 65 years and over say they are encouraged to be vaccinated by friends and relatives. If friends or relatives advise them to not accept a vaccine, they do not necessarily take their advice. In addition, they say they talk to their friends and relatives to persuade them to be vaccinated.	"Well, I have decided to get them primarily because my husband has been working in the medical field. We had friends who were doctors, medical doctors and nurses, who have also influenced my thinking and helped me to understand the importance of preventive medicine. However, I do remember that there were lots and lots of times when I did not trust; I didn 't feel comfortable with being experimented on." (72-year-old female, college educated, vaccinated)	Downgraded twice for adequacy	Low
Asterisk (*) Eilers 2015a included participants who were aged 52 years and over, Ridda 2009 included participants who were aged 60 years and over, Daniels 2004 included participants who had a mean age of 62 years.				

1 See [Appendix F](#) for full GRADE-CERQual tables

- 1 **Studies spanning multiple age/ life stage categories**
- 2 **Figure 5 Summary of the main concepts identified in the qualitative evidence from studies spanning multiple age/ life stage categories**
- 3 See the findings in
- 4 [Table](#) 11 for more details.



1

1 **Note:** In the following table, the terms ‘Polish and Romanian immigrants’ and ‘Polish and Romanian community members’ are used
 2 interchangeably in the findings. The studies that contributed to these findings recruited people who had been living in the UK from a few months to
 3 up to 15 years. Where Jackson 2016 is included, and the finding refers to Travellers this may also include Gypsy and Roma people. We have used
 4 Traveller as an umbrella term to make the finding less unwieldy. Where findings relate to people who are immigrants, the country which people had
 5 migrated from, and the length of time that they had been living in a new country, will be stated at the end of the finding (where this information is
 6 available).

7 **Table 11 Summary of the barriers to and facilitators to vaccination identified from studies spanning multiple age/ life stage categories**

Studies	Study design	Theme	Illustrative quotes (where available)	Cerqual explanation	Confidence
Views on vaccine-safety, effectiveness and usefulness					
5 (Bell 2019*; Bell 2020 Jackson 2016, McCoy 2019, Ruijs 2012a)	Semi-structured interviews	<p>Parents are uncertain about the importance of vaccinations for their children, but many were in favour, especially among Polish and Romanian parents and Traveller parents*.</p> <p>Most Polish and Romanian parents* regarded vaccines as essential protection against disease, but some vaccines were considered unnecessary and refused or generated particular concern such as the MMR vaccine. However, vaccination was not a priority for some Romanian immigrants and Romanian Roma who were more concerned about surviving and feeding their children.</p> <p>In contrast, parents of homeschooled children (from a Protestant background) believed that their healthy lifestyle would protect them together with a reduced risk of exposure and vaccines were therefore unnecessary.</p> <p>Orthodox Protestant parents had mixed views: some thought they were necessary to protect against disease while others disagreed and placed their faith in God.</p>	<p>“I just believe in supporting their immune system in other ways, naturally with supplements and healthy foods. And my kids have been so healthy. I’ve been so blessed.” “I want to be the best steward of my body and my kid’s body and their health. And I think God put on this Earth the things that are necessary to keep us healthy.” (Homeschooling parent)</p> <p>“Whether I have my children vaccinated or not does not matter to me because I don’t believe in it. I believe that if God wants to spare my children from an accident, then He will spare them from it.” Orthodox Protestant parent</p> <p>“Because you want to protect your children against everything.. .” Orthodox Protestant parent</p>	No downgrading necessary	High

Studies	Study design	Theme	Illustrative quotes (where available)	Cerqual explanation	Confidence
		<p>Healthcare providers perceived Travellers as having mainly positive views about vaccination. Travellers agree that there has been a shift in beliefs and acceptance between generations, although Travellers had more confidence in some vaccines than others (such as HPV and MMR). This increased confidence was linked to growing integration of Travellers into society and greater contact with non-Travellers. However, a minority of completely rejected vaccinations as unnecessary and preferred to treat any resulting infections instead.</p> <p>*Polish and Romanian immigrants living in the UK (average time living in the UK was 11 years for Polish people and 9 years for Romanians)</p>	<p>“There’s very, very few people in my opinion, who actually really don’t want it. I think I have only probably come across one that actually says to me ‘we don’t want it, and we’ve thought about it’. (Health visitor referring to Travellers)</p> <p>“I think our generation, up to about 30, 35 years old, we accept the idea of immunisation. The older ones... they are a bit [uncertain]... because they didn’t go to the doctor so often.” (Romanian Roma, Father)</p>		
6 (Bell 2020a, Gorman 2019, Jackson 2016, McCoy 2019, Ruijs 2012a, 2012b)	Semi-structured interviews and focus groups	<p>Parent’s assessment of the risk posed by the vaccine preventable diseases varied but an appreciation of the potential consequences of not vaccinating was not sufficient to encourage some parents to vaccinate their children.</p> <p>Older members of Traveller communities had personal experience of some of the diseases and remembered the caring for sick children, while outbreaks of measles in some traveller communities had increased uptake of the MMR as a result. Some Travellers were positive about accepting the HPV vaccine to try to prevent cervical cancer in part because of family experiences of this cancer.</p> <p>In contrast, most evangelical Protestant homeschooling parents and orthodox Protestant parents thought that childhood infections were a natural way of strengthening the immune system and did not pose a great risk to their children. many</p>	<p>“The girls need this, cervical cancer’s rife in my family, so all my aunties had had pre-cancerous cells, apart from one, she’s had full blown cervical cancer. She was only 32 [with] three kids . . . so I would definitely be sending, as much as I don’t like them to be getting injections, but . . . that would be an important one for us.” (Traveller mother)</p> <p>“I remember my nieces and nephews used to get... Whooping Cough, and you’d never hear about any vaccination for it, it’s frightening ‘cos they keeps coughing and they go blue coughing the whole time... And my child had ... measles at that</p>	No downgrading necessary	High

Studies	Study design	Theme	Illustrative quotes (where available)	Cerqual explanation	Confidence
		<p>reported that because they had survived the diseases as children meant that they were mild.</p> <p>Health care professionals report explaining the severity of the diseases to these parents and some were aware that severe side effects and death were possibilities, but this did not necessarily lead to an increase in vaccination.</p> <p>Some Polish parents identified a greater risk of disease in multicultural cities in the UK than at home which emphasised the importance of vaccination to them. However, providers also reported similar sentiments to Protestant parents in Romanian and Romanian Roma communities concerning measles.</p>	<p>time. I had to keep him in, in the caravan but I had to put him into darkness... it was my mother used to be telling me, keep him in darkness, don't leave him out in the light, and get Calpol or whatever you can get for him... he was about 2 weeks like that.” Traveller “But a childhood disease... to immunize against it? Looking at the children, they simply come down with it. I also had it earlier myself. And you get over it; it's just part of things.” (Homeschooling parent)</p>		
3 (Bell 2020a, Jackson 2016, Keshet 2021)	Semi-structured interviews and focus groups	<p>Most Travellers believed the protective benefits of vaccination outweighed the short term side effects and accepted vaccinations for themselves and their children as the normal thing to do. Others expressed reservations about the pain of injection and potential side effects although they usually went ahead with the vaccinations after thinking about the balance of benefits and harms. However, a minority of parents in Traveller communities were concerned that vaccinating their daughters for HPV would lead to community censure as it could imply that they were promiscuous.</p> <p>In contrast some Romanian immigrants and Romanian Roma declined vaccination for their children because they were aware of people who had been vaccinated but still got measles and therefore believed the vaccines were ineffective. In</p>	<p>“There's a new one we are all a bit wary about, the HPV for the young ones. And our young ones, they're clean when they get married so we don't, we're not into than kinda giving that one to the young ones. ...our girls aren't promiscuous, look after the girls' reputations do you know what I mean?” Irish Traveller, Mother.</p> <p>“How can I know for sure what will be injected into my child?... I am much more afraid [of the consequence of vaccination] than... [of being] unable to comply with the rabbi's instructions... I realized that I'm much more afraid of the vaccines than of the</p>	Downgraded once for adequacy	Moderate

Studies	Study design	Theme	Illustrative quotes (where available)	Cerqual explanation	Confidence
		<p>addition, they thought that the risk of serious side effects was high and outweighed the benefits.</p> <p>Some Ultra-Orthodox Jewish mothers also declined vaccination because of fears over side effects, even if this meant going against the advice of their Rabbi.</p>	diseases.” (Ultra-Orthodox Jewish parent		
2 (Gorman 2019, Jackson 2016)		Previous experiences of having the vaccination themselves or seeing no ill effects in other children encouraged acceptance, especially of the MMR vaccine by Travellers. This point was also raised by Polish immigrant parents.	“You just often hear that vaccination causes autism. And so...I risked it since we were vaccinated when we were young and nothing really happened to us.” (Polish parent)	Downgraded once for adequacy	Moderate
1 (McCoy 2019)	Semi-structured interviews	Some homeschooling evangelical Protestant parents reported that establishing herd immunity within a community was a valid reason to vaccinate their children to protect other vulnerable children who could not be vaccinated themselves for medical reasons. However, a lack of trust in the government and their perceived links with pharma companies were cause for concern and had a negative effect on decision making.	“I don’t have a comfort level with my government that their desire is really to help the people improve their health. It’s all about money now.” “You can’t trust what the government tells us. I mean they tell us what, you know, whatever company is paying them a crap load of money to say. So sure, they say something is safe. They say something is good for you. But is it really?” “It’s hard to make a decision, because both sides can be skewed and they both lend themselves to fear-mongering. That’s why the Holy Spirit is really helpful.” (Homeschooling parent)	Downgraded once for adequacy	Moderate
6 (Bell 2019*, Gorman 2019, Jackson 2016, McCoy 2019 Ruis	Semi-structured interviews and focus groups	Parents who are Travellers, Polish and Romanian immigrants*, orthodox Protestant and evangelical Protestant homeschoolers shared concerns about the safety of vaccines with more concern being raised about certain vaccines (specifically MMR and HPV).	‘You just often hear that vaccination causes autism. And so...I risked it since we were vaccinated when we were young and nothing really happened to us.’ (Polish mother)	No downgrading necessary	High

Studies	Study design	Theme	Illustrative quotes (where available)	Cerqual explanation	Confidence
2012a, Keshet 2021)		<p>These concerns were due to the perceived link between MMR vaccination and autism and in some cases were the result of being influenced by other people in their community who attributed their child's autism to the vaccination. Some Ultra-Orthodox Jewish parents also had concerns about vaccination based on experiences by others in the community. However, Polish and Romanian immigrant parents* were no more concerned than the general population about this issue.</p> <p>Parents were concerned about the lack of long-term safety data for new vaccines such as HPV, and worried about their children being 'guinea pigs' in medical research. In addition, HPV was considered problematic by some parents due to negative media stories about side effects.</p> <p>*Polish and Romanian immigrants living in the UK (average time living in the UK was 11 years for Polish people and 9 years for Romanians)</p>	<p>“Oh no! Absolutely not [HPV]! I’ve heard about girls who have had paralysis after these vaccinations, I’ve heard about many, many cases, I do not think it’s made up and I would absolutely not agree.” (Polish mother)</p> <p>“I have a four-year-old nephew who was diagnosed with epilepsy half a year ago. I have no doubt that vaccines are involved... I know from my research that epilepsy is one of the problems caused by vaccination” (Ultra-Orthodox Jewish parent)</p> <p>“It’s a new vaccine, and I like to wait and see the long-term effects of things. So, anything that is new, my kids aren’t going to get, simply because we don’t know how that is going to play out in 10 or 15 years.” “I feel like I’m doing all the vaccines that have been around for 20 years. I’m comfortable with those.” (Homeschooling parent)</p>		
1 (Jackson 12016)	Semi-structured	Many Travellers were concerned about the safety of the pertussis vaccine during pregnancy because the immune system was perceived to be weak at this time while older travellers believed that the vaccine could lead to brain damage and disability, therefore vaccination of the baby after birth was favoured.	“These [whooping cough] are needles that the women don’t take when they are pregnant because to them it’s God’s fate, you just don’t inject when a woman’s having a baby ...you just leave it alone and leave it in	Downgraded once for adequacy	Moderate

Studies	Study design	Theme	Illustrative quotes (where available)	Cerqual explanation	Confidence
			God's hands. What will be will be."		
Access					
3 (Bell 2019*, Bell 2020a*, Jackson 2016)	Semi-structured interviews	<p>Some parents who are Polish or Romanian immigrants* and Roma Travellers are unfamiliar with the NHS and can find it difficult to navigate the UK health system to obtain healthcare.</p> <p>They reported difficulties in registering with GPs and this was linked to lack of appropriate documentation in some cases, while Roma travellers were not necessarily aware that they needed to book appointments to be seen by a GP. In addition, pregnant Roma often arrive without having had any antenatal care and cannot access it in the UK until they are registered with a GP. These difficulties are overcome with the support of family members and friends and a growing understanding of how the system works. Once registered some Romanian and Polish parents report finding it easy to book appointments at GP practices.</p> <p>In contrast other Romanian and Romanian Roma parents still find it hard book GP appointments, and this may be due to language difficulties affecting communication or discrimination. Providers report that these parents are more likely to see help at A&E if they are unwell than to visit a GP, which may be linked to problems with booking appointments. However, providers also thought that these communities have a more reactive response to healthcare. This could negatively affect their uptake of vaccines.</p> <p>*Polish and Romanian immigrants living in the UK (average time living in the UK was 11 years for</p>	<p>"But I think as time goes on, you know, it's better, 'cos they've got a better understanding, but I think that initial, you know when they're registering and they're initially trying to get appointments and things like that." (Health visitor referring to Roma Travellers)</p> <p>"My mum lives here in the UK but her general practitioner throws her out [of] the door every time she has problems because she can't speak English, they've got her out during the appointment. They've done this three times already. They push her out. And she's feeling really sick she's afraid." (Romanian parent).</p>	No downgrading necessary	High

Studies	Study design	Theme	Illustrative quotes (where available)	Cerqual explanation	Confidence
1 (Bell 2020a)	Semi-structured interviews	Polish people and 9 years for Romanians in one study, 3 years or less in another study) Providers thought that drop-in clinics would be more effective at increasing vaccine uptake in Romanian and Romanian Roma communities* than booked appointments. This might be due to difficulties in making and attending appointments if families are often travelling and/or do not speak English well (or at all). *Polish people living in the UK for 3 years or less	None	Downgraded once for adequacy	Moderate
1 (Jackson 2016)	Semi-structured interviews	A minority of Travellers described problems with accessing healthcare that included difficulties with registering with GPs, problems booking appointments and having to wait weeks for appointments, which could be a problem for those who are travelling. Some Travellers prefer to use A&E and use out-of-hours services to avoid these waits.	Irish Traveller, Mother: "It's very hard to get an appointment innit?" Irish Traveller, Mother: "Yeah, it is hard. They might give you an appointment for 2 weeks' time, by 2 weeks' time I'm forgetting about it anyway"	Downgraded once for adequacy	Moderate
1 (Jackson 2016)	Semi-structured interviews	Healthcare providers recognised the importance of being flexible and using a number of approaches to make vaccinations more accessible to Travellers including holding drop-in clinics, using opportunistic vaccinations, improving the accessibility of appointments and delivering outreach services. Opportunistic vaccinations were suggested at A &E and other non-vaccination clinics plus during other appointments at GP practices while some providers reported having longer GP opening hours with increased numbers of vaccination clinics to improve uptake. However, most travellers reported being able to attend appointments and they agreed with service providers that outreach service should be limited to those who cannot attend mainstream services such as the elderly and those who travel regularly or do not ever attend GPs .	You know, the problem is if you, if you don't adapt to the communities you're working with then you end up missing people and people will not get preventative care" (Social services team leader) "Because like new mums they should be able to get to a doctor shouldn't they... in this day and age doctors are accessible but like the elderly, it's even if they only live maybe half a mile from the doctors for an old person that half a mile can seem like ten miles to them. So for the elderly I think there should be a nurse for a	Downgraded once for adequacy	Moderate

Studies	Study design	Theme	Illustrative quotes (where available)	Cerqual explanation	Confidence
			couple of hours that could go out and give them their immunisation.” (Gypsy Grandmother)		
Implementation and delivery					
3 (Bell 2019*, Bell 2020a*, Jackson 2019)	Semi-structured interviews	<p>Recall and reminder systems may need tailoring for Traveller and Polish and Romanian immigrant communities* to achieve maximum levels of vaccination. Polish and Romanian families may miss appointments with their regular visits to their home countries. Standard recall and reminder systems do not account for people who travel regularly, whose children are not in school, who are not registered with GP or who rely on communal mailboxes. Providers report identifying and targeting by phone or text families that are particularly hard to immunise. Invitations letters and information is also provided by schools, while midwives, health visitors and support workers remind people during home visits. Travellers also referred to receiving face to face reminders at other appointments with healthcare staff.</p> <p>*Polish and Romanian immigrants living in the UK (average time living in the UK was 11 years for Polish people and 9 years for Romanians)</p>	None	Downgraded once for adequacy	Moderate
1 (Jackson 2016)	Semi-structured interviews	<p>Poor levels of attendance or being homeschooled can make it harder for children to be vaccinated in some Traveller communities.</p> <p>Girls from some Traveller communities (such as Romanian Roma) are withdrawn from school when they reach puberty to avoid them mixing with non-Traveller boys while a minority of adolescents may have reduced attendance due to racism and discrimination at school. This makes it harder to</p>	None	Downgraded once for adequacy	Moderate

Studies	Study design	Theme	Illustrative quotes (where available)	Cerqual explanation	Confidence
		ensure that they receive the vaccinations that are normally provided at school such as HPV. Other Traveller children miss vaccinations if the family is travelling when the vaccines are administered at school. In contrast, other groups of Travellers such as Scottish show people have good school attendance.			
1 (Bell 2020b)	Semi-structured interviews	<p>The use of financial incentives based on uniform target vaccination rates can discourage effort in areas with harder to reach populations.</p> <p>Financial incentives aimed at increasing providers effort to vaccinate do not reflect differences in populations across the country. They are seen to unfairly penalise providers in underserved communities who may expend a lot of effort but fail to reach the 90% target for childhood vaccination. GPs in other areas may reach targets with much less effort due to their population demographics. This can be discouraging, cause resentment and may lead to reduced effort to increase vaccination.</p>	‘... The system is so biased in or towards practices in nice leafy-green areas with English [speaking] people because, you know, that our nice or well-off end but we hit 90 percent vaccination with no trouble at all. We don’t have to do anything. Whereas there we spend a huge amount of effort and money and time and we hit about 77 percent.’	Downgraded once for adequacy	Moderate
1 (Wiot 2019)	Focus groups	Parents can be reluctant for their young children to receive multiple injections at one time. Healthcare providers noted that the increase in number of vaccines and frequency of vaccinations on the routine schedule could lead to parental reluctance to vaccinate due to not wishing to inflict pain repeatedly and that this leads to logistical problems for healthcare staff in ensuring that the children receive all of the vaccinations.	None	Downgraded once for adequacy and once for study limitations	Low
1 (Wiot 2019)	Focus groups	Healthcare providers reported a number of challenges to achieving vaccination targets. These included: the use of performance targets; vaccine shortages; frequent changes to vaccination schedules and a lack of continuity of care. Performance targets were unpopular with	“What challenges me most is trying to make head or tail of the shingles vaccination schedule. You’ve got who gets a turn, and in which year, and why it has been planned out so ridiculously to	Downgraded once for adequacy and once for study limitations	Low

Studies	Study design	Theme	Illustrative quotes (where available)	Cerqual explanation	Confidence
		healthcare providers as they led to feelings of stress and powerlessness and reduced their ability to provide more holistic care. Uncertainty around the vaccination schedule was caused by frequent changes in the schedule and the associated changes in information about side effects and this could cause problems when dealing with patient questions. A lack of continuity of care was considered problematic because this can result in incomplete patient records, difficulties in managing vaccination targets and different healthcare professionals (such as pharmacists) may not provide the same level of information and discussion with the patient.	have different age groups every year? ... the whole vaccine schedule changes so rapidly from year to year." (UK nurse)		
2 (Bell 2019, Bell 2020a Wiot 2019)	Semi-structured interviews and focus groups	Appointment times are usually fixed and short which results in rushed discussions between healthcare providers and parents or individuals about vaccinations. As a result, healthcare providers feel pressured and limited in their ability to provide effective care because during these short appointments they may be expected to discuss, gain consent and administer vaccines. This can be exacerbated by communication barriers if the patient is not fluent in English. Romanian and Polish parents also feel rushed and not listened too and this can negatively affect their decision to vaccinate their children.	None	No downgrading necessary	High
Barriers linked to the re-organisation of the NHS in 2013					
1 (Chantler 2016)	Semi-structured interviews	The reallocation of immunisation functions across new or reformed organisations was viewed as having fragmented the delivery of the immunisation programme. It had the result that the responsibility for immunisation was retained by the NHS although the management of local public health programmes was transferred to local government. This dispersal of responsibilities across multiple organisations	'Since April last year (2013), this system of immunisations is fractured; it really is fractured. So, you've got Public Health England, and the Department of Health and the JCVI creating the strategy or policy; you've got NHS England commissioners ... trying to	Downgraded once for adequacy	Moderate

Studies	Study design	Theme	Illustrative quotes (where available)	Cerqual explanation	Confidence
		raised questions about leadership and accountability. In some cases, different providers were involved in running different vaccinations within the same school, which increased the risk of poor communication with parents and schools, and between providers and people managing the contracts and data.	<p>implement, and then at the side of that you've got local authority colleagues holding us to account for assurance purposes ... Three organisations are trying to inspire general practice or primary care, or providers, to jab more. It's a complex mesh, so it's trying to hold that mesh together, at the moment." (NHS England, 59)</p> <p>This kind of complexity required them to "work very hard to pull it [the system] back together" (Local authority Public Health Team member), and streamline processes within and across organisations in order to "bring them together somehow." (Screening immunisation team member).</p>		
1 (Chantler 2016)	Semi-structured interviews	Adapting to the reorganisation was time consuming and required people to revise previous patterns of working, adopt new roles and responsibilities, acquire new skills and make new connections.	"We've been here nearly two years and it just about feels we're beginning to manage it appropriately." (Screening immunisation team member)	Downgraded once for adequacy	Moderate
1 (Chantler 2016)	Semi-structured interviews	Staff redeployment was disruptive and the level of disruption for the individual was linked to how comparable the new role was to the old for one. Key challenges were finding staff with skills and experience in immunisation, screening and commissioning, and developing a team, that is embedded within NHS England employed by Public Health England. A significant consequence of the redeployment was the removal of budgets and decision-making from local players to regional ones	'PHE had become an "upward facing, not outward facing" organisation with different priorities:...having to answer Parliamentary questions, and briefing Ministers, and it's...because we're civil servants, that's seen as a bigger priority than supporting the frontline, which is a huge cultural shift that I	Downgraded once for adequacy	Moderate

Studies	Study design	Theme	Illustrative quotes (where available)	Cerqual explanation	Confidence
		and a loss of local knowledge (the historical memory gained from working in an area for a long time and the relationships built over time between providers and service managers), insights into underperforming areas and practices, and the understanding of contextual factors that affected the uptake of immunisations	don't feel comfortable with, because I see my job as supporting the frontline, because I want children to be vaccinated." (National interviewee)		
1 (Chantler 2016)	Semi-structured interviews	The dispersal of duties and formation of new teams resulted in a lack of clarity about responsibility and how the system should be implemented collaboratively. For example, the existence of different organisational reporting procedures was viewed as having complicated the management of incidents such as errors in the administration of vaccines or failures in cold chain storage.	<p>"There was a lack of clarity about what do these new roles actually mean ... Okay, we can say, well, ours is the assurance role and the area team commissions, but actually in terms of divvying up the tasks, what does that mean, who does what, how does it come together and make a whole?" (LA Public health team, 27)</p> <p>"... there's an operating framework, there's job descriptions and, as I said, I think it's absolutely clear within that what we're supposed to be doing, but people are not working in those ways and I think there's different interpretations." (Screening immunisation Team member)</p>	Downgraded once for adequacy	Moderate
1 (Chantler 2016)	Semi-structured interviews	Screening and immunisation teams reported that they were less able to apply their clinical expertise and were more focussed on commissioning and logistics. They reported difficulties in monitoring provider performance due to a lack of resources and wider geographical areas of responsibility(footprints), but having larger footprints	"...we are trying to solve issues that we don't fully understand because we don't actually have the resource to go out there and do the investigative work that is required. So we are, in a way, working blindly." (SIT)	Downgraded once for adequacy	Moderate

Studies	Study design	Theme	Illustrative quotes (where available)	Cerqual explanation	Confidence
1 (Chantler 2016)	Semi-structured interviews	<p>also meant that they could implement a more consistent approach across larger areas.</p> <p>The introduction of tripartite working with immunisations being led by DH, PHE and NHS England required different ways of working. Instead of a single organisation agreeing on and implementing strategies, these policies had to be reviewed by all partners, making rapid responses to public health issue more challenging. The process of clearing and checking each other's contributions to official correspondence was mentioned as an example of difficulties encountered in balancing power and exercising trust in tripartite relationships. However, annual reviews of Section 7a agreements were viewed as a successful example of cross-organisational planning and collaboration.</p>	<p>"We've got strong governance arrangements in place to support the delivery of the 7a agreement that locks everybody into a way of working that ensures we work collaboratively together in a strategic way....The Section 7a agreement forces you to have a proper strategic conversation with the NHS... whereas that didn't really happen." (National interviewee, 8)</p>	Downgraded once for adequacy	Moderate
1 (Chantler 2016)	Semi-structured interviews	<p>Screening and immunisation teams are considered to be an important resource and potential strength of the new system. However, their dual accountability to PHE and NHS England has complicated defining their role and achieving a good balance between commissioning and supporting providers resulting in a lot of variation in how they operate. Many SITs are short staffed and have problems attracting staff, which reduces their ability to performance manage immunisation providers.</p> <p>Strategies used to overcome issues included: NHS England providing SITs with real time immunisation uptake statistics via a data management system, and data sharing agreements to enable LA Public health teams fulfil their assurance responsibilities. There were also a number of ad hoc and sometimes short lived (due to funding constraints) mitigating strategies at local levels: such as a CCG</p>	None	Downgraded once for adequacy	Moderate

Studies	Study design	Theme	Illustrative quotes (where available)	Cerqual explanation	Confidence
		prioritising finding for immunisation and a LA public health team linking SITs with schools and community based children's centres.			
1 (Chantler 2016)	Semi-structured interviews	There is a huge inconsistency in training provision because it is not clear what role SITs should play in helping ensure that healthcare professionals are trained appropriately. Different approaches are used in different places such as getting local universities to provide essential skills courses for practice nurses, having practice nurses set up monthly training sessions supported by their CCG and a management company.	<p>"...what does facilitate mean? It doesn't say who's actually responsible. So yes, the SIT could be responsible for facilitating training, but that doesn't necessarily mean to say they've got to do it." (National interviewee)</p> <p>"...there is huge inconsistency about [training] provision, including no provision, and there is a lack of clarity and a lack of understanding about who should be providing it, who should be commissioning it and who should be funding it." (National interviewee) "</p>	Downgraded once for adequacy	Moderate
1 (Chantler 2016)	Semi-structured interviews	Establishing and maintaining relationships is essential to make the national framework and local operating models work well, but this requires significant time, effort and creativity. The National Immunisation Programme Board (IPB) and LA Health Protection Forums were part of the implementation of the HSCA 2013, while other partnerships have developed iteratively over time. Examples of these include regular strategic meetings between senior SIT members and LA DPHs and reappointing pre-existing immunisation committees; a SIT established immunisation board with senior representation from NHS England, CCGs, PHE health protection teams, academia,	"The Health Protection Forum wants to make its priorities things that it can do together, so the whole point is that different people are responsible for different bits of the system now, and there is some fragmentation. But obviously there are lots of areas that we all need to work together on, so that forum is a way strategically of joining up some of those dots." (LA Public Health Team)	Downgraded once for adequacy	Moderate

Studies	Study design	Theme	Illustrative quotes (where available)	Cerqual explanation	Confidence
		pharmacy, LA Public Health Teams and NHS Trusts.	"I think for a future workforce it is really about bearing in mind that partnership working is part of someone's job description...being able to have that knowledge of tapping into those different structures and things. I think that is a core skill... to promote the uptake of immunisation." (LA PHT,"		
Immunisation board findings Note: the goal of the immunisation board was to create a partnership forum that would; i) clarify responsibilities and coordinate efforts across organisations, ii) provide oversight of the delivery of the immunisation programme and activities aimed at increasing vaccination coverage, and iii) provide a means of organisational accountability.					
1 (Chantler 2019b)	Semi-structured interviews	Immunization board members think they are responsible for overseeing commissioning and providing input into commissioning decisions, but the nature of this oversight is unclear and people thought the role of the board in decision-making needed to be more transparent. They would like the board to demonstrate more strategic leadership, be better at holding NHS England to account and delivering agreed strategies, e.g. establishing borough level immunisation steering committees with local action plans.	<p>"I think probably, what might be helpful is having clarity around what the board is being asked to do when papers come to them... I don't think this a decision-making body, to my knowledge the decisions and the accountability sit with the people in the system rather than with the board...so being clear about what it is you're asking people to guide and advise on, and coming back to them to say, "Well we did this, as a result of that". Board member #11</p> <p>"...the board should be about providing the leadership and the direction and the assurance and the challenge, as well, around immunisation performance...the board should be absolutely on our</p>	Downgraded once for adequacy	Moderate

Studies	Study design	Theme	Illustrative quotes (where available)	Cerqual explanation	Confidence
1 (Chantler 2019b)	Semi-structured interviews	Immunisation board members think they lack a collective affiliation and common goals. Different members have different reasons for being part of the board and these can include representing parents organisations, staying in the loop as well as ensuring that decision-making accounted for the realities on the ground and was evidence-based. This also has an affect on meeting attendance with board members with an active rather than a watching brief for immunisation finding it easier to prioritise attendance since the meetings corresponded with their direct responsibilities.	backs constantly" (Board member #2)." " "I think we need to revisit exactly what our membership is and what each person thinks they're bringing to the group and what skill and expertise they're contributing." Board member # 9"	Downgraded once for adequacy	Moderate
Facilitators from GP practices with high uptake					
1 (McGeown 2018)	Unstructured interviews	Building positive relationships between medical staff and patients over time was considered to be vital in achieving increased vaccine uptake. The examples cited involved people being offered vaccinations by their 'named GP'; using antenatal appointments with GPs to establish relationships that could improve adherence to postnatal care plans (including vaccinations); providing appointments with child vaccination specialist nurses that allowed sufficient time to address parental concerns and having consultations with homeless people that were not time limited.	'It's all about the conversation that I have [with patients]'. 'If I've put the effort in on the first appointment with that person and you get the trust there, next time you don't have to spend so much time explaining things'.	Downgraded once for adequacy	Moderate
1 (McGeown 2018)	Unstructured interviews	Flexibility in addressing the needs of patients was thought to be essential in facilitating vaccine uptake. This was manifested by increasing the opportunities for vaccination by offering opportunistic vaccination when people were attending the surgery for other reasons; increased out of hours clinics; 'walk-in' clinics at weekends for working parents; longer appointments for non-English speakers or those with complex needs.	None	Downgraded once for adequacy	Moderate

Studies	Study design	Theme	Illustrative quotes (where available)	Cerqual explanation	Confidence
1 (McGeown 2018)	Unstructured interviews	Online appointment booking also increased immunisation bookings. Having well trained, designated staff who were up to date with current guidance on vaccinations was linked to increased uptake by staff. The designated individuals, including administrative staff as well as nurses, were responsible for vaccinations and accountable to practice managers. Regular training events and updates on the latest guidance were in place in all practices and having the latest vaccine guidance embedded in the IT system to automatically prompt clinicians was thought to be helpful.	None	Downgraded once for adequacy	Moderate
1 (McGeown 2018)	Unstructured interviews	Team-work was highlighted as an important factor in achieving vaccine uptake. This involved a multidisciplinary approach working with colleagues in other fields, such as health visitors who hold baby clinics and visit parents at home to discuss vaccinations and CCG immunisation leads who could provide expertise to answer questions and address concerns. In addition, having an element of competition within and between practices was also linked to increased vaccine uptake.	None	Downgraded once for adequacy	Moderate
1 (McGeown 2018)	Unstructured interviews	The importance of planning ahead was emphasised across all interviews as important facilitator for vaccine uptake. This involved identifying eligible children in advance and contacting parents to make appointments and ensuring records are up to date to facilitate identification. For example, one practice booked the 8 week vaccinations at the 6 week baby check, another discussed childhood vaccinations at antenatal clinics where vaccination for pregnancy were administered.	'Some patients, especially (some) elderly ones ... want to speak to their named GP'. Another added that elderly patients were much more likely to make an appointment 'when they get a call from the practice [as] it's different to getting a letter'.	Downgraded once for adequacy	Moderate
1 (McGeown 2018)	Unstructured interviews	An escalating system of contact was used to help catch non-responders. Initially people received email, texts or letters (often automated), but if they	None	Downgraded once for adequacy	Moderate

Studies	Study design	Theme	Illustrative quotes (where available)	Cerqual explanation	Confidence
		did not book an appointment they were called by a member of the admin staff, then the practice nurse and finally the GP if this continued. Different approaches worked with different people, for example the elderly were thought to respond to contact from their GP.			
Information and influences					
3 (Jackson 2016, McCoy 2019, Ruijs 2012b)	Semi-structured interviews	<p>Healthcare professionals are trusted sources of information for many parents and can influence decision making, but not all parents respond positively.</p> <p>Where the health care providers and parents have established a trusting relationship based on long-term positive interactions, this allows the healthcare staff to promote vaccinations. Travellers overwhelmingly identified healthcare providers as the key trusted source of written and verbal information about childhood and adult vaccinations, while many home schooling evangelical Protestant parents also identified physicians as having a real positive influence on their decision to vaccinate based on trusting that doctors want the best for their kids. However other Protestant parents felt pressured to vaccinate and this damaged their relationship with the healthcare providers or reported that they were pressured not to vaccinate by nurses and other respected healthcare related individuals. Healthcare professionals working with Orthodox Protestant parents who have religious objections to vaccination provide information to try to persuade the parents to change their minds, but very few parents respond to this approach, which can be frustrating for the healthcare providers.</p>	<p>"Well the medical professionals . . . know what they're talking about rather than somebody that's talking about it on the news, 'cos they could be telling you anything." (Scottish Showperson, father)</p> <p>"It remains hard. I regularly tell them what the illnesses do and also refer them to our website. On the basis of that information, very few come around to vaccination, however. And then you lose heart." (Child healthcare centre doctor referring to Orthodox Protestant parents)</p>	No downgrading necessary	High

Studies	Study design	Theme	Illustrative quotes (where available)	Cerqual explanation	Confidence
2 (Bell 2020a, Jackson 2016)	Semi-structured interviews	<p>Knowledge about and awareness of vaccinations was variable in Traveller communities.</p> <p>In general, Travellers were more aware of childhood vaccines including HPV, than those aimed at adults, although they were less familiar with some of the more recently introduced childhood vaccines (such as rotavirus). There was increased awareness of vaccines such as MMR due to controversies about their safety.</p> <p>Some Travellers (Romanian Roma) had limited understanding of specific vaccines, the diseases they protect against and the time at which they are routinely provided. However other Roma participants were more knowledgeable.</p>	<p>“He says he has not heard of immunisation for adults which is why he was surprised when his brother said ‘he has done one’... he knew about vaccinations for children but not for adults.” (Romanian Roma, Father (via his wife who was translating on his behalf))</p>	Downgraded once for adequacy	Moderate
1 (Wiot 2019)	Focus groups	<p>Health care providers identified the lack of knowledge or misinformation about vaccines as the main problem affecting vaccine uptake because this required a substantial amount of time to provide information and attempt to correct misinformation that could be better used to address other patient needs. They suggested a public education programme to provide the correct information needed for decision making and challenge misinformation.</p>	None	Downgraded once for adequacy and once for study limitations	Low
3 (Bell 2019*, Gorman 2019, Jackson 2016)	Semi-structured interviews and focus groups	<p>Providing credible, trustworthy and unbiased information to parents could help improve their decision making. Polish and Romanian immigrant parents* report challenges in identifying trustworthy sources of information amongst the unregulated information available on the internet. They find the NHS literature more credible but would like more information about vaccine side effects. Scottish Show people commented on the biased information</p>	<p>“Really, at the beginning I went to the NHS website, but I realized that there is not a lot of information there. In addition, there is no information about cases of these problems and no cited statistics at all.” (Polish mother)</p>	No downgrading necessary	High

Studies	Study design	Theme	Illustrative quotes (where available)	Cerqual explanation	Confidence
		<p>provided by the media, specifically around the MMR vaccine.</p> <p>*Polish and Romanian immigrants living in the UK (average time living in the UK was 11 years for Polish people and 9 years for Romanians)</p>	<p>“I received very little information here about long-term complications. Short-term side effects yes, like about how that fever can happen... However, nobody talks about complications in two or three years.” (Polish mother)</p>		
1 (Jackson 2016)	Semi-structured interviews	Schools can also be a useful source of information for Traveller parents and girls. Some Traveller parents and girls reported receiving information about vaccinations from schools in written format and in presentations in school assemblies. This was generally well received.	None	Downgraded once for adequacy	Moderate
3 (Jackson 2016, McCoy 2019, Ruijs 2012a)	Semi-structured interviews	The influence of family and community was felt by both Travellers and evangelical Protestant parents but to different degrees. These influences were still strong in Traveller communities but there was a shift to health professionals as the primary source of information. In contrast some Orthodox Protestant parents reported discussing vaccinations with family and friends, but others did not do so deliberately because they feel pressured to make the same decision as their non-vaccinating community. Protestant home schooling parents also experienced pressure from family and friends not to vaccinate their children.	<p>“Because if there’s the mumps or the measles, that’s the talk of the day at school and they ask out of interest if we have already had them. I don’t tell them that we’ve been vaccinated then but simply say nothing. I just walk a bit further up if I notice that they’re talking about it.” (Homeschooling parent)</p>	No downgrading necessary	High
3 (Gorman 2019, Jackson 2016, McCoy 2019)	Semi-structured interviews and focus groups	Parents reported looking at information in the media, social media and on the internet as part of their decision-making process, but this information was often conflicting and could be confusing. Polish and Romanian immigrant parents were aware of antivaccination groups and celebrities in their home countries promoting not vaccinating their children. Travellers reported coming across biased, scaremongering information in the media	<p>“In Poland, it has become more fashionable not to vaccinate, with the publicity of celebrities talking about not vaccinating...” (Polish mother)</p> <p>“I began to research them and, of course, you know you could read a blog about anything. You can</p>	No downgrading necessary	High

Studies	Study design	Theme	Illustrative quotes (where available)	Cerqual explanation	Confidence
		(especially about MMR) and social media as well as accurate and balanced information. In contrast, some Travellers had no access to the internet or had to rely on their children to use it for them. Evangelical Protestant homeschooling parents reported feeling empowered by the research they did online, but this could also lead to confusion with the amount of conflicting information.	read blogs for vaccines, and you can read blogs against vaccines. And I was like, 'oh my word, how do you even know what's true?' I mean let's talk about fake news. There's so much of that with any topic, and it's not necessarily fake, but it's one slant and another slant." (Homeschooling parent)		
1 (McCoy 2018)	Semi-structured interviews	Parental autonomy in the decision-making process was very important for evangelical Protestant homeschooling parents and they were empowered by their research. In some cases, they reported changing doctors if their decisions were challenged and they did not feel respected.	None	Downgraded once for adequacy	Moderate
2 (Deml 2019, Mittring-Junghans 2021)	Semi-structured interviews	Complementary and alternative medicine providers mostly thought that decisions on vaccinations should be made on an individual-basis rather than one recommendation for all and that some diseases are an important part of life. They preferred to discuss vaccination with parents, basing their discussion on both evidence and their own opinions (whether positive or negative), rather than providing a strong stance either before or against vaccination. Those who were against vaccination did not think they should be the primary person for consultations about vaccination.	"A human being can always get sick. Childhood diseases are only a part of it." "Vaccinations (...) are no insurance against disease. You should truly think carefully about what to vaccinate against and when."—	Downgraded once for adequacy	Moderate
Religious and cultural differences					
Language and literacy barriers					
4 (Bell 2019*, Bell 2020a*, Gorman	Semi-structured interviews	Language barriers can make communication between healthcare workers and parents who are from abroad difficult and this is compounded by the lack of availability of translators at consultations and	"I'm just learning English, right? I'm not sure, I do not know medical terms...so I call the doctor, and the receptionist said	No downgrading necessary	High

Studies	Study design	Theme	Illustrative quotes (where available)	Cerqual explanation	Confidence
2019, Jackson 2016)	and focus groups	<p>information in languages other than English. Polish and Romanian immigrant parents* report difficulties in understanding medical terminology and would like information to be provided in their own language. Healthcare providers report that interpreting services are difficult to organise, can be impersonal and increase the time needed for a consultation, but agree that face to face communication using interpreters is preferable for certain groups who have low levels of literacy (such as Roma Romanian Traveller communities) and have a culture of oral communication. There can be additional difficulties with obtaining translation services for Romanian Roma as they do not necessarily speak Romanian proficiently or at all and the use of Romanian translators may be culturally inappropriate. Romanian Roma also speak a number of dialects and it may be hard to locate a suitable translator.</p> <p>Language difficulties can make it hard to obtain accurate vaccination histories for immigrants*.</p> <p>*Polish and Romanian immigrants living in the UK (average time living in the UK was 11 years for Polish people and 9 years for Romanians in one study, 3 years or less in another study)</p>	to me: 'No, we cannot accept you today with your child, because we do not have translators available'." (Polish mother)		
2 (Bell 2020a*, Jackson 2016)	Semi-structured interviews	Low levels of literacy act as a barrier preventing some Travellers and immigrants* from understanding written information about vaccines and appointment letters. Romanian Roma and some Romanians have low literacy levels and may struggle to read information even when it is translated into their native language. Low levels of literacy may also be found in older members of other Traveller communities, which may include the	"But I think the perception is, often, with public health commissioners . . . especially sort of with Roma gypsies, that you can just translate materials into that language and I think it's not always acknowledged that perhaps it is more [an] oral culture and especially when you've got	Downgraded once for adequacy	Moderate

Studies	Study design	Theme	Illustrative quotes (where available)	Cerqual explanation	Confidence
		<p>current generation of parents. As a result, Travellers and providers agree that simple written information with pictures may prove useful but verbal information is preferable.</p> <p>*Romanian immigrants living in the UK for 3 years or less</p>	<p>communities, if there's not you know, low levels of literacy. (Immunisation manager)</p> <p>"Half of these women can't read or write and they're embarrassed, and not to talk big talk with the big words, to make it basic so as a Traveller woman can understand what they're on about." (Traveller, adolescent girl)</p>		
UK versus Poland and Romania's schedules and processes					
3 (Bell 2019*, Gorman 2019, Jackson 2016)	Semi-structured interviews and focus groups	<p>Some immigrant parents* are aware that there is an emphasis on informed consent and choice concerning vaccination in the UK. while others think they are mandatory. Polish parents were aware of differences in the rules around consent in the UK compared to Poland where vaccination was mandatory. In contrast, some Roma Travellers were unaware that vaccinations were not mandatory and believed that their children would not be allowed to attend school unless they had all their childhood vaccinations. The requirement for written consent in schools was seen by some healthcare providers as off putting for parents who may not be used to a formal approach to consent in Romania.</p> <p>*Polish and Romanian immigrants living in the UK (average time living in the UK was 11 years for Polish people and 9 years for Romanians)</p>	<p>"Well...I have not heard about the trend for non-vaccinating, because in Poland, as far as I know, they can legally take your child if you do not vaccinate. Or you can go to prison ... So there is a much better system here than in Poland, really." (Polish mother)</p>	No downgrading necessary	High
2 (Bell 2019*, Gorman 2019)	Semi-structured interviews and focus groups	<p>Polish and Romanian parents* were aware of differences between the UK schedules and those of their home countries but while this could lead to uncertainties it was not necessarily viewed as a problem by parents. Some followed the UK system as their children were born and living in the UK,</p>	<p>"There are different vaccination calendars, but we vaccinated all our children in the UK... I did not think twice about there being a Polish calendar." (Polish mother)</p>	Downgraded once for adequacy	Moderate

Studies	Study design	Theme	Illustrative quotes (where available)	Cerqual explanation	Confidence
		<p>while others report consulting their own doctor in Poland or continuing to use their native health services particularly if they were visiting just after birth. Healthcare providers noted that this could cause difficulties if the children returned to the UK with undocumented vaccine histories.</p> <p>*Polish and Romanian immigrants living in the UK (average time living in the UK was 11 years for Polish people and 9 years for Romanians)</p>			
3 (Bell 2019*, Gorman 2019, Jackson 2016)	Semi-structured interviews and focus groups	<p>The number of vaccinations, new combination vaccines and lack of an ability to customise the schedule by accessing vaccine individually were raised as s by Polish and Romanian parents*. However, there was a common belief that vaccines in the UK were superior to those in Poland and had fewer side effects and many parents appreciated that vaccines were free in the UK as they could be expensive elsewhere.</p> <p>*Polish and Romanian immigrants living in the UK (average time living in the UK was 11 years for Polish people and 9 years for Romanians)</p>	<p>“In my opinion, the children get colossal doses now, right? Now, there are seven vaccines in one, well, people, well, why the hell...We were all vaccinated, but no one got the large doses that the children get now. And it’s no surprise that later on a child who has weak immunity gets ill, when they get such a dose at once...” (Polish mother)</p> <p>“There is no choice here, it is the first class stuff, and in Poland there is the second quality grade, which is free...from what I’ve heard that the vaccines in Poland are worse - kind of dirty, polluted. That’s why more complications happen in Poland than here.” (Polish mother)</p>	No downgrading necessary	High
2 (Bell 2019*, Gorman 2019)	Semi-structured interviews and focus groups	<p>Levels of trust in the UK system were varied with many Polish and Romanian immigrant parents* being sceptical about the quality of the UK system and in particular the medical staff. There was a lack of trust in nurses giving vaccinations because these</p>	<p>"I have more confidence in the doctor in Poland. Doctors in Poland are trained doctors. They study medicine for several years....Here, I have the</p>	Downgraded once for adequacy	Moderate

Studies	Study design	Theme	Illustrative quotes (where available)	Cerqual explanation	Confidence
		<p>are carried out by doctors in Poland while some parents were concerned that GPs were generalists, while vaccination was considered a specialist service. Parents also viewed the expertise of health visitors negatively comparing them to paediatricians at home.</p> <p>Lack of trust in primary healthcare was a driving factor for people opting to access emergency services in England and for seeking care in Poland and Romania or private Polish doctors in England. In addition, parents were unhappy about a lack of continuity of care preferring to have a single member of staff who has a relationship with them and their child. Health care providers thought that it was important to explain the UK system to parents to improve trust.</p> <p>*Polish and Romanian immigrants living in the UK (average time living in the UK was 11 years for Polish people and 9 years for Romanians)</p>	<p>impression that a doctor...they have everything on the computer. He's typing in a computer that you come, have a cold, a fever, and [it] jumps out [from the computer], what he has to give me. (Polish mother)</p> <p>'Every time when I go to the GP it's a different person... these vaccinations are given by nurses, it's so very impersonal and if there's some reaction then you go to the hospital, right? ...at the GP they will not notice something is happening with the child...it seems to me that there should be a doctor, just one person who would be connected with the child.' (Polish or Romanian mother)</p>		
Religious beliefs- Orthodox Protestants					
1 (Ruijs 2012a)	Semi-structured interviews	<p>Family tradition can be a barrier or a facilitator to vaccination in Orthodox Protestant families, but some families break with tradition and make their own decisions.</p> <p>Some Orthodox Protestant parents automatically vaccinated their children because it was the tradition in their family, while others followed family tradition by not vaccinating their children. Other Orthodox Protestant parents broke with family tradition and made decisions to vaccinate or not vaccinate mainly based on religious arguments. The Orthodox Protestant parents mainly made decisions regarding vaccinations together, although</p>	<p>"Yes, did we really think about it? We didn't really consciously think about it because both of us have also been vaccinated. You just continue on, really ... I wouldn't know of anyone in my family who hasn't done it." (Parent from a traditionally vaccinating family)</p>	Downgraded once for adequacy	Moderate

Studies	Study design	Theme	Illustrative quotes (where available)	Cerqual explanation	Confidence
		the man is the head of the family and main decision maker.			
1(Ruijs 2012a)	Semi-structured interviews	<p>Religion can be a barrier or facilitator to vaccination in Orthodox Protestant communities, however traditionally vaccinating parents do not necessarily link their decision to God.</p> <p>Traditionally non- vaccinating parents believed in divine intervention and that they could not interfere with the will of God, but were willing to accept vaccinations in some cases such as for tetanus post-exposure prophylaxis or in the case of a polio epidemic where they considered the vaccinations to be more curative than preventative measures. Deliberately non-vaccinating parents held similar religious views.</p> <p>Deliberately vaccinating parents used predominantly religious arguments to justify their decision and considered vaccinations to be a gift from God. In contrast, traditionally vaccinating parents used medical arguments to justify their decisions.</p>	<p>"I cannot say that I know someone who does not do it. I have the idea that by us in the church, certainly here, that it's simply accepted. I also cannot think up any arguments for why it should not be allowed." Traditionally vaccinating parent</p> <p>"I know for sure that God cares for me. And that the things He sends me, that may also be disease, that He will help me to cope with it." (Deliberately non-vaccinating parent)</p>	Downgraded once for adequacy	Moderate
1(Ruijs 2012a)	Semi-structured interviews	<p>Both vaccinating parents and non-vaccinating parents suffered from guilt over their choices and in some cases feel regret which could affect their decisions to vaccinate their children in the future.</p> <p>Non-vaccinating parents worried about disease epidemics (especially polio) while first generation deliberately vaccinating parents feared the adverse effects of vaccination and these could be taken as a sign from God that they have made the wrong decision.</p>	<p>"[In case of a polio epidemic] I would really find it horrible if one of my children or my husband would get it, I really would. I cannot bear to think of it. And I count on being spared of this. I would try to explain later to my child why I didn't do it, purely on the basis of faith." (Deliberately non-vaccinating parent)</p>	Downgraded once for adequacy	Moderate

Studies	Study design	Theme	Illustrative quotes (where available)	Cerqual explanation	Confidence
			“Imagine that the decision is wrong. Just a bit of fear, because you made a decision on rational grounds but more than just the rational may be at play. You read, of course, about the possible effects and, certainly when I first had her vaccinated, I found it scary. You break with something you grew up with.” (Deliberately vaccinating parent)		
1(Ruijs 2012b)	Semi-structured interviews	<p>Providing information is usually ineffective in persuading reluctant Orthodox Protestant parents to accept vaccination.</p> <p>All healthcare providers responded to religious objections from Orthodox Protestant parents to vaccination by providing information about the severity of the diseases concerned, benefits and side effects of vaccinations and how the vaccines work, however, this was rarely a successful approach and led to feelings of frustration amongst the staff.</p>	<p>“They think measles is not that serious, it’s just a childhood disease. But measles can be really serious and I try to explain that, that it may have serious complications.” (Doctor who works with Orthodox Protestant families)</p> <p>“They’re not impressed by mumps. And whooping cough? I explain that infants may even die of lack of breath, that’s the risk if they’re not vaccinated. But that doesn’t result in enough fear to make them start vaccination, even not in the presence of whooping cough at school. They just wait and see.” (Nurse who works with Orthodox Protestant families)</p>	Downgraded once for adequacy	Moderate
1(Ruijs 2012b)	Semi-structured interviews	Providers try to engage Orthodox Protestant parents in discussions about vaccinations and a knowledge of Orthodox Protestantism or being Protestant themselves is beneficial.	““What should I do?” That’s difficult, I don’t answer such a question. They have to decide themselves. I give them some material, on which they can base	Downgraded once for adequacy	Moderate

Studies	Study design	Theme	Illustrative quotes (where available)	Cerqual explanation	Confidence
		<p>Providers who had knowledge about orthodox Protestantism or were Protestant themselves (although not necessarily Orthodox) were able to relate the parents more easily, could engage them in discussions about the religious and medical issues and support their decision making. Although they were clear that the parents had to make the final decision themselves.</p> <p>Discussions between healthcare providers and parents were dependent on the willingness of the parents to be engaged.</p> <p>The staff reported only discussing vaccinations for the first-born child. After this, they confirmed with the parents that the decision was the same for subsequent children: They were worried that the parents would stop attending the clinics if they were repeatedly challenged about their decisions.</p>	<p>their choice. I show them the pros and cons, medically but also religiously. In the Bible there are arguments for and against vaccination, but it's up to them to weigh these arguments." (GP who works with Orthodox Protestant families)</p>		
1(Ruijs 2012b)	Semi-structured interviews	<p>Adoption of an authoritarian position is helpful in obtaining permission to vaccinate from Orthodox Protestant parents when tetanus post-exposure prophylaxis is needed.</p> <p>When (and only when) tetanus post-exposure prophylaxis is concerned, healthcare providers adopt an authoritarian stance and tell parents what to do in the best interest of the child because they have a serious risk of disease at that point in time.</p>	<p>"Tetanus is something that you would not wish upon your worst enemy. If your kid should come down with this, you would never forgive yourself. So I say: "The wound will be cleaned and now a shot because you've never been vaccinated and you've got dirt in your system" and that is usually swallowed more or less without a problem." (GP who works with Orthodox Protestant families)</p>	Downgraded once for adequacy	Moderate
Traveller specific issues (or only raised by Travellers in this section)					
1 (Jackson 2016)	Semi-structured interviews	<p>Healthcare providers who work with Travellers all noted the importance of working in partnership with colleagues within their own organisation and sector as well as with those working in other sectors. This</p>	<p>"A lot of the work is local and it's all about local relationships" Immunisation manager.</p>	Downgraded once for adequacy	Moderate

Studies	Study design	Theme	Illustrative quotes (where available)	Cerqual explanation	Confidence
		collaboration could take the form of sharing information on Travellers between providers, encouraging families to access services at other contacts and working with other staff to ensure that appropriate care is available and maintained over time building trust with the Travellers.			
1 (Jackson 2016)	Semi-structured interviews	The lack of accurate, consistent methods of recording Traveller identity in medical records makes it hard to measure vaccine uptake in these communities and target funding and services appropriately. Some staff also worry that recording this information could be seen to be discriminatory.	“Have to be very careful about being discriminatory, surely if you identified a certain group of the population.” immunisation co-ordinator.	Downgraded once for adequacy	Moderate
1 (Jackson 2016)	Semi-structured interviews	Healthcare providers reported a lack of funding to carry out work with Travellers to promote vaccine uptake. This lack of funding affects work with the Roma communities in particular in some areas and may be due to commissioners and senior managers failing to understand the complex nature of working with these communities. Rather than being proactive in trying to address inequalities and promote vaccine uptake routinely, vaccination services are now seen to be more reactive with catch up campaigns in the case of outbreaks. Service providers also raised concerns that there was a lack of fund for training staff carrying out immunisations and schools may be prevented from taking part in immunisation campaigns by the lack of money to provide consent forms in other languages.	None	Downgraded once for adequacy	Moderate
1 (Jackson 2016)	Semi-structured interviews	NHS reforms have led to system changes that make it hard for healthcare providers to provide vaccinations because teams that are involved in commissioning work do not necessarily have any involvement in its delivery and therefore things like training of staff may be overlooked.	None	Downgraded once for adequacy	Moderate

Studies	Study design	Theme	Illustrative quotes (where available)	Cerqual explanation	Confidence
1 (Jackson 2016)	Semi-structured interviews	<p>Some local and national strategies exist to support work with Travellers and in particular the Roma community (e.g. ROMA-Net, the Romani Local Action Plan) to increase vaccine uptake. However, strategies do not necessarily cover housed Roma, healthcare workers may be unaware of these initiatives and they no longer available in some areas.</p> <p>Local Traveller health or immunisation initiatives have included programmes developed to raise awareness of, and increase access to, health services and uptake of immunisations as well as specialist posts to work with Travellers. Some approaches were more effective than others with healthcare providers reporting having doors slammed in their faces when trying to promote the MMR vaccination in some places. However, specialist health visitor roles were unanimously recognised as beneficial for Travellers because these staff were able to develop long-term trustful relationships with Travellers, supporting them to access health and welfare information and services, including the Healthy Child Programme, and assessing vulnerable families to see if they need an enhanced service. They also used to give vaccinations in people's home. These posts are no longer funded in all areas.</p>	None	Downgraded once for adequacy	Moderate
1 (Jackson 2016)	Semi-structured interviews	Targeting Traveller mothers could help increase vaccine uptake because they are viewed as having responsibility for their children and are often the main decision makers regarding vaccinations.	They described immunisation decision-making as 'more a woman's thing' (Gypsy, Father)	Downgraded once for adequacy	Moderate
1 (Jackson 2016)	Semi-structured interviews	A lack of cultural understanding and experience of interacting with Travellers can lead to discrimination by healthcare providers who may resent chasing up	"I have been in meetings where particular sort of practice managers seem to think that, you	Downgraded once for adequacy	Moderate

Studies	Study design	Theme	Illustrative quotes (where available)	Cerqual explanation	Confidence
		people for vaccinations. Many healthcare providers were concerned about this problem. However, some stereotyping of the Roma community in particular was seen as helpful in identifying them and offering them suitable support to access healthcare. Staff who worked with Travellers more routinely were considered more understanding and less judgemental.	<p>know, that people are irresponsible and don't care about their children and don't make the effort and are lazy and that sort of thing. So I have come across those kind of attitudes." (Former immunisation manager)</p> <p>"I think it is for good reasons because they see, as they should, legally, the Roma community as this protected characteristics element and they obviously want to be very vigilant to any risk of discrimination, that's why they say . . . we have to provide quite a lot for this community." (Manager of local authority community centre)</p>		
1 (Jackson 2016)	Semi-structured interviews	Continuity of care helps build positive relationships between Travellers and healthcare providers that can be influential in decision making concerning vaccinations. Many Travellers report having positive relationships based on trust and respect that often developed by attending the same GP practice and seeing the same health professionals over a prolonged period of time. However, there were a few accounts of negative encounters with health professionals which had damaged relationships when for example staff did not take time to discuss vaccinations or were judgemental about their decisions. Healthcare providers also noted the importance of continuity of care in building relationships, but that this could be time consuming.	<p>"It's the same practice so we know the Doctors and I really wouldn't want to move myself or my kids from them because they know us as if you're equal, if you know what I mean. [I'm] not just a patient, they know our history and get on with them." (Mother)</p> <p>"I think having a relationship in a GP practice that's an ongoing thing so the same GP practice has been there for people and that's the shift being settled, that will make a difference. Because you've got that point of reference, you've got that person to come back to."</p>	Downgraded once for adequacy	Moderate

Studies	Study design	Theme	Illustrative quotes (where available)	Cerqual explanation	Confidence
1 (Jackson 2016)	Semi-structured interviews	The travelling lifestyle can make it hard to build relationships with Travellers and encourage vaccinations, but the amount of travelling varies across Traveller communities. English Gypsy and Scottish Showpeople are more settled and travel for shorter times so they don't lose their spaces on site. This allows them to access GP services and book appointments around their travelling commitments. Travelling is seen as being more disruptive in other communities such as the Roma Travellers with staff commenting that they spend time build relationships and then the families move on.	<p>(Practice nurse)</p> <p>" If you was offered a jag and you wasn't here and you was out travelling, you would probably make another appointment wouldn't you. You wouldn't miss it. If you wanted it [immunisation] you wouldn't miss it." (Scottish Showperson, Mother)</p> <p>"I think there's a frustration at times that we get so far into a piece of work with a family and then they take off." (School nurse referring to Roma Travellers)</p>	Downgraded once for adequacy	Moderate

1 See [Appendix F](#) for full GRADE-CERQual tables

1 **1.1.7 Economic evidence**

2 An economic literature review was not conducted for this review question, as it was
3 not expected to provide value alongside qualitative evidence.

4 **1.1.8 Economic model**

5 No economic modelling was undertaken for this review question.

6 **1.1.9 The committee's discussion and interpretation of the evidence**

7 **1.1.9.1. The outcomes that matter most**

8 The opinions of individuals being targeted for vaccination or their parents/carers
9 (where relevant) were considered to be very important as they make the final
10 decisions about whether to be vaccinated or vaccinate a child or other dependent.
11 The committee noted that where young people are judged to be Gillick competent
12 their opinions and ability to consent to vaccination could be more important than
13 those of their parents, but they agreed that in practice providers are reluctant to go
14 against what the parent has decided. Where the views of the individual, their parents
15 or carers (where relevant) about barriers or facilitators differed from healthcare staff
16 the views of the individual or parent/carer were considered to be more important if
17 they were related to issues affecting these people directly. However, where findings
18 related to systems or processes that were areas of staff expertise the views of the
19 healthcare staff were prioritised but the views of individuals being targeted for
20 vaccination remained important.

21 The evidence presented highlighted the importance of multiple barriers to vaccination
22 and provided insight into some potential facilitators, however there was far less
23 information on these in the findings. Some of the most important findings were
24 shared across the reviews. These included concerns about side effects and
25 effectiveness; difficulties to do with decision making linked to a lack of reliable
26 information and lack of time to discuss vaccinations with providers; access issues;
27 and issues to do with implementation of vaccination programmes including a lack of
28 provider training. Other important findings were review specific. For example,
29 concerns about sexual health, promiscuity and a lack of understanding of the link
30 between cervical cancer and HPV were specific to the 11-18 year old review.
31 Findings concerning consent were also particularly important for this age group
32 because young people who are Gillick competent can consent to be vaccinated
33 without parental agreement. For the 65 and over review, the committee agreed that
34 the lack of awareness of vaccinations on the part of people in this age group was
35 important in addition to the findings listed above. The other key findings related to
36 barriers and facilitators experienced by Travellers, Gypsy and Roma, immigrants and
37 other groups (such as people with religious beliefs) who may be subject to
38 inequalities.

39 **1.1.9.2 The quality of the evidence**

40 The evidence base was comprised of a large number of qualitative studies (mainly
41 focus groups or interviews) with varying methodological quality, but the majority were
42 judged to have low levels of methodological concern. Reasons for downgrading
43 included a lack of information about the aim of the study, selection of participants or
44 how data were collected or analysed. In other cases, parents of girls were recruited
45 to investigate HPV vaccination of boys (Gottval 2017) and another study (Wood

1 2011) looking at issues around assessing Gillick competence recruited a variety of
2 people including those not directly involved in the assessments. In addition, some of
3 the studies included in the pregnancy analyses were judged to have moderate
4 methodological concerns because they examined barriers and facilitators to vaccine
5 uptake during pregnancy but recruited women after they had given birth. These
6 women had a higher risk of recall bias than pregnant women and the level of risk of
7 bias would likely increase with time since birth. The committee agreed that including
8 women shortly after birth was not problematic (O'Shea 2018 recruited women within
9 1 month of delivery), but that Gauld 2016 (women gave birth in last 12 months) and
10 Winslade 2017 (unclear how long since the women gave birth but could be up to 3
11 years) should be downgraded once.

12 The studies were mainly highly relevant with reasons for downgrading including
13 studies with a mixed population of participants who were not all of interest but where
14 there was difficulty in extracting the views separately; studies where views about
15 other vaccinations such as flu were also included, and data could not be extracted
16 separately. The other reason for downgrading for relevance related to the age of
17 participants in the section looking at vaccination of people aged 65 years and older.
18 Since there was a shortage of studies looking at the views of these people about
19 shingles and pneumococcal vaccines, the review included studies with people aged
20 50 years and over. The committee agreed that the views of people aged 60 years
21 and over, were more likely to be similar to the views of people aged 65 years and
22 over and so no downgrading for relevance was applied to studies with this
23 population. In contrast, the data from studies recruiting people aged 50 year and over
24 was downgraded once for relevance as this group was more likely to be different to
25 people aged 65 year and over, with more people still in work and in better health.
26 However, the committee noted that this is not completely correlated with age and that
27 there can also be big differences in health and activity levels between 65 and 70 year
28 olds that are both included within the target age groups for the routine vaccines for
29 the elderly in this review.

30 The committee agreed that papers which examined people's views about HPV
31 vaccination of boys before the vaccination was included on the routine schedule for
32 that country could be included as a protocol deviation (despite the protocol requiring
33 the vaccines to be on the routine schedule at the time of the study). This was
34 because only one study for HPV vaccination in boys met the routine schedule
35 requirements for the protocol, and this was an analysis of open-ended questions from
36 a questionnaire which was lacking in detail.

37 The confidence in the findings ranged from high to very low with downgrading for
38 adequacy mainly. The high confidence findings were generally supported by multiple
39 studies or several studies including a particularly detailed or rich study for that topic
40 area (for example, Jackson 2016 for the views of Travellers), while moderate or lower
41 confidence studies were supported by fewer and/ or less rich studies.

42 The committee discussed a number of key issues that applied in general to the
43 findings across age groups/ life stages or to particular stages:

- 44 1. The committee agreed that the findings presented needed to be put in the
45 context of vaccination uptake in the UK as they painted a very negative view
46 about childhood vaccination and routine vaccination in general across the
47 population. They agreed that this could be misleading because the qualitative
48 findings by their nature are unable to give an idea of the numbers of people
49 with these thoughts and concerns. However, they agreed that the use of
50 qualitative data enabled investigation of what people are concerned about
51 and why in more detail than a survey could.

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2. The committee were aware of a Public Health England survey on changing attitudes to childhood immunisation in English parents (Campbell 2017) which found that that confidence in and acceptance of the vaccination programme was high, with 90% reporting vaccination their children automatically and only 2% of parents reporting refusing vaccinations. This also reported high levels of trust in the NHS and health professionals (90%). The committee emphasised that the survey findings reflected their own experiences of vaccine uptake. Specifically, that the vast majority of parents/ people accept vaccination for their children/ themselves, while a smaller group have questions but go onto accept vaccination after discussion with a healthcare provider if their questions are answered satisfactorily. An even smaller group of parents/ people are not vaccinated but some of these may be willing to be vaccinated if barriers around access, such as clinic locations, clinic times, transport issues, or consent, for example, are addressed, while the remaining people are very opposed to vaccination. The committee agreed that it is important to engage with the people/ parents who have questions and remove barriers to vaccination for those people who are or may be willing to be vaccinated/ have their children vaccinated as this is likely to result in a greater increase in vaccination rates than solely targeting the small group of people who are very resistant to vaccinations.
3. The committee noted that a lot of the findings presented were based on studies that were relatively old with the majority of the studies in the 0-5 age group being published 10 or more years ago and conducted out even earlier. They also noted that many of the HPV studies were carried out just after the vaccine had been introduced and that findings for all age group/ life stages may not be representative of the current views of adults/ parents/staff/ young people because approaches to gaining consent, providing information and processes had changed over time. In particular there are often additional safety fears that accompany the introduction of a new vaccine that resolve over time. For HPV vaccination of girls 80.1% were fully vaccinated in 2008/9 and this increased to 83.9% in 2018/19. (The 2019/20 vaccination statistics have not been used because this programme was affected by the COVID 19 pandemic.) Where possible in their discussion of the evidence they highlighted where they thought findings were no longer/less applicable to the current situation in the UK.
4. The review protocol included several subgroups of particular interest including Travellers/gypsies, and migrants and asylum seekers. Several studies were identified looking at Travellers/gypsies and healthcare staff working with them. The committee noted that it was important to be aware that Travellers are not a single homogenous group but rather include groups such as Romanian/Slovakian Roma, English Gypsies, Irish Travellers and Scottish Showpeople. These groups have some barriers to vaccine uptake in common, but other barriers are specific to certain groups and may overlap with issues faced by immigrants in the case of Roma. The studies do not always reflect these differences clearly and have the drawback of not including Travellers staying at the roadside or on unregistered sites who are likely to be the hardest to reach. Where possible findings for Travellers state which Traveller groups they apply to, but this is not always made clear in the studies themselves and some findings may apply to multiple Traveller groups.
5. A number of studies looked at the barriers affecting immigrants/ethnic minorities, but these were not a homogenous group either and the studies

1 recruited migrants from countries such as India, Bangladesh, Pakistan, China
2 and Bhutan or from areas such as Africa (Nigeria, Somalia, Kenya, Zimbabwe
3 and Zambia) and Asia. The committee noted that the studies do not always
4 clearly specify where their participants originate from or whether they are very
5 recent, well-established, or the children of immigrants but born in the UK
6 themselves making it harder to separate barriers related to nationality from
7 ethnicity or cultural differences. [Where possible the findings state where the
8 parents are from (nationality) or their ethnicity if they have been recruited on
9 this basis instead.]

10
11 6. The committee noted that there was a lack or shortage of evidence for the
12 following subgroups listed in the protocol: care home residents or people in
13 long-term care; children excluded from mainstream education (including pupil
14 referral units) and non-attenders (including home schooled children), looked
15 after children and children in young offenders' institutes. There was also
16 limited evidence of barriers and facilitators at the health system level (for
17 example, clinical commissioning group [CCG], local authority, regional and
18 national level) compared to the information available for the service provider
19 level (for example, GP practices, practitioners) and individual level (for
20 example, patients or service users). Finally, there was also limited evidence
21 from catch up campaigns.

22
23 7. Findings for all life stages talked about balancing the risks of disease and
24 from vaccination as part of the decision-making process, but none discussed
25 how people would like risk to be presented to facilitate this process. However,
26 this topic is also covered in the [NICE guideline on Shared Decision Making](#).

27 **1.1.9.3 Barriers and facilitators for routine vaccinations**

28 The committee noted that the findings were generally negative, focusing on barriers
29 to uptake for each age group/life stage, with a lack of facilitators. This was linked to
30 the design of the included studies which often had a focus on the barriers to uptake
31 built into the study and the interview or focus group questions. The committee also
32 noted that barriers may be perceived or actual barriers. For example, a person may
33 think that access is a problem because clinics are not available at convenient
34 times/locations but if this is not the case in their area then the barrier is one of
35 perception rather than an actual physical barrier.

36 Some of the barriers could be theoretically converted into facilitators reasonably
37 easily (for example, if not having time for discussions is a barrier, then having longer
38 consultations could be a facilitator). However, the committee noted that the findings
39 from this review needed to be related to increased uptake as determined by the
40 quantitative evidence reviews to provide support for recommendations. Therefore,
41 the committee did not make recommendations from this review alone at their first
42 encounter with the qualitative evidence, but rather looked at these findings again in
43 relation to the quantitative evidence before making recommendations (please refer to
44 evidence reviews C-J for the discussions of the quantitative and qualitative evidence,
45 how a mixed methods analysis was used to try to bring the 2 types of evidence
46 together and the resulting recommendations). Where there was an absence of
47 relevant quantitative evidence, for example for groups with potential equality issues
48 such as Travellers, Gypsy and Roma, the committee used their expertise together
49 with the qualitative evidence to make recommendations.

1 ***Barriers and facilitators for vaccinations for 0-5 year olds***

2 The committee discussed the findings and agreed with them in general (taking into
3 account the points made above in the quality of the evidence section). They noted
4 that although a lot of the 0-5 group papers examined barriers to MMR vaccination
5 specifically others looked at childhood vaccinations in general so the focus on a
6 single vaccination is less pronounced for this age group than for the 11-18 age
7 group. They agreed that as a result, that a lot of the findings were generalisable
8 unless they addressed MMR specific barriers (such as misinformation linking MMR to
9 autism based on the Wakefield study).

10 The committee agreed that several expected findings were missing from the
11 evidence review. In their experience large family size is linked to a reduction in
12 vaccine uptake (Reading 2004, Walton 2017). In these families the older children
13 may be vaccinated but it becomes harder logistically to get the children to clinics for
14 vaccination as their numbers increase, leading to lower rates of vaccination in the
15 younger ones. This is seen in ultra- orthodox Jewish communities for example, where
16 families may have 10 or more children (Letley 2018). However, this barrier is not
17 confined to religious groups and can also be a problem in families with more than 2
18 children. The committee were also surprised that there was no discussion of social
19 media as a source of information in the 0-5 age group findings, which was probably
20 linked to the age of the studies. However, this was mentioned briefly by parents in
21 the findings spanning age groups and by midwives in the findings relating to pregnant
22 women. In the committee's experience (and supported by the PHE survey regarding
23 childhood vaccinations, Campbell 2017) social media is now an important source of
24 information and misinformation for parents and individuals.

25 There was limited evidence about the barriers and facilitators for a number of issues
26 including processes and implementing the vaccination programme for 0-5 years olds.
27 The committee agreed that there were provider level problems such as reduced
28 levels of contact with health visitors in the preschool period once babyhood has
29 passed and that health visitors were not able to administer vaccinations in all areas.
30 They also commented that in their experience there can be problems with the
31 management of vaccinations at the commissioning level and that these were not
32 reflected in this evidence base. In particular, the effects of rearrangements of the
33 NHS in 2013 that fragmented existing vaccination systems were not covered here but
34 have been included in the findings from studies spanning categories. The committee
35 also noted that there was an absence of evidence with regards to staffing levels at
36 general practices which could affect immunisation levels.

37 The committee agreed there was a lack of evidence about barriers and facilitators
38 linked to different types of schools. They noted that local authority state schools have
39 vaccination nurses and are more easily accessible than some academies, faith-
40 based schools and private schools. These schools have more autonomy with regards
41 to what they teach and whether they accept and promote vaccinations for their
42 pupils. In some areas, there are nurses who specialise in accessing different types of
43 schools, but the committee agreed that some regions do not have this service due to
44 differences in commissioning. In addition, there was a lack of information about
45 young people who are not attending school (such as those being home schooled- 1
46 paper in the findings spanning life stages, or who are excluded from school) and
47 partial attenders (which may be for health reasons) who miss information sessions
48 and vaccinations.

49 The committee were surprised by the absence of evidence on altruistic motives in the
50 findings for the 0-5 years of age group. For example, there were no findings about
51 parents taking herd immunity into account when deciding to vaccinate their child.

1 Instead, parental focus was very concerned with the risk of vaccination or disease to
2 their child as an individual. This was also the case with the 11-18s findings. One
3 study in the studies spanning ages category looked at the views of evangelical
4 Protestant home schooling parents (McCoy 2019) and reported a finding about
5 vaccinating their children to protect vulnerable children who could not be vaccinated
6 themselves for medical reasons. This was linked in the associated quote to being
7 personally acquainted with such children.

8 The committee commented on several unexpected findings or ones needing
9 additional explanation/ context. They noted that the finding that some Somali parents
10 believed there was quasi-mandatory vaccination in the UK and that a lack of
11 vaccination could prevent school and university attendance was interesting as in this
12 case the lack of understanding of the differences between Somalia and the UK acted
13 as a facilitator to increase vaccine uptake. However, the committee agreed that it is
14 important that such misunderstandings are corrected, and that people are able to
15 make informed decisions about vaccination. They also noted that this
16 misunderstanding is not confined to some Somali parents and is a more commonly
17 held misconception across cultural groups, for example some Polish and Romanian
18 immigrant parents reported this as well. Other findings for Somali were in favour of
19 vaccination, however, in the committee's experience this is no longer the case for all
20 Somali parents, particularly where MMR vaccination is concerned.

21 The committee commented that parents generally trust their GP and GPs are
22 supported by the practice nurse and health visitor. Therefore, the committee felt that
23 the finding about pressure making parents feel negative towards vaccination
24 probably concerns a small number of parents and does not represent the view of the
25 vast majority who vaccinate automatically. In support of this view, the PHE survey of
26 UK vaccine attitudes (Campbell 2017) reported high levels of trust in the NHS and
27 health professionals (90%).

28 Religious beliefs can be a barrier to vaccination or a facilitator depending on the
29 interpretation of the religion by the individual family and community. The committee
30 discussed the findings concerning Muslim and Jewish parents and noted that this
31 was likely to apply to other religious groups as well (a similar finding is presented for
32 Orthodox Protestants in the section on studies spanning categories). They were
33 aware that there are many different groups within the same religion (for example,
34 ultra-Orthodox and non- ultra Orthodox Jewish populations) and these may have
35 different views about vaccination and be subject to different barriers and facilitators.
36 Therefore, it is not possible to generalise the views from individual studies looking at
37 single religious communities to all communities within the same religion or across
38 religions. In addition, how individuals use their faith to make decisions about vaccines
39 may not reflect the predominant or official stance of that religion.

40 Two studies considered access to childhood vaccines during the COVID-19
41 pandemic, one reporting the views of parents and the other the views of GP staff.
42 Practice nurses reported how they had to phone parents to encourage them to attend
43 vaccination sessions, but despite this being time consuming they also reported
44 benefits as they had time to discuss any concerns that parents had about
45 vaccination. The committee thought that this was an important theme as, in their
46 experience, the time allocated to vaccination appointments can be relatively short
47 despite the number of tasks to complete during an appointment. This supported a
48 recommendation from the education and reminders review (see evidence review E)
49 that sufficient time should be provided to complete all the necessary steps in
50 vaccination appointments. This theme highlights the importance of allowing time for
51 discussions about vaccination within the appointment so that people can discuss any

1 questions or concerns they have before being making a decision about the
2 vaccination.

3 An additional theme from the evidence collected on routine vaccinations during the
4 COVID-19 pandemic was that parents were hesitant about vaccinating their children
5 because of a lack of information about what to expect about the new safety and
6 social distancing procedures at their GP practice. The committee thought that this
7 theme was also relevant to vaccinations prior to the pandemic, as people may be
8 unsure what to expect from their appointment. For parents this could include whether
9 both parents can attend the appointment or whether they can bring their other
10 children into the appointment. An additional point was therefore added to the
11 recommendation about what information a vaccine invitation should contain from the
12 education review (evidence review E). This stated that an invite should also include
13 information about what to expect at the appointment.

14 The committee also noted that in their experience from the COVID-19 vaccination
15 programme itself, there is a misconception that providers will share information with
16 the Home Office that could be used to help detain or deport undocumented
17 immigrants. They agreed that this barrier to uptake is likely to also apply to routine
18 childhood vaccinations and this is supported by the finding for vaccinations for 0-5
19 year olds that undocumented migrants can be afraid of visiting healthcare facilities.

20 ***Barriers and facilitators for vaccinations for 11-18 year olds***

21 The committee discussed the findings and agreed with them in general (taking into
22 account the points made above in the quality of the evidence section) and with the
23 caveats noted below. They noted that there was a limited amount of data about
24 vaccinations for the 11-18 age groups other than HPV and even where studies
25 covered other vaccines in addition to HPV their findings were often dominated by
26 HPV. This is potentially problematic because the HPV vaccination is aimed at
27 preventing a sexually transmitted infection and therefore has a specific set of issues
28 concerning uptake that are not generalisable to other vaccinations for the 11-18 age
29 group. It was also a relatively new vaccination at the time many of the studies were
30 carried out, which is associated with additional barriers to uptake (see below).
31 However, other findings concerning barriers and facilitators to implementation are
32 likely to be generalisable such as the logistics of the vaccination process itself (for
33 example, adolescent fear of needles and anxiety surrounding the injection process).
34 In addition, other findings such as those about wanting to have information from
35 reliable sources and concerns about safety are likely to be generalisable.

36 The committee also noted that since the majority of studies for 11-18 age group
37 focused on HPV, they were restricted to examining the views of adolescent girls
38 where young people were recruited because at the time the studies were carried out
39 HPV vaccination was only available to girls in most countries. The views of
40 adolescent boys are under-represented as a result. In addition, the quantitative
41 evidence about effective interventions to increase uptake was also limited to girls for
42 the same reason. HPV vaccination is now available for adolescent boys in the UK
43 and so the committee thought it was important that their views on HPV vaccination
44 are also considered in future research. As a result, they made a research
45 recommendation aimed at evaluating the effectiveness and acceptability of HPV
46 vaccination programmes for adolescent boys (see research recommendation 1 in
47 [Appendix K](#)). The committee also included transgender individuals who identify as
48 male because they were aware that these individuals may be at greater risk of being
49 unvaccinated.

1 Similar to the 0-5 age group, the findings for vaccinating 11-18 year olds included
2 generally positive view for parents, young people and staff in some studies, while
3 others mentioned negative views (in some case the same studies fall into both
4 groups). The committee thought this was important to place these findings in context
5 of vaccination rates in the UK, where 83.9% of Year 9 females completed the 2-dose
6 HPV vaccination course in 2018/19. Therefore, although the majority of people have
7 positive views or go on to develop positive views and accept vaccination, it is still
8 important to address the barriers raised by people with negative views or concerns
9 about vaccination to increase uptake further. The committee also commented that
10 the vaccination rate varies across ethnic groups. This was not evident from the
11 findings because this review did not include survey data.

12 The committee noted that at the time most of the studies were carried out HPV was a
13 new vaccination and there are specific barriers that are associated with this status
14 that hopefully cease to be relevant as the vaccine becomes more established. The
15 committee pointed out that evidence about HPV safety continues to accumulate and
16 in the longer term there will be information about its impact on levels of cervical
17 cancer. They also thought that many of the barriers about the lack of information
18 about safety and effectiveness, the lack of understanding about how HPV is
19 transmitted and linked to cervical cancer have been addressed by existing public
20 health interventions. In addition, changes in messaging have been made to attempt
21 to frame HPV vaccination as a means of protection from cancer, to normalise the
22 vaccine and draw attention away from the issues of sexuality. This approach can now
23 be supported by evidence showing that young women who are vaccinated do not
24 start having sex earlier (Brouwer 2019, Hansen 2014). The committee also noted that
25 a recent study in Sweden (Lei 2020) showed that quadrivalent HPV vaccination was
26 associated with a substantially reduced risk of invasive cervical cancer at the
27 population level, providing additional support for the effectiveness of HPV vaccination
28 in preventing cancer. However, it is unclear from the qualitative evidence in this
29 review whether these barriers have been addressed successfully because most of
30 the evidence dates from before the changes were made.

31 Another finding that the committee agreed is no longer relevant refers to school
32 nurses being in favour of extending the upper age to the early twenties for young
33 women who had not been vaccinated for HPV. The committee noted that recent
34 changes in commissioning of the vaccination meant that eligibility had been extended
35 to up to 25 years old in the UK in the last year.

36 The committee commented on the finding that some school nurses had reservations
37 about vaccinating their own children. They found this surprising because they had not
38 encountered any vaccine hesitant school nurses and agreed that the nurses should
39 be aware of the evidence supporting the vaccinations and would ideally not let any
40 personal opinions affect their professional judgement. However, they were aware that
41 healthcare practitioners had voiced reservations about other vaccinations in the past
42 (for example, MMR vaccination (Petrovic 2001)).

43 The committee noted that there was a lack of evidence regarding the barriers and
44 facilitators concerning HPV vaccination for people who are LGBT. However, the
45 committee agreed that the introduction of gender-neutral HPV vaccination meant that
46 a transgender adolescent would be offered the vaccination whatever gender they
47 identified with. In addition, they noted the absence of evidence that met the inclusion
48 criteria for this review concerning lesbians or male (adolescents) who have sex with
49 men (MSM). It was therefore it was unclear from the included evidence whether
50 lesbians realised that they can still catch HPV and whether MSM realised that HPV
51 vaccination would protect them from certain types of cancer as well. However, the
52 committee were aware of studies that did not meet the inclusion criteria for this

1 review (due to the age of the participants) that look at the views of MSM about HPV
2 vaccination (for example, Simatherai 2009 and Gerund 2016).

3 The committee discussed the logistics of vaccination in schools including those
4 around obtaining consent for vaccination from parents and adolescents. They agreed
5 with the finding that commonly school nurses are unwilling to go against a parent's
6 decision to not vaccinate even if the young person consents. They commented that
7 young people who lack parental consent may respond to perceived peer pressure on
8 vaccination day and request vaccination but there is usually insufficient time for
9 assessment of Gillick competence at that point. In addition, nurses may lack training
10 in assessing Gillick competence, do not feel confident in their ability to judge this and
11 are concerned about parents complaining so they are unlikely to accept consent from
12 a young person in the absence of parental consent. However, the committee agreed
13 that the absence of a signed consent form may not be linked to a lack of consent but
14 rather may be due to the way parents receive consent forms from schools. In their
15 experience, where paper consent forms have been replaced by electronic ones there
16 have been increased rates of consent. These also have the advantage that they can
17 be set up to record a lack of consent as well as consent and save a lot of time for
18 school nurses that was previously spent on processing paperwork and chasing up
19 non-responders. Finally, the committee noted that vaccine uptake declines with age
20 and agreed that the vaccinations should be offered as early as possible within the
21 possible range for each vaccine to enable catch up sessions to be carried while the
22 young people are still attending school and are therefore easier to reach. (See
23 evidence review J for more evidence concerning consent for school-based
24 vaccination and Gillick competence and how the committee's discussion resulted in
25 recommendations on these topics.)

26 The committee agreed that anxiety surrounding the vaccination process itself is an
27 important barrier for vaccination for some young people. They agreed that wearing
28 suitable clothing that makes it easier to access the area being injected and that
29 vaccinating girls and boys separately helps reduce embarrassment which can lead
30 some young people to refuse vaccination. They thought that this was common
31 practice now. The committee also agreed that the vaccination session can be
32 organised in such a way to reduce stress by for example, identifying particularly
33 anxious individuals who can be vaccinated separately with additional support, having
34 small groups waiting for vaccination rather than entire year groups and by
35 communicating appropriately with the young people that they feel some control over
36 the process. The committee were also aware of a [WHO manual on immunisation
37 stress related responses](#) that is aimed at helping managers and health professionals
38 and provides detailed suggestions about how to prevent, identify and respond to
39 stress-related responses following immunisation.

40 The committee agreed that a single, broad approach might not work for all groups
41 and that while simplifying consent processes, improving access and using catch up
42 sessions could increase uptake in many cases, in others a more targeted and
43 tailored approach may be necessary. This could take into account community
44 specific barriers to increase in uptake or more individual barriers that required a
45 different approach to the general population. For example, young people who aren't
46 attending school as they have been excluded or who are being home schooled need
47 a different setting for vaccination, while young people who have reduced attendance
48 (due to illness or another reason) may also need a tailored approach to ensure they
49 are vaccinated. In the case of religious parents, where religion was identified as both
50 a barrier and facilitator depending on the particular groups of people involved (similar
51 to the findings for vaccinating 0-5 year olds) the committee agreed that a tailored
52 approach could involve community leaders to help promote vaccination. The
53 committee made recommendations relating to tailoring funding to local needs in

1 evidence review G on infrastructure; and about providing access to services that
2 meet local needs in evidence review D on improving access. They also made a
3 research recommendation about using the World Health Organisation 'Tailoring
4 Immunisation Programmes' approach to designing interventions to increase uptake in
5 the UK in evidence review J. (See these reviews for more details.)

6 Immigrants who have problems with understanding English and would benefit from
7 literature in their native language, although the committee noted that free online
8 translation software such as [Google translate](#) can help with this and that electronic
9 consent forms are more easily translated online than paper ones. However,
10 translated written documents would not be sufficient for immigrants who are illiterate
11 and who need documents reading to them. Problems with literacy may also apply to
12 other people who are not immigrants such as Travellers. The committee made
13 recommendations about providing information, invitation and reminders in an
14 appropriate format and language as part of the review of education interventions (see
15 evidence review E for more details) and about recording language and literacy needs
16 alongside up to date contact information (see evidence review A for more details).

17 Some of the findings for immigrants appeared to contradict each other (see the
18 findings for 11-18 year olds) but this could be explained by the heterogeneity
19 amongst the immigrant groups between and even within studies. However, the lack
20 of detailed information about study participants and the variation in views between
21 immigrants makes it harder to use these findings to produce a tailored approach to
22 increase vaccination. For example, Mupandawana 2016 recruited parents from a
23 wide range of African countries and did not explore if there were differences between
24 them based on their country of origin.

25 An additional consideration was the use of catch-up campaigns for young people
26 who were not up to date with their routine vaccinations. One study evaluated the use
27 of a Meningitis ACWY vaccination (against meningococcal groups A, C, W and Y)
28 catch up campaign in London. Practices nurses identified issues with making young
29 people aware of the catch-up campaign. They also reported that they felt
30 unsupported once they had been given responsibility for the campaign as they felt
31 that other staff were less motivated to put time into catch-up Meningitis ACWY
32 vaccinations because it is not a targeted vaccine and so there were no additional
33 incentives for giving these vaccinations. This theme provided support for a
34 recommendation in the infrastructure review (see evidence review G) that highlights
35 the possibility of incentives for some vaccinations having unintended consequences
36 on other vaccinations. The committee also noted that this single study was one of
37 only a very few studies identified that focused on catch-up campaigns. Given that
38 catch-up campaigns can provide additional opportunities for vaccination to young
39 people who are behind on their routine vaccinations, the committee thought that it
40 was important for research to evaluate the best setting for these to take place. The
41 committee had already made a recommendation about offering catch-up sessions to
42 children and young people who are not up to date with their vaccinations in the mixed
43 methods review (see evidence review J) and this qualitative evidence highlighted the
44 importance of not only offering catch-up sessions, but also determining where the
45 most effective setting for these would be. Based on the evidence in this review and in
46 review J, the committee decided to include a research recommendation to compare
47 the effectiveness and acceptability of catch-up campaigns in school-based and GP-
48 based settings (see Appendix K – evidence review J).

49 ***Barriers and facilitators for vaccinations for pregnant women***

50 The committee agreed with the findings in general with the caveats detailed below.
51 They noted that there was a limited evidence base compared to vaccinations for 0-5

1 and 11-18 year olds and that this did not include any studies looking at the
2 subgroups of interest in the protocol (including immigrants and Travellers, Gypsy and
3 Roma), although views about vaccinations during pregnancy are mentioned briefly in
4 studies in the section spanning life stages for some of these groups. There was also
5 no evidence identified concerning the barriers and facilitators to vaccination for
6 transgender or non-binary people who are pregnant. The committee agreed that
7 these people may be less likely to attend appointments if they have concerns about
8 being misgendered. The use of the terminology 'pregnant woman' in this review was
9 not intended to exclude these people but was used to maintain consistency with NHS
10 websites.

11 The committee noted that there were differences in the organisation of care for
12 pregnant women across countries with the UK, Europe and New Zealand having a
13 midwife led service, while in other countries care is more obstetrician and
14 gynaecologist led. In the UK, obstetricians and gynaecologists do not routinely see
15 pregnant women unless they have a high-risk pregnancy and they do not administer
16 vaccinations or give public health advice. Therefore, some of the findings concerning
17 obstetricians and gynaecologists are less relevant for the UK.

18 Several findings were highlighted as not being relevant or as less relevant to the UK.
19 Firstly, the committee discussed pregnant women's level of awareness of pertussis
20 vaccination during pregnancy and were surprised that this appeared to be low in
21 some cases, although these studies (Wiley 2015 and O'Shea 2018) were not UK
22 based and the committee thought this was less of a problem in the UK. Secondly,
23 they noted that the finding that some obstetricians and gynaecologists believe that
24 there is not enough evidence to recommend pertussis vaccination was from a US
25 study and did not fit with their experience in the UK. Thirdly, the finding about a lack
26 of official sources of information was supported by studies from Australia, whereas in
27 the UK there are official NHS and other [government websites](#) which provide
28 information aimed at pregnant women and/or healthcare providers. However, they
29 noted that this finding is probably no longer relevant to Australia either as there are
30 now government websites covering vaccinations during pregnancy. Fourth, the
31 committee noted that online tools and apps currently exist which can be used as
32 pregnancy checklist and include tick boxes to help pregnant women keep on top of
33 actions they need to take such as obtaining vaccinations. The finding about the need
34 for a pregnancy checklist is therefore out of date, although women may need
35 directing to the available options. Finally, they noted that the finding that midwives
36 are not equipped to routinely vaccinate pregnant women came from Australia and is
37 not the case in the UK, where midwives are the main vaccinators of pregnant
38 women.

39 Although the committee agreed that there is information about pertussis vaccination
40 available for pregnant women, they noted that the midwives giving out the
41 information may not always feel confident in explaining it and in responding to
42 questions about vaccinations. This may be because pertussis is a relatively new
43 vaccination and there was no/ limited training for practicing midwives when it was
44 introduced, although newer midwives are likely to have encountered this during their
45 training to become a midwife. The committee agreed that training for midwives
46 covering the information to support vaccination and how to communicate this
47 effectively was likely to be useful in increasing uptake by pregnant women. The
48 committee discussed staff education as part of the education interventions review
49 and make recommendations that covered these training needs (see evidence review
50 E for more details).

51 The committee noted that discussions with midwives were very important in obtaining
52 consent for vaccination. In their experience, pregnant women fell into 2 main groups:

1 those who want to be told what to do and would follow medical advice, and those
2 who do a lot of research and ask questions to ensure they make an informed
3 decision. They stressed that the women in this latter group were not necessarily
4 opposed to vaccination because they had questions. However, although pregnant
5 women prefer to discuss vaccination information with midwives because there are
6 fewer appointments and more to cover in each appointment these discussions can
7 be hard to fit in and may not be prioritised due time pressures. This lack of time can
8 also cause problems with obtaining consent for vaccination. In addition, a lack of
9 continuity of care can lead to repetition of the same information at different
10 consultations which wastes time. In contrast, continuity of care can be an important
11 method of building trust and help facilitate vaccine uptake. Finally, the committee
12 agreed that there are lots of information and leaflets about vaccination that are
13 available to pregnant women and that it is hard to know when best to give them as
14 this may vary between people.

15 In addition to issues raised about the lack of time for midwives to discuss vaccination,
16 one study looked at the option of pharmacies giving vaccinations to pregnant women.
17 Although this study was not based in the UK it highlighted how some women have
18 trust in their pharmacists and would be happy to receive vaccinations from them.
19 Some pharmacists and midwives indicated that they were happy for a wider range of
20 settings to access vaccines but had concerns over safety, such as if a person was to
21 have an adverse reaction to a vaccine. The committee discussed how this is an
22 important consideration but decided that it was standard practice to ensure the safety
23 of vaccination sites. As such, they decided against referring to safety protocols in the
24 recommendation from the access review (review D) about using alternative settings
25 for vaccinations.

26 Limited quantitative and qualitative evidence was identified for pregnant women
27 compared to babies and children aged 0-5 years and young people aged 11-18
28 years, and most of the identified studies were not UK based. The committee
29 therefore decided to make a research recommendation to identify whether there are
30 any interventions that are both acceptable and effective at increasing vaccine uptake
31 for pregnant women (see Appendix K in the pregnancy evidence review F).

32 ***Barriers and facilitators for vaccinations for people aged 65 and over***

33 The committee agreed with the findings in general with the caveats detailed below.
34 They noted that people aged 65 and over are a heterogenous group of people. Some
35 people are likely to be in good health and may be working while others may be
36 retired and/ or have poor health. As a result, they are likely to have some different
37 barriers and facilitators to vaccine uptake while sharing others. For example, there
38 were a range of views about the benefits of vaccination ranging from people
39 accepting a vaccine to protect themselves from disease to those who were more
40 accepting of death. This might reflect the differing ages of study participants between
41 and within studies, which could be as wide as from 50-92 years in Eilers 2015a.

42 The committee agreed that a tailored approach to increasing uptake would be
43 necessary to account for these differences. For example, although GPs are trusted
44 sources of advice and information due to relationships built over time with repeated
45 contacts, healthy people aged 65 years and older may have low levels of contact with
46 their GPs. As a result, it may not be sufficient to rely on this contact to raise
47 awareness and gain consent for vaccination. Alternative settings, such as
48 pharmacies, may be useful in targeting these people in an opportunistic manner for
49 example when they collect prescriptions and pharmacists are also trusted to provide
50 good advice. However, the committee agreed that it is helpful to have a room in
51 pharmacies where discussions about vaccinations can be conducted in private. In

1 addition, the committee commented that although people aged 65 years and over
2 reported a lack of information about the vaccinations available to them the sources
3 and format of information that these people would find most useful and accessible
4 may differ to other the other age groups/ life stages. This difference may decrease
5 and needs change over time as more technologically experienced people reach 65
6 years old. Finally, the committee commented that there might be differences in the
7 ability of people in care homes to give informed consent to be vaccinated compared
8 to other people aged 65 years and over and that they may face additional logistical
9 barriers to being vaccinated if they cannot travel to GP surgeries independently.

10 The committee took these issues into account when making recommendations on
11 tailoring services to people's needs, including having alternative settings for
12 vaccination and providing home visits for people who cannot travel to vaccination
13 services (see evidence review D). They also made a recommendation for people who
14 need support with giving consent for vaccinations (see evidence review J). Other
15 recommendations cover having enough time for conversations about concerns about
16 vaccinations during consultations and that staff should be able to tailor the
17 information they provide to the needs of the individual (see evidence review E for
18 more details).

19 The committee noted that there was a shortage of information about the barriers and
20 facilitators affecting people in care homes or assisted living and where these
21 participants were included their views were not presented separately. None of the
22 included studies had findings relating to whether people have the capacity to consent
23 due to dementia and other cognitive impairments that are more common in the >65's
24 population in care homes. There was also a lack of evidence about the barriers and
25 facilitators facing Travellers, Gypsy and Roma, immigrants, and asylum seekers
26 aged 65 years and over, with the exception of a single finding about undocumented
27 migrants. In addition, even when considering studies spanning age/ life stage
28 categories that looked at Travellers, Gypsy and Roma (Jackson 2016) the findings
29 mainly focused on childhood vaccinations with brief mention of vaccinations in
30 pregnancy.

31 The findings suggested that people aged 65 years and older have lower awareness
32 of the vaccinations available to them, with some individuals thinking that vaccinations
33 are primarily for children. The committee were interested to note that some
34 individuals and healthcare staff differentiated between the benefits associated with
35 the shingles and pneumococcal vaccinations, with the latter being deemed
36 sufficiently dangerous to warrant vaccination although people do not necessarily see
37 the risk of contracting pneumonia as very high. In contrast, shingles was seen by
38 some individuals and staff to be less dangerous and therefore less of a priority unless
39 they had experience of shingles or realised how painful it could be.

40 Given the more limited qualitative evidence for people aged 65 and over than for the
41 other categories, the committee thought it was important that this group of people is
42 given more consideration in future research. This decision was supported by the
43 quantitative evidence where there were relatively few studies using this age group
44 and even fewer were UK-based. For this reason, it was decided that a research
45 recommendation should be made to provide more detailed evidence on the most
46 effective types of interventions, and the acceptability of these interventions, for older
47 people (research recommendation 2 in [Appendix K](#)). To future proof the
48 recommendation in light of the changing age of eligibility for the shingles vaccination
49 the committee used the term 'older people' instead of 'people aged 65 years and
50 over'. See the section on [other factors the committee took into account](#) for more
51 information about this and a definition of the term 'older people'.

1 **Barriers and facilitators identified in studies spanning age/ life stage**
2 **categories**

3 The committee discussed the findings relating to implementation and noted that
4 system reorganisations can be disruptive and lead to staff confusion and the loss of
5 institutional knowledge and connections. These can adversely affect relationships
6 that have been built up over time with underserved communities such as Travellers,
7 Gypsy and Roma. They agreed that there are many challenges for providers
8 including changes to the schedule leading to uncertainty, a lack of continuity of care,
9 vaccine shortages and the use of performance targets. In particular, they agreed that
10 a lack of time during consultations for conversations about vaccination was
11 problematic and acted as a key barrier to uptake. The qualitative findings supported
12 this with the use of fixed, short appointments leading to rushed discussions that left
13 providers feeling pressurised and parents feeling rushed and not listened too. This
14 was not helped where language difficulties were involved as conversations involving
15 an interpreter could take longer to cover the same content.

16 The evidence from CQC GP practices with high uptake highlighted that having
17 appointments with child vaccination specialist nurses that allowed sufficient time to
18 address parental concerns and having consultations with homeless people that were
19 not time limited were important facilitators for vaccine uptake. This study also
20 reported that having well trained, designated staff who were up to date with current
21 guidance on vaccinations was linked to increased uptake. The designated
22 individuals, including administrative staff as well as nurses, were responsible for
23 vaccinations and accountable to practice managers. The committee agreed that in
24 their experience, having a named lead with responsibility for ensuring that the
25 vaccination related tasks that an organization needs to perform are carried out
26 satisfactorily is essential because where there is no accountability, tasks may be
27 postponed or ignored when staff have competing priorities. This finding provides
28 additional support for the recommendation the committee made about having named
29 leads in organisations that administer or carry out vaccination related tasks. The
30 qualitative findings from the CQC paper also support the following recommendations
31 the committee made about:

- 32 • ensuring that vaccination providers are able to attend their mandatory training
33 and that this is revisited as part of their continuing professional development (see
34 evidence review E for more details).
- 35 • using a system of escalating contact to try to reach people who have not
36 responded to invitations for vaccination (see evidence review C for more details).
- 37 • ensuring that records are up to date to facilitate identification (and contact) of
38 eligible people (see evidence review A for more details).
- 39 • improving access by increasing the number of places that vaccinations can be
40 carried out and by tailoring opening hours to local needs (see evidence review D
41 for more details).
- 42 • using opportunistic identification and vaccination when people are attending
43 healthcare settings for other reasons as part of the making every contact count
44 philosophy (see evidence reviews A and D for more details).

45 The concept of herd immunity was raised as an important reason to vaccinate their
46 child by parents in 1 finding based on a single study in this section and by 2 studies
47 in the section specific to people aged 65 years and over. The committee noted that,
48 unlike topics such as individual benefits, disease severity and side effects; benefits to
49 the community/ population were not raised as part of the decision-making process by
50 the majority or parents or individuals in the qualitative evidence. This was in alignment
51 with their experience that parental decision making tended to be focused on the
52 benefits to the individual child. In addition, they agreed that the concept of herd

1 immunity was not necessarily well understood and could be hard to explain. They
2 disliked the use of the word 'herd' and thought that population or community
3 immunity was more representative of the concept and easier to understand. The
4 committee discussed whether an understanding of population immunity could be a
5 facilitator for vaccine uptake. They agreed that in areas of high uptake using
6 population immunity to persuade someone to accept vaccination might be hard.
7 However, in some under vaccinated communities, if people understand that being
8 vaccinated can help to protect their community, this might be an additional factor in
9 favour of vaccination. The committee therefore agreed to include direct (to the
10 individual) and indirect (to the population/ community) benefits in their
11 recommendation about information to provide with an invitation to be vaccinated (see
12 evidence review E for additional details about this recommendation).

13 The committee discussed the findings grouped under the headings 'information and
14 influences' and 'views on vaccine safety, effectiveness and usefulness'. They noted
15 that although the findings represented the views of Travellers, and Polish and
16 Romanian immigrants they were similar to the general population. The majority of
17 people in these groups viewed vaccinations positively but were concerned about side
18 effects and found it hard to assess the risk/ benefits. The findings about specific
19 vaccines (pertussis for pregnant women, HPV, MMR) generating more concern were
20 also consistent with findings in the 0-5 and 11-18 reviews for a wider population.
21 They also reported problems with obtaining unbiased, accurate information and that
22 healthcare professionals are trusted sources of information. These findings agreed
23 with the committee's experience.

24 However, the committee noted that additional barriers may apply to these
25 populations. The evidence showed that language and literacy issues could be key
26 barriers that prevent some Travellers and immigrants from accessing vaccinations.
27 This was in alignment with the committee's experience. They noted that GP services
28 can access a network of phone translators, but that translators aren't available for
29 every dialect; it can be hard to determine who is speaking at times; these
30 appointments take longer than a normal consultation in English and it can be hard to
31 be certain that nuances in the discussions are translated well. In some places (for
32 example, in the Turkish community in Hackney) they were aware that advocates can
33 attend consultations to provide support for the person and provide translation
34 services. These people are obtained from the local community and have an
35 understanding of the barriers the person faces. The committee also noted that
36 although someone is able to speak a language does not mean that they are literate in
37 it and so it is important that information is provided in a format they can access too as
38 well as a suitable language. They drafted a recommendation to reflect these points
39 (see evidence review E for more details.) In addition, they included a cross reference
40 to the NICE guideline on [Community engagement: improving health and wellbeing
41 and reducing health inequalities](#) because section 1.3 covers involving people in peer
42 and lay roles to represent local needs and priorities. The committee were also aware
43 that NICE is developing a guideline on [Advocacy services for adults with health and
44 social care needs](#) and that this is due to publish in March 2022.

45 The qualitative findings showed that some immigrants faced additional problems
46 accessing healthcare. These included a lack of understanding of the differences
47 between the UK routine schedule and that of their home country; difficulties in
48 obtaining accurate vaccination histories and registering with GPs. To try to overcome
49 these barriers the committee made a series of recommendations. One of these was
50 aimed at ensuring the best practice was followed at patient registration and
51 highlighted that immigration status or proof of address is not required (see evidence
52 review D for more details). A second one referred providers to the PHE guidance on
53 [Vaccination of individuals with uncertain or incomplete immunisation status](#) to ensure

1 that individuals are treated as unimmunised if they do not have a documented or
2 reliable, verbal vaccine history. Finally, the committee made a recommendation to
3 ensure that people from outside the UK who are eligible for vaccination (or their
4 parents/ guardians) are provided with details of the UK schedule and support
5 accessing healthcare if needed (see evidence review E for more details for the last 2
6 recommendations).

7 The committee discussed the findings about Orthodox Protestant parents in the
8 Netherlands and their relevance to the populations in the UK. In the Netherlands, this
9 group form a cultural minority and have their own political party, their own
10 newspaper, and their own schools. They were not aware of a directly equivalent
11 group in the UK but agreed that the findings were useful as they represented the
12 views of an identifiable minority religious community. The findings clearly showed
13 that even within a specific community the views concerning vaccination were very
14 varied, with some parents using religious beliefs to justify not vaccinating their
15 children while others used them to justify vaccination. Some followed the traditions
16 within their families to vaccinate or not vaccinate while others made different
17 decisions. These findings highlighted that religious communities are heterogenous
18 and that they cannot be assumed to have uniform views regarding vaccinations. This
19 was also seen in the findings for 0-5 year olds and 11-18 year olds above concerning
20 other religious groups (including Muslims and Jews). Both vaccinating parents and
21 non-vaccinating Orthodox Protestant parents suffered from guilt over their choices
22 and in some cases feel regret which could affect their decisions to vaccinate their
23 children in the future. The committee agreed that feelings of guilt and regret are
24 commonly linked to decisions around vaccinations and are not limited to parents with
25 religious beliefs.

26 The committee agreed that the findings about a lack of funding for Traveller specific
27 interventions, including mobile outreach services, were in line with their experience.
28 They noted that some Traveller, Gypsy and Roma communities faced specific
29 barriers to vaccination linked to their travelling lifestyle, while others (Scottish show
30 people) are more settled. The committee discussed facilitators for vaccination for
31 Travellers. They agreed that it was counterproductive to cut funding to address
32 barriers to uptake in communities with low uptake as it is more expensive to deal with
33 disease outbreaks in these communities. To help address these barriers, and
34 barriers to uptake faced by other groups that were raised in the other qualitative
35 reviews above, the committee drafted recommendations for commissioners to
36 provide funding to match local needs and to provide additional funding in in areas of
37 low uptake to address inequalities and barriers to vaccination (see evidence review G
38 for more details). They also made recommendations about improving access by
39 tailoring service opening hours and locations for vaccinations to meet local needs;
40 providing multiple locations including within the community if this would address
41 specific local needs and for home visits for people who cannot travel to vaccination
42 services (see evidence review D for more details).

43 **1.1.9.4 Cost effectiveness and resource use**

44 No recommendations were made directly from this evidence review. Please see the
45 economic evidence and discussions in the reviews C, D, E, F, G, H, and I, which
46 cover different types of interventions to increase uptake. These reviews have
47 included the qualitative evidence from the current review as part of a mixed-methods
48 analysis, with relevant economic evidence, and recommendations have been made
49 in most of these reviews.

1 **1.1.9.5 Other factors the committee took into account**

2 The committee agreed that the reviews in this guideline identified limited research
3 that has specifically targeted populations and groups identified as having low
4 vaccination uptake such as Travellers, Roma and Gypsy; and some immigrants and
5 religious communities and these studies have mainly been qualitative in nature. They
6 agreed that it is very important to try to identify effective interventions for populations
7 with low uptake and which of these interventions are considered most acceptable.
8 They therefore made a research recommendation to cover this (see research
9 recommendation 3 in [Appendix K](#) for more details).

10 ***Future proofing the recommendations***

11 In the evidence reviews we looked for evidence regarding routine vaccinations for
12 people aged 65 and over because this was the age limit for vaccinations for older
13 people on the NHS routine schedule at the time the work was carried out. Since there
14 was limited evidence for this age group, we also included data from relevant studies
15 including people aged 50 and over, where the majority of participants were in our
16 target age group, or the mean age was 65 or over with committee agreement taken
17 on a review-by-review basis. These studies were downgraded for applicability where
18 the committee deemed it appropriate.

19 According to the [Joint Committee on Vaccination and Immunisation minutes](#) from the
20 meeting on 22 June 2021, shingles vaccination eligibility is changing to include
21 people aged 60 and over and this will be introduced in a phased manner down from
22 the current age of 70 years. It is unclear when this change will be initiated or
23 completed. In order to future proof the guideline recommendations we have therefore
24 changed those mentioning people aged 65 and over to refer to older people instead
25 and defined them as follows: adults who are eligible for routine vaccination on the UK
26 schedule, excluding pregnancy-related vaccinations. We also suggest that people
27 consult the [green book](#) for information about current age limits and vaccinations for
28 older people. The content of the recommendations has not been changed otherwise
29 as this was not deemed necessary. The majority of recommendations that apply to
30 older people are also more generally applicable and have not been altered because
31 they do not mention groups of people by age. The committee discussions of the
32 evidence have also been retained in their original form, with the addition of the
33 information about the use of the term older people where the relevant
34 recommendations that specifically mentioned people aged 65 and over are
35 discussed.

36 **1.1.10 Recommendations supported by this evidence review**

37 This evidence review supports recommendations in evidence reviews C to J and the
38 research recommendations on increasing HPV vaccine uptake in boys; increasing
39 vaccine uptake in people aged 65 years and over and in populations or groups with
40 low routine vaccine uptake. Other evidence supporting these recommendations can
41 be found in:

- 42 • evidence review C on reminders interventions to increase vaccine uptake
- 43 • evidence review D on interventions to increase vaccine uptake by improving
44 access
- 45 • evidence review E on education interventions to increase vaccine uptake
- 46 • evidence review F on increasing vaccination in pregnant women
- 47 • evidence review G on increasing vaccine uptake by improving infrastructure
- 48 • evidence review H on multicomponent interventions to increase vaccine
49 uptake

- 1 • evidence review I on increasing vaccine uptake by targeting acceptability
- 2 • evidence review J on the acceptability and effectiveness of specific
- 3 interventions

4 Since this review was used as part of a mixed-methods analysis to help inform large
5 numbers of recommendations they are not listed individually here. See the
6 discussions in the quantitative evidence reviews above for information about the
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1 Appendices

2 Appendix A – Review protocol

3 Review protocol for the barriers to, and facilitators for, 4 vaccine uptake and interventions to increase vaccine 5 uptake.

6 Please note that the review protocol also includes a quantitative question
7 about interventions to increase uptake. This part of the work is presented in
8 evidence reviews C to I to ensure the size of the evidence reviews remain
9 manageable.

ID	Field	Content
1.	Review title	Identifying effective interventions to improve uptake of routine vaccines and the barriers to, and facilitators for, vaccine uptake.
2.	Review questions	What are the most effective interventions for increasing the uptake of routine vaccines? What are the barriers to, and facilitators for, increasing the uptake of routine vaccines?
3.	Objectives	To identify the barriers to, and facilitators to vaccine uptake and effective strategies to improve routine vaccine uptake.
4.	Searches	The following databases will be searched: <ul style="list-style-type: none"> • Cochrane Central Register of Controlled Trials (CENTRAL) • Cochrane Database of Systematic Reviews (CDSR) • Embase • MEDLINE • Medline in process • Medline epubs ahead of print • Emcare • Psycinfo • Sociological Abstracts • ASSIA • DARE • Econlit (economic searches) • NHS EED (economic searches) • HTA (economic searches) • Other subject specific databases as appropriate for the quantitative review <p>Searches will be restricted by:</p> <ul style="list-style-type: none"> • Studies published since 1990

		<ul style="list-style-type: none"> English language Human studies Qualitative, Systematic Review, RCT, OECD geographic filters as appropriate <p>Other searches:</p> <ul style="list-style-type: none"> Reference searching where appropriate Citation searching where appropriate Inclusion lists of systematic reviews Websites where appropriate <p>The searches will be re-run 6 weeks before final submission of the review and further studies retrieved for inclusion.</p> <p>The full search strategies for MEDLINE database will be published in the final review.</p>
5.	Condition being studied	Uptake of vaccines on the routine NHS schedule
6.	Population	<p>Inclusion:</p> <ul style="list-style-type: none"> All people who are eligible for vaccines on the routine UK immunisation schedule and their families and carers (if appropriate). Staff including, but not limited to, those providing advice about or administering vaccines and those people with relevant administrative or managerial responsibilities. <p>Exclusion: None</p>
7.	Interventions and factors of interest	<p><u>RQ2.1 Quantitative review</u></p> <p>Interventions including, but not confined to:</p> <p>1. Information, education and methods of communicating them</p> <p>Interventions to provide information including:</p> <ul style="list-style-type: none"> online campaigns including social media and apps radio campaigns letters by mail printed materials (e.g. leaflets) multi-media campaigns TV and online advertising (including pop up adverts) posters online information exchange- fill in questionnaire and get information <p>Educational interventions (delivery methods):</p> <ul style="list-style-type: none"> face-to-face sessions telephone conversations

		<ul style="list-style-type: none"> • social media with responses • interactive multi-media interventions (e.g. case studies on GP websites; e-learning) • interactive community events (e.g. talks with question and answer sessions) • peer education (carried out by a community member who shares similar life experiences to the community they are working with) • lay education (carried out by community members working in a non- professional capacity) • multicomponent interventions targeting education • vaccine hotlines and special advisory clinics for health professionals <p>Who provides the information and/or advice and how they do so, including:</p> <ul style="list-style-type: none"> • Vaccine champions: <ul style="list-style-type: none"> ○ Practitioners ○ Peers ○ Community leaders • Interventions to train staff and other people on how best to communicate the information/ run educational sessions. • Recommendations to vaccinate from people/groups including: <ul style="list-style-type: none"> ○ Medical and other staff (for example, GPs, nurse, health visitors, midwives,) ○ Social workers ○ Community leaders ○ Religious leaders ○ Peers ○ Teachers <p>Information and education can be provided during home visits, during interactions with health and social care workers, at support group meetings for people using other services etc. This may involve providing a contact point for more information.</p> <p>Types of information include PHE bulletins and local bulletins for providers.</p> <p>2. Vaccination reminders aimed at providers or individuals including:</p> <p>Reminder and recall systems (aimed at provider)</p> <ul style="list-style-type: none"> • clinical alerts and prompts • national alerts to local teams • local recall initiatives <p>Personal invitation to be vaccinated from:</p> <ul style="list-style-type: none"> • GP
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		<ul style="list-style-type: none"> • community pharmacist • health or social care worker • from several professionals <p>Reminders to individuals/ eligible groups by:</p> <ul style="list-style-type: none"> • text messages • electronic invitations (via apps) • emails • letter • phone calls • posters • postcards <p>3. Interventions targeting acceptability:</p> <ul style="list-style-type: none"> • Alternative forms of vaccinations (e.g. injections, formulations) • Alternative settings • Alternative vaccine providers (e.g. doctor administering vaccine instead of nurse) <p>4. Interventions to improve access including:</p> <p>Expanding access in healthcare, such as:</p> <ul style="list-style-type: none"> • Reducing distance/time to access vaccinations • Out of hour or drop-in services • Delivering vaccines in clinical settings in which they were previously not provided <p>Vaccination clinics in community settings:</p> <ul style="list-style-type: none"> • community pharmacies • antenatal clinics • specialist clinics (e.g. drug and alcohol services, mental health services) • community venues (e.g. libraries, children's centres) <p>Dedicated clinics for specific/ all routine vaccinations</p> <ul style="list-style-type: none"> • Mass vaccination clinics in community or other settings (e.g. schools) • Walk in or open access immunisation clinics <p>Extended hours clinics</p> <ul style="list-style-type: none"> • weekends evenings (after 6 pm) • early mornings (before 8 am) • 24-hour access <p>Outreach interventions or mobile services</p> <ul style="list-style-type: none"> • home or domiciliary or day centre visits • support group meeting visits • residential or care home visits • special school visits • inpatient visits • custodial visits • immigration settings • mobile clinics (e.g. in community)
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		<p>Parallel clinics</p> <ul style="list-style-type: none"> • Offer vaccination in parallel with regular appointments (e.g. with midwives, clinicians, inpatient and outpatient clinics, long stay wards, etc.) • coordinated timing of other programmes (such as child developmental checks) <p>Opportunistic vaccinations:</p> <ul style="list-style-type: none"> • visits to GP, practice nurse or consultant for other medical conditions including STI clinics, drug and alcohol programmes • having vaccinations provided in hospitals or accident and emergency departments • may involve a dedicated person to administer the vaccines. <p>5. Interventions to improve infrastructure (targeting processes, staffing and settings):</p> <p>Booking systems</p> <ul style="list-style-type: none"> • dedicated vaccination lines or online systems <p>Organisation of local provider-based systems:</p> <ul style="list-style-type: none"> • Local area approaches • Systems and processes in place to work with the community • Practice level approaches • Assigned lead for a specific vaccination programme • Having staff who are competent to deliver vaccinations available in multiple settings • Having staff with responsibilities for training practitioners, answering complex questions, co-ordinating immunisations etc. <p>Systems involved in the recording and identification of eligibility and status (covered in RQ1- see this review protocol for a list of potential interventions)</p> <p>Incentives based interventions:</p> <ul style="list-style-type: none"> • Incentive (and disincentives for not vaccinating) schemes (for individuals) <ul style="list-style-type: none"> ○ voucher schemes (not to cover cost of vaccination or healthcare) ○ payment to cover travel costs ○ fines/ penalties for not vaccinating ○ entry to childcare settings/ schools blocked in the absence of proof of vaccination status • Mandatory vaccination • Incentive schemes (for providers) <ul style="list-style-type: none"> ○ targets ○ quality and outcomes framework ○ voucher schemes
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		<p>Audit and feedback on uptake rates for providers</p> <ul style="list-style-type: none"> • Weekly statistics • Content and delivery of feedback • Practical relevance (e.g. how many more people need to be vaccinated to achieve a target number) • Comparison data (e.g. between GP practices) <p>6. Multicomponent interventions:</p> <ul style="list-style-type: none"> • Interventions which include more than one component and target multiple issues (for example the intervention could include an educational component and changes in the timing of clinics) will be analysed separately, but with other similar multicomponent interventions where possible. • Multicomponent interventions which include more than one component that is targeting a single issue will be included in the relevant category instead. <p><u>RQ2.2 Qualitative review</u></p> <p>Barriers to, and facilitators for, routine vaccine uptake including, but not limited to:</p> <ul style="list-style-type: none"> • Thoughts, views and perceptions of individuals, parents or carers and staff • Issues relating to acceptability • Issues relating to accessibility • Issues relating to infrastructure • Issues relating to mis-information or a lack of information and communication of information • Issues relating to informed refusal • collective benefit / altruistic motives
8.	Comparators	<p><u>RQ2.1 Quantitative review.</u></p> <ul style="list-style-type: none"> • Usual approaches to increase vaccine uptake • Other interventions to increase vaccine uptake <ul style="list-style-type: none"> ○ Other interventions targeting same issue/ theme (for example education) ○ Other interventions targeting different issues/ theme (for example education versus infrastructure) <p><u>RQ2.2 Qualitative review.</u></p> <p>Not applicable</p>
9.	Types of study to be included	<p><u>RQ1.1 Quantitative review.</u></p> <p>Systematic reviews of included study designs.</p> <p>Then as needed:</p> <ul style="list-style-type: none"> • Randomised controlled trials • Non-randomised controlled trials • Controlled before-and-after studies • Interrupted time series

		<ul style="list-style-type: none"> • Cohort studies • Before and after studies • Mixed method study designs (quantitative evidence that matches the above study designs only) <p><u>RQ1.2 Qualitative review</u></p> <ul style="list-style-type: none"> • Systematic reviews of included study designs • Qualitative studies that collect data from focus groups and interviews • Qualitative studies that collect data from open-ended questions from questionnaires/ surveys • Mixed method study designs (qualitative evidence that matches the above study designs only) <p>For the mixed methods synthesis, published mixed methods studies will also be included if the study does not present quantitative and qualitative evidence separately, but only if the individual study designs meet the inclusion criteria for both the qualitative and quantitative reviews as detailed above.</p>
10.	Other exclusion criteria	<p>Interventions to increase uptake of these vaccines/ conditions:</p> <ul style="list-style-type: none"> • Selective immunisation programmes, as defined in the Green Book and additional vaccines for people with underlying medical conditions because they do not form part of the routine schedule. • Seasonal vaccinations because they are not part of the routine vaccination schedule, apart from Flu, which is covered by a separate NICE guideline and excluded for this reason (see section 14 for reasons underlying a possible deviation from this exclusion). • Travel vaccines- not on routine schedule • Areas covered by NICE's guideline on tuberculosis. • Catch-up campaigns alongside the introduction of a new vaccine <p>Only papers published in the English language will be included.</p> <p>Questionnaires and surveys will not be included, (apart from those reporting open-ended questions from questionnaires/surveys).</p> <p>Where studies from the USA (or other countries with similar health insurance-based systems) are included in the qualitative reviews any barriers/ facilitators relating to financial incentives (such as payment for vaccines or affording health insurance) will not be recorded as these are not relevant for the UK. In addition, in countries</p>

		where vaccines or health care are paid for by the user studies looking at any financial incentive-based interventions are excluded.
11.	Context	<p>The Department of Health and Social Care in England has asked NICE to produce a guideline on vaccine uptake in the general population.</p> <p>In recent years, UK vaccination rates have declined, resulting in increases in vaccine preventable diseases, particularly measles. There were 991 confirmed cases in England in 2018 compared with 284 in 2017 and the World Health Organization no longer considers measles 'eliminated' in the UK.</p> <p>Reasons for low uptake include poor access to healthcare services; inaccurate claims about safety and effectiveness, which can lead to doubts about vaccines; and insufficient capacity within the healthcare system for providing vaccinations. In addition, problems with the recording of vaccination status and poor identification of people who are eligible to be vaccinated may have contributed to this problem.</p>
12.	Primary outcomes (critical outcomes)	<p><u>RQ2.1 Quantitative outcomes:</u></p> <p>Changes in:</p> <ul style="list-style-type: none"> • Vaccine uptake (overall for a specific vaccine or vaccines and for each dose where a vaccine is administered in multiple doses) <p><u>RQ2.2. Qualitative outcomes:</u></p> <p>The outcomes will be generated using emergent coding, but are expected to include the following:</p> <ul style="list-style-type: none"> • Thoughts, views and perceptions of individuals, parents or carers and staff • Issues relating to acceptability • Issues relating to accessibility • Issues relating to infrastructure • Issues relating to mis-information or a lack of information and communication of information • Issues relating to informed refusal
13.	Secondary outcomes (important outcomes)	<p><u>RQ2.1 Quantitative outcomes:</u></p> <p>Changes in:</p> <ul style="list-style-type: none"> • the proportion of people offered vaccinations • the numbers of people who develop the disease the vaccination was aimed at preventing
14.	Data extraction (selection and coding)	All references identified by the searches and from other sources will be uploaded into EPPI reviewer and de-duplicated. 10% of the abstracts will be reviewed by two reviewers, with any disagreements resolved by

		<p>discussion or, if necessary, a third independent reviewer.</p> <p>The qualitative review search results and quantitative systematic review search results will be sifted using the EPPI reviewer priority screening functionality, but the whole data base will still be screened in each case. However, when sifting for primary studies for specific sections of the quantitative review priority screening may be used to terminate screening before the end of the search is reached. In this case, at least 50% of the identified abstracts will be screened. After this point, screening will only be terminated if a pre-specified threshold of 500 references is met for a number of abstracts being screened without a single new include being identified. A random 10% sample of the studies remaining in the database when the threshold is met will be additionally screened, to check if a substantial number of relevant studies are not being correctly classified by the algorithm, with the full database being screened if concerns are identified.</p> <p>The full text of potentially eligible studies will be retrieved and will be assessed in line with the criteria outlined above. Data will be extracted from the included studies into a standardised form (see Developing NICE guidelines: the manual section 6.4) for assessment of study quality and evidence synthesis. Extracted information for the quantitative review will include: study type; study setting; study population and participant demographics and baseline characteristics; details of the intervention and comparator used; study methodology; inclusion and exclusion criteria; recruitment and study completion rates; outcomes and times of measurement and information for assessment of the risk of bias.</p> <p>For the qualitative review, extracted information will include study type; study setting; sample characteristics; study methodology; inclusion and exclusion criteria; themes reported and information for assessment of the risk of bias.</p> <p>If insufficient evidence is identified to make recommendations, we will consult the committee and consider a call for evidence (as detailed in the NICE manual) or include more indirect evidence from other relevant guidelines (for example, the NICE flu guideline).</p>
15.	Risk of bias (quality) assessment	Risk of bias will be assessed using appropriate checklists as described in Developing NICE guidelines: the manual .

		<p>Systematic reviews will be assessed using the ROBIS checklist.</p> <p>For the quantitative review, randomised controlled trials will be assessed using the Cochrane risk of bias v2.0 checklist. Non-randomised controlled trials and cohort studies will be assessed using the Cochrane ROBINS-I checklist. Controlled/ uncontrolled before and after studies, and interrupted time series will be assessed using the EPOC tool.</p> <p>Any mixed methods studies with quantitative data that can be extracted separately will be assessed using ROBINS-I, Cochrane risk of bias v2.0, or EPOC appropriate.</p> <p>Qualitative studies will be assessed using the CASP qualitative checklist. Any mixed methods studies with qualitative data that can be extracted separately will be assessed using the CASP qualitative checklist.</p> <p>Mixed methods studies where separate quantitative and qualitative data cannot be assessed separately will be assessed using the mixed methods appraisal tool (2018 version).</p>
16.	Strategy for data synthesis	<p>A mixed methods approach will be used to address this topic area.</p> <p>The quantitative and qualitative reviews will be conducted separately (segregated study design) but at the same time. The evidence from the reviews will then be analysed in relation to each other (convergent synthesis of results). (See below for more details. The findings will not be integrated by transforming one type of evidence into the other (e.g. quantitative findings into qualitative findings).</p> <p><u>RQ1.1 Quantitative review</u></p> <p>Where possible, meta-analyses of outcome data will be conducted for all comparators that are reported by more than one study, with reference to the Cochrane Handbook for Systematic Reviews of Interventions (Higgins et al. 2011). Data will be separated into the groups identified in section 17.</p> <p>Continuous outcomes will be analysed as mean differences, unless multiple scales are used to measure the same factor. In these cases, standardised mean differences will be used instead. Pooled relative risks will be calculated for dichotomous outcomes (using the Mantel–Haenszel method) reporting numbers of people</p>

		<p>having an event. Absolute risks will be presented where possible.</p> <p>Fixed- and random-effects models (der Simonian and Laird) will be fitted for all comparators, with the presented analysis dependent on the degree of heterogeneity in the assembled evidence. Fixed-effects models will be deemed to be inappropriate if one or both of the following conditions is met:</p> <ul style="list-style-type: none"> • Significant between study heterogeneity in methodology, population, intervention or comparator was identified by the reviewer in advance of data analysis. • The presence of significant statistical heterogeneity in the meta-analysis, defined as $I^2 \geq 50\%$. <p>In any meta-analyses where some (but not all) of the data comes from studies at high risk of bias, a sensitivity analysis will be conducted, excluding those studies from the analysis. Results from both the full and restricted meta-analyses will be reported. Similarly, in any meta-analyses where some (but not all) of the data comes from indirect studies, a sensitivity analysis will be conducted, excluding those studies from the analysis.</p> <p>GRADE will be used to assess the quality of the outcomes. Outcomes using evidence from RCTs, non-randomised trials and cohort studies will be rated as high quality initially and downgraded from this point. Controlled before and after studies and interrupted time series will be rated as low quality initially. Reasons for upgrading the certainty of the evidence will also be considered.</p> <p>Where 10 or more studies are included as part of a single meta-analysis, a funnel plot will be produced to graphically assess the potential for publication bias.</p> <p>Meta-analyses will be carried out separately for each study type per outcome, but the similarities and differences between the results obtained from the different study types will be noted.</p> <p><u>RQ1.2 Qualitative review:</u></p> <p>Where multiple qualitative studies are identified for a single question, information from the studies will be combined using a thematic synthesis. By examining the findings of each included study, descriptive themes will be independently identified and coded in NVivo v.11. If there are less than 5 studies, Nvivo v.11 will not be used.</p>
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		<p>Once all of the included studies have been examined and coded, the resulting themes and sub-themes will be evaluated to examine their relevance to the review question, the importance given to each theme, and the extent to which each theme recurs across the different studies. The qualitative synthesis will use these 'descriptive themes' to develop 'analytical themes', which will be interpreted by the reviewer in light of the overarching review questions.</p> <p>Code saturation may be used as a reason to stop extracting data from new qualitative studies.</p> <p>CERQual will be used to assess the confidence we have in the summary findings of each of the identified themes. Evidence from all qualitative study designs (interviews, focus groups etc.) is initially rated as high confidence and the confidence in the evidence for each theme will be downgraded from this initial point.</p> <p><u>Synthesising the findings of mixed method reviews.</u></p> <p>Where mixed methods studies are identified that present data in a form that cannot be extracted and analysed separately as quantitative and qualitative data, the results of the studies will be reported separately for each study. Any correlations or discrepancies between the findings of the mixed methods studies and the syntheses of the quantitative and qualitative findings of the above analyses will be noted.</p> <p><u>Mixed method synthesis of findings from the quantitative and qualitative reviews</u></p> <p>Where appropriate, a synthesis matrix will be produced to combine results from the different individual analysis methods. Findings from one analytical approach will be compared to findings from the second approach, and outcomes paired up if they provided relevant information on the same underlying topic. The agreement between the findings of the two approaches will be qualitatively assessed, with each paired set of findings put into one of the three categories relating to the strength of the identified correlation.</p> <p>The results may be presented as a concept diagram with quantitative findings mapped onto the qualitative ones if this is thought to be informative.</p>
17.	Analysis of sub-groups	<p><u>RQ2.1. Quantitative review</u></p> <p>Results will be separated into the following for analysis:</p> <ul style="list-style-type: none"> • Age/time when vaccine is due:

		<ul style="list-style-type: none"> ○ During pregnancy ○ 0-5 years ○ 11 to 18 years ○ 65 years and older ● Population groups with potential equality issues: <ul style="list-style-type: none"> ○ Children excluded from mainstream education (including pupil referral units) and non-attenders. ○ Care home residents or people in long-term care ○ Looked after children ○ Religious groups or groups with special beliefs (e.g. anthroposophical views) ○ Travellers/ gypsies ○ Migrants and asylum seekers ● Settings: <ul style="list-style-type: none"> ○ care homes (covered above for residents) ○ hospitals ○ community versus healthcare ○ educational settings ● Mandatory versus partially mandatory, opt-outs allowed or completely optional vaccine schedules ● Numbers of doses of vaccines ● Study type: RCT, non-randomised studies (NRTs, CBA, ITS) ● Interventions that are part of a catch up campaign versus interventions that are not part of a catch up campaign ● System levels: <ul style="list-style-type: none"> ○ health system level (for example clinical commissioning group [CCG], local authority, regional and national level) ○ service provider level (for example GP practices, practitioners) ○ individual level (for example patients or service users including carers) ○ mixed levels ● For interventions that use information/ education to increase uptake the results will also be presented for generic versus tailored interventions. <p><u>RQ2.2 Qualitative review</u></p> <ul style="list-style-type: none"> ● Views of individuals, their parents and carers (where relevant) versus staff.
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		<ul style="list-style-type: none"> • Age/time when vaccine is due: <ul style="list-style-type: none"> ○ During pregnancy ○ 0-5 years ○ 11 to 18 years ○ 65 years and older • Views of population groups with potential equality issues: <ul style="list-style-type: none"> ○ Children excluded from mainstream education (including pupil referral units) and non-attenders. ○ Care home residents or people in long-term care ○ Looked after children ○ Religious groups or groups with special beliefs (e.g. anthroposophical views) ○ Travellers, migrants and asylum seekers • Settings: <ul style="list-style-type: none"> ○ care homes (residents covered above) ○ hospitals ○ community versus healthcare ○ educational settings • Mandatory versus partially mandatory, opt-outs allowed or completely optional vaccine schedules • Views concerning catch up campaigns versus non catch up campaigns • System level issues: <ul style="list-style-type: none"> ○ health system level (for example clinical commissioning group [CCG], local authority, regional and national level) ○ service provider level (for example GP practices, practitioners) ○ individual level (for example patients or service users) ○ mixed levels
18.	Type and method of review	<input type="checkbox"/> Intervention <input type="checkbox"/> Diagnostic <input type="checkbox"/> Prognostic <input type="checkbox"/> Qualitative <input type="checkbox"/> Epidemiologic <input type="checkbox"/> Service Delivery

		<input checked="" type="checkbox"/> Mixed method		
19.	Language	English		
20.	Country	England		
21.	Anticipated or actual start date	January 2020		
22.	Anticipated completion date	October 2021		
23.	Stage of review at time of this submission	Review stage	Started	Completed
		Preliminary searches		
		Piloting of the study selection process		
		Formal screening of search results against eligibility criteria		h
		Data extraction		
		Risk of bias (quality) assessment		
		Data analysis		
24.	Named contact	<p>5a. Named contact Guideline Updates Team</p> <p>5b Named contact e-mail VaccineUptake@nice.org.uk</p> <p>5e Organisational affiliation of the review National Institute for Health and Care Excellence (NICE)</p>		
25.	Review team members	<p>From the Guideline Updates Team:</p> <ul style="list-style-type: none"> • Marie Harris 2006ingh • Toby Mercer • Stephen Sharp 		

		<ul style="list-style-type: none"> • Joshua Pink • Stacey Chang-Douglass • Elizabeth Barrett
26.	Funding sources/sponsor	This systematic review is being completed by the Guideline Updates Team which receives funding from NICE.
27.	Conflicts of interest	All guideline committee members and anyone who has direct input into NICE guidelines (including the evidence review team and expert witnesses) must declare any potential conflicts of interest in line with NICE's code of practice for declaring and dealing with conflicts of interest. Any relevant interests, or changes to interests, will also be declared publicly at the start of each guideline committee meeting. Before each meeting, any potential conflicts of interest will be considered by the guideline committee Chair and a senior member of the development team. Any decisions to exclude a person from all or part of a meeting will be documented. Any changes to a member's declaration of interests will be recorded in the minutes of the meeting. Declarations of interests will be published with the final guideline.
28.	Collaborators	Development of this systematic review will be overseen by an advisory committee who will use the review to inform the development of evidence-based recommendations in line with section 3 of Developing NICE guidelines: the manual . Members of the guideline committee are available on the NICE website: https://www.nice.org.uk/guidance/indevelopment/gid-ng10139
29.	Other registration details	None
30.	Reference/URL for published protocol	None
31.	Dissemination plans	<p>NICE may use a range of different methods to raise awareness of the guideline. These include standard approaches such as:</p> <ul style="list-style-type: none"> • notifying registered stakeholders of publication • publicising the guideline through NICE's newsletter and alerts • issuing a press release or briefing as appropriate, posting news articles on the NICE website, using social media channels, and publicising the guideline within NICE.
32.	Keywords	Vaccine uptake, NHS routine vaccination schedule, interventions and barriers and facilitators.

33.	Details of existing review of same topic by same authors	None
34.	Current review status	<input checked="" type="checkbox"/> Ongoing <input type="checkbox"/> Completed but not published <input type="checkbox"/> Completed and published <input type="checkbox"/> Completed, published and being updated <input type="checkbox"/> Discontinued
35..	Additional information	None
36.	Details of final publication	www.nice.org.uk

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1 **Appendix B – Literature search strategies**

2 A search for qualitative evidence to answer the review question what are the barriers to, and
3 facilitators for, increasing the uptake of routine vaccines? was run on 31st December 2019
4 and 10th January 2020 in the following databases Medline, Medline in Process, Medline Epub
5 ahead of print, Embase, Emcare and Psycinfo (all via the Ovid Platform), the Cochrane
6 Database of Systematic Reviews (via the Wiley 2015 Platform), Applied Social Sciences
7 Index and Abstracts, Sociological Abstracts and British Nursing Index (all via the Proquest
8 platform). The Medline strategy is shown below. NICE inhouse qualitative and OECD country
9 geographic filters were used where appropriate and the search limited to records published
10 since 1990 and in the English language. The strategy was translated for all databases and re
11 run on 8th April 2021.

12

- 13 1 Diphtheria/
14 2 diphtheria*.tw.
15 3 Tetanus/
16 4 (tetanus or tetani).tw.
17 5 Whooping Cough/
18 6 (pertuss* or "whooping cough").tw.
19 7 Haemophilus influenzae type b/
20 8 ("Haemophilus influenza* type b" or "Hemophilus influenza* type b" or hib).tw.
21 9 Hepatitis B/
22 10 "hepatitis b".tw.
23 11 exp Poliomyelitis/
24 12 (Polio* or (infantile adj1 paralysis)).tw.
25 13 exp Pneumococcal Infections/
26 14 (Pneumococcal adj4 (disease* or infection*)).tw.
27 15 (streptococcus pneumoniae adj4 Infection*).tw.
28 16 exp Meningococcal Infections/
29 17 (Meningococcal adj4 (disease* or infection*)).tw.
30 18 Rotavirus Infections/ or Rotavirus/
31 19 rotavirus.tw.
32 20 Measles/
33 21 (measles or rubeola or mmr).tw.
34 22 Mumps/
35 23 (mumps or (epidemic adj2 (parotitides or parotitis))).tw.
36 24 Rubella/ or Rubella virus/

- 1 25 (rubella or ((german or "three day") adj2 measles*).tw.
2 26 human papillomavirus 16/ or human papillomavirus 18/ or exp papillomavirus
3 Infections/ or exp human papillomavirus 11/
4 27 (hpv or papillomavirus).tw.
5 28 Condylomata Acuminata/
6 29 (condyloma* adj1 acuminat*).tw.
7 30 ((genital or venereal) adj2 wart*).tw.
8 31 exp Herpes Zoster/
9 32 (shingles or herpes zoster or zona).tw.
10 33 or/1-32
11 34 exp Vaccination/
12 35 Vaccines/ or exp bacterial vaccines/ or cancer vaccines/ or exp toxoids/ or exp
13 vaccines combined/ or exp viral vaccines/
14 36 exp Immunization programs/
15 37 vaccin*.tw.
16 38 exp Immunization/
17 39 (immunis* or immuniz*).tw.
18 40 (immunologic* adj4 (sensitiz* or sensitiz* or stimulation*).tw.
19 41 (immunostimul* or variolation*).tw.
20 42 or/34-41
21 43 33 and 42
22 44 exp Diphtheria toxoid/ or exp tetanus toxoid/ or Haemophilus Vaccines/ or
23 meningococcal Vaccines/ or exp Pertussis Vaccine/ or exp Streptococcal vaccines/ or exp
24 Vaccines Combined/ or exp Measles vaccine/ or exp Mumps Vaccine/ or exp papillomavirus
25 vaccines/ or exp Poliovirus Vaccines/ or Rotavirus Vaccines/ or exp Rubella Vaccine/ or
26 Hepatitis B vaccines/ or Herpes Zoster Vaccine/
27 45 43 or 44
28 46 (barrier* or facilitat* or hinder* or block* or obstacle* or restrict* or restrain* or obstruct*
29 or inhibit* or impede* or delay* or constrain* or hindrance or enhance* or encourag* or
30 support* or promot* or optimiz* or optimis* or adher* or motivat* or incentive* or persuad* or
31 persuasion or intend* or intention or counsel* or hesitan*).tw.
32 47 (uptake or ((increas* or improv* or rais* or higher) adj4 (rate* or immuni* or vaccin* or
33 complian*))).tw.
34 48 Attitude/
35 49 Attitude to health/
36 50 Health Knowledge, Attitudes, Practice/
37 51 exp "Treatment Adherence and Compliance"/

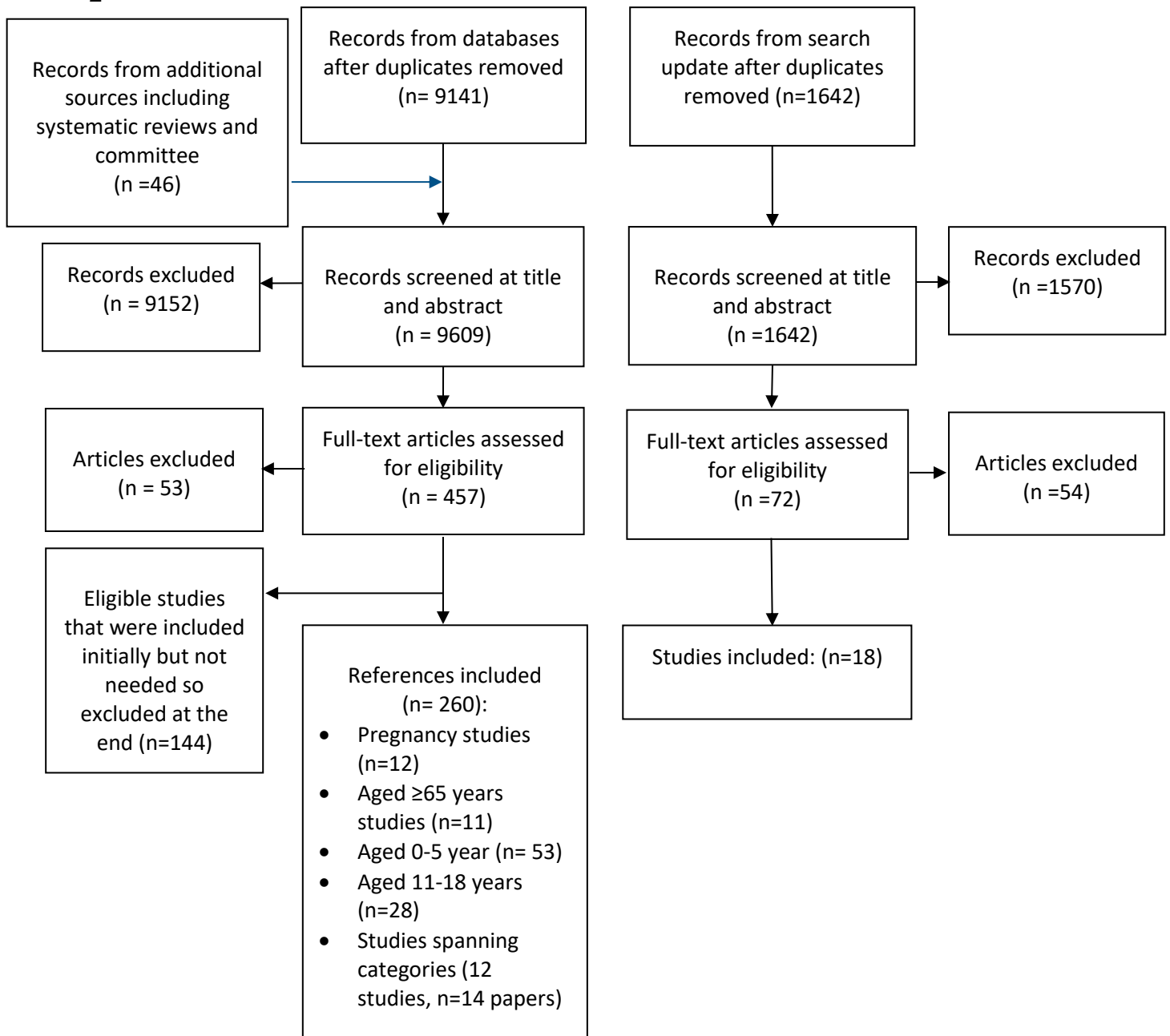
- 1 52 (accept* or compli* or particip* or adher* or nonadher* or non-adher* or cooperat* or
2 co-operat* or dropout* or drop-out* or empower* or engage* or involve*).tw.
- 3 53 exp patients/px
- 4 54 (experience* or belief* or stress* or emotion* or anx* or fear* or concern* or uncertain*
5 or unsure or thought* or feeling* or felt* or view* or opinion* or perception* or perspective* or
6 attitud* or satisfact* or know* or understand* or aware* or sad*).tw.
- 7 55 stress, psychological/
8 56 adaptation, psychological/
9 57 emotions/
10 58 anxiety/
11 59 fear/
12 60 sadness/
13 61 exp Health Services Accessibility/
14 62 (access* or availab* or usab* or convenien*).tw.
15 63 Healthcare disparities/
16 64 (equit* or inequit* or equal* or inequali* or fair* or disparit* or variab* or variation or
17 varied).tw.
18 65 exp Socioeconomic factors/
19 66 (socioeconomic adj1 (factor* or status)).tw.
20 67 (poverty or poor* or rich* or low income or low-income or middle income or middle-
21 income or high income or high-income).tw.
22 68 ((social or middle or low* or working or upper) adj1 class*).tw.
23 69 Health Plan Implementation/ or Implementation Science/
24 70 (implement* or feasibil* or practical* or practicabil* or suitab* or viab* or achievab*).tw.
25 71 Culture/ or Cultural Characteristics/ or Cultural Diversity/ or Superstitions/ or Taboo/
26 72 ((cultur* or custom*) adj4 (belief* or believe*)).tw.
27 73 Religion/ or Buddhism/ or Christianity/ or Hinduism/ or Islam/ or Judaism/
28 74 (religio* or buddhis* or christian* or hindu* or islam* or muslim* or judaism or jew*).tw.
29 75 or/48-74
30 76 46 or 47 or 75
31 77 45 and 76
32 78 animals/ not humans/
33 79 77 not 78
34 80 limit 79 to ed=19900101-20191231
35 81 limit 80 to english language/

- 1 82 afghanistan/ or exp africa/ or albania/ or andorra/ or antarctic regions/ or argentina/ or
2 exp asia, central/ or exp asia, northern/ or exp asia, southeastern/ or exp atlantic islands/ or
3 bahrain/ or bangladesh/ or Bhutan/ or bolivia/ or borneo/ or "bosnia and Herzegovina"/ or
4 brazil/ or bulgaria/ or exp central america/ or exp china/ or colombia/ or "Commonwealth of
5 Independent States"/ or croatia/ or "Democratic People's Republic of Korea"/ or ecuador/ or
6 gibraltar/ or guyana/ or exp india/ or indonesia/ or iran/ or iraq/ or jordan/ or kosovo/ or
7 kuwait/ or lebanon/ or liechtenstein/ or macau/ or "macedonia (republic)"/ or exp melanesia/
8 or moldova/ or monaco/ or mongolia/ or montenegro/ or nepal/ or Netherlands Antilles/ or
9 New Guinea/ or oman/ or pakistan/ or paraguay/ or peru/ or philippines/ or qatar/ or "republic
10 of Belarus"/ or romania/ or exp russia/ or saudi arabia/ or serbia/ or sri lanka/ or suriname/ or
11 syria/ or taiwan/ or exp transcaucasia/ or ukraine/ or uruguay/ or united arab emirates/ or exp
12 ussr/ or venezuela/ or yemen/
- 13 83 australasia/ or exp australia/ or austria/ or exp Baltic States/ or belgium/ or exp canada/
14 or chile/ or czech republic/ or europe/ or European Union/ or exp france/ or exp germany/ or
15 greece/ or hungary/ or ireland/ or Israel/ or exp italy/ or exp japan/ or korea/ or luxembourg/
16 or mexico/ or netherlands/ or new zealand/ or north america/ or poland/ or portugal/ or exp
17 "republic of korea"/ or exp "Scandinavian and Nordic Countries"/ or slovakia/ or slovenia/ or
18 spain/ or switzerland/ or turkey/ or exp united kingdom/ or exp united states/ or "Organisation
19 for Economic Co-Operation and Development"/ or Developed Countries/
- 20 84 82 not (82 and 83)
- 21 85 81 not 84
- 22 86 Qualitative Research/
- 23 87 Nursing Methodology Research/
- 24 88 Interview.pt.
- 25 89 exp Interviews as Topic/
- 26 90 Questionnaires/
- 27 91 Narration/
- 28 92 Health Care Surveys/
- 29 93 (qualitative\$ or interview\$ or focus group\$ or questionnaire\$ or narrative\$ or narration\$
30 or survey\$).tw.
- 31 94 (ethno\$ or emic or etic or phenomenolog\$ or grounded theory or constant compar\$ or
32 (thematic\$ adj4 analys\$) or theoretical sampl\$ or purposive sampl\$).tw.
- 33 95 (hermeneutic\$ or heidegger\$ or husser\$ or colaizzi\$ or van kaam\$ or van manen\$ or
34 giorgi\$ or glaser\$ or strauss\$ or ricoeur\$ or spiegelberg\$ or merleau\$).tw.
- 35 96 (metasynthes\$ or meta-synthes\$ or metasummar\$ or meta-summar\$ or metastud\$ or
36 meta-stud\$ or metathem\$ or meta-them\$).tw.
- 37 97 "critical interpretive synthes*".tw.
- 38 98 (realist adj (review* or synthes*)).tw.
- 39 99 (noblit and hare).tw.
- 40 100 (meta adj (method or triangulation)).tw.
- 41 101 (CERQUAL or CONQUAL).tw.
- 42 102 ((thematic or framework) adj synthes*).tw.

- 1 103 or/86-102
- 2 104 85 and 103
- 3
- 4

1 Appendix C – Qualitative evidence study selection

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1 Appendix D – Qualitative evidence tables

2

Adams, 2015

3

Bibliographic Reference Adams J; Bateman B; Becker F; Cresswell T; Flynn D; McNaughton R; Oluboyede Y; Robalino S; Ternent L; Sood BG; Michie S; Shucksmith J; Sniehotta FF; Wigham S; Effectiveness and acceptability of parental financial incentives and quasi-mandatory schemes for increasing uptake of vaccinations in preschool children: systematic review, qualitative study and discrete choice experiment.; Health technology assessment (Winchester, England); 2015; vol. 19 (no. 94)

4 Study Characteristics

Secondary publication of an included qualitative study - see the evidence table and risk of bias/ relevance judgements under the main reference	Associated paper (for details see McNaughton 2016)
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Albert, 2019

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Bibliographic Reference Albert, Katelin; Beyond the responsibility binary: analysing maternal responsibility in the human papillomavirus vaccination decision.; Sociology of health & illness; 2019; vol. 41 (no. 6); 1088-1103

7 Study Characteristics

Study design	Semi-structured interviews
Aim of study	To explore parents' views of the HPV vaccine.
Study location	Canada
Study setting	Community
Study dates	2012 to 2015
Sources of funding	Social Sciences and Humanities Research Council of Canada
Study methods	Lasting about 1 hour, interviews were conversational and they discussed their upcoming or recently made HPV vaccine decision. The investigators intended to interview mothers and fathers about their HPV vaccination decisions, but mothers were more willing to participate. They recruited participants through snowball sampling, recruitment posters, individual handbills and online. They told potential informants that they wanted to talk to them about their thoughts, beliefs and opinions on the HPV vaccine; what experiences shaped their decision; and, what they knew about HPV and the vaccine. Finding participants was challenging, as this vaccine is controversial and explicitly tied to adolescent sexual behaviour. Some people who did not vaccinate their daughters (from HPV or other vaccines) did not want to participate

	<p>because of previous criticisms, even after assurances of confidentiality and non-judgement.</p> <p>Themes and topics discussed in interviews remained consistent.</p> <p>Respondents completed a short, structured demographic form before being the interview.</p> <p>They purposefully interviewed a varied number of people by race and ethnicity, but they did not find substantive differences across their accounts in their sample. Guided by grounded theory, their data analysis was inductive and began by using NVivo software to open code interviews, followed by writing analytic memos. The interviewer was a woman who was not a mother. She tried to remain reflexive about how her own life experiences. The analysis involved a deliberate effort to focus on mothers' points of view.</p>
<p>Population and perspective</p>	<p>The data come from in-depth semi-structured interviews with 28 Ontario mothers with at least one daughter between sixth and twelfth grade (ages 11 through 17).</p> <p>Fifteen mothers had daughters who received the HPV vaccine, 12 had daughters who did not receive it, and one informant had one daughter receive it and two daughters who did not.</p> <p>All mothers identified as heterosexual. Twenty-one were married, seven were single mothers who were separated, divorced or now re-married. Seventeen mothers' total household incomes were far above the Ontario's median household income (\$76,510 CAD) (Statistics Canada 2015), ranging from \$100,000 to above \$200,000. Five were in the median range from \$60,000 to \$99,000, and four far below the median, with several earning less than \$29,000 per year. The remaining participants chose not to disclose their income. Educationally, three mothers had high school diplomas, five had some college, eight held a Bachelor's degree, eight held a graduate degree and four held a professional degree. Informants were asked to self-identify their race/ethnicity. About two-thirds stated they were White/Caucasian and the other third identified as Black (Guyanese and Black African), Jewish-Mexican, First Nations (Indigenous), Finnish, Arab-Lebanese-Canadian, Filipino-Canadian, West African/Afghan and South African.</p>
<p>Inclusion Criteria</p>	<p>Parents With at least 1 daughter aged 11 to 17 years.</p>
<p>Relevant themes</p>	<p>1. HPV vaccine-consenting mothers: Risks of cervical cancer and benefits of vaccination. A common theme in interviews with consenting mothers was the threat of cancer, with the vaccine is a way to exert some control over the risk of cancer. A typical example is Annette (38-year-old mother of two girls who had childhood vaccinations like MMR), who saw cancer as the biggest variable this decision. It was an obvious decision for her since the vaccine could: "protect my child against something that is that, um, dangerous, health-wise."</p> <p>2. Non-HPV vaccine-consenting mothers: Risks of vaccinating and cervical cancer is treatable. Many non-HPV vaccine-consenting mothers (most of whose children had received other, mandatory vaccines) believed the risks of the vaccine were too high, and its preventative potential too low even if these mothers had concerns about cancer. This organised what they felt they were responsible for in terms of their daughters' life, health and sexual health. These mothers saw cervical cancer as fairly treatable since Canada has good screening mechanisms in place. They asked these mothers if they worried about their daughters developing cervical cancer. Many responded that while that would be awful, they believed the risk did not seem large, and that cervical cancer is slow-growing and treatable. For example, one mother said: "My first reason that comes to mind, what are we going to do in 25 years when none of these women can have babies? [O]r they're having difficulties carrying babies to term? There's something unknown. Birth defects? I have no idea . . . I knew from what my doctor told me that early initiation of sexual intercourse with a boy increases the chance of cervical cancer, so one of the things you need to do is come in for regular check-ups to be tested. And that to me seems like a much more reasonable</p>

way to deal with things. If she decides to be sexually active, [I told her], you're going to go and have a Pap done with your doctor every year. You made that choice [to be sexually active], you now have to go do something you really don't like doing every year for the rest of time as far as I'm concerned."

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

2

Austin, 2001

Bibliographic Reference

Austin H; Parents' perceptions of information on immunisations.; Journal of child health care : for professionals working with children in the hospital and community; 2001; vol. 5 (no. 2)

3

4 Study Characteristics

Study design	Semi-structured interviews
Aim of study	To understand parents' experiences of deciding to have their child immunised.

Behavioural model used	Phenomenological method
Study location	UK
Study setting	Community
Study dates	Not provided
Sources of funding	MSc student research project at the University of Greenwich
Study methods	<p>A purposive sampling method was used within the practice population to include parents of children aged between seven and nine months, and aged 18 months, during two consecutive months. The children of these parents had recently been immunised and were routinely seen in developmental clinics during the health visitor's work.</p> <p>Consent was obtained from the Ethics Committee, managers and the GPs within the practice whose patients were the participants, and from the parents themselves. Parents were invited to the surgery for their child's developmental check. Following completion of this, the research project was explained, and parents given an information sheet. Preliminary consent was obtained regarding contact for arranging the interview, and written consent was gained immediately prior to commencing each interview.</p> <p>An appointment was then arranged for an interview at home or the surgery.</p> <p>Following the evaluation of a pilot interview, a semi structured interview was used:</p> <ul style="list-style-type: none"> • What information on immunizations did you receive? • From whom did you receive this information? • When did you receive it? • Were you satisfied with it? • If so, why? • If not, why not? • What, or who, influenced your decision on the immunization of your child? • What changes to the information and its delivery would you suggest?
Population and perspective	15 parents were seen and agreed to be contacted. Of these, 13 were willing to participate. This resulted in interviews with 11 mothers and 2 couples. Parents came from social classes 1-5. 4 mothers were single parents. 4 mothers had a history of postnatal depression. 5 mothers worked part-time.
Inclusion Criteria	<p>Parents of children who had a specified age range Aged 7 to 9 months</p> <p>People who agreed to routine vaccinations The children of these parents had recently been immunised and were routinely seen in developmental clinics during the health visitor's work.</p>
Exclusion criteria	None reported
Relevant themes	The investigators identified 4 themes:

	<p>1. Feelings: risk, worry, fear, isolation, vulnerability, trust, reassurance, side effects, proven, protection: "In having your child immunised, you're taking a risk, rather than if you don't have them immunised you're just leaving them at risk."</p> <p>2. Communication: written information, professional sources of information, and the timing of information. Codes used in relation to the levels of satisfaction with communication were: helpful, clarity, reasons, for protection, explanation, discussion, discussion, unhelpful: "My questions were answered. I just understood what the information was saying and when I was able to talk to yourself, and the practice nurse, time was given for questions and clarification and that made it very satisfying as well."</p> <p>3. Decision-making influences: decision making guidance, expected things to do, influences, health, attitude, disease, informed, sickness: "... the media and society, because everybody does it. You feel that unless you've got a very good reason, you just do it anyway."</p> <p>4. Suggestions for change: Statistics, need for more information, preparation, group meeting, split immunisations: When asked who they thought the most appropriate person to give the information, a typical response was: "... with the health visitor again. To me it was a waste of the doctor's time."</p>
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1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Austin, 2008

2

Bibliographic Reference Austin, Helen; Campion-Smith, Charles; Thomas, Sarah; Ward, William; Parents' difficulties with decisions about childhood immunisation.; Community practitioner : the journal of the Community Practitioners' & Health Visitors' Association; 2008; vol. 81 (no. 10); 32-35

3

4 Study Characteristics

Study design	Focus Groups
Aim of study	To hear parents' stories about immunising their children, and to compare the views of parents of completely and incompletely immunised children to understand better how and why they made their decisions.
Behavioural model used	None stated
Study location	UK
Study setting	Community
Study dates	2000 to 2002
Sources of funding	British Medical Association Claire Wand Fund
Study methods	<p>A steering group planned the study, undertook a literature search and obtained ethical approval.</p> <p>Focus groups gave parents the opportunity to explain and reflect on their decision making processes, enabling the researchers to gather information and explore parents' knowledge, beliefs and attitudes. Each group lasted about an hour. Consent was confirmed and the groups were audiotape recorded, with contemporaneous notes being made by an observer. The researcher facilitated the focus groups, using a discussion guide drafted by the steering group after consultation with primary care practitioners and developed iteratively in response to points raised by participants. She only intervened when the discussion stalled, introducing new areas for consideration.</p> <p>Focus groups were used in order to capture parents' views without a sense of individual scrutiny or criticism. They offered an opportunity to discuss and reflect upon the general issue of childhood immunisation, as well as personal experiences. The method is flexible and does not discriminate against those with reading difficulties. Participants were encouraged to comment in their own words, while being stimulated by the ideas and comments of other group members.</p> <p>Analysis of the audiotape transcripts and observers' notes was carried out by the researcher and an observer.</p> <p>Using Cresswell's spiral analysis, all transcripts and reflective notes were reviewed. The recording and frequency of participants' words and metaphors were coded into a short list, which expanded as the data were continually reviewed. Subsequent</p>

	<p>interpretation and classification of the data led to the formation of 34 codes. The researcher counted the frequency of the codes, identified patterned regularities and built up a chain of evidence. These codes were then reduced to 12 categories of factors.</p>
Population and perspective	<p>There were 25 parents in total in 4 different focus groups.</p> <p>The study cohort comprised children living in a primary care group area (population 67500, 17 GP practices) born between 1 July 1995 and 30 June 1996 (n=628), aged between five and six years at the time of the study. They were categorised as completely or incompletely immunised using the child health computer system. Any child who had missed any dose of the primary or pre-school booster schedule was treated as incompletely immunised. The records revealed that 158 (25%) had an immunisation status described as 'incomplete'.</p> <p>The immunisation co-ordinator wrote to one parent of each child to inform them of the study and request consent to pass their names to the research group, producing 355 replies (response rate=57%) from 298 parents of completely immunised children (PCICs) and 158 parents of incompletely immunised children (PIICs). Three replies indicated that fully immunised children had been assigned incorrectly.</p> <p>Of the 209 (44%) PCICs who consented to inclusion, 30 were randomly selected by the research assistant and invited to attend a focus group, and 13 (43%) accepted. Only 27 (17%) PIICs consented to inclusion and all were invited, of whom seven mothers and one father attended (30%). It was noticeably more difficult to recruit PIICs than PCICs. Participants were classified by the immunisation status of their child or children. Four focus groups were held, two of PCICs and two of PIICs.</p>
Inclusion Criteria	<p>Parents of children who had a specified age range Aged between 5 and 6 years</p>
Exclusion criteria	<p>None reported</p>
Relevant themes	<p>12 "Categories of factors" were identified:</p> <ol style="list-style-type: none"> 1. Fear of diseases and unknown side effects: "I was frightened... I hadn't seen a reaction with anyone else but the first time I had him vaccinated against whooping cough, I couldn't sleep for weeks" 2. Risk: "This is progress, that we are having these immunisation programmes. I know there is a risk, but there is a risk with everything. Our very existence is, it's inherently risky." 3. Anger toward other parents, government and media: "The government are the ones who are putting our children at risk, we-you know, as parents - we have weighed up the pros and cons and they ought to stop and listen." 4. Worry and guilt: "That is what I was always worried about, I used to think, 'Oh, he is so lovely', as he is a clever little boy, and if it did change I would just never ever forgive myself, and you would feel so awful and I still have to take a risk which is the horrible thing and we shouldn't have to, we should be able to have a single vaccine." 5. Feelings relating to safety, protection and reassurance: PCICs found safety and reassurance in the knowledge that their own children were immunised, and reached this decision in a logical way. 6. Feeling alienated and judged: "I feel discriminated against by the government because they really are, I think, putting on so much pressure and sometimes I think it is quite unbearable." 7. Conflict and distress in decision-making: "We are under so much pressure, when people keep on insisting, insisting." 8. Trust and mistrust of government, GPs and other healthcare professionals: "I really don't trust the government." 9. Confusion about conflicting information: "It's traumatic to make a decision about immunisation anyway... only because of the element of doubt." 10. Perception of pressure from government, friends, media and professionals: "It is

the government... patronising me and informing me that if it was available in single vaccines then I would be more likely not to have them vaccinated because it involves more injections. But I am sorry, that it is just patronising again, 'cos I certainly would, so as you can tell I am fairly annoyed about it really.”

11. Interest in single vaccines as alternatives to the MMR vaccine: They felt guilty in case their child had a reaction, and wanted single vaccines as an alternative to the MMR vaccine.

12. Concerns about autism and bowel disorders: “That is what I was always worried about, I used to think, 'Oh, he is so lovely', as he is a clever little boy, and if it did change I would just never ever forgive myself, and you would feel so awful and I still have to take a risk which is the horrible thing and we shouldn't have to, we should be able to have a single vaccine.”

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

2

Austvoll-Dahlgren, 2010

3

Bibliographic Reference Austvoll-Dahlgren, Astrid; Helseth, Solvi; What informs parents' decision-making about childhood vaccinations?; Journal of advanced nursing; 2010; vol. 66 (no. 11); 2421-2430

1 **Study Characteristics**

Study design	Focus Groups
Aim of study	To identify parents' decision-making processes in relation to childhood vaccinations, including barriers and facilitators to searching for information.
Behavioural model used	Grounded theory
Study location	Norway
Study setting	Community
Study dates	2008
Sources of funding	Oslo University College
Study methods	<p>Public health nurses were recruited from three maternal and child health centres in a major Norwegian city. Centres were selected to represent a spread in socio-economic backgrounds and a mixed population, and included centres in the western and eastern districts and one in the city central area.</p> <p>In total, 16 public health nurses participated into three focus groups. Interviews were led by a researcher with a social science background assisted by a nursing student as interview secretary. Data collection was done using semi-structured qualitative interviews lasting between 45 and 90 minutes. The sessions were tape-recorded with the permission of informants.</p> <p>The interview guide included general topics about how public health nurses experienced decision-making about vaccination, what informed decision-making, and barriers and facilitators to the search for information.</p> <p>Ethics approval for the study was granted by Norwegian Social Science Data Services (NSD) and Regional Committees for Medical and Health Research Ethics.</p> <p>Throughout the data collection process, memo-writing was done to supplement the analysis process. Interviews were transcribed as a part of the analysis process. In first phase, the data were coded by 'incident to incident' to identify concepts. Interim analysis was performed continuously to check and interpret data, and to develop preliminary categories and relationships between these. The final stages included creating a chart and exploring connections between categories, based on axial coding.</p> <p>Member-checking was done at the end of the interviews. Participants were presented with preliminary interpretations of the main issues identified to check authenticity and allow them to comment on the accuracy and completeness. To improve credibility, the reading and interpretation of data was done independently and then discussed by two additional researchers. The interdisciplinarity of the research team added different perspectives and viewpoints to the study, including theoretical knowledge and clinical experience. To address the issue of dependability, an</p>

	independent audit of the research methods and the study decision trail was performed by an external grounded theory researcher.
Population and perspective	16 public health nurses in 3 focus groups
Inclusion Criteria	Practicing healthcare professionals Public health nurses who dealt with childhood vaccinations
Exclusion criteria	None reported
Relevant themes	<p>4 Themes were identified:</p> <p>1. Making a decision about childhood vaccinations: a question of trust and common-sense: "You just do it. We didn't think much about it. We talked a little about it at home, but there is a reason why it's recommended."</p> <p>2. Most important source of information about childhood vaccinations: Public health nurses as counsellors and mediators of information: "(I expect) good answers to everything parents may be unsure about when it comes to children! (Public health nurses are) society's instrument to support and ensure that everyone is feeling secure."</p> <p>3. Attitudes towards the decision may also influence the search for information: "Then you may be wary if somebody you know closely and you have seen it with you own eyes, someone who has had side effects...Then I think you may look up more information on your own."</p> <p>4. Being inadequately informed may result in low confidence in own decision and uncertainty about rights and responsibilities in decision-making: "Well, you get a pamphlet where all the benefits of vaccinations are listed, signed by the Institute of Public Health (saying), 'This is good (for you)! Then you must be particularly interested in the topic to disagree, or to find any arguments for not (vaccinating)."</p>
Additional information	This study also included data from parents. However, this data has not been used because we already had enough UK data from parents.

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes

Section	Question	Answer
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Badertscher, 2012

2

Bibliographic Reference Badertscher, N.; Morell, S.; Rosemann, T.; Tandjung, R.; General practitioners' experiences, attitudes, and opinions regarding the pneumococcal vaccination for adults: A qualitative study; International Journal of General Medicine; 2012; vol. 5; 967-974

3

4 Study Characteristics

Study design	Semi-structured interviews
Aim of study	To investigate why the pneumococcal vaccination is so rarely provided by GPs.
Behavioural model used	None stated
Study location	Switzerland
Study setting	General practices
Study dates	2010 to 2011
Sources of funding	Sanofi Pasteur MSD
Study methods	The semi-structured and open-ended interviews took place at the GPs' practices at a time of their choice. The interviews were conducted by a staff member from the Institute of General Practice at the University of Zurich. An interview guide outlined

	<p>the main aspects of the interview. Additional explanations were given when the GP did not understand the question. The interviews were recorded on a digital audio recorder; the interviewer provided additional hand notes. Prior to the start of the study, the interview guide was tested with two GPs concerning comprehensibility of the questions and logical structure of the interview.</p> <p>They decided to analyse with qualitative content analysis rather than with grounded theory.</p> <p>They sent an information letter to all GPs on a pre-existing list of their GP research network of 251 GPs who once showed interest in participating in research projects. The response rate was rather low, with 28 GPs (11.2%) showing interest in participation. In Switzerland, the task of primary care differs based on geographical factors, especially with respect to the work environment of an urban region (where there may be many specialists or hospitals around) compared with a rural area (where the GP is very often the only physician in a broader region). Therefore, the final participants were chosen in a way as to obtain a representative balanced distribution with respect to rural and urban GPs.</p>
Population and perspective	<p>20 GPs were recruited. Participants had between 7 and 32 years of practical experience, with a mean of 20.3 years. Three of the 20 participants were female, 17 were male. Sixteen GPs worked full-time and four worked part-time. Thirteen participants worked in an urban or suburban region, while seven participants worked in a rural area.</p> <p>According to the statistics of the Swiss Medical Board, 24 out of the 5800 general practitioners/general internists, 4262 (73.5%) were male, so in their sample study, the women are slightly underrepresented.</p>
Inclusion Criteria	<p>Practicing healthcare professionals GPs</p>
Exclusion criteria	<p>None reported</p>
Relevant themes	<p>Three themes were discussed:</p> <p>1) GPs' evaluation of the pneumococcal disease and its vaccination. GPs stated that they had hardly ever seen patients with proven invasive pneumococcal disease in their own practice. The vaccination was perceived effective by the majority of the GPs, but most of the GPs stated that they had no possibility of verifying the effectiveness in their daily practice. "I can't say anything about the effectiveness of the vaccination from my daily experience, because I don't know, if a patient really had a pneumococcal disease and if this would have been preventable with the vaccination." (GP)</p> <p>2) Lack of awareness and time constraints as barriers. Due to the permanent time constraints in the GPs' daily practice, after the solving of acute health issues, there was just not enough time left to discuss the pneumococcal vaccination. GPs stated that some patients did not even know this vaccination exists. "For me, it's just a question of priorities ... There are many issues that are much more important than the pneumococcal vaccination." (GP)</p> <p>3) Interventions to increase the pneumococcal vaccination rate. GPs proposed an improvement of the data regarding the epidemiology of the pneumococcal disease and the effectiveness of the pneumococcal vaccination and they highlighted the importance of a good vaccination campaign. "The vaccination rate could be positively influenced if the existing data would be declared clearly and GPs would be transparently informed about the benefits and harms of the vaccination ... Number needed to vaccinate, number needed to harm ...</p>

Really proved in good studies ..." (GP)

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research has some value
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

2

Batista Ferrer, 2016

3

Bibliographic Reference Batista Ferrer, Harriet; Trotter, Caroline L; Hickman, Matthew; Audrey, Suzanne; Barriers and facilitators to uptake of the school-based HPV vaccination programme in an ethnically diverse group of young women.; Journal of public health (Oxford, England); 2016; vol. 38 (no. 3); 569-577

4

5 Study Characteristics

Study design	Semi-structured interviews
	Participant observation

Aim of study	To identify the barriers and facilitators to uptake in an ethnically diverse group of young women, with previously identified lower uptake, and to make recommendations to increase uptake.
Behavioural model used	None stated
Study location	The south west of England
Study setting	Education (three state-funded comprehensive schools)
Study dates	October 2012 to July 2013
Sources of funding	This work was supported by the Centre for the Development and Evaluation of Complex Interventions for Public Health Improvement (DECIPHer), a UKCRC Public Health Research Centre of Excellence. Joint funding (from the British Heart Foundation, Cancer Research UK, Economic and Social Research Council, Medical Research Council, the Welsh Government and the Wellcome Trust, under the auspices of the UK Clinical Research Collaboration. In addition, the study was supported by the NIHR Health Protection Research Unit in Evaluation of interventions and the Biosocial Society.
Study methods	<p>A two-tiered system of consent was used to recruit young women. In the study schools, the parents of all young women eligible for vaccination according to the English national immunization schedule were sent an information pack with a reply slip to be completed if they did not wish their daughter to take part (parental opt-out). Young women whose parents had not opted them out were given an information leaflet and asked for their assent to complete a short questionnaire providing their basic details (including ethnicity and Free School Meal entitlement) and vaccination status. This two-tier consent procedure for low-risk research studies with young people has been shown to result in higher recruitment rates, especially those from socioeconomically disadvantaged backgrounds.</p> <p>A sampling frame, stratified by vaccination status and ethnicity (Black/Black British, Asian/British Asian, White British and Other/Mixed), was created, and potential participants were then randomly selected from each strata using a computer-generated number. Selected young women were able to nominate a peer of their choice to participate in the interview with them if they wished. The views of young women from minority ethnic groups and White British young women were sought to gain understanding of factors affecting uptake unrelated to ethnicity or culture. The young women were given an information sheet and invited by the study researcher (H.B.-F.) to participate, for which written parental consent was sought.</p> <p>In each school, a vaccination session was observed during which detailed field notes about the context and any specific incidents relevant to uptake recorded. Young women were interviewed alone or with a peer. The interviews took place either in the school, home or place of work of the participant. Semi-structured topic guides, informed by the findings of a previous qualitative synthesis, were used and covered vaccination beliefs, experiences of the HPV vaccination programme, decision-making and consent, and cultural and religious beliefs.</p> <p>Interviews were carried out until saturation was achieved and no new issues arose. To minimize researcher bias, the interviewer (H.B.-F.) was careful to remain neutral with respect to her personal views and to the responses provided. All interviews were digitally recorded with the permission of the participant and confidentiality maintained.</p> <p>As data collection progressed, interview recordings were transcribed verbatim. The analysis was based on methods from thematic analysis and the Framework approach</p>

	to data management. Sections of text were coded, with multiple codes being allocated where appropriate. Coding was simultaneously inductive (emerging from the data in the transcripts) and deductive (based on the research questions and constructs previously identified). Similar codes were grouped together to create a thematic framework comprising a hierarchy of themes and sub-themes. Codes were double checked by the same researcher to ensure consistency and accuracy. Analysis was undertaken independently by one researcher (H.B.-F.) with discussions held with a study author (S.A.) as analysis progressed. Separate charts were constructed around key themes for young women (organized by vaccination status) and key informants using the Framework Matrix within QSR NVivo10 software.
Population and perspective	Twenty-three young women aged 12 to 13 years, and six key informants. Multiple perspectives were sought for this study to gain a more comprehensive understanding of factors affecting uptake. The lead school nurse and a key staff member at each school were given information about the study and invited to participate in an interview.
Inclusion Criteria	Girls aged 12-13 School nurses School staff
Exclusion criteria	None reported
Relevant themes	<ol style="list-style-type: none"> 1. Vaccine beliefs: some parents were wary of vaccinations or have beliefs that oppose vaccination. 'Most of them were scared about the side effects, but I wasn't really too worried about that' 2. Priority: prevention of cervical cancer was an important reason to prioritize young women's receipt of the vaccine. 'She [mother] said it was a good thing to have after her [cervical cancer] scare' 3. Sexual mores: Key informants agreed that the recommended age to vaccinate was appropriate to ensure young women are adequately protected prior to sexual debut. 'We see lots of children that are sexually active at 13. . .I would say in some areas that we're working, it's the best thing to do really, it's the best time' 4. Information needs: The importance of information in multiple languages, and provision of verbal information, to families was highlighted. 'Here there are 38 languages. . .so what parents are very good at doing here is they'll get a letter in English and they'll find a friend to interpret it for them, which I don't think is good enough. . .there needs to be more translations into general languages' 5. Decision-making and consent: The majority of vaccinated young women indicated that decisions were made by their parents, or with other adults, irrespective of their own perspective. 'There is no way you can be giving a vaccination to a child without their parents' consent. That is beyond crazy!'

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes

Section	Question	Answer
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Bell, 2020a

2

Bibliographic Reference Bell S; Saliba V; Ramsay M; Mounier-Jack S; What have we learnt from measles outbreaks in 3 English cities? A qualitative exploration of factors influencing vaccination uptake in Romanian and Roma Romanian communities.; BMC public health; 2020; vol. 20 (no. 1)

3 **Study Characteristics**

Study design	Semi-structured interviews
Aim of study	To explore factors contributing to the risk of under vaccination in Romanian and Roma communities.
Study location	UK
Study setting	Birmingham, Leeds and Liverpool (cities that experienced measles outbreaks in 2017–18 that particularly affected Romanian and Roma Romanian communities).
Study dates	Unclear but after the 2017-2018 measles outbreak
Sources of funding	The research was funded by the National Institute for Health Research Health Protection Research Unit (NIHR HPRU) in Immunisation at the London School of Hygiene & Tropical Medicine in partnership with Public Health England (PHE).
Study methods	The researchers identified and approached provider through PHE Health Protection Teams in each city. The teams were able to link the authors with providers that they considered key in the outbreak response. The providers included people involved in vaccination delivery and outbreak management in each city, including frontline vaccinators and representatives from Public Health England (PHE) Health Protection

	<p>Teams, Screening and Immunisation Teams and Local Authorities. The interviews lasted 30–45 min and took place in person or via telephone. Providers were asked about their experiences in delivering vaccination services to Romanian and Roma service users.</p> <p>The authors also conducted semi-structured interviews with Romanian community members (CMs) living in one of the cities. CM recruitment took place through an Eastern European women’s community group led by a Gypsy, Roma and Traveller Outreach worker. Interviews with CMs lasted approximately 30 min and were conducted face to- face, with the assistance of a Romanian speaking female interpreter. During the interviews, we asked the CMs to talk about their vaccination experiences in relation to themselves and any children/grandchildren.</p> <p>Findings were analysed thematically. During theme generation, a matrix was created using the “5A’s Taxonomy for Determinants of Vaccine Uptake” to categorise factors associated with vaccine uptake. The categories within the taxonomy are: Access, Affordability, Awareness, Acceptance and Activation [26] (Table 2). Contributing factors to vaccine uptake were classified in this way to identify where to target recommendations to improve uptake.</p>
<p>Population and perspective</p>	<p>Thirty-three providers and 9CMs. The CMs were all women, and 3 of these women self-identified as Roma. Providers from a range of job roles were recruited from different organisations on the basis that they were involved in vaccination delivery to Romanian and Roma Romanian communities, or in an outbreak response. The providers included: PHE Health protection team members, screening and immunisation team members, a GP, practice nurses, school nurse and a health visitor. Community members were al Romanian with 3 being Roma or having Roma heritage (father). They were all in the UK for 3 years or less with children ranging in age from 6 months to 21 years. One was pregnant, another a grandparent with role in deciding vaccinations for grandchild. One CM was childless.</p>
<p>Inclusion Criteria</p>	<p>Parents of a specific nationality Romanian</p> <p>Parents who are part of a specific community Some but not all of community member participants were Romanian Roma</p> <p>Grandparents Romanian</p> <p>Vaccination providers who work with the Romanian community</p>
<p>Exclusion criteria</p>	<p>None reported</p>
<p>Relevant themes</p>	<p>Nine themes were identified:</p> <ol style="list-style-type: none"> 1. Primary care accessibility and acceptability: Providers considered access to primary healthcare to be a major barrier to vaccine uptake. Providers reported that registration with general practice and lower primary care use were an issue amongst the communities. Lower usage of primary care by the communities was partly perceived as due to differences in health-seeking behaviours. Community members were more likely to access accident and emergency (A&E) services than primary care, and only then once they felt very unwell. Providers found that navigating the health system was challenging and unclear for community members, particularly in the presence of language barriers. The process of registering with a general practice was not always clear. For instance, providers found that some community members were unaware of a need to register their new-born child at their GP practice, considering that this would be an automatic process if the mother was already registered there. Experiences of discrimination were also not

uncommon specifically providers highlighted this in relation to encounters with GP receptionists.

2. Language and literacy: CMs reported language and literacy as major barriers to accessing credible vaccine information and giving informed consent for vaccination. Providers also reported their awareness of these issues, and highlighted communication as a factor affecting their ability to properly explain vaccinations and to promote vaccination. The time-allotted to appointments with midwives and those working in general practice, reported as just 15 min, was considered unrealistic, particularly when trying to overcome communication barriers.
3. Perceived financial costs: several providers reported a lack of clarity around payment for health services that could pose as a barrier to accessing healthcare and vaccination. '... if you are new into the country there are language issues, you don't know how to navigate the health system, how do you understand if you're one of those migrants that will be charged or won't be charged ...' (Provider)
4. Competing priorities: In the context of other competing demands, vaccination was often not one of the main priorities for community members. The communities were described as having a more reactive response, living day-by-day, and dealing with immediate stressors. Competing priorities related to financial instabilities.
5. Awareness: Given the language and literacy barriers experienced by CMs, being able to locate credible information about vaccines in translated forms was difficult. The majority of CMs that the researchers spoke with were not provided with written vaccination in translated forms. Amongst the CMs there was an awareness around the vaccine schedule in the UK .
6. Perceptions around measles severity: Providers, particularly in Birmingham, reported that measles was not necessarily a disease that caused concern amongst the communities. Several providers believed that for some community members their children contracting measles was a 'rite of passage'. It was considered beneficial to contract measles rather than vaccinate, so as to develop a 'natural immunity' to the disease.
7. Perceptions around the benefits of vaccination: Amongst the interviewed CMs, most considered vaccinations beneficial and important, particularly those that had witnessed vaccine-preventable diseases. CMS were often nervous ahead of their child's first vaccination, but this passed with positive vaccination experiences. Amongst the CMs that declined vaccination, there was also the belief that vaccinations are ineffective or unnecessary.
8. Trust in vaccinations and health services: Past experiences of vaccinations and in Romania and the UK, affected the decision to access vaccinations and health services amongst some of the community members. Understandably, negative experiences could create a distrust and fear of vaccines and health services.
9. Activation: Providers found that their blanket approach for reaching service users, such as GPs sending vaccination reminders to CMs via letter or text message, was not a particularly effective way of reaching the communities, particularly the Roma. This was due to communication barriers, and the transiency within Roma communities. Face-to-face communication was considered a much more effective approach to reaching communities and gaining their trust, using outreach strategies. In order to promote vaccination, although costly, providers also considered that it would be beneficial to involve members of the community as vaccine advocates.

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

2

Bell, 2020b

3

Bibliographic Reference Bell S; Saliba V; Evans G; Flanagan S; Ghebrehewet S; McAuslane H; Sibal B; Mounier-Jack S; Responding to measles outbreaks in underserved Roma and Romanian populations in England: the critical role of community understanding and engagement.; *Epidemiology and infection*; 2020; vol. 148

4 **Study Characteristics**

Study design	Semi-structured interviews
Aim of study	To investigate whether responders to measles outbreaks were able to overcome barriers to vaccine uptake and consider the most effective ways of promoting vaccination uptake amongst underserved Romanian and Romanian Roma communities.
Behavioural model used	None stated

Study location	Birmingham, Leeds and Liverpool, UK
Study setting	Community
Study dates	June 2018 and January 2019.
Sources of funding	The research was funded by the National Institute for Health Research Health Protection Research Unit (NIHR HPRU) in Immunisation at the London School of Hygiene & Tropical Medicine in partnership with Public Health England (PHE).
Study methods	The recruitment and study methods are as described in Bell 2020a for the vaccination providers.
Population and perspective	Thirty-three providers were recruited. Providers from a range of job roles were recruited from different organisations on the basis that they were involved in vaccination delivery to Romanian and Roma Romanian communities, or in an outbreak response. The providers included: PHE Health protection team members, screening and immunisation team members, a GP, practice nurses, school nurse and a health visitor.
Inclusion Criteria	Vaccination providers who work with the Romanian community
Exclusion criteria	None reported
Relevant themes	<p>There were many themes reported, but only 1 was relevant for our current review and not covered by Bell 2020a (see additional comments below).</p> <p>The perceived unfairness of immunisation targets:</p> <p>GPs receive financial payments for administering childhood vaccinations, based on achievement against a 70% or 90% uptake target for children at 2 and 5 years. Practices achieving the 90% target secure the highest financial payment. GPs that served populations with greater barriers to health service found it difficult to achieve the higher immunisation target.</p> <p>‘.... The system is so biased in or towards practices in nice leafy-green areas with English [speaking] people because, you know, that our nice or well-off end but we hit 90 percent vaccination with no trouble at all. We don’t have to do anything. Whereas there we spend a huge amount of effort and money and time and we hit about 77 percent.’ (Provider#12)</p> <p>The focus of the immunisation target payment system on outcome, rather than process, meant that providers felt penalised for not reaching targets even when they ‘work so hard for immunisations’. Providers also felt that this could lead to reduced vaccination call-recall efforts.</p>
Additional information	The focus of this study was the catch up campaign initiated in response to a measles outbreak. This type of vaccination programme is not part of the routine schedule and is out of scope for this review. Therefore we have only extracted themes that refer to barriers or facilitators that affected vaccination rates leading up to outbreak or vaccination of this community in general. Many of these themes are covered in more detail in Bell 2020a and we have only extracted themes that are not reported in that paper here.

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant (Themes that related to the catch up campaign were not extracted.)

1

Bell, 2020c

Bibliographic Reference Bell S; Clarke R; Paterson P; Mounier-Jack S; Parents' and guardians' views and experiences of accessing routine childhood vaccinations during the coronavirus (COVID-19) pandemic: A mixed methods study in England.; PloS one; 2020; vol. 15 (no. 12)

2 Study Characteristics

Study design	Semi-structured interviews
	Open ended question from a survey or questionnaire
Aim of study	To provide recommendations to inform the way that childhood vaccinations are communicated and delivered during the COVID-19 pandemic, to help improve and maintain routine childhood vaccination uptake

Study location	England
Study setting	Community
Study dates	April 2020 - May 2020
Sources of funding	National Institute for Health Research (NIHR) Health Protection Research Unit in Immunisation at the London School of Hygiene & Tropical Medicine in partnership with Public Health England
Study methods	<p>The COM-B model was used to design study tools and provide a framework for data analysis. Participants for the online surveys were recruited through social media adverts, aimed at recruiting an ethnically representative sample by approaching minority ethnic community groups. Beliefs and experiences were measured on a Likert scale and open ended questions were used to ask participants about their experiences of accessing routine childhood vaccinations during the COVID-19 pandemic. Only responses to open ended questions are included in this review.</p> <p>After completing the survey, participants were asked if they were willing to take part in the semi-structured interviews. People were contacted purposively based on characteristics such as ethnicity, household income and geographical location. Interviews lasted approximately 30 minutes and were conducted via phone. Topic guides, shaped around the content of the questionnaire, were used to support the interviews. Interview participants received a £10 gift voucher as a thank you for their time and contribution.</p> <p>Interviews were transcribed verbatim and analysed thematically using the stages outlined by Braun and Clarke: data familiarisation, coding and theme identification and refinement. To enhance the rigour of the analysis, coding approaches and data interpretations were discussed between the authors. Interviews were coded using initial codes generated from the interview topic guide and components of the COM-B model</p>
Population and perspective	<p>1252 people completed the survey, 95% (1190) of which were female and identified as White. 51.85% had a child who was due a vaccination within 12 weeks, of which 44.8% had booked a vaccine appointment.</p> <p>19 people (18 female, 1 male) took part in follow-up interviews. All participants reported that their child had received all recommended vaccines on the routine schedule prior to the COVID-19 pandemic.</p>
Inclusion Criteria	Parents and guardians aged 16 years or older living in England, with a child (or children) aged 18 months or under
Exclusion criteria	None reported
Relevant themes	<ol style="list-style-type: none"> 1. Awareness of vaccination service continuation: Several interview participants said they had been unsure about whether routine childhood vaccinations were being classed as an 'essential service' and operating as usual during the COVID-19 pandemic, particularly at the beginning of lockdown. Interview participants generally reported that their knowledge about the continuation of routine vaccinations had come through communication with other parents and guardians, often using social media, and they could not find information about service continuation on the NHS website "the only reason I really knew that they were going ahead is because my friend's got a baby that's three weeks older and she'd had hers, so I knew that they were going ahead. But otherwise, yeah, I wouldn't have been sure at all." 2. Uncertainties about vaccination appointments: As well as worries about side effects and child upset, parents had additional concerns during the pandemic, such as the measures taken to ensure safety and the risk of catching COVID-19. They felt that more information needed to be provided on GP websites or

	<p>when booking appointments. " . . .if you knew in advance what had been done in the surgery and how the rooms were set out and things like that, that would sort of make you feel a bit more comfortable about it"</p> <p>3. Some parents delayed vaccination appointments at the peak of the pandemic but those that made an appointment reported a positive experience in relation to safety measures to prevent the spread of COVID-19. "I was a bit nervous about going to the GP. . . in the end I called, um, I rang my friend, she had a newborn as well, and she explained to me what happened when she went to the GP and she got given a mask and gloves and she felt quite safe in her appointment. So I thought OK, it's better to get him vaccinated because there's a risk of other diseases as well. I felt a lot more secure."</p> <p>4. Some parents reported difficulties registering their child with a GP practice, making appointments for vaccinations or being unable to access postnatal baby checks "The only issue we have faced is that her 6-week check was cancelled by our GP practice due to covid-19 restrictions yet she wasn't allowed her first set of immunisations until she'd had the check. There seemed to be no guidance on how the surgery should handle this. In the end, I had to 'refuse' some of the checks (the docs couldn't perform them due to the restrictions) just so my daughter could have her immunisations."</p>
Additional information	43.3% of survey respondents (n = 530) provided details to be contacted for a follow-up interview. In total, 61 parents were contacted to participate. Of these 39 did not respond to recruitment emails, 2 responded initially but did not follow through with an interview, and 19 took part in interviews

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Can't tell <i>(Recruitments methods were designed to achieve an ethnically representative sample but 94% of survey respondents were White. Survey respondents could register to take part in the interviews - 530 people were willing to take part in interviews but only 61 were contacted to participate. No information about why that number of people were chosen. Only 19 people agreed to take part in the interviews.)</i>
Data collection	Was the data collected in a way that addressed the research issue?	Yes

Section	Question	Answer
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research has some value
Overall risk of bias and relevance	Overall risk of bias	Moderate <i>(94% of respondents were white indicating that the sample does not represent all populations. Very few survey participants took part in the interviews)</i>
Overall risk of bias and relevance	Relevance	Highly relevant

1

Bell, 2019

2

Bibliographic Reference Bell, S.; Edelstein, M.; Zatonski, M.; Ramsay, M.; Mounier-Jack, S.; 'I don't think anybody explained to me how it works': Qualitative study exploring vaccination and primary health service access and uptake amongst Polish and Romanian communities in England; *BMJ Open*; 2019; vol. 9 (no. 7); e028228

3

4 Study Characteristics

Study design	Semi-structured interviews
Aim of study	This study explored vaccination attitudes and behaviours among Polish and Romanian community members in England, and related access to primary healthcare.
Behavioural model used	Social Ecological Model The SEM acknowledges that health behaviours, such as vaccination uptake, are shaped by multiple factors at the following levels: intrapersonal/individual (e.g., knowledge, attitudes), interpersonal (e.g., family, friends), institutional (e.g., workplaces), community (e.g., neighbourhoods, community groups, local organisations) and policy (e.g., laws, national or local policies). The SEM has previously been used in the context of vaccination behaviours.
Study location	UK. Recruitment focused on three geographical areas (Boston, Lincolnshire; Slough, Berkshire; Brent, London).
Study setting	Community

Study dates	Not stated
Sources of funding	The research was funded by the National Institute for Health Research, Health Protection Research Unit in Immunisation at the London School of Hygiene & Tropical Medicine in partnership with Public Health England
Study methods	<p>Potential participants were given an information sheet, fully detailing the study objectives and explaining all aspects of participation, including the right to withdraw from the research. Participants were interviewed in person or via telephone. Community members were offered the option of being interviewed in English, Polish or Romanian. Interviews were audio recorded and reflective notes were taken during interviews. Face-to-face interviews were conducted in community venues (eg, libraries and quiet coffee shops) in a location convenient for the participant. Face-to-face interviews with healthcare workers were performed in workplaces, in quiet environments away from clinical areas. Most interviews with community members lasted 30–60 min, and approximately 20–40 min with healthcare workers.</p> <p>Community members were asked about their vaccination and related public healthcare experiences. Healthcare workers were interviewed about vaccination service delivery to Polish and Romanian service users. Community members and healthcare workers were solicited for service improvement suggestions. Interview topic guides were developed for this study with community involvement.</p> <p>Interviews were transcribed verbatim and analysed thematically using the stages outlined by Braun and Clarke: data familiarisation, coding and theme identification and refinement. To enhance the rigour of the analysis, coding approaches and data interpretations were discussed between the researchers. Interviews were coded using initial codes generated from the interview topic guide and levels of the Social ecological model (SEM). Use of the SEM helped to identify where to focus policy and practice recommendations.</p> <p>The study received ethical approval from the London School of Hygiene and Tropical Medicine Observational Research Ethics Committee, the Health Research Authority and from Research and Development departments in the recruitment areas. Written informed consent was obtained from all study participants.</p>
Population and perspective	<p>Twenty Polish and 10 Romanian community members and 20 healthcare workers were interviewed. Community members were identified through community venues (including schools, nurseries and churches), and advertisements in Polish newspapers, EE shops and via Twitter and Facebook pages. Of the 30 recruited participants, 27 were parents (mainly mothers), 2 were pregnant, 1 was the male partner of a pregnant woman and 1 woman was neither a parent or pregnant but given the flu vaccination due to her having asthma. The average time spent living in the UK was 11 years for Polish participants and 9 years for Romanian ones.</p> <p>The researchers intended to recruit more Romanian community members, to match the number of Polish participants; however, this was not possible during the timeframe of the study due to challenges with recruitment. The study received some negative responses when advertised via social media on Romanian pages that appeared to reflect a mistrust in taking part in research, antivaccination attitudes and concerns around living in England following the Brexit vote.</p> <p>Healthcare workers were identified via general practices and community providers. They included specialist health visitors, school nurses, a vaccination advisor, specialist nurses focused on health inequalities and practice nurses.</p>
Inclusion Criteria	<p>Women who are currently pregnant</p> <p>Parents</p>

	<p>People aged 65 years or older</p> <p>People with certain health conditions People in the target groups for flu vaccination due to specified long term health conditions such as diabetes and heart disease.</p> <p>Family members Grandparents</p> <p>Immigrants Romanian and Polish</p>
Exclusion criteria	None reported
Relevant themes	<p>CMs = community members, HCWs = healthcare workers in the following text.</p> <p>Seven main themes were identified:</p> <p>1. Challenges to navigating the health system. These were institutional level issues such as challenges in registering with general practices due to uncertainties around entitlement to care and difficulties in producing proof of address as requested by some practices. CMs perceived the English PHC system as markedly different to systems in Poland and Romania and had faster access to treatment in Poland and Romania.</p> <p>"....in Poland a GP is a GP and they accept the fact that they are GPs....so if they cannot deal with something, they will very easily refer you somewhere else.... If you feel dizzy or you've got a headache, they will send you to a neurologist. It's not a problem. Here, trying to get a referral somewhere is just like God help you." (Polish mother, Cornwall)</p> <p>2. Transnational use of health services. CMs often reported ongoing use of health services in Poland and Romania; in some instances, this was done to avoid relying on public healthcare in England to gain direct access to secondary care. Vaccinating children in more than one country could cause disruption of the UK immunisation schedule and affect the accuracy of documentation of vaccination histories.</p> <p>3. Language and literacy. Communication barriers during healthcare consultations were reported by both HCWs and CMs. The lack of information in languages other than English was noted. Several HCWs reported using online translation tools to aide communication. HCWs also struggled to translate vaccination histories. An additional challenge in working with Roma Romanian communities was overcoming literacy barriers.</p> <p>4. Expectations of vaccination delivery. CMs based their expectations on intrapersonal knowledge and experiences in Poland and Romania. This meant their expectations were often unmet because of policy and institutional level differences in vaccination programmes.</p> <p>The number of childhood vaccinations administered within a short space of time was also reported as a concern by parents. Choice of formulations in Poland or Romania was compared to the lack of choice on the NHS.</p> <p>In Poland vaccines are administered by doctors. Some Polish participants were concerned that nurses in England might not be qualified for this role. The absence of segregated areas between healthy and sick patients in GP practices in England was found to be alarming.</p>

	<p>5. Vaccine acceptance. Although most CMs regarded vaccines as essential for protection against disease, certain vaccines created greater concern or were considered less important than others. MMR hesitancy was linked to the Wakefield controversy but was reported not to be at any greater level than in the general population.</p> <p>6. Accessibility of vaccines. CMs reported that it was straightforward and easy to book vaccination appointments at GP practices; however, dissatisfaction was often noted around the time allocated. HCWs considered it generally difficult to provide vaccine information, administer vaccines and document vaccine delivery within the time allotted (approximately 10–15 min), and this was made even more challenging because of communication barriers.</p> <p>CMs reported not always receiving vaccination reminders and appointments were often missed due to frequent travel to their home countries.</p> <p>7. Trust. Trust in healthcare was partially shaped by different expectations of health services and a lack of understanding of how the English system works. Some CMs were particularly sceptical about the quality of healthcare in England:</p> <p>“I have more confidence in the doctor in Poland. Doctors in Poland are trained doctors. They study medicine for several years....Here, I have the impression that a doctor....they have everything on the computer. He’s typing in a computer that you come, have a cold, a fever, and [it] jumps out [from the computer], what he has to give me.” (Polish mother, Wellingborough)</p>
Additional information	The study participants included one person who was not a parent/carer, pregnant or soon to be a parent. Data was not extracted for flu vaccination or non-parents/parents to be.

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes

Section	Question	Answer
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant (Views about flu vaccination were not extracted and only 1 participant out of 30 community members was not in our review population of interest (not a parent/ carer or pregnant or eligible for vaccination herself on the routine schedule excluding flu vaccination) .)

1

Berman, 2017

2

Bibliographic Reference Berman, Melissa; Dube, Eve; Quach, Caroline; Exploring the acceptability of the available pneumococcal conjugate vaccines in Canadian health care professionals and immunization experts.; Vaccine; 2017; vol. 35 (no. 25); 3326-3332

3

4 Study Characteristics

Study design	Semi-structured interviews
Aim of study	To assess the perceptions of frontline healthcare workers and immunization experts on whether PCV10 is considered an acceptable alternative to PCV13, as well as factors offered in support of their opinions.
Behavioural model used	None stated
Study location	Canada
Study setting	Not specified. Healthcare professionals involved with immunisation were sought.
Study dates	2016
Sources of funding	McGill University Health Centre Research Institute

<p>Study methods</p>	<p>After consulting with a medical anthropologist, the researchers developed a questionnaire to investigate the preference for pneumococcal vaccines in the prevention of pneumococcal disease in frontline healthcare workers and key policy drivers of immunization within Canada.</p> <p>Information was collected through semi-structured interviews conducted in person, whenever possible, or over the phone. People who chose to participate were asked open-ended questions that allowed them to elaborate on their responses. The interviewer ensured to probe for the reasoning behind stated responses and answers were read back to participants to confirm that they accurately represented their views. They set out to stop data collection once no new information was gathered from 3 consecutive interviews, or when a total of 20 participants were enrolled, whichever occurred first.</p> <p>Interviews were recorded and transcribed verbatim by the interviewer and the recordings were erased immediately after transcription. Each participant was assigned a number and any identifying details were removed from the transcription.</p> <p>The study received approval from the McGill University Health Centre Research Ethics Board.</p>
<p>Population and perspective</p>	<p>In order to have a meaningful and representative sample, they employed a stratified purposeful sampling technique. They stratified their selection by committee and by province, ensuring to include professionals working at the frontline of healthcare delivery so as to capture variations in opinions across these attributes. Lists of participants were obtained through one of the primary investigator's professional network. Members belonging to immunization committees were initially contacted through email by the committee's secretariat and informed of the study's purpose. The research team then reached out to participants who met one or more criteria of interest (i.e. public health professional and/or frontline healthcare worker with expertise in immunization). They endeavoured to enrol at least one participant that met these characteristics from each Canadian province and to have a higher representation for the more populated provinces (Quebec and Ontario).</p> <p>A total of 21 of the 33 (64%) participants invited to take part in the study agreed to be surveyed: 9 from NACI (43%), 3 from CIQ (14%), 5 from CIC (24%) and 4 representing frontline healthcare providers (19%) who did not belong to immunization committees. With the exception of Saskatchewan, they achieved representation for all of the Canadian provinces.</p>
<p>Inclusion Criteria</p>	<p>Practicing healthcare professionals Involved with immunisation</p>
<p>Exclusion criteria</p>	<p>None reported</p>
<p>Additional information</p>	<p>7 Themes were identified (the job titles of the participants providing quotes was not provided):</p> <ol style="list-style-type: none"> 1. Expectation concerning publicly funded vaccine against <i>Streptococcus pneumoniae</i>: "That it should be efficacious, safe and that there is a sufficient disease burden to prevent. These are certainly the three first items that I would look at. The fourth one being how affordable is this." 2. Preference for PCV vaccine: "When you are providing advice individually it depends on what the patient can afford and if the plan covers it. For a publicly funded program, we [. . .] need to consider the epidemiology of disease, how many diseases we are preventing and what the cost-benefit of doing the program is".

3. Influence of new data on preference: “Well, in the setting where [one of] the study has been performed, where the population is receiving PCV13 but a study has been performed with PCV 10 vs. 13, the findings are essentially irrelevant because in fact you have a clear demonstration of herd effects from PCV 13”.
4. Importance of secondary outcomes of vaccination program: “Otitis media, from my perspective, would factor into cost effectiveness analysis, so it would be an important outcome. But, from a population health perspective, otitis media is not something that we are implementing a program to address. Invasive pneumococcal disease, however, is something we invested into a program to address”.
5. Focus of the vaccination program: Unilaterally, most agreed the target should be IPD (15/21), naming the “catastrophic”, “life threatening” and “disabling” consequences of the condition in support of their opinion. One participant recognized the inherent dilemma in making a choice between preventing severe outcomes that occur less frequently or the milder presentations of infection that occur more often, questioning: “which one is more important, numbers or consequences?”.
6. Belief in PCV cost difference: “So I’m not sure the price of the PCV13 is worth it anymore. I would say that maximum a 15–20% premium on the 13, maximum”.
7. Conflicts of interest: “But I’m also leery, cautious, about the extrapolation from a population appearance of equivalence and then saying that we are getting equivalent protection from cross-protection. By the way, this is an argument that GSK has been using for their HPV vaccine”.

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable

Section	Question	Answer
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Bolsewicz, 2020

2

Bibliographic Reference Bolsewicz, Katarzyna; Thomas, Susan; Moore, Donna; Gately, Colleen; Dixon, Andrew; Cook, Paul; Lewis, Peter; Using the Tailoring Immunization Programmes guide to improve child immunisation in Umina, New South Wales: we could still do better; Australian Journal of Primary Health; 2020; vol. 26 (no. 4); 325-331

3 Study Characteristics

Study design	Focus Groups Semi-structured interviews
Aim of study	To gain a greater understanding of factors that influence childhood immunisation in areas of low vaccine coverage
Study location	Australia
Study setting	Community in New South Wales
Study dates	February 2019 - August 2019
Sources of funding	Australian Government's Medical Research Future Fund (MRFF) as part of the Rapid Applied Research Translation program and the Prevention Research Support Program funded by the NSW Ministry of Health
Study methods	<p>Data from the Australian Immunisation Register (AIR) between 2016 and 2018 were analysed to identify areas where records showed a high number of children aged ≤5 years who were at least 1 month overdue for at least one vaccination. Immunisation stakeholders were invited to participate in interviews and focus groups. Service providers were identified by the immunisation team and the director of the Central Coast Public Health Unit, who had close contact with all immunisation stakeholders in the district. Parents and carers were identified through community organisations. Aboriginal voices were sought through engagement with Aboriginal community organisations.</p> <p>Interviews took place at locations convenient to participants. Focus groups were held with parents and for service providers in similar roles. Individual interviews were held with health service managers. The interview guide used open-ended questions that could be freely discussed by participants. The line of inquiry in this study was iterative and embedded within ongoing data analysis, which informed subsequent questions and sampling to achieve theoretical saturation. Interviews were audio recorded and transcribed verbatim, except for some carer interviews during which extensive notes were taken. Two authors also undertook a 'sensory walk' in the selected community. Interview data were analysed individually and then jointly by two authors. Barriers, enabling factors and potential strategies to address underimmunisation were grouped as either broader structural (policies, social and economic factors), intermediary (access to services) or individual (knowledge, opinions, behaviours) factors. Categories were informed by the social determinants of health framework.</p>

	Results were discussed with the research team and then with participating service providers, allowing opportunity for feedback before the themes were finalised.
Population and perspective	10 service providers (community health, public health, GPs, primary health network, council and other providers). Carers and community members were also included but only the results from service providers were relevant for this review.
Inclusion Criteria	Immunisation stakeholders - service providers, parents and carers
Exclusion criteria	None reported
Relevant themes	1. Collaboration between providers - Vaccine uptake can increase in areas where there is collaboration between different providers "If I know that [out of home care] children are not up to date with their immunisations and the carers struggle to get to the GP or a child health centre, the immunisation nurse will come with me [on a home visit]. So, we do work together. We want to get the children up to date" [Health Service Provider].
Additional information	Study included the views of providers, parents and the community but, for children aged 0-5, the views of parents and community members are only taken from UK studies in this review. There is less evidence available for providers in this age group and so their views have been included in the review.

1

2 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Can't tell
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research has some value
Overall risk of bias and relevance	Overall risk of bias	Low

Section	Question	Answer
Overall risk of bias and relevance	Relevance	Highly relevant

1

Boyce, 2012

2

Bibliographic Reference Boyce, Tammy; Holmes, Alison; Addressing health inequalities in the delivery of the human papillomavirus vaccination programme: examining the role of the school nurse.; PloS one; 2012; vol. 7 (no. 9); e43416

3 **Study Characteristics**

Study design	Semi-structured interviews
Aim of study	The interviews aimed to confirm or challenge existing findings and identify additional and as yet unidentified issues related to the delivery of the HPV vaccine programme and health inequalities.
Behavioural model used	None stated
Study location	UK
Study setting	Schools and other locations where the HPV immunisation programme is delivered.
Study dates	June–August 2011
Sources of funding	Sanofi Pasteur MSD, National Institute for Health Research (NIHR) Biomedical Research Centre, UK Clinical Research Collaboration.
Study methods	<p>The study had 2 components: a rapid evidence assessment of the literature and a series of interviews of health professionals.</p> <p>Two methods of sampling to identify health professionals who deliver the HPV immunisation programme were used; convenience sampling and snowballing. The Royal College of Nurses and the School and Public Health Nurses Association were contacted and agreed to send an email to school and practice nurses outlining the research and a request to be interviewed. The aim of the convenience sample was to interview school nurses from a range of areas across the UK, including areas of high deprivation. Sampling did not seek to be representative but to reflect diversity within the group. Snowballing techniques were then applied; interviewees were asked to suggest others who might be willing to be interviewed or provide alternate or innovative examples of addressing health inequalities. This purposive sampling technique sought to achieve wider representation and to include special or unique cases. Extensive efforts were made to interview health professionals from each of the four home nations, rural and urban areas and areas of deprivation. The decision to stop interviews was made when thematic saturation was reached (when new themes did not arise) and when an appropriate range and geographical representation of health professionals from across the UK were interviewed.</p> <p>71 interviews were held over the telephone and notes recorded. The use of note-taking (instead of recording) may introduce a risk of bias but it was a deliberate</p>

	<p>decision to take notes as this forces the researcher to concentrate more closely. In addition, recording interviews can [alter] conversations and create [particular contexts for what is said]. Often the default is to record qualitative interviews, however there was concern that as the interviews aimed to be short, there would not be time to build up trust between the interviewer and interviewee or time to discuss permission to record the conversation. The interviews were semi structured, based on open-ended questions and typically lasted 15–20 minutes. Nine interviews took place over email. These email interviews included detailed descriptions of their services and an exchange between the author and interviewee covering questions in the topic guide. All interview participants were informed of the purpose of the research and that notes were being recorded and assured their comments would be anonymised.</p> <p>Interviews were analysed using a two-level systematic thematic analysis. A list of deductive codes was initially created. Inductive codes emerged during the second level of the thematic analysis and findings from the rapid evidence assessment also helped to create these codes.</p> <p>The theme concerning record keeping is analysed in a separate review question looking at the identification and recording of eligibility and status.</p>
Population and perspective	80 Health professionals who deliver the HPV immunisation programme across the UK: school nurses and other health professionals including practices nurses, administrators, civil servants, health visitors and pharmacists.
Inclusion Criteria	Practicing healthcare professionals School nurses
Exclusion criteria	None reported
Relevant themes	<p>The thematic analysis identified three key themes concerning health inequalities and the HPV vaccination programme:</p> <ol style="list-style-type: none"> 1. Variations in delivery of the HPV vaccination programme: School nurses described that a typical school-based HPV vaccination of the routine cohort involved a number of opportunities for girls to be vaccinated. <p>Mop up clinics were held in some places and reflect the efforts of school nurses to address health inequalities. The location of these clinics was important with those more convenient location for the girls achieved better uptake. For example one area covering a large rural area offered mop-up clinics in the main city’s concert hall on a Saturday afternoon as they believed it would “accommodate more girls, taking into consideration the time they might be up and about, the attraction of shopping and the access for young women who may have had Saturday work in the city” (Central Scotland).</p> <ol style="list-style-type: none"> 2. Expected versus ‘actual’ inequalities: Issues included religion and ethnicity, girls not in school, girls with learning difficulties, travellers and ‘Looked After Children’. <p>In contrast to the published research, interviews with school nurses stated that in their experiences religion and ethnicity had little effect on HPV vaccination uptake. In many areas there was good uptake in schools with high percentages of religious groups but in other cases some Muslim and Catholic schools decided not to offer the HPV vaccination. In many areas school nurses reported religious leaders had a significant impact on the uptake of the HPV immunisation programme, either in encouraging or rejecting the vaccine. Support from religious leaders was not consistent, even within the same religion.</p>

When asked who was likely to miss the HPV vaccine, many school nurses quickly stated they knew who would be difficult to vaccinate - vulnerable girls; “you know the ones that don’t attend, we send 5 or 6 letters...For those that did not attend, we keep giving them chances” (South Wales). Other vulnerable groups were girls with learning difficulties who needed additional effort to vaccinate. “It also takes longer to get trust and convince girls it is ok” (Central England), “parents think the HPV vaccine is unnecessary as they will not be sexually active” (North East England).

Establishing trust and having a flexible attitude was also important when vaccinating travellers and gypsies, a group with poor health and low uptake of childhood vaccines. “Word of mouth worked in my favour” (school nurse who vaccinated 16 travellers in 2009/10).

Many school nurses made additional efforts to vaccinate girls held in custody or in the care of social services, describing them as “the most vulnerable girls and (I want to) ensure they get them” (South West Scotland).

Girls not in school were also likely to miss HPV vaccination. “We do not currently have a programme for pupils not in school as we are a school-based service” (Central England). “Unless we see them in school it’s very difficult” (South London).

3. Accurate and persistent records: the information LEAs provided was frequently wrong or not up to date or slow to be delivered. One school nurse was frustrated with the lists she received from the local education authority, describing them as “three months out of date” (North West England). “We want Year 7 in July but sometimes don’t get until girls are already in Year 8” (North West England).

In addition, the type of information LEAs offered was inconsistent across the UK. For example, in some areas the LEA provided school nurses with addresses of those not in school but in other areas they would not provide these addresses and instead sent invitation to vaccinate letters on behalf of nurses; leaving school nurses unaware if and/or when letters were sent.

Administrative support staff were identified as being valuable members of the immunisation team that helped school nurses maintain accurate records and as a result, minimise inequalities. They also helped chased up girls who had been missed. One school nurse described the reason for their high uptake; “School nurses couldn’t meet need alone. Teams go into schools and blitz each school. The school nurse and health care assistant help along with clerical assistance” (South West Scotland). One of the consistent themes that surfaced in the interviews was the repeated number of times girls needed to be contacted and that vulnerable girls needed to be contacted more often. Where health professionals were persistent and offered numerous opportunities to be vaccinated, uptake was higher.

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes

Section	Question	Answer
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Can't tell (No statement of ethics committee approval)
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Brabin, 2011

2

Bibliographic Reference Brabin, Loretta; Stretch, Rebecca; Roberts, Stephen A; Elton, Peter; Baxter, David; McCann, Rosemary; The school nurse, the school and HPV vaccination: a qualitative study of factors affecting HPV vaccine uptake.; Vaccine; 2011; vol. 29 (no. 17); 3192-6

3 **Study Characteristics**

Study design	Semi-structured interviews
Aim of study	To assess descriptions of expected and actual roles of school nurses and their perceived impact on these roles of a new HPV vaccination programme.
Behavioural model used	Ajzen's Theory of Planned Behaviour Ajzen's Theory of Planned Behaviour postulates that actions are motivated by (a) attitudes and beliefs (b) subjective norms and (c) perceived control of the action.
Study location	Manchester, UK
Study setting	Two Primary Care Trusts
Study dates	July 2008
Sources of funding	GlaxoSmithKline provided the research grant and vaccine but had no role in the conduct of the research or reporting of the data. Dr Brabin is funded by the Max Elstein Trust. Researchers at the University of Manchester also receive support from

	<p>the Manchester NIHR Biomedical Research Centre and the Manchester Academic Health Science Centre, Central Manchester University Hospital NHS Trust.</p> <p>North Manchester NHS Research Ethics Committee approved the study.</p>
Study methods	<p>Cervarix™ was offered at 0, 1, and 6 months to all 12–13 year olds between October 2007 and September 2008 by two Primary care trusts (PCTs) in Greater Manchester. Both PCTs costed their implementation plans and received a budget that would allow them to recruit additional staff to deliver the vaccine. In July, at the end of the main study, all NHS-registered school nurses who had taken part in the study were invited to complete a short questionnaire. This assessed their training, experience and role in vaccination. In England each PCT configures its own delivery plan. In PCT1 four teams of school nurses vaccinated in all secondary schools in their allocated areas. Vaccine uptake in PCT1 was 59.8%. In PCT2, children in all schools were vaccinated by a vaccine team, comprising three school nurses who were helped on the day by the school nurse attached to that particular school. Vaccine uptake in PCT2 was 78.7%.</p> <p>Nurses were further asked to indicate their willingness to take part in a semi-structured interview with the research nurse (RS) to discuss their views on the vaccine programme. Interviews were arranged at the convenience of the school nurse and were recorded using a digital Dictaphone after obtaining written consent. The theoretical framework was based on Ajzen's Theory of Planned Behaviour. The interview schedule was based round the following themes: the school nursing role; the school/school nurse relationship; organisation of HPV vaccine delivery and factors affecting HPV uptake within schools. Additional themes, related to nurses' attitudes to vaccinating minors without parental consent, were also covered but that analysis was published elsewhere.</p> <p>After classification of the text by theme, initial analysis showed divergence between expected and achieved roles so the transcripts were re-read and coded to identify all explanatory sub-themes. Finally, the researchers linked themes in order to assess whether constraints on the school nurse's ability to achieve her roles could affect HPV vaccine uptake. Interviews were continued until the interviewer considered that little new material was emerging. RS and LB both reviewed the data and its analysis to arrive at a consensus on interpretation.</p>
Population and perspective	In total 15 nurses took part in the semi-structured interviews, 8 in PCT1 and 7 in PCT2.
Inclusion Criteria	School nurses
Exclusion criteria	None reported
Relevant themes	<ol style="list-style-type: none"> 1. Organisational issues: In PCT1, views on how well the delivery had worked reflected how well the team had worked. In PCT2, they little contact with schools, they relied on individual nurses to negotiate timetables and rooms and were often critical of this support. "They are all dead keen to have a dedicated immunisation team, but I think you still need your named nurse for each school because the links are so important for them to set up the sessions, and liaise with staff, and help you get consents back" 2. School nurse achievement of her roles: Two key factors - Disjunction between the school nurses' ideal and actual roles and School nurse's relationship with the school. "Teachers are very pleased to see us when there is a problem, you know. 'Just handle everything' they will say." 3. Achievement of the school nurse role and HPV vaccine uptake: Vaccination was viewed by schools as an appropriate role for the school nurse but they expected the school nurse to organise it. This was not the view of the school

	nurse, most of whom held the school largely responsible for poor vaccine uptake. "They don't mind giving them out but they are not prepared to keep a check on them when they come back."
Additional information	The findings from the questionnaire were not extracted as they were not qualitative in nature.

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	No <i>(Aim is implied but not explicitly stated.)</i>
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Can't tell <i>(Because the aims are not explicitly stated)</i>
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Can't tell <i>(Because the aims are not explicitly stated)</i>
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell <i>(This is not mentioned)</i>
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Moderate
	Relevance	Highly relevant

2

Briggs, 2019

3

Bibliographic Reference Briggs, L.; Fronek, P.; Quinn, V.; Wilde, T.; Perceptions of influenza and pneumococcal vaccine uptake by older persons in Australia; *Vaccine*; 2019; vol. 37 (no. 32); 4454-4459

4 Study Characteristics

Study design	Semi-structured interviews
Aim of study	Identifying and understanding the perspective of older people on vaccination.
Behavioural model used	None stated
Study location	Australia
Study setting	Medical centres, sporting clubs and community centres in two Australian states, south-east Queensland and northern New South Wales.
Study dates	2017 to 2018
Sources of funding	Griffith University and The Hong Kong Polytechnic University Collaboration Research Grant.
Study methods	<p>Participants ≥ 65y were recruited using purposeful and snowball sampling. Invitations were posted in medical centres, sporting clubs and community centres in two Australian states, south-east Queensland and northern New South Wales. Interested volunteers were invited to contact the researchers. Three participants suggested a further six people whom they believed would be interested in participating in the research, and recruitment information was provided on request. All six volunteered to participate in the study. Inclusion criteria was ≥ 65y, the capacity to communicate in English, and to give informed consent. Participant information explaining the study, informed consent and other ethical requirements, was provided to volunteers. Signed consent was obtained and re-confirmed verbally at interview.</p> <p>One semi-structured interview (60–90 mins) was conducted with each participant in homes, community centres or available offices between July 2017 and January 2018. Interviews were divided between two experienced researchers. Demographic data was collected. Closed questions asked whether participants had received annual influenza and pneumococcal vaccinations. The interview guide was not based on any pre-existing models or constructs. Rather open-ended questions (e.g. Can you tell me what motivated you to be vaccinated against influenza?) were designed to elicit participants' perspectives on influenza and pneumococcal vaccinations, perceptions of benefits and risks, and influences on their decision to vaccinate or not. Prompts and probing questions enabled further elaboration allowing each participant to describe their experiences. Interviews were recorded, transcribed and deidentified for analysis.</p>
Population and perspective	Of the 36 participants, 26 (72%) were female and 10 (28%) male.
Inclusion Criteria	People aged 65 years or older
Exclusion criteria	None reported
Relevant themes	<p>Five themes were identified:</p> <p>1) Health practitioner influence Participants considered prompts to vaccinate against influenza affective. The majority</p>

	<p>of participants placed their trust and confidence in recommendations and information from their doctors. “I’ve got a GP doctor that I’ve known for seven or eight years and he’s very, very good. So, I trusted his judgement.”</p> <p>2) Anti-vaccination influence Some health practitioners acted as deterrents to uptake behaviours, however, it was only those participants who held pre-existing anti-vaccination beliefs that uncritically accepted their perspectives. “My chiropractor is always going on about it [not having vaccinations] . . . But if you’re coming from one side you’re often not open to the reasons on the other side, so I think I probably make more of my own informed decision given all the information I get from other people”</p> <p>3) Social responsibility A key driver was concern for the health and livelihood of grandchildren and other family members and responsibility for the community in general. “well a) just for my own health and b) is that I don’t pass it on to my grandchildren who are six and four, or pass it on to somebody else”</p> <p>4) Work-based vaccination Findings suggest that providing influenza vaccination to younger people in the workplace is important to continuing this behaviour in later life. “And then, there was a program where they would come to the workplace, and they would do it in a day, or two days, and make it available and, so, I guess that got me into doing it. And, of course, since I’ve finished work, then I just continued with it. I just go to my GP.”</p> <p>5) Perceptions of age Participants identified as healthy, active, socially engaged and responsible individuals even with chronic or other health conditions. Participants generally felt those in need of vaccination were less healthy or older than themselves. “[pneumococcal vaccination] is probably okay for older people, and I’m talking probably 85 plus. I’m talking old-old. For the flu, my impression of it is – it’s there, and it’s great for those who want it.”</p>
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1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	No
Data collection	Was the data collected in a way that addressed the research issue?	Yes

Section	Question	Answer
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Brown, 2012

2

Bibliographic Reference Brown, Katrina F; Long, Susannah J; Ramsay, Mary; Hudson, Michael J; Green, John; Vincent, Charles A; Kroll, J Simon; Fraser, Graham; Sevdalis, Nick; U.K. parents' decision-making about measles-mumps-rubella (MMR) vaccine 10 years after the MMR-autism controversy: a qualitative analysis.; Vaccine; 2012; vol. 30 (no. 10); 1855-64

3 **Study Characteristics**

Study design	Semi-structured interviews
Aim of study	To obtain an up-to-date, comprehensive and methodologically robust picture of general factors underlying parents' decision-making about the first dose of MMR.
Behavioural model used	Grounded theory
Study location	UK
Study setting	Community
Study dates	2008 to 2009
Sources of funding	UK Health Protection Agency (HPA). The National Institute for Health Research (NIHR).
Study methods	Parents were eligible to participate if they had a child aged between 11 months and 3.5 years (the broad window for the first MMR vaccination (MMR1) in the UK, though the vaccine is recommended to be given ideally at 12–13 months old), who was registered with NHS Ealing, and was eligible to receive MMR1 (i.e. had no confirmed contraindications), but had so far received neither MMR1 nor any single measles, mumps or rubella vaccine (hereafter referred to as 'singles'). A purposive sampling frame was used to select parents with a range of intended

MMR1 decisions: (1) accepting MMR1 on time, (2) accepting MMR1 late, (3) obtaining one or more singles, (4) obtaining no MMR1 or singles. Parents had not acted on their decisions at the points of recruitment, interview and coding, so intended MMR decision was used as a proxy of actual MMR decision for selection, but actual MMR decision was used to group participants for analysis. Recruitment continued until thematic saturation (the point at which no new themes emerge in new interviews) was reached within each decision group. Any parents from the saturated decision group who responded after this point were advised that sufficient data had been obtained for parents in their group, and recruitment messages were amended to specify the particular groups still needed. As these amendments were made quickly after saturation was reached, and recruitment was fairly slow with only 2 or 3 interviewees per month, only one potential interviewee (accepting MMR1 on-time) was not able to participate in the study. Parents were recruited initially through 17 GP practice nurses, 2 community groups, and 6 online parenting forums with no formal pro- or anti-vaccination position (e.g. not 'activist' groups). These approaches yielded few parents rejecting both MMR1 and singles, so chain referral was used in addition. Study materials were translated to support recruitment of an ethnically diverse sample.

Ethical approval was obtained. Participants were interviewed at home or in their workplace, either face-to-face or by telephone (participants chose a method to suit them). Written consent was obtained, and each participant received a £10 shopping voucher in return for their time. Language support was provided where requested/accepted by the participant. Interviews were guided by a semi-structured schedule (provided as supplementary material) informed by the literature. The schedule comprised four topic areas to be discussed: personal details, planned MMR1 behaviour, general factors underpinning decision, and identification of key 'decision drivers', and each topic area contained prompts e.g. vaccine, disease, parenting.

Interviews opened with a broad question 'What things have you thought about whilst making your decision about the first MMR dose?' to identify topics salient to the participant, which the interviewer then probed for expansion. Interviews were audio recorded and transcribed verbatim. GP practices were contacted 6 months after interview to obtain MMR1 uptake data for participants' children. Participants were classified to decisions groups as follows: 'accepted MMR1 on time' if child received MMR1 by the day he/she turned 14 calendar months old (UK immunisation schedule recommends MMR1 at 13 months); 'accepted MMR1 late' if child received MMR1 after 14 calendar months old; 'obtained singles' if child received no MMR1 by time of data collection but GP confirmed singles had been given or the parent had intended to give singles; 'accepted no MMR1 or singles' if child received no MMR1 by time of data collection and the parent had intended to give neither MMR1 nor singles. Transcripts were analysed by a coder with background in psychology using a modified Grounded Theory approach using NVivo. Coding was completed before objective outcome data were obtained but the primary analyst was aware of each interviewee's intended decision. Data were first broken into small sections of homogeneous content ranging in size from a few words to a paragraph, and grouped by that content into codes. Sections which covered the same content were grouped into the same code, and new codes were created as new content areas were found in the data. Every section of data was grouped under at least one code, and sections with shared content but from different participants were grouped under the same code. During the coding process, links between codes were identified and memoed, and through this process codes were linked together and synthesised into broad themes for reporting. Two measures were taken to counter analysis biases: eight transcripts distributed across the decision groups were analysed in duplicate by a second coder with background in medicine blinded to the first analyst's codes and to the participant's intended decision, and a further eight participants across the decision groups provided a member check by reviewing the coding of their interviews. A qualitative approach to reliability was taken, whereby the two coders discussed their codes, identified discrepancies and reached

	consensus via discussion, tracing beyond the original subset where necessary to ensure any necessary amendments or additions were applied to all relevant data in the full dataset.
Population and perspective	Twenty-four parents (all mothers) participated in interviews. Most participants were highly educated at-home mothers. Twelve participants were recruited through GP practices, 3 through mother-and-baby groups, 6 through online parenting forums and 3 through chain referral recruitment.
Inclusion Criteria	Parents of children who had a specified age range Age 11 months to 3.5 years
Exclusion criteria	None reported
Relevant themes	<p>5 Themes were identified:</p> <ol style="list-style-type: none"> 1. MMR vaccine and controversy. Specific topics included the vaccine's ingredients, how well it works and how long for, the age at which it is given, and what the alternatives are. Many parents compared MMR with other vaccines on these factors. Most parents spontaneously mentioned the MMR controversy and described how it had complicated the decision for them and for most parents. : “[My husband’s] brother has an autistic child. And they’ve taken the decision, they felt that the autism may have been linked to the MMR vaccine and he subsequently decided not to vaccinate his 2 sons where their daughter was vaccinated.” 2. Social and personal consequences of MMR decision. Some parents discussed MMR decision-making as a factor on which responsible parenting, morals, and perhaps even intellect, could and would be judged. Many parents compared their decisions and decision-making rationale with those of other parents, and felt that in turn their own decision would be judged by people around them. Those doing the judging included fellow parents, family, friends and health professionals – but some parents expected they would be their own harshest critic if their decision turned out badly: “I have friends [who have] decided that you know measles mumps and rubella might not kill their child so they’re not going to actually have them vaccinated. . . it’s a very selfish decision.” 3. Health professionals and policy. Many parents talked at some length about the individuals, organisations and policies involved in the provision of MMR. Trust in these sources was a factor which differentiated between MMR acceptors and rejectors in many cases, with the groups respectively using trust and mistrust to rationalise their decisions.: “[GPs] have targets, if they don’t vaccinate everyone in their patient list then I think they lose money. So the, if they’re using targets rather than looking at it on a child by child basis and whether or not the child should have it, then I think the motivations are money ultimately.” 4. Severity and prevalence of measles, mumps and rubella infections. Parents’ views on disease severity often appeared rooted in personal experience rather than population-level statistics: “Four days I had measles for as a child then I was right as rain. People used to go to measles parties for God’s sake so those kids weren’t dropping like flies all over the place.” 5. Information about MMR and alternatives. Across decision groups, parents expressed frustration with the absence of unbiased and accurate information: “There’s nobody you can talk to about your decision, there’s either people being paid to give the vaccination or loonies on the web.”

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes

Section	Question	Answer
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Brownlie J, 2005

2

Bibliographic Reference

Brownlie J HA; 'Leaps of Faith' and MMR: An Empirical Study of Trust; Sociology; 2005; vol. 39; 221-239

3

4 **Study Characteristics**

Study design	Focus Groups Unstructured interviews
Aim of study	To explore the trust of parents with regards to the MMR vaccine.
Behavioural model used	None stated
Study location	UK
Study setting	Community

Study dates	1999 to 2001
Sources of funding	Chief Scientist's Office, Scottish Executive
Study methods	Re-analysis of 2 qualitative data sets on professional and parental views of the MMR vaccine. The original data result from studies undertaken by an independent research agency for the Health Education Board for Scotland.
Population and perspective	<p>Study 1: This study produced interview data from eight focus groups, comprising parents stratified by deprivation category (DEPCAT) and by whether they were at a pre- or post-MMR invitation stage. In addition, three focus groups were held with health visitors and practice nurses, 15 telephone interviews were carried out with general practitioners and a screening survey was implemented.</p> <p>Study 2: comprises eight focus groups with parents from three health board areas, 3 different socio-economic areas, with varying degrees of concern about immunization and who had children aged between two and six months or seven and 18 months. Three focus groups were also held with health visitors from each of the three areas and interviews were carried out with five GPs.</p>
Inclusion Criteria	<p>Practicing healthcare professionals</p> <p>Parents of children</p>
Exclusion criteria	None reported
Relevant themes	<p>5 themes were identified by the investigators:</p> <ol style="list-style-type: none"> 1. Good reasons. A cross social class, parents see the potential benefits of immunization as well as its possible dangers: "... it'll probably just be a list of probabilities ... judgement at the end of the day." 2. Suspension of routine. For many parents, there is an element of routinisation in relation to childhood immunizations, a sense that this is what you do as a parent – a habitual practice born of confidence in the predictability and familiarity of the everyday world: "You just go and do it ... I mean I can't even remember when my kids were done (...) and then when you see something in the papers ... it's too late (...). I think with the little one, it (MMR) was coming up and that's when I stopped and thought. I hadn't been, really, to be honest, giving it a huge amount of thought. It was just something you do." 3. Personal networks: Parents from all socio-economic groups also describe the strong influence of their peers and family in their decision-making about MMR: "I know it's bad isn't it but that's what we're all saying – we trust our peers more than we trust our healthcare professionals." 4. Professionals as Trust-builders: Health visitors form a significant node in the relations between parents, professionals and knowledge that shape and preside over MMR immunization: "We discuss it within the first visit at 11 days, it's part of the information pack that we deliver to the mothers with new babies." 5. Parents, Risk Anxiety and the State. As well as describing unease about health professionals promoting the government line in relation to MMR, parents also describe a more general feeling of mistrust towards the government and their role in relation to health: "I mean the government is ... they've got the power to hide and to withdraw and to add information at any stage, any time, so to me even if a report was to come from the government to say this is

absolutely one hundred percent you know safe, it's really not worth the paper it's written on."

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Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Can't tell
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Can't tell
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

3

Brownlie, 2006

4

Bibliographic Reference Brownlie, Julie; Howson, Alexandra; 'Between the demands of truth and government': health practitioners, trust and immunisation work.; *Social science & medicine* (1982); 2006; vol. 62 (no. 2); 433-43

5

6 Study Characteristics

Study design Focus Groups

	Semi-structured interviews Analysis of archived discussions Secondary analysis of existing interviews.
Aim of study	To gain an understanding of trust and child immunisations from the perspective of staff working at general practices (health visitors, practice nurses, GPs)
Behavioural model used	Governmentality Lam's typology
Study location	UK
Study setting	General practices (community)
Study dates	Not provided
Sources of funding	Chief Scientist's Office
Study methods	<p>HEBS - the Health Education Board for Scotland commissioned research in 1998 to focus on professional and parental attitudes towards MMR and immunisation generally, in three Scottish health board areas - Glasgow, Lothian and the Borders. This study, carried out by a private research agency, included three focus groups involving 18 health visitors and four practice nurses, and 15 telephone interviews with general practitioners randomly selected from across the three areas.</p> <p>A second study carried out in 2001 for HEBS, by the same research agency, had a slightly different aim: to inform HEBS' child immunisation work generally. The 2001 data set is again from three health board areas - this time Glasgow, Lothian and Perth and Kinross. This data included three focus group interviews with health visitors (16 in total), from each of the three areas, and interviews with five general practitioners. As with the 1998 study, the focus groups were convened with the help of local practice managers and health visitor coordinators; general practitioners were again randomly selected through primary care trusts. The focus of the 1998 research was to explore professionals' current knowledge and concerns about MMR; to establish the advice professionals gave parents in relation to MMR and other immunisations; and the sources of information and advice on immunisations - including MMR - practitioners were most likely to use. In the 2001 study, practitioners were asked about their perception of their role in the delivery of the child immunisation programme and their views about the information and support provided to health professionals about immunisation. Although this later study was concerned with immunisation in general, because it was conducted at a time when media speculation about MMR was intense many professionals chose to focus on MMR specifically. Across both studies, semi-structured interview schedules were used and, with the consent of participants, all the interviews were tape-recorded and fully transcribed.</p> <p>Secondary analysis of existing qualitative data can be undertaken. The investigators sought neither to 'make whole' the original data nor to verify or falsify the claims the original data supported. The form of secondary analysis they used was a supplementary one, which entailed an in-depth re-examination of the primary data on emergent themes of trust and risk. They argue that secondary analysis was appropriate in this case because these themes were evident yet under-developed in the original research and pressures on practitioners' time make this a difficult population to gain access to.</p>

	<p>All data were anonymised and the agency that carried out the original research was assured that the consent given by the original participants would not be breached by ongoing analysis of the same data, given that the substantive area of the original research - MMR immunisation - would also be the subject of the secondary analysis. In their re-analysis strategy, they:</p> <ul style="list-style-type: none"> > re-read and re-coded all data. First, both researchers read transcripts of group and telephone interview data in full. Following this initial reading, the data were allocated into two groups. Each researcher reread these data and proceeded to build up an preliminary in vivo coding frame, working up from the data to develop codes. Second, they exchanged transcripts and preliminary codes to check for consistency in coding and finalise a coding frame with which to code all the data. Throughout the analysis they exchanged examples of coding to ensure all data were coded according to consistent criteria. > used a qualitative analysis software package to establish an 'audit trail' and facilitate the display of emergent interpretations. > compared data within and across cases in relation to emergent themes. > interviewed the original researcher to provide context to the primary research and to enhance the distinction between primary and secondary analysis. <p>Having identified risk and trust as emergent themes, they looked to governmentality as an analytical framework for interpreting these themes. In doing so, they recognised that the regulation and negotiation of knowledge is central to governmental health technologies such as immunisation and they, therefore, also drew on Lam's typology as a way of mapping instances of engagement and resistance to governmentality practices.</p>
Population and perspective	<p>1998 study: 18 health visitors, 4 practice nurses, 15 GPs</p> <p>2001 study: 16 health visitors, 5 GPs</p>
Inclusion Criteria	<p>Practicing healthcare professionals Who work at general practices</p>
Exclusion criteria	<p>None reported</p>
Relevant themes	<p>3 Themes were identified:</p> <ol style="list-style-type: none"> 1. Target-setting and MMR. While general practitioners showed concern about the possible impact of parental anxieties on achieving targets, this was tempered by anxiety that parents might perceive general practitioners as 'pushing' MMR in order to reach targets: "The whole philosophy of pushing people to have em... injections [...] so we can earn money is quite wrong in our view, in that we almost have to get to the stage of persecuting people" (GP) 2. Trusting knowledge about MMR. The task of delivering MMR in the period after the publication of the Wakefield research was made more demanding for practitioners because of the relative absence of accurate information about this particular research and research informed responses to it: "The media thing explodes and then there's no follow up to it and I think that just raises anxiety." (health visitor) 3. Mediating risk and trust. television was viewed by some as a medium that could be used more effectively to transfer decision-making from doctors to parents: "I would rather see it be done as a kind of a television campaign and the right was given to the parents." (GP)

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Burns, 2020

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Bibliographic Reference Burns, S.; Selvey, L.; Roux, F.; Influences to HPV completion via a school-based immunisation program; Sex Education; 2020; 1-16

3 **Study Characteristics**

Study design	Focus Groups with students Semi-structured interviews with parents
Aim of study	Exploring barriers and enablers to vaccine coverage in schools in Western Australia
Study location	Australia
Study setting	10 schools in Western Australia

Study dates	2016-2018
Sources of funding	Communicable Disease Control Branch within the Western Australian Department of Health
Study methods	<p>Ten school-based focus groups were held with year 8 students and 22 phone-based semi-structured interviews were held with parents of students from low-coverage schools within different Socio-Economic Indexes for Areas areas. Parents were purposively sampled, upon recommendation from administrators or school nurses. Parents were provided a gift voucher to thank them for their participation. The semi-structured interview guides for focus groups and interviews were informed by the literature and needs expressed at a meeting of school health and immunisation nurses (2016). These focused on knowledge about HPV and HPV vaccination; knowledge and attitudes about the vaccination process, including the consent process and discussion with students/parents; attitudes towards HPV vaccination, incentives and barriers to vaccination; and how students and parents would like to receive information about vaccination.</p> <p>Student discussions and parent telephone interviews were recorded and transcribed verbatim. The transcripts were reviewed by the research team against the original recording and field notes to maintain dependability and determine credibility. Transcripts were imported into NVivo 11 and thematic analysis was conducted on each transcript with descriptive codes generated through line-by-line analysis. Words and phrases were examined to identify shared meanings and perceptions. Theme nodes were developed to explain the data. To reduce bias and enhance confirmability themes were coded manually by the primary analyst then reviewed by the research team. The socio-ecological model was employed to guide the research in recognition of the complex interactions of individual, interpersonal, organisational, community and societal factors that affect HPV vaccination.</p>
Population and perspective	10 schools (2 Catholic, 3 Independent, 5 Government), 70 Year 8 students and 22 parents
Inclusion Criteria	<p>Schools in Western Australia</p> <p>Unclear how the schools were selected</p> <p>Staff, year 8 students and their parents from the included schools</p>
Exclusion criteria	None reported
Relevant themes	<p>5 relevant themes were identified:</p> <p>1. Knowledge of HPV vaccination: Parents and students were mostly supportive of the HPV vaccination but had limited knowledge about HPV and the vaccine. Some were unsure of the reasons that boys were also vaccinated "For sure. For sure . . . and I've got boys. So, it would have been easy for me to say no, you know, because they're not going to be affected but I think it's important."</p> <p>2. Discussions about vaccination: Only a few students had discussed vaccination with their parents. Many indicated that they would like to have had more discussions prior to vaccination and the need for accessible information for parents was highlighted "Yeah, I did. Not about what it was for or anything, actually. Not specifically, which I probably should have, but I didn't do that"</p>

	<p>3. Vaccination beliefs: Parents generally supported vaccination although some were less supportive of the HPV vaccine specifically "Now I come from a Jewish background, I'm a Christian so therefore I come from the whole perspective of not sleeping around and especially children like 12 year old's. On the other hand, having said that, if your child, if my child is 18 and was in a relationship with a guy who has been sleeping around, there's no reason why they can't have the HPV immunisation then"</p> <p>4. Trust in vaccination programmes: Most students and their parents believed that vaccines were safe, and this feeling was increased because of school support for the vaccination programme and because it was provided by the government "I trust the school so whatever the school is giving to any of my children, I trust them, that's good for them so I let them"</p> <p>5. Information and education needs: Nearly all students wanted themselves and their parents to know more about HPV and the vaccination. Face-to-face classes, information on social media and hard copies of information were all considered to be important "You see it's hard to keep up with all of them, and with the emails, I don't always have it active, so they could have told me about it, and I haven't looked at everything."</p>
Additional information	Online surveys also used to collect staff perspectives, but only data from the parent interviews were included in this review. Results from student focus group discussions were not included because there was sufficient evidence from UK-based studies for young people's views on HPV vaccination programmes

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Can't tell <i>(Unclear how schools were selected. Most students had received all 3 vaccinations and most parents had consented to vaccination. Limited views for people who did not consent to vaccination)</i>
Data collection	Was the data collected in a way that addressed the research issue?	Yes

Section	Question	Answer
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research has some value
Overall risk of bias and relevance	Overall risk of bias	Moderate <i>(Unclear how schools were selected and most of the students included had all 3 vaccinations, with limited views from people who did not have or agree to vaccination)</i>
Overall risk of bias and relevance	Relevance	Highly relevant

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2

Bystrom, 2014

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Bibliographic Reference Bystrom, Emma; Lindstrand, Ann; Likhite, Nathalie; Butler, Robb; Emmelin, Maria; Parental attitudes and decision-making regarding MMR vaccination in an anthroposophic community in Sweden--a qualitative study.; Vaccine; 2014; vol. 32 (no. 50); 6752-7

4 Study Characteristics

Study design	Semi-structured interviews
Aim of study	To explore facilitators and barriers to MMR vaccination among parents living in anthroposophic communities in Sweden. (Rudolf Steiner developed anthroposophy as a life philosophy, which includes a holistic view on health, life and spiritual ideas.
Behavioural model used	None stated
Study location	Sweden
Study setting	Community
Study dates	2013

Sources of funding	WHO Regional Office for Europe
Study methods	<p>The study followed a qualitative research design. In-depth interviews were chosen as the most appropriate approach to explore individuals' attitudes and perceptions toward health, disease, vaccinations and decision-making.</p> <p>The study was conducted in a community near Stockholm, where the population is around 7000. The community hosts a number of anthroposophic facilities, including six Waldorf pre-schools, three primary schools, one hospital, one primary health clinic and one child welfare centre (CWC). In 2011, 145 children were born in the community and the public CWCs reported a MMR coverage of 89%. In comparison, the MMR vaccination coverage at the anthroposophic CWC was 8.7% for children born in 2010 (personal communication, PHA). Two MMR doses are offered free of charge at 18 months and a booster dose at 6–8 years.</p> <p>Sampling of informants was purposive. All parents in the community, regardless of MMR vaccination decisions, were invited to participate; however, parents with an anthroposophic lifestyle were preferred. Parents were recruited at CWCs and preschools, most of them having an anthroposophic lifestyle. Snowball sampling was used to find additional informants.</p> <p>The semi-structured interview guide included questions on health perceptions, parents' reasoning, the decision-making process and the influence that families and social networks had on the parent's decision to vaccinate or not. A total of 19 interviews with 20 participants were held. After these interviews, they felt that data was rich enough to explore the facilitators and barriers for MMR vaccination. In one interview, both parents participated. Interviews were conducted in Swedish by the first author and digitally recorded. Parents chose the location of the interviews, which lasted on average 47 min, with a range of 25–70 min. Written informed consent was obtained before the interview.</p> <p>The analytical process followed qualitative content analysis. Interviews were transcribed verbatim and read several times to ensure familiarity with the overall content. Codes were clustered and categories and sub-categories were developed displaying the manifest meaning and further advanced into themes illustrating the latent meaning of the text. Open Code facilitated the coding and categorising process. The analysis was performed by the first author but the interpretation was regularly discussed by the research team.</p> <p>Ethical approval was obtained from the Regional Ethical Review Board Stockholm. International ethical guide-lines were followed.</p>
Population and perspective	20 parents were included in the study, out of which 9 had chosen to vaccinate their children, and 11 had not.
Inclusion Criteria	<p>Parents of children Ages of the children were not specified</p> <p>Parents who are part of a specific community An anthroposophic community in Sweden</p>
Exclusion criteria	None reported
Relevant themes	<p>5 Themes were identified:</p> <p>1. Views of health. Vaccinating parents expressed an allopathic view on health and vaccination and conveyed a strong degree of trust in the health care system. They</p>

	<p>also used anthroposophic and alternative medicines as complements to their mainly allopathic view, when for example treating colds with natural remedies. Parents emphasized the importance of a healthy lifestyle and nutrition in order to stay healthy: "I honestly do believe that the western medicine makes a mistake by having a mechanical view in the body. The body is not just mechanical, other factors such as diet actually have an impact."</p> <p>2. Conformers. Parents believed that the vaccine is safe to use for their children, since it has been used for many years. For conformers, the decision to vaccinate is self-evident: "I trusted the experts who implemented the program and so I trusted the vaccines. . . Since the [MMR] vaccine has been used for a long time and there are no known adverse effects that I know."</p> <p>3. Pragmatists. Pragmatists vaccinate their children at age 18 months to 3–4years of age. Pragmatists believe that 18-month old children are too young to be vaccinated. Parents are concerned with safety of vaccines and thus prefer to delay vaccination: "And then measles shows up and you do not have the time to deal with it. In the end, if you would get measles and you should have the ability to take care of it then you need 5–6 weeks since it is a long process."</p> <p>4. Attentive delayers. This group of parents delay vaccination from 18 months to 3–4years of age, but are aware of the risks and careful not to expose anyone to the disease. The principal reason for delaying measles vaccination is to allow the child to mature since they also believe that infants are too young to be vaccinated: "I believe that although he has not had the diseases, his body is stronger considering the adverse effects of vaccines. And then I believe that he can tolerate it better."</p> <p>5. Promoters of natural immunity. Promoters of natural immunity delay vaccination of their children for more than 5 years. This group is strongly aligned with anthroposophic health beliefs: "It is some part of the anthroposophic reasoning that it is positive and something that strengthens both physically and develops the personality."</p>
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1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes

Section	Question	Answer
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research has some value
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Casiday, 2006

2

Bibliographic Reference Casiday R; Uncertainty, decision-making and trust: lessons from the MMR controversy.; Community practitioner : the journal of the Community Practitioners' & Health Visitors' Association; 2006; vol. 79 (no. 11)

3

4 Study Characteristics

Study design	Focus Groups Semi-structured interviews
Aim of study	For parents making decisions such as whether or not to immunise their child with the MMR vaccine, risk is not construed in terms of numbers of people who may be harmed or of distribution of benefits within the community, but rather as the likelihood - or uncertainty about the likelihood - that their own child will come to harm. This paper describes strategies that parents adopted for dealing with this uncertainty, and the implications of those strategies for health professionals providing information and advice to parents.
Behavioural model used	None stated
Study location	UK
Study setting	Community
Study dates	2002 to 2004
Sources of funding	Wellcome Trust
Study methods	This paper draws on the results of a study on risk conceptualisation, trust and decision-making in the case of MMR vaccination." Parents were recruited through personal visits to carer and toddler groups, community centres, and flyers posted at nurseries and community centres. Participants were purposively selected to include a

	<p>broad range of educational qualifications, socioeconomic backgrounds and immunisation decisions.</p> <p>The focus groups and interviews followed a semi-structured format, asking parents to describe their experiences of deciding whether to give the MMR vaccine to their children. Transcripts were carefully read several times to build an interpretive framework for qualitative analysis. The analytical approach used here involved both answering questions of a priori research interest (for example, 'what factors were related to parental trust in healthcare practitioners?') and searching for emergent themes. A list of keywords related to each theme was developed and blocks of text were coded for keywords and according to the speaker's decision with respect to MMR immunisation, using AnSWR. AnSWR was then used to generate a list of all passages related to each keyword. These passages were read in relation to one another to develop an outline of salient issues, and a series of validity checks was used: where cases were found that did not fit with emergent theory, the theory was re-examined and evaluated in the light of those cases. Segments of text were selected to illustrate key points. Ethical approval for the qualitative study presented here was given by the Durham University Ethics Advisory Committee, in July 2002.</p>
Population and perspective	<p>The age range was probably 12 to 36 months (toddlers) and 3 to 5 years (nursery).</p> <p>Three focus groups (totalling 16 parents) and 71 individual interviews with parents of young children were carried out. A total of 77 mothers and 10 fathers took part in the study.</p> <p>Of the 87 parents who participated, 56 had vaccinated their children with the MMR at the time of interview, 16 had (or were planning to have) separate (single-antigen) vaccines, 10 did not vaccinate their children against measles, mumps and rubella, and five were still undecided.</p>
Inclusion Criteria	<p>Parents of children Parents of toddlers and nursery school children</p>
Exclusion criteria	<p>None reported</p>
Relevant themes	<p>3 Themes were identified:</p> <ol style="list-style-type: none"> 1. Reducing complexity through trust. Many parents sought to reduce the complexity of this decision through trust in other experts or groups. This trust allowed parents to act on information and arguments presented by the trusted source, and to dismiss opposing viewpoints as 'irrational' or 'biased'. Often, parents placed this trust in health professionals and medical advice, but the same sort of trust was also sometimes invested in anti-vaccine groups or private clinics administering separate vaccines; indeed, some parents rejected all immunisations, not just the MMR: "My partner and I decided together. We brought it up with the nurse before we had it... I think just from hearing doctors in interviews and health officials kind of saying that it was safe, and it's a really difficult thing because as a parent you want to make your decisions based on what medical experts say." 2. Embracing ambivalence. An alternative strategy for dealing with uncertainty and contradictory information was to embrace ambivalence through compromise solutions, such as delaying vaccination and opting for separate (single) vaccines: "Well, yeah, there is a time delay but we're only talking three months we're not talking three years or whatever and I think any child in the three months anything could happen." 3. Identifying vulnerable groups. Some parents sought to reduce uncertainty by identifying groups of children who seemed to be more likely to suffer adverse outcomes than others: "He was quite an unhappy new-born. I think he had colic and

various other things. We ended up deciding that he had some sort of problem with his digestion... Then I met a doctor in passing... he said if your child has any problem with their bowel, he wouldn't have the MMR."

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

2

Casiday, 2007

3

Bibliographic Reference Casiday, Rachel Elizabeth; Children's health and the social theory of risk: insights from the British measles, mumps and rubella (MMR) controversy.; Social science & medicine (1982); 2007; vol. 65 (no. 5); 1059-70

4 Study Characteristics

Study design	Focus Groups Semi-structured interviews
Aim of study	To explore the decision making of parents with regards to the MMR vaccine.

Behavioural model used	None stated
Study location	UK
Study setting	Community
Study dates	2002 to 2004
Sources of funding	Wellcome Trust
Study methods	<p>This paper draws on the results of a study on risk conceptualisation, trust and decision-making in MMR vaccination (Casiday, 2005). Both Cambridge and Durham, UK, are university cities, with relatively affluent and well educated populations, although both have pockets of socioeconomic deprivation, and Durham is surrounded by some of the poorest areas in England. Both Cambridge and Durham had nearby private clinics offering single-antigen vaccines as an alternative to MMR vaccination, and at the time of the study had official MMR uptake rates of 83% and 88%, respectively (compared with a national average uptake of 82% and a government target of 95%) (Department of Health, 2004).</p> <p>Parents were recruited at toddler groups, community centres, and nurseries through personal visits and flyers, which asked for 'parents of young children who would be willing to discuss their views and experiences about the MMR vaccine.' Snowball sampling was also used to access additional parents refusing the MMR vaccine. Participants were purposively selected to include a broad range of educational qualifications, socioeconomic backgrounds and immunisation decisions. Although refusal to participate was not quantified, recruitment was generally straightforward, with lack of time cited as the main reason for refusal. Two parents declined to interview because they were in strong disagreement on the issue with their domestic partners. Parents were given written information about the study and an opportunity to ask questions, and provided written consent to participate.</p> <p>The focus groups and interviews followed a semi structured format, asking parents to describe their experiences of deciding whether to give the MMR vaccine to their children, with careful attention given to avoid generating anxiety among parents where it did not exist before. Transcripts were carefully read several times to build an interpretive framework for qualitative analysis. The analytic approach used here involved both answering questions of a priori research interest (e.g., How did parents conceptualise risk from the vaccine and the diseases it protects against?) and searching for emergent themes, using techniques identified by Ryan and Bernard (2003). A list of keywords related to each theme (e.g., risk of autism, risk of disease, decision-making process) was developed and blocks of text were coded for keywords and according to the speaker's decision with respect to MMR immunisation, using AnSWR (Centres for Disease Control and Prevention, 2000). AnSWR was then used to generate a list of all passages related to each keyword. These passages were read in relation to one another to develop an outline of salient issues. Segments of text were selected to illustrate key points, following Mason (2002), with participants identified pseudonymously.</p>
Population and perspective	Eighty-seven parents of young children (77 mothers and 10 fathers) participated in focus groups (N=16) and individual interviews (N=71). No significant differences in parents' interview responses were noted between the two cities.

	Of the 87 participants, 56 had vaccinated their children with the MMR at the time of interview, 16 had (or were planning to have) separate (single antigen) vaccines, 10 did not vaccinate their children against measles, mumps, and rubella, and 5 were still undecided.
Inclusion Criteria	Parents of children Toddlers and nursery school children
Exclusion criteria	None reported
Relevant themes	<p>3 Themes were identified:</p> <p>1. Balancing risks. To decide whether to immunise their children with MMR, parents engaged in a process of 'weighing the risks of vaccinating against the risks of not vaccinating': "I read that they carried out a survey on children who had been breastfed for the first six months, and half of them were vaccinated and half of them hadn't, and they found that the ones who had been vaccinated were five times more likely to get asthma. Which is quite considerable really."</p> <p>2. Decision-making on behalf of children. The choice that parents were making would have important consequences for their children, unable to decide for themselves: "Who do you love more than your children? You want to know am I putting him at unnecessary risk? So that's the other thing that makes it hard, is that you're not just deciding it for yourself, you're deciding it, with your best intentions for somebody else."</p> <p>3. Trust and public vs private good. Although parents were the focal point for this study, parental roles must be viewed in the wider context of contemporary British society, in which many private and state-appointed actors (e.g., nurseries, the National Health Service and local government councils) have a responsibility to protect children's health: "My own children's health and safety is more important than the impact on the population... I don't want you to think that I'm not putting my children first that I'm putting the population first because that's not the case. But I feel by protecting them I'm also protecting the population. But by protecting the population I'm protecting them. It's sort of two ways."</p>

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell

Section	Question	Answer
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Chantler, 2019a

2

Bibliographic Reference Chantler, T.; Letley, L.; Paterson, P.; Yarwood, J.; Saliba, V.; Mounier-Jack, S.; Optimising informed consent in school-based adolescent vaccination programmes in England: A multiple methods analysis; Vaccine; 2019; vol. 37 (no. 36); 5218-5224

3

4 Study Characteristics

Associated publication from the same study	Paterson 2019. Strengthening HPV vaccination delivery: findings from a qualitative service evaluation of the adolescent girls' HPV vaccination programme in England.
Study design	Semi-structured interviews
Aim of study	This research investigated the process by which consent is obtained in the English school-based adolescent immunisation programme for HPV with the aim of understanding existing challenges and identifying pathways for optimising the consent processes.
Behavioural model used	None stated
Study location	South West (Cornwall, North Somerset, Bristol), North Central Midlands (Lincolnshire, Leicester), and South Central Midlands Luton).
Study setting	Education and healthcare
Study dates	2017 - 2018
Sources of funding	The research was funded by the National Institute for Health Research Health Protection Research Unit (NIHR HPRU) in Immunisation (Grant reference: HPRU-2012-10096) at the London School of Hygiene and Tropical Medicine in partnership with Public Health England (PHE).

Study methods	<p>This research investigated the process by which consent is obtained in the English school-based adolescent immunisation programme using data from (1) interviews with immunisation providers/managers and a review of consent forms, (2) analysis of survey data of parents and adolescents in relation to vaccination attitudes. The methods are detailed in the associated paper by Paterson 2019.</p> <p>In addition, this study carried out a content evaluation of a sample of adolescent consent forms. They contacted all NHS England local teams in January 2018 (n = 14) requesting copies of the consent forms used by all their service providers in the school-based adolescent vaccination programmes (HPV programme, Men ACWY programme, teenage booster (Td/IPV) programme). This data was not extracted for this review - see the paper for more details about the methods specific to this component of the study.</p>
Population and perspective	<p>39 participants responsible for delivering immunization programmes in six local authorities in the South West (Cornwall, North Somerset, Bristol), North Central Midlands (Lincolnshire, Leicester), and South Central Midlands (Luton). This sampling frame included areas that; (i) delivered both doses of HPV vaccine in school Year 8 and areas that delivered the first dose in Year 8 and the second dose in Year 9. (ii) were geographically and socio-demographically diverse, (iii) had a range of HPV coverage rates and commissioned different types of providers (e.g. school nurses, and immunization teams).</p> <p>The researchers received 36 consent forms for the HPV programme and 35 consent forms for Men ACWY and teenage booster programmes.</p> <p>The survey involved a sample of 654 parents and 652 young people representative of England, within each region, by deprivation, as well as by the age and gender of young people aged 13–15.</p>
Inclusion Criteria	<p>Practicing healthcare professionals Who are involved in the immunisation process. At the service delivery level: Service provider organization administrators; Service provider nursing leads; Nurses who provide the vaccines in schools; Service provider data administrators; Child Health Information Service Managers.</p> <p>Parents of adolescent girls</p> <p>Adolescent girls 13-15</p> <p>Immunization commissioners NHS England Public Health Commissioners; Screening and Immunization Leads; Immunization managers; Immunization coordinators with responsibility for school-aged immunizations</p>
Exclusion criteria	<p>None reported</p>
Relevant themes	<ol style="list-style-type: none"> 1. Logistics of sending and retrieving consent forms: The dissemination and retrieval of consent forms was reported as logistically complex and resource intensive for immunisation teams. 'So, the number of non-returns is our biggest problem. We can deal with refusals because we can evidence those, but what we can't determine is out of those non-returns, how many people want to have it and how many people don't.' 2. Communication with parents and adolescents: The primary means of communication between immunisation teams and parents and adolescents was by sending out invitation letters with accompanying consent forms and in some cases an HPV vaccine information leaflet. ". . .we're [immunisation team] quite happy to take calls at any point, to answer any queries. Because I have had a few [parent] that have been thinking they're going to say no, but then we've had a conversation and it's actually allayed their fears and it's been understood more clearly that they actually go okay, yes, we'll have it' which is good, because, as I say, we want to encourage them all to have it."

	<p>3. The practice of obtaining consent: Adolescent self-consent required extra time and resources during immunisation sessions and not all nurses felt confident about assessing for 'Gillick competency'. Several schools were also not happy about girls aged under 16 being allowed to self-consent. "The difficulty is where you get a cultural mix about who makes decisions in the house /family. This is a learning point of who makes decisions in the family, who gives consent and obviously in certain cultures the young person themselves wouldn't feel able to give consent to themselves because it would be deemed it's their parents' responsibility and they wouldn't obviously go against a parent's wishes."</p> <p>4. Consistency of parental and adolescent decision-making: there was rarely any disagreement between young people and their parents over immunisation decisions.</p>
Additional information	This study uses a number of sources of data, but we did not extract the data from the review of consent forms or the analysis of survey results because these data types do not match our review protocol.

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell (<i>This is not mentioned</i>)
Ethical Issues	Have ethical issues been taken into consideration?	Can't tell (<i>No statement of ethics committee approval</i>)
Data analysis	Was the data analysis sufficiently rigorous?	Yes (<i>Details are provided in Paterson 2019</i>)
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

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Chantler, 2019b

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Bibliographic Reference Chantler T; Bell S; Saliba V; Heffernan C; Raj T; Ramsay M; Mounier-Jack S; Is partnership the answer? Delivering the national immunisation programme in the new English health system: a mixed methods study.; BMC public health; 2019; vol. 19 (no. 1)

4 Study Characteristics

Study design	Semi-structured interviews
Aim of study	The authors were interested in gaining more insights into how partnership working was helping to streamline and reintegrate the delivery of the immunisation programme following the fragmentation, which was a by-product of the 2013 NHS reorganisation.
Behavioural model used	None stated
Study location	UK
Study setting	An unspecified metropolitan area
Study dates	June- September 2016
Sources of funding	The research was funded by the National Institute for Health Research Health Protection Research Unit (NIHR HPRU) in Immunisation (Grant reference: HPRU-2012-10096) at the London School of Hygiene and Tropical Medicine in partnership with Public Health England (PHE).
Study methods	<p>The study included a cross-sectional questionnaire survey targeted at immunisation 'managers' and service 'providers' in England, and a qualitative evaluation of the terms of reference of an immunisation board that served a large metropolitan area. The cross sectional work was out of scope for this review and is not summarised here.</p> <p>The enactment of the 2012 Health and Social Care Act (HSCA) on 1st April 2013 led to significant changes in the structure and organisation of the English health system. To manage these changes NHS England and PHE immunisation leads based in a large metropolitan area established an Immunisation Board in November 2013. In March 2016 the leadership of this immunisation board, decided to renew the board's terms of reference (TOR) to ensure the board remained fit for purpose. To inform TOR revisions LSHTM researchers were asked to conduct a qualitative evaluation of the immunisation board to document members' perspectives on: i) its purpose, ii) its governance, iii) its achievements (public health outcomes), iv) members roles and responsibilities, v) operational challenges and vi) whether meeting arrangements (e.g. schedule, communication) facilitated pragmatic partnership work. They used semi-structured interviews with board members, observations of board meetings and a review of board meeting minutes.</p> <p>The participants were recruited from the board membership list provided to LSHTM researchers in May 2016 which listed 26 people. The 23 people not involved in this study received an email and follow-up phone call inviting them to participate in a semi-structured interview. Nine interviews were conducted in person by aLSHTM</p>

	researcher in places of participants choosing (place of work, café, or LSHTM) and three by phone. Prior to the interviews, the purpose of the study was discussed and interviewees signed a consent form stating willingness to participate. The interviews lasted 20–60 min, were recorded with participants' permission, transcribed and uploaded to NVivo 11. The approach to data analysis was thematic and involved a combination of deductive and inductive coding [14]. This consisted of organising the data under the pre-defined topic areas (topic guide in Additional file 2) from the interview guide and then exploring this data inductively to identify the key themes and associated sub-points.
Population and perspective	Twelve board members took part. They included lay members and representatives from the following organisations: NHS England, PHE, Universities, CCGs, Local Councils (authorities/boroughs) and service provider organisations.
Inclusion Criteria	Membership of the relevant immunisation board
Exclusion criteria	Involvement in running the study
Relevant themes	<p>Three overarching themes were identified:</p> <ol style="list-style-type: none"> 1. Defining the board's purpose and decision-making role: Interviewees considered the board responsible for overseeing commissioning and providing input into commissioning decisions. The nature of this board was less clear, to paraphrase: 'Is it a steering committee, a partnership forum, or a formal decision-making structure?' The role of the board in decision making needed to be more transparent. Interviewees wanted the board to demonstrate more strategic leadership and hold NHS England to account. 2. Promoting collective affiliation for mutually beneficial public health gains: some interviewees raised concerns about what they perceived to be a lack of collective affiliation and common goals. A case was made for promoting more collective responsibility to achieve mutually beneficial public health gains. Members disagreed about their roles on the board. 3. Achievements, maintaining momentum and moving forward: The implementation of a Measles Mums & Rubella (MMR) catch-up campaign straight after the 2013 NHS reorganisation was presented as a key achievement and confirmation of the utility of a metropolitan partnership structure that serves a whole NHS England commissioning region. The board was useful in supporting communication between partners and providing backing for new operational procedures.
Additional information	Data was only extracted for the qualitative findings from the semi-structured interviews and not the questionnaire, observations or review of board meeting minutes. .

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes

Section	Question	Answer
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Can't tell
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

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Chantler, 2016

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Bibliographic Reference Chantler T; Lwembe S; Saliba V; Raj T; Mays N; Ramsay M; Mounier-Jack S; "It's a complex mesh"- how large-scale health system reorganisation affected the delivery of the immunisation programme in England: a qualitative study.; BMC health services research; vol. 16

3 **Study Characteristics**

Study design	Focus Groups Semi-structured interviews
Aim of study	The purpose of this study was to generate evidence about the effects of large-scale health system re-organisation on the delivery of a public health programme in a high-income country, and to document how these changes were managed and mitigated, particularly as immunisation leaders had voiced concerns about the potential associated risks of re-organisation.
Behavioural model used	None stated
Study location	UK
Study setting	National level and in three local implementation sites (locations unspecified)

Study dates	The first round of interviews were between December 2014 and June 2015, and a second round between September and December 2015.
Sources of funding	The research was funded by the National Institute for Health Research Health Protection Research Unit (NIHR HPRU) in Immunisation at London School of Hygiene and Tropical Medicine in partnership with Public Health England (PHE).
Study methods	<p>The interviews with a wide range of participants from the different organisations involved in the delivery of the immunisation programme generated narratives of the process of organisational change allowing it to be understood. The interviewees were national representatives from tri-partite organisations responsible for programme oversight and local level programme implementers from three local sites. At national level, PHE colleagues supported the identification of potential participants from PHE, DH, NHS England, professional bodies and the Joint Committee on Vaccination and Immunisation, who were involved in policy making, and providing leadership and strategic oversight for the immunisation programme. At local level, Screening and Immunisation Leads helped the research team map the implementation of the immunisation programme at the three sites in order to identify potential participants from SITs, NHS England, PHE Health Protection Teams, LA Public Health teams, CCGs and service providers (e.g. practice nurses). The local level implementation sites were selected to represent different geographical areas, varying levels of immunisation coverage and a range of changes in governance.</p> <p>Data was collected by a team of three researchers who approached potential participants by email and obtained their written informed consent prior to interviewing them. There were 2 rounds of interviews. The second round included interviews with new participants, identified iteratively as a result of previous interviews and observations, and some follow-up interviews and feedback discussions with existing participants to clarify emerging questions and find out about ongoing developments at national and local level. Additional topics were added as new questions emerged during data collection and analysis. At one site, a focus group with 9 practice nurses was carried out as part of an immunisation training day, but most rest of the interviews were carried out individually or in groups of 2-3 people.</p> <p>Interviews were recorded and transcribed verbatim, with only 4 participants opting for notes to be taken during the interview. These notes, written accounts of observed events and the interview transcripts were imported into a qualitative data analysis programme (NVivo10). The approach to analysing this data was primarily inductive, which meant that the researchers sought to be attuned to emerging themes rather than just pursuing the pre-defined interview topics. Three researchers met regularly to discuss emerging themes, resolve discrepancies in data analysis, confirm definitions of higher level themes and sub-themes, and produce a consistent framework that was systematically applied to the whole data set.</p>
Population and perspective	There were 75 participants from the following organisations: (national level) PH England, NHS England, Department of Health, Professional organisations, Joint Committee on Vaccination and Immunisation; (local level) NHSE, PHE, local authority public health teams, CCG members, service providers.
Inclusion Criteria	<p>People from different organisations involved in the delivery of the immunisation programme at the national and local level.</p> <p>National representatives from tri-partite organisations responsible for programme oversight and local level programme implementers from three local sites.</p>
Exclusion criteria	None reported
Relevant themes	<p>There were 3 overarching themes identified:</p> <p>Transition to the new health system</p>

- Fragmentation in the delivery of the immunisation programme: The allocation of immunisation functions across new or reformed organisations was viewed as having fragmented the delivery of the immunisation programme. Interviewees reported that immunisation, as a public health programme, did not slot neatly into the new health structure. The PHE-led screening and immunisation teams had to develop effective working relationships with partners in LA Public Health Teams, CCGs, and PHE Health Protection Teams in order to make sense of the new delivery arrangements for immunisation. One commissioning manager (SIT, 48) described changes to the provider landscape as “a second level of fragmentation”, and highlighted the risks fragmentation posed to effective communication with parents and schools, and between partners in the management of contracts and data.
- Redeployment and shifts in working practice: The implementation of the health reforms resulted in a significant movement of human resources in terms of teams, organisations or individuals. For some this involved a loss of independence, a change in contract and working culture, and a move from a technical to a more political role. Interviewees’ experience of staff redeployment was shaped by where they moved to, whether they moved with a team or alone, and how much their role changed. For SIT leads, key challenges were finding staff with skills and experience in immunisation, screening and commissioning, and “developing a team, that is embedded within NHS England employed by Public Health England, and that ultimately don’t feel like they belong in either” (SIT, 65). A significant consequence of the redeployment was the removal of budgets and decision-making from local players to regional ones and a loss of local knowledge (the historical memory gained from working in an area for a long time and the relationships built over time between providers and service managers), insights into underperforming areas and practices, and the understanding of contextual factors that affected the uptake of immunisations.
- Adapting to the new infrastructure: Adapting to the new modus operandi for immunisation required people to revise previous patterns of working, adopt new roles and responsibilities, acquire new skills and make new connections. Many interviewees found it difficult to establish new working rhythms and commented on how long it had taken for the system to settle. A couple of years in, many interviewees were still grieving for their old jobs, particularly if their redeployment had resulted in a loss of autonomy, or left them less able to improve practice or influence policy.

Applying the new arrangements for immunisation

- Tripartite working at national level: One of the most significant changes at national level was the introduction of tripartite working. Immunisation was no longer solely led by DH, instead accountabilities were shared with NHS England and PHE. This required national leaders to develop a completely different way of working: whereas previously policies had been agreed and executed by one organisation in a ‘command and control style’, they were now reviewed by partners who provided detailed input on implications for implementation and commissioning. Despite the emphasis placed on joint responsibility, questions arose about how to manage mutual accountabilities.
- Applying the local operating model for immunisation: The application of operational guidance for the immunisation programme at local level was not straightforward, according to a wide range of interviewees. The dispersal of duties and the creation of new teams and roles resulted in a lack of clarity and varying interpretations as to who was responsible for what, and how the system should be implemented collaboratively. Although their role had been less affected by the changes, immunisation providers generally found it difficult to access advice, support and training in the new system, and many were unclear about the differences between SITs and LA PH teams.

	<p>Regrouping and making the new arrangements work</p> <ul style="list-style-type: none"> Working in partnership: “To join up different bits of the system”: Interviewees underscored the need to build effective collaborative processes and strong relationships to make national framework and local operating model work. tolerably well. Establishing and maintaining partnership working reportedly required significant time, effort and creativity but it also increased programme accountability and created opportunities for sharing good practice and troubleshooting. National and local level interviewees agreed that the success of the immunisation programme hinged on developing strong working relationships with key individuals based in different organisations. Building on opportunities and addressing gaps: Professionally led SITs embedded within NHS England area teams were considered to be an important resource and potential strength of the new system. National leaders have supported them by running fortnightly teleconferences and six monthly meetings for team leads. SITs dual accountability to PHE and NHS England was however also viewed as having contributed to difficulties in defining their role, and achieving the right balance between commissioning and supporting providers. This lack of definition was maintained to have resulted in a huge variation in the way SITs operate. Many SITs had also been functioning below capacity due to staff attrition and problems in attracting professionals with the right skill sets to civil service posts. The ad hoc manner in which problems tended to be resolved was even more apparent in relation to the provision of training for immunisation providers. The local operating model was not clear about the role SITs should play in helping health care professionals and their employers ensure that they had been trained in accordance with the mandatory requirements.
<p>Additional information</p>	<p>The complete data set comprised of observations of 3 national immunisation board meetings and 3 local immunisation board/committee meetings, and interviews (individual, peer and focus group) with 19 national level decision-makers and 56 local implementers. Where possible, only the data from the interviews and focus group were extracted.</p>

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes

Section	Question	Answer
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

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Condon, 2002

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Bibliographic Reference

Condon L; Maternal attitudes to preschool immunisations among ethnic minority groups; Health Education Journal; 2002; (no. 61); 180-189

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7 Study Characteristics

Study design	Focus Groups Semi-structured interviews
Aim of study	To explore the attitudes of ethnic minority parents to preschool immunisations, particularly the first MMR vaccination.
Behavioural model used	None stated
Study location	UK
Study setting	Community
Study dates	2000 to 2001
Sources of funding	Smith and Nephew Foundation
Study methods	Subjects were mothers of children aged 16 months to 3 years of Pakistani, Somali and Afro-Caribbean ethnicity who were identified from health visitor records and recruited with the aid of local link workers. These ethnic groups were chosen as visible ethnic minorities, who despite differences in culture and experience could be expected to share something of the experience of being Black in a White majority population. Medical ethical approval was obtained.

	<p>Recruitment was by link workers for the Pakistani and Somali groups. Link workers are members of ethnic minority communities who are employed as interpreters and advocates by Health Links, a Bristol voluntary agency. Link workers invited women to participate whom they considered most likely to take an active part in a group discussion. Participants therefore could be considered more confident and outgoing than average.</p> <p>Eleven women attended the Pakistani group, including two (uninvited) grandmothers. Lunch, taxi transport and a crèche were provided for participants. Somali women were more difficult to attract, and on the day of the group several women failed to arrive, despite having assured the Somali link worker that they would attend. This suggests that these women did not want to take part in the research, but did not want to risk displeasing the link worker. Due to small numbers in the Somali group (three women), an additional two interviews were carried out. Afro-Caribbean women were also initially resistant to participation. The initial approach to possible Afro-Caribbean participants was by letter, a strategy which resulted in no women returning the prepaid reply slip and consenting to take part in a group. When the researcher telephoned women directly a number expressed interest.</p> <p>Although it was not possible to attract sufficient Afro-Caribbean women to a group discussion, five women agreed to individual interviews at home. Interviews followed the semi-structured question framework used for the focus groups.</p> <p>Reasons given for nonparticipation at the time of initial contact with Afro-Caribbean women were lack of time and family commitments. However, when interviewed, both Afro-Caribbean and Somali participants described their initial reluctance to take part as arising from a feeling that their positive views on immunisation would not be of value to the researcher.</p> <p>Focus group methodology was chosen for its ability to draw out participants' opinions, and to access insights which would not be available without group interaction. This qualitative methodology appeared particularly suited to accessing the opinions of non-English speaking and nonliterate participants. Seeking the opinions of women in a culturally homogenous group situation could be expected to lessen to some degree the potential inhibiting factor of the presence of a White health professional researcher. The Pakistani group and the Somali group were conducted in the first language of the participants, to include women who spoke little or no English.</p> <p>A link worker/moderator asked questions from a framework devised by the researcher while an additional link worker made a detailed transcript of the discussion. After the group the notetaker's narrative was recorded in English, with the moderator adding her own comments about what was said and also about the dynamics of the group. The use of two native speakers meant that the account given to the researcher benefited from an element of triangulation as it was not derived solely from one individual views of what was said by participants.</p> <p>Resultant data was analysed thematically.</p>
<p>Population and perspective</p>	<p>21 participants in total: 10 Pakistani (average of 11 years in UK - range 3 months to 45 years), 5 Somali (average of 3 years in UK - age 5 months to 10 years), 3 Afro-Caribbean, 1 Black UK, 1 Black Caribbean (5 born in UK)</p>
<p>Inclusion Criteria</p>	<p>Parents of children who had a specified age range Aged 16 months to 3 years and had Pakistani, Somali and Afro-Caribbean ethnicity</p>
<p>Exclusion criteria</p>	<p>None reported</p>
<p>Relevant themes</p>	<p>6 Themes were identified by the investigators:</p>

	<p>1. Positive attitude to immunisation: Findings were that all women had a positive attitude to immunisation. Immunisation was seen as the only way of preventing children from contracting infectious diseases.</p> <p>2. The diseases immunised against are dangerous to children: Infectious diseases were considered very dangerous, with the potential to cause long-term harm to children.</p> <p>3. Catching infectious diseases was considered far more dangerous than immunisation: All groups thought that vaccination did not guarantee that their children would not catch infectious diseases, but felt that diseases contracted after immunisation would be less severe.</p> <p>4. Some element of risk was accepted as inevitable within life: Vaccination was described as having a small element of risk, but no one knew a child who had suffered adverse effects from vaccination. Somali and Pakistani women saw risk within a spiritual concept of life in which Allah is all powerful and human powers are limited.</p> <p>5. Exposure to media publicity about the risks of MMR: The three ethnic groups had different exposure to media publicity about the risks of MMR, largely linked to command of English. Those who were aware of adverse media publicity remained positive about their decision to vaccinate their own children.</p> <p>6. Information and advice: All the groups mentioned that medical advice was based upon research, which they generally perceived as impartial and valid. While valuing the advice of all health professionals the Pakistani group agreed that "the doctor is the best person to say go and have it done".</p>
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Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Can't tell

Section	Question	Answer
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

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Condon, 2020

Bibliographic Reference Condon L; McClean S; McRae L; 'Differences between the earth and the sky': migrant parents' experiences of child health services for pre-school children in the UK.; Primary health care research & development; vol. 21

2 Study Characteristics

Study design	Focus Groups
Aim of study	To explore parents' experiences of using child health services for their pre-school children post-migration
Study location	UK
Study setting	Community - South West England
Study dates	January 2015 - March 2015
Sources of funding	None reported
Study methods	<p>Participants selected purposively to include established and recent migrant communities and different experiences of healthcare. Recruitment was carried out by the four linkworkers from Pakistani, Polish, Somali and Romanian backgrounds who acted as gatekeepers to their communities. Each linkworker identified up to eight participants and invited them to attend focus groups at an agreed date and time. Five focus groups took place in community venues and were led by the researchers and co-facilitated by a linkworker who provided concurrent translation. Questions relating to use of health services were included in a topic guide which was designed to explore parental health behaviours post-migration.</p> <p>NVivo10 was used to store and categorise data. A thematic content analysis approach was taken and initially data were coded to identify preliminary themes, and immersion in the data led to the inductive development of ideas and broader observations, which were discussed by the research team. Data from the five nationalities/ethnicities were compared and contrasted in terms of emergent themes.</p>
Population and perspective	28 parents (22 mothers, 6 fathers) from either Poland, Pakistan, Romania or Somalia, aged 17-47 years

Inclusion Criteria	A parent of a pre-school child, and migrated to the UK in the last 10 years from Romania, Poland, Pakistan or Somalia
Exclusion criteria	None reported
Relevant themes	2 relevant themes were identified: <ol style="list-style-type: none"> 1. Pressure to immunise: Some people interpreted vaccination reminders as pressure to comply "Immunisation here like, for example you get reminders, you have to immunise your children, but back home you have a choice; you can take only if you want, nobody would push you to do that, so it's just like, take or not take." 2. Issues with registering children with a GP: It was reported that problems getting a child registered with a GP could delay vaccinations "We found it difficult to register our boy to a GP in Scotland...we tried online, and I had to take a lot of time off from work to be able finally to do it...[This was] because I wasn't noticed, I wasn't given importance."

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research has some value
Overall risk of bias and relevance	Overall risk of bias	Low
Overall risk of bias and relevance	Relevance	Highly relevant

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Cooper Robbins, 2010a

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Bibliographic Reference Cooper Robbins, Spring Chenoa; Bernard, Diana; McCaffery, Kirsten; Brotherton, Julia; Garland, Suzanne; Skinner, S Rachel; "Is cancer contagious?": Australian adolescent girls and their parents: making the most of limited information about HPV and HPV vaccination.; Vaccine; 2010; vol. 28 (no. 19); 3398-408

2 **Study Characteristics**

Study design	Semi-structured interviews with parents and focus groups with girls
Aim of study	To explore the knowledge of teenage girls and their parents with regards to the HPV vaccine.
Study location	Australia
Study setting	Education.
Study dates	Not mentioned. However, the study was conducted after HPV vaccine was placed on Australia's routine vaccination schedule (available from April 2007).
Sources of funding	CSL Limited
Study methods	<p>At the time of data collection, all participants had received information about HPV vaccination, made a decision about uptake of the vaccine. The time lapsed between receiving information and study participation ranged from 1 to 8 months, based on school availability for study participation.</p> <p>Purposive sampling (schools with low and high HPV vaccine uptake, and schools from Public, Catholic, and Independent sectors) was utilized to approach participants from a broad range of vaccination experiences (including refusals). A total of 9 schools participated.</p> <p>Key personnel involved in the HPV vaccination process in each of the schools were identified and these individuals were approached for interviews and for assistance in recruitment of girls and parents from their school. Each school chose to do this slightly differently. Some schools sent letters home with all adolescent girls in a year cohort, while other schools chose girls in specific classes (i.e. health class) to send letters home with.</p> <p>Once focus groups with girls and interviews with parents were arranged, the researchers conducted the interviews at the school's convenience. Letters invited adolescent girls and their parents to participate in the study independently. The researchers interviewed 38 parents. All interested participants were included in data collection. Additional schools were sampled until conceptual saturation was reached.</p> <p>Individual interviews were conducted with parents. An interview schedule with prompts was informed by the literature and utilized in initial interviews; subsequent interviews were guided by the data analysis. This ensured that all potential themes were explored.</p> <p>The following topics were explored in relation to HPV and HPV vaccination: discussions with family and friends, attitudes, decision-making processes, knowledge and understanding, experience of vaccination, and questions and concerns that were raised by participants. While knowledge was a topic purposefully explored, low knowledge and understanding emerged as an underlying theme that contextualized all data collected.</p>

	<p>All interviews and focus groups were digitally recorded, transcribed and then recurring themes and patterns were identified. Using an inductive method involving constant comparison, they compared emerging themes and experiences within and between each interview. The first two authors completed separate analyses of the data, coding the data sentence by sentence, and then discussed identified themes. To ensure reliability, two experts were asked to read a selection of transcripts and identify themes. Finding no major discrepancies, coding and analysis was completed. Conceptual saturation was reached when no new codes were generated. An overall analysis was performed to confirm that the ranges of diverse themes that emerged were represented.</p> <p>The study was approved by the Human Research Ethics Committee at the Children’s Hospital at Westmead, the Department of Education and Training, The Independent Schools Association, and the Catholic Diocese of Parramatta.</p>
Population and perspective	<p>20 focus groups of adolescent girls and 38 parents. Focus groups were comprised of girls of similar age in each group in schools (e.g. Year 7 or 9–10). Individual interviews were conducted with parents of some of the girls who participated in the focus groups. Most of the parents interviewed were female (37/38) and originally from Australia (21/38). Some parents performed home duties only (6/38) and some engaged in work outside the home as well.</p>
Inclusion Criteria	<p>Parents Of girls at school who were the right age to have the HPV vaccine. Girls of the age to be vaccinated with HPV</p>
Exclusion criteria	<p>Lack of parental consent for daughter to participate in the study</p>
Relevant themes	<p>10 Themes were identified by the investigators that related to the views of parents:</p> <ol style="list-style-type: none"> 1. What HPV is. Many of the parents answered with uncertainty when asked about what they thought HPV was. Their answers both implied confusion and explicitly expressed this confusion and lack of knowledge about HPV. Many parents could articulate the phrase “human papillomavirus,” but not much more. Some parents simply responded “no” to regarding whether they had heard of HPV. 2. How HPV is transmitted. Knowledge surrounding HPV transmission was varied. While approximately half of the parents mentioned “sex,” it was often followed by qualifiers such as “I think.” The uncertainty about HPV transmission was also discussed. Only one parent mentioned skin contact as a route of transmission. Many parents had knowledge that sexual behaviours were related to HPV, but were unsure about the relationship. Some parents attributed HPV to a high number of sexual partners: “I don’t know how it’s transmitted. I only know that if you’re young and have a lot of different sexual partners you’re more likely to end up with cervical cancer [if you have] having sex with the same person and then get married and stick with them. . .”. 3. The HPV and cervical cancer connection. HPV and cervical cancer were used interchangeably by some, and the connection in parents’ minds was tenuous. More often than not, participants offered that they were not sure what the difference was between the two. Parents were also confused about the HPV and cervical cancer relationship, often misusing names. When asked what HPV was, one parent responded “I don’t know what it stands for. It’s a vaccination for cervical cancer”. 4. What the vaccine protects against. Parents were confused about what the HPV vaccine protected the girls against. A parent discussed why there might be so much confusion about this: “. . . just the adverts on TV. It just brought across the idea to most people that this is the thing that is going to stop you getting cervical cancer”. 5. How the vaccine works. The way that the vaccine works was also a mystery to the participants who were interviewed. Many parents mistook

	<p>the virus-like particles in the vaccine for the HPV virus or cancer. Other participants had some general ideas about how vaccinations worked, and applied that knowledge to the current vaccine. However, the idea that cancer was given as part of the vaccine was also prominent. Parents had different views about doses of vaccine, some thinking that additional booster doses were required in the next few years.</p> <ol style="list-style-type: none"> 6. HPV vaccine recommendations. Some participants were unsure about the need to vaccinate young girls and were not sure why age was an important factor. Similarly, some parents thought that the vaccine was for older girls, ones who had already had sex, while other parents thought girls could not get the vaccine after becoming sexually active. Some parents thought that the vaccine was designed for individuals who had many sexual partners: “. . . I thought what a fantastic thing [the vaccine], because I actually went to school with a girl who can't have children because she's got cervical cancer, and the reason she has cervical cancer is because she was very promiscuous when she was at school with me”. 7. Vaccine and Pap smear connection. Parents were more likely to think that girls who had been vaccinated still needed to have Pap smears, although some were unsure. A few parents stated that they had not heard anything about Pap smear guidelines after vaccination. 8. Wanting more information. Some parents had suggestions about what and how information could be delivered to future HPV school-based vaccination programs. [There is no further information available in the study on this] 9. Deferring responsibility for lack of knowledge. Some parents explained their lack of knowledge by the tendency to defer responsibility to trusted sources: “I guess only since receiving this [information during the study], in that it has reminded me that we said ‘yes,’ and it's a bit after the horse has bolted sort of thing. . . . But I think it's just because it's lumped in, it's another vaccination in the blue book – you do this at age 2, at age 5 you do this. I've never questioned the blue book”. 10. Judging themselves critically (as parents). Since their knowledge about HPV vaccination was limited, some parents expressed some sense of guilt or shame over vaccinating their daughters without being well-informed. Some parents discussed feeling like a “bad parent” after realising that they did not know much about the vaccination their child had been given. Many parents made statements about their perceived level of knowledge after talking with the interviewers: “I didn't realise how ill-informed I am. You just sign off on all these forms. . . .”. Other parents asserted that following the interview they would research more information on their own.
<p>Additional information</p>	<p>This study included data from girls which was not extracted because there was sufficient data about girls from UK studies.</p> <p>Cooper Robbins et al. appear to use the same participants across three studies (all dated 2010) to address slightly different but related aims. The studies are included separately because they have different aims and findings.</p> <p>The associated papers are: Cooper Robbins, Spring Chenoa; Bernard, Diana; McCaffery, Kirsten; Brotherton, Julia M L; Skinner, S Rachel; "I just signed": Factors influencing decision-making for school-based HPV vaccination of adolescent girls.; <i>Health psychology : official journal of the Division of Health Psychology, American Psychological Association</i>; 2010; vol. 29 (no. 6); 618-25</p> <p>Cooper Robbins, Spring Chenoa; Bernard, Diana; McCaffery, Kirsten; Skinner, S Rachel; 'It's a logistical nightmare!' Recommendations for optimising human papillomavirus school-based vaccination experience.; <i>Sexual health</i>; 2010; vol. 7 (no. 3); 271-8</p>

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

2

Cooper Robbins, 2010b

3

Bibliographic Reference Cooper Robbins, Spring Chenoa; Bernard, Diana; McCaffery, Kirsten; Brotherton, Julia M L; Skinner, S Rachel; "I just signed": Factors influencing decision-making for school-based HPV vaccination of adolescent girls.; Health psychology : official journal of the Division of Health Psychology, American Psychological Association; 2010; vol. 29 (no. 6); 618-25

4 Study Characteristics

Study design	Semi-structured interviews with parents, teachers and immunisation nurses and focus groups with girls
Aim of study	To explore experiences, knowledge, attitudes, decision-making processes, and contextual factors related to consent to vaccination and vaccination completion in a school-based HPV vaccination program for adolescent girls.

Behavioural model used	None stated
Study location	Australia
Study setting	Education
Study dates	Not provided. However, HPV vaccine was on the routine schedule.
Sources of funding	Not stated
Study methods	<p>A purposive sampling strategy was utilized to approach participants from a broad range of vaccination experiences, including those fully vaccinated, incompletely vaccinated, and nonvaccinated. To facilitate this, schools of high and low vaccination uptake, determined by data from the 2007 vaccination program, and schools from different sectors (Public, Catholic, and Independent) across metropolitan Sydney were approached to participate.</p> <p>Ten schools were approached, and nine schools from all of the Area Health Service regions of Sydney participated in the research study. The nine schools that participated had a three-dose vaccine completion rate ranging from 64% to 90% of girls offered the vaccine. Each school was provided with ethically approved information sheets and consent forms for both parents and adolescents to sign.</p> <p>As the study was to be conducted on school grounds, the school personnel decided how study recruitment would work best: some schools provided parental information sheets and consent forms to the entire year cohort of girls to take home, while others provided them to only one class (i.e., a health class) of students across different year levels. Schools coordinated the collection of signed consent forms and provided participant details to the researchers.</p> <p>Individual interviews were conducted with parents, teachers and immunisation nurses, and focus groups with girls.</p> <p>Many of the parental interviews were with parents of year 7 students. At the time of the data collection, all parents had received information about the vaccine, had already made a decision about whether or not to accept the vaccine, and their daughter had the opportunity to receive at least one HPV vaccine dose.</p> <p>An interview schedule with discussion subjects and prompts was informed by the literature and utilized in initial interviews; subsequent interviews were guided by the data analysis in a dynamic way. This ensured that all potential themes were explored. The first two authors collected data. Individual interviews with parents were scheduled according to the participants' preferences. Sometimes these occurred before school hours, sometimes during, and sometimes after, though usually on school grounds. These interviews lasted between 20 and 60 minutes.</p> <p>The presented data comprised of accounts from parents, other interviewees and girls. All interviews were digitally recorded, transcribed verbatim and were subsequently analysed by the research team to identify recurring themes and patterns within the data.</p> <p>The first two authors completed the primary analysis of the data. The analysis took a data-driven approach, allowing the results to emerge inductively; the findings are therefore grounded in the data of participants' thoughts and words. Inquiry and analysis was a dynamic process: undertaken and informed from the first interview. Using a constant comparative method, they continually compared emerging themes</p>

	<p>and experiences within each interview and between each focus group and interview. The first two authors completed separate analysis of the data independently and then discussed identified themes and concepts. No major discrepancies were identified in the themes. To ensure reliability, one expert in qualitative HPV decision research and one expert in adolescent HPV vaccination research read a selection of transcripts and identified themes. Finding no major discrepancies, further coding and analysis was performed.</p> <p>Conceptual saturation was reached when no new codes were generated. An overall analysis was performed to confirm that the ranges of diverse themes that emerged were represented.</p> <p>The study was approved by the Human Research Ethics Committee at the Children’s Hospital at Westmead, the Department of Education and Training, The Independent Schools Association and the Catholic Diocese of Parramatta.</p>
Population and perspective	38 parents, 10 teachers, and 7 immunization nurses were interviewed in total. There is no further information on them. Focus groups were comprised of girls of similar age (e.g., Year 7 or Years 9–10).
Inclusion Criteria	<p>Parents Of girls aged 12 to 15 years of age.</p> <p>Immunisation nurses</p> <p>Teachers</p> <p>Girls of the age to be vaccinated with HPV</p>
Exclusion criteria	None reported
Relevant themes	<p>11 Themes were found by the investigators that were raised by parents:</p> <ol style="list-style-type: none"> 1. Active Decision-Making (Vaccinated and Not-Vaccinated). Participants in the active decision-making groups (both vaccinated and not vaccinated) often had one or several discussions with family members and/or friends about HPV vaccination. The decision was one mainly made by parents, but girls were often a part of the process. When noncongruence of parent and child choice occurred, it was most often resolved by the parent’s decision. 2. Strong Core Health Beliefs Prevention, as a health ideology, was a common core belief among the Active Decision-Making/Vaccinated group and seemed to be a facilitator of vaccination: “I think vaccines against anything preventable is worthwhile”. 3. Personal Experiences Within the Medical System. Parents in the Active Decision-Making/Not Vaccinated group with friends or family who had negative outcomes as a result of vaccines or medical treatments generalized this negativity to all medical treatments, including HPV vaccination: “It’s the preservative side of it that worries me. It’s either mercury or lead or whatever it is. That is the part I worry about that usually causes a lot of problems for people. Personally for me I have had two family members that have been affected by prescription drugs and I’m sceptical . . .”. 4. Trust Issues. Individuals in the Active Decision-Making/Vaccinated group talked about their trust of the medical system that researched vaccines, trust of the government in regulating vaccines, and trust of the school that was providing the vaccine. Comments that the vaccine would not be given to children unless it had been extensively tested reflected these parents’ trust. Parents described the ease of the decision, since the school was providing the vaccine and doing all of the “work” associated with receiving a vaccine. 5. Perception of Media Messages. Parents in the in the Active Decision-Making/Vaccinated group recalled positive messages they had heard in the media. While parents did not describe or recall specific examples, their

	<p>overall feeling of the vaccine as gained through the media was one of confidence in the vaccine. In contrast, parents in the Active Decision-Making/Not Vaccinated group often described the negative things they had heard from friends, family, and/or media.</p> <ol style="list-style-type: none"> 6. Convenience of School Delivery. A majority of parents interviewed in the Active Decision-Making/Vaccinated group mentioned the convenience of having the vaccinations at school: “The advantages for me at school were that the organizing was taken away. All I had to do was sign the form and I knew it was taken care of. It wasn’t something I had to then think about having to do after school or make an appointment. It wasn’t anything extra. It was something that was done”. 7. Concerns Related to Sex. Parents’ concerns related to sex included: their discomfort in discussing with their adolescent a virus and vaccination related to sex; the risk that their adolescent may view vaccination as tacit permission for sex; the idea that only promiscuous individuals would contract HPV and subsequently develop cervical cancer; and the belief that their adolescent was too young (or would never be “old” enough) to receive the vaccination. 8. Fear. Fear was a common issue across all groups. Fear was often intense and could sometimes not be moderated by discussion or understanding of vaccine benefits. As one parent explained: “I sat down and talked to her and discussed that she really should have it done . . . She was just ‘No, no, no!’ . . . she had heard through school that someone’s friend who had [been vaccinated] had died”. 9. Passive Decision-Making (Vaccinated and Not-Vaccinated). Individuals in the Passive Decision-Making groups were not engaged in decision-making; the only distinguishing feature between those who were vaccinated and those who were not was that individuals in the nonvaccinated group did not return a signed consent form and therefore the adolescent was not vaccinated. 10. Routine Response and Competing Demands. Participants in the Passive Decision-Making/Vaccinated group did not appear to actively engage in the decision process; they gave consent as part of a routine response. Some parents talked about signing consent forms without reading all the information. Parents were familiar with signing forms that come home, and an implicit trust of the school facilitated this process. These parents did not discuss the information with their daughters. Competing demands (of work, life and parenting) may also have played a role in this routine response: “I can’t remember discussing it. I think it was just the case that she brought it home, fill this out. But in the business of life, forms come home and you just complete them”. 11. Communication Issues. Parents described how some parents of differing cultural backgrounds did not understand the importance of vaccinations, or could not reconcile the sexuality aspect of this vaccination with their cultural beliefs.
<p>Additional information</p>	<p>This study also included data from girls and school nurses, which was not extracted because there was sufficient data about these groups from UK studies.</p> <p>Cooper Robbins et al. appear to use the same participants across three studies (all dated 2010) to address slightly different but related aims. The studies are included separately because they have different aims and findings.</p> <p>The associated papers are: Cooper Robbins, Spring Chenoa; Bernard, Diana; McCaffery, Kirsten; Skinner, S Rachel; 'It's a logistical nightmare! Recommendations for optimising human papillomavirus school-based vaccination experience.; Sexual health; 2010; vol. 7 (no. 3); 271-8</p> <p>Cooper Robbins, Spring Chenoa; Bernard, Diana; McCaffery, Kirsten; Brotherton, Julia; Garland, Suzanne; Skinner, S Rachel; "Is cancer contagious?": Australian</p>

adolescent girls and their parents: making the most of limited information about HPV and HPV vaccination.; Vaccine; 2010; vol. 28 (no. 19); 3398-408

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

2

Cooper Robbins, 2010c

3

Bibliographic Reference Cooper Robbins, Spring Chenoa; Bernard, Diana; McCaffery, Kirsten; Skinner, S Rachel; 'It's a logistical nightmare!' Recommendations for optimising human papillomavirus school-based vaccination experience.; Sexual health; 2010; vol. 7 (no. 3); 271-8

4 Study Characteristics

Study design	Semi-structured interviews with parents, teachers and immunisation nurses and focus groups with girls
Aim of study	To examine the factors perceived to impact optimal vaccination experience.

Study location	Australia
Study setting	Education
Study dates	2008 to 2009
Sources of funding	CSL Limited Australia, Clinical School at The University of Sydney
Study methods	<p>A qualitative study was conducted. Data were collected concerning the experience of HPV vaccination through interviews with parents of girls offered the vaccine, interviews with teachers and immunisation nurses who provided the vaccinations in the schools, and observations in schools during vaccination delivery. and focus groups with girls offered the vaccine.</p> <p>See Cooper Robbins 2010b for methods</p> <p>The study was approved by the Human Research Ethics Committee at the Children's Hospital at Westmead, the Department of Education and Training, The Independent Schools Association and the Catholic Diocese of Parramatta.</p>
Population and perspective	See Cooper Robbins 2010b
Inclusion Criteria	<p>Parents Of girls aged 12 to 15 years of age. Immunisation nurses Teachers Girls of the age to be vaccinated with HPV</p>
Exclusion criteria	None reported
Relevant themes	<p>2 Themes from parents were identified by the investigators:</p> <p>Commitment to process. Parents noticed the level of the school's commitment to HPV vaccination and often commented that they wouldn't have had their daughter vaccinated had the school not supported it so strongly. [There is no further data from parents on this]</p> <p>Efficiencies in consent and record keeping. Parents discussed the need for flexibility as well as consistency in record keeping. [There is no further data from parents on this]</p>
Additional information	<p>This study included data from girls and school nurses, which was not extracted because there was sufficient data about these groups from UK studies. The views of teachers were not extracted either.</p> <p>Cooper Robbins et al. appear to use the same participants across three studies (all dated 2010) to address slightly different but related aims. The studies are included separately because they have different aims and findings.</p> <p>The associated papers are: Cooper Robbins, Spring Chenoa; Bernard, Diana; McCaffery, Kirsten; Brotherton, Julia M L; Skinner, S Rachel; "I just signed": Factors influencing decision-making for school-based HPV vaccination of adolescent girls.;</p>

Health psychology : official journal of the Division of Health Psychology, American Psychological Association; 2010; vol. 29 (no. 6); 618-25

Cooper Robbins, Spring Chenoa; Bernard, Diana; McCaffery, Kirsten; Brotherton, Julia; Garland, Suzanne; Skinner, S Rachel; "Is cancer contagious?": Australian adolescent girls and their parents: making the most of limited information about HPV and HPV vaccination.; Vaccine; 2010; vol. 28 (no. 19); 3398-408

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell (this was not)
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Can't tell
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

2

3

Cotter, 2003

4

Bibliographic Reference Cotter S; Ryan F; Hegarty H; McCabe TJ; Keane E; Immunisation: the views of parents and health professionals in Ireland.; Euro surveillance : bulletin European sur les maladies transmissibles = European communicable disease bulletin; 2003; vol. 8 (no. 6)

1 **Study Characteristics**

Study design	Focus Groups Semi-structured interviews
Aim of study	To more clearly determine the knowledge, attitudes and practices of parents and health professionals in Cork and Kerry to early childhood vaccines.
Behavioural model used	None stated
Study location	Ireland
Study setting	Community
Study dates	2001
Sources of funding	Not specified
Study methods	<p>The study was undertaken between May and August 2001 and involved both qualitative (interviews, focus groups) and quantitative methods (surveys). Only the qualitative results of the study are presented here. Initial semi-structured telephone interviews with key informant GPs (i.e. GPs involved in post-graduate training) identified those reasons that they considered responsible for falling vaccination rates. The issues and concerns expressed were then further explored in focus group discussions with parents and nurses (public health nurses, practice nurses and midwives).</p> <p>Non-probabilistic sampling methods were used for selecting participants for the focus groups. Coordinators of 'mother and toddler' groups known to the SHB or other organisations involved in child health (e.g. La Leche League) were informed of the study and asked to invite participation from their members (i.e. parents). Senior Public Health Nurse Managers and hospital matrons in each hospital providing obstetric services were similarly contacted, and asked to identify and invite participation of staff involved in providing or advising on child health care. Local branches of the Irish Practice Nurse Association were contacted and invitations extended to their members to participate.</p> <p>Eight focus groups were held with parents (47 participants), 3 focus groups with public health nurses (23 participants), two focus groups with midwives (14 participants), and two focus groups with practice nurses (12 participants). The groups were formed to represent a broad range of parents from different socio-economic and geographical areas, as well as health professionals, using methods appropriate for qualitative research.</p> <p>A facilitator and a scribe who noted the comments of the participants attended focus groups. The analysis and write up was conducted by another independent researcher. The notes from the focus groups were transcribed and analysed by content in accordance with recognised qualitative research techniques. The transcripts for each focus groups including the various types of participants (parents, practice nurses etc.) were read through and analysed separately to identify emergent key themes and issues, which were then coded. Care was taken to consider minority opinions as well as the majority viewpoint. Emergent themes and main issues were later compared with those identified independently by the group facilitator.</p>
Population and perspective	Interviews with 19 GPs. Eight focus groups were held with parents (47 participants), 3 focus groups with public health nurses (23 participants), two focus groups with midwives (14 participants), and two focus groups with practice nurses (12 participants).

Inclusion Criteria	Parents Registered midwives Registered nurses General practitioners
Exclusion criteria	None reported
Relevant themes	<p>5 themes were identified by the investigators. This is the total amount of data in this study relevant to health professionals:</p> <ol style="list-style-type: none"> 1. Health professionals perceived parents in Cork and Kerry to be both confused about, and have limited knowledge of, vaccines and vaccine preventable diseases. 2. The levels of knowledge about vaccines and vaccine preventable diseases varied greatly both within, and between, the different health professional groups. 3. To varying degrees, the health professionals felt that they were ill-equipped to properly inform parents about vaccine related issues. 4. They all expressed a need for timely and accurate information to help them address parental concerns. 'We need up-to-date information and research...if health professionals had better information they would be better able to promote'. 5. All the health professionals considered that the influence of the media had had a dramatic negative impact on vaccination rates: 'Biggest problem is adverse publicity in the press'.

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	No
Ethical Issues	Have ethical issues been taken into consideration?	Can't tell
Data analysis	Was the data analysis sufficiently rigorous?	Can't tell

Section	Question	Answer
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Creed, 2021

2

Bibliographic Reference Creed, Stephanie; Walsh, Elaine; Foley, Tony; A qualitative study of parental views of HPV vaccination in Ireland; European Journal of General Practice; 2021; vol. 27 (no. 1); 1-9

3 Study Characteristics

Study design	Semi-structured interviews
Aim of study	To address the gap identified in the literature about parental views on HPV vaccination in Ireland and to provide insights that may help develop strategies to improve HPV vaccination uptake
Study location	Republic of Ireland
Study setting	One GP practice in County Cork with approximately 13,000 registered patients
Study dates	March 2018 - August 2018
Sources of funding	None reported
Study methods	<p>All eligible patients at the selected GP practice were identified and convenience sampling was used to select which parents were invited to take part. Semi-structured interviews took place in the GP practice. Interviews were audio recorded and transcribed verbatim. Field notes were made during and post interviews. Transcripts were subsequently sent to participants for review and no further edits were required.</p> <p>An initial sample size of ten was set and data saturation was tested, by conducting subsequent interviews. As new themes emerged from the initial three subsequent interviews, three further interviews were conducted. Again new themes emerged, so a further two interviews were conducted after which data saturation was reached. This was confirmed by the absence of any new themes emerging. Inductive thematic analysis was used. Transcripts were read and initial codes were generated and discussed at a research meeting, and a coding system agreed. For every three interviews, one was selected at random for dual independent coding analysis by a second researcher</p>
Population and perspective	18 parents were interviewed
Inclusion Criteria	Parents of female patients aged 11–13 years, registered to the practice, who had not yet been offered the HPV vaccine.

Exclusion criteria	None reported
Relevant themes	<p>4 relevant themes were identified:</p> <p>1. Knowledge of HPV and the HPV vaccine: Parents had varying knowledge of HPV and the vaccination. Many were aware that there was an optimal age for vaccination but unclear of the reasons why and often underestimated the prevalence of HPV "It's not the like the usual ones you hear about like chlamydia or gonorrhoea (P14); I would say 1% of population".</p> <p>2. Beliefs about vaccination: Parents expressed their wishes to vaccinate their children to protect their health and to prevent cancer, but none referred to preventing sexually transmitted infections. Some parents indicated that fear of the side effects might mean they choose not to vaccinate. "The HSE (Health Service Executive) are swearing that there are no side effects but then you have parents swearing there are"</p> <p>3. Information needs: Many parents felt that they did not have sufficient information about HPV vaccination, particularly in relation to long-term side effects "I just feel I'm not getting all the information"</p> <p>4. Factors influencing vaccination decision: The media was reported as a strong influence on parental decisions but most parents reported the recommendations of their GP as the strongest factor "it's the person you rely on the most and trust their opinion"</p>

1

2 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Can't tell <i>(27 parents were contacted to take part but one-third declined)</i>
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes

Section	Question	Answer
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research has some value
Overall risk of bias and relevance	Overall risk of bias	Moderate <i>(One-third of the parents who were invited to take part declined. Limited information about potential reasons for this)</i>
Overall risk of bias and relevance	Relevance	Highly relevant

1

Daniels, 2004

Bibliographic Reference Daniels, Nicholas A; Juarbe, Teresa; Rangel-Lugo, Martha; Moreno-John, Gina; Perez-Stable, Eliseo J; Focus group interviews on racial and ethnic attitudes regarding adult vaccinations.; Journal of the National Medical Association; 2004; vol. 96 (no. 11); 1455-61

2 Study Characteristics

Study design	Focus Groups
Aim of study	Do African-American and Latino adults perceive faith-based organizations as a suitable setting to receive adult immunisations?
Behavioural model used	None stated
Study location	USA
Study setting	Catholic community churches in San Francisco
Study dates	2003
Sources of funding	Resource Centres for Minority Aging Research program by the National Institute on Aging, the National Institute of Nursing Research, and the National Centre on Minority Health and Health Disparities, National Institutes of Health.
Study methods	<p>The focus groups were conducted in the language of preference (English or Spanish). Participants were presented with a basic definition of the three primary adult vaccinations (e.g., flu, pneumonia, and tetanus) at the beginning of the focus group. Then, several open-ended questions were posed, such as, "Please tell us in your own words what you have heard about adult immunizations," "Have you heard of the flu or tetanus vaccine?," or "What do you know about the pneumonia vaccine?" Each focus group was professionally taped, transcribed verbatim, translated (Spanish to English), and submitted for thematic analysis by four of the investigators. Phrases and sentences were the unit of analysis.</p> <p>They used a two-step recruitment method to enrol racial and ethnic minority adults from faith-based organizations as focus group participants. First, invitations to participate were sent to selected San Francisco religious leaders and church-governing bodies representing faith-based organizations located in low</p>

	<p>socioeconomic neighbourhoods with >50% African-American and/or Latino members. Faith-based organizations that expressed interest in participating were invited to an informational group meeting to review the purpose of the project and to explore partnership arrangements. They sought to build relationships with interested faith-based organizations over a period of time before recruiting focus group participants from within their membership. Second, faith-based organizations that agreed to participate were asked to inform their members during church announcements and in weekly bulletins that University of California, San Francisco (UCSF) researchers were available to discuss and enrol eligible members in an adult vaccine focus group study. Church members were asked to stay after religious services for a baseline screening eligibility session. If a member was eligible and willing to participate, an appointment was made at a time, date, and location for a scheduled focus group. They recruited church members who were 1) age 50 or older, 2) adults with chronic heart or lung diseases or diabetes mellitus who had not routinely been immunized against influenza, or 3) adults age 65 or older who had never been vaccinated against pneumococcal disease. Individuals who received the influenza vaccine in the preceding year or the pneumococcal vaccine anytime in the past were excluded from the study.</p> <p>All of the study materials were available in English and Spanish. Each focus group participant signed informed consent, received instructions on the interview process, and was encouraged to freely express opinions during the interview. A short sociodemographic questionnaire was administered at the beginning of the focus group. The identity of the participants was kept confidential, and a code number was used to identify each participant's response and the focus group itself. Participants received \$20 grocery vouchers for their participation in the group interview.</p> <p>All focus group leaders were bilingual and bicultural skilled and experienced healthcare researchers with doctoral backgrounds. The two Latino focus groups were conducted in Spanish; the African-American and Caucasian focus groups were conducted in English. Standard moderation techniques were used throughout, and all focus groups lasted approximately an hour.</p>
Population and perspective	<p>They interviewed a convenience sample of 22 men and women, mean age 62 years (range 46-80 years), who self identified as white (n=3), Latino (n=9), and African-American (n=10). The Latino participants were all foreign-born and came from Mexico, Central America, and Puerto Rico. In general, most of the participants were women (77%) and had health insurance. Each focus group had an average of 5.5 participants (range 3-10).</p>
Inclusion Criteria	<p>People aged 65 years or older Who had never been vaccinated against pneumococcal disease</p> <p>People aged 50 years or older</p> <p>People with certain health conditions Adults with chronic heart or lung diseases or diabetes mellitus who had not routinely been immunized against influenza</p>
Exclusion criteria	<p>Participants who had received specified vaccine(s) Individuals who received the influenza vaccine in the preceding year or the pneumococcal vaccine anytime in the past were excluded from the study.</p>
Relevant themes	<p>Five themes were identified:</p> <p>1) Awareness and Knowledge of Adult Vaccinations Some believe that vaccines are preventive, while others believe they are curative. They were more knowledgeable about influenza than pneumococcus and were unaware of mortality benefits from vaccinations. They had misconceptions based on personal health status and lack of flu history, and lacked knowledge about vaccine cost and insurance coverage.</p> <p>"I believe that the first thing we have to clarify is what a vaccine is, because this gentleman here is possibly talking about another kind of medication that is not a</p>

<p>vaccine. The vaccine is injected [in] to a person, the same antibodies that produce the disease, minimized, so that the body reacts to it."</p> <p>2) Barriers to Immunizations Literacy, insurance status, cost, transportation, gender and occupational roles, fears for legal status, lack of trust in the health care system and providers, inconvenience. Some believe vaccines cause harm, pain, disease (flu), and change hot and cold balance. "We have a general distrust of the medical profession, and we have beliefs in home remedies and that kind of thing."</p> <p>3) Role of Health Care Providers More vaccine education requested. Need for consistency in recommendation. Promote with patient reminders. "But, I don't remember on any regular basis-any doctor or nurse-saying to me...for instance, I just got notice in the mail that it was time to have my mammogram. And then I thought-oh, okay, I'll do that. But I've never gotten anything in the mail or from my doctor saying, 'Its time to have your flu shot'."</p> <p>4) Faith-based Organizations as a Venue for Adult Immunization Delivery Peer models for persuasion, bulletin, posters, and support from faith-based leaders to provide encouragement. "I think that church is a good place for vaccinations because a lot of people go there."</p> <p>5) Desire to Improve Health. Overall, there was a strong desire to improve health and to take advantage of health education and prevention services: "Well, it's for my health so I'm going to do it, if it's the best thing for me."</p>
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1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes

Section	Question	Answer
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Davis, 2001

2

Bibliographic Reference Davis, M M; Andrae, M; Freed, G L; Physicians' early challenges related to the pneumococcal conjugate vaccine.; *Ambulatory pediatrics : the official journal of the Ambulatory Pediatric Association*; 2001; vol. 1 (no. 6); 302-5

3

4

5 Study Characteristics

Study design	Semi-structured interviews
Aim of study	To characterize the obstacles faced by physicians regarding administration of a 7-valent pneumococcal conjugate vaccine (Prevnar) to all children younger than 2 years and to high-risk children from 2–5 years of age during the months immediately following national recommendations.
Behavioural model used	None stated
Study location	USA
Study setting	Community
Study dates	2000
Sources of funding	Centres for Disease Control and Prevention
Study methods	<p>The study was approved by the Institutional Review Board of the University of Michigan. They contacted a convenience sample of paediatricians and family physicians listed in the telephone directory across a variety of urban and rural communities in 7 states: California, Illinois, Massachusetts, Michigan, New York, North Carolina, and Texas. States were chosen to provide a variety of state vaccine financing approaches that may affect the availability of childhood vaccines at the provider level: Vaccines for Children (VFC) only (California), enhanced VFC (Illinois, Michigan, New York, Texas), and universal purchase (Massachusetts, North Carolina).</p> <p>In developing the interview protocol, the authors consulted with local physician opinion leaders and tested the instrument for ease of administration and participant comprehension. Physicians who were recommending pneumococcal vaccine were asked questions about their sources of information about the vaccine, their encounters with parents, obstacles in implementing the new recommendations, and</p>

	<p>their experiences with third-party payers. Physicians who were not currently recommending pneumococcal vaccine were asked about their reasons for not recommending the vaccine. All participants were asked about the general approach within their practices to decision making about providing new vaccines and recommendations they might have to improve the vaccine recommendation process in the future. The protocol was semi-structured to permit follow-up inquiries from the interviewer regarding respondents' comments. Every effort was made to phrase questions in a non-judgmental fashion and to refrain from leading questions.</p> <p>They contacted 64 paediatricians and 42 family physicians by facsimile to invite them to answer questions regarding pneumococcal vaccine. The first 24 physicians (21 paediatricians, 3 family physicians) who responded to the invitation to participate within the study period were contacted by one investigator to conduct interviews by telephone. Physicians were offered an honorarium for their participation. Interviews were conducted before availability of the pneumococcal vaccine through the VFC program.</p>
Population and perspective	24 physicians (21 paediatricians, 3 family physicians). At the time of the interviews, 18 physicians were recommending pneumococcal vaccine and 6 were not.
Inclusion Criteria	Practicing healthcare professionals Physicians
Exclusion criteria	None reported
Relevant themes	<p>2 themes were identified by the investigators:</p> <p>1. Resistance From Parents: Some physicians said that parents were simply wary of another "new vaccine." Several physicians mentioned that they concurred with parental concern about the difficulty of adding pneumococcal vaccine to an already congested primary vaccination schedule. One paediatrician said, "I hurt inside for those babies and their parents as I give that fifth shot at the 2-month visit."</p> <p>2. Variations in Coverage of Pneumococcal Vaccine by Health Plans. Several physicians expressed that variation in insurance coverage for pneumococcal vaccine was, as one described, "our biggest problem." This led to a lack of coordination, which prompted one physician to say: "I lost money on the rotavirus vaccine—hey, I lost money on the measles vaccine, too! It's just the way it is with each vaccine."</p>

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes

Section	Question	Answer
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Deml, 2019

2

Bibliographic Reference Deml, Michael J; Notter, Julia; Kliem, Paulina; Buhl, Andrea; Huber, Benedikt M; Pfeiffer, Constanze; Burton-Jeangros, Claudine; Tarr, Philip E; "We treat humans, not herds!": A qualitative study of complementary and alternative medicine (CAM) providers' individualized approaches to vaccination in Switzerland.; *Social science & medicine* (1982); 2019; vol. 240; 112556

3 **Study Characteristics**

Study design	Semi-structured interviews
Aim of study	To understanding complementary and alternative medicine providers' roles in vaccine hesitancy, asking : (1) how do complementary and alternative medicine providers describe their perspectives and roles regarding vaccination?; (2) in what ways, if any, do complementary and alternative medicine providers' views and practices diverge from biomedical and public health vaccination ideas?; and (3) how do complementary and alternative medicine providers and parents discuss vaccination during consultations?
Study location	Switzerland
Study setting	Complementary and alternative medicine clinics
Study dates	August 2017 – November 2018
Sources of funding	Swiss National Science Foundation in the setting of National Research Program NRP74 (Grant Number 407440_167398)

<p>Study methods</p>	<p>Practitioners were interviewed and then observed during consultations in an attempt at qualitative data triangulation; data gathered during interviews allowed comparison of their vaccination perspectives and descriptions of their interactions with parents to observations of what actually happened in practice during consultations.</p> <p>Providers were recruited through research networks by sending recruitment letters and study flyers via e-mail, by personally calling potential participants, and through snowball sampling. Purposive sampling was conducted with providers' support to selectively observe consultations during which vaccination was likely to be discussed, including interactions with parents seen for the first time or with parents considering their children's first vaccinations. Informed consent was obtained from providers for interviews and from providers and parents for observations.</p> <p>A qualitative interview guide was drafted based on vaccine hesitancy literature and included open-ended questions about the following themes: (1) providers' background and training, (2) parent-provider interactions during consultations, (3) perspectives on vaccination and immunity, and (4) perspectives on medicine and public health. Interviews were digitally audio-recorded, and transcribed verbatim.</p> <p>Observed consultations were documented with ethnographic observation notes in field journals and written into a narrative format. A semi-structured approach was used to complete observation guides based on vaccine hesitancy and medical ethnography literature. After compiling interview transcripts and observation notes, a coding scheme was developed. The coding scheme allowed data to be coded into three main groupings: providers' (1) positions on vaccination along the spectrum of VH, (2) reflections on official Swiss vaccination discourse, evidence, and biomedicine, and (3) focus on individuals' choices. Data was analysed using the Framework Method described by Gale et al. (2013) with the support of MAXQDA software (VERBI, 2017). Further analysis used an inductive approach by incorporating themes from the data.</p>
<p>Population and perspective</p>	<p>17 participants (15 were licensed doctors with additional training in complementary and alternative medicine). Participants practiced a range of medicine types (7 anthroposophic medicine, 7 homeopathic medicine, 1 Traditional Chinese medicine/acupuncture), 1 phytotherapy and 1 naturopathy</p>
<p>Inclusion Criteria</p>	<p>Complementary and alternative medicine providers in French and German speaking regions of Switzerland</p>
<p>Exclusion criteria</p>	<p>None reported</p>
<p>Relevant themes</p>	<p>2 relevant themes were identified:</p> <ol style="list-style-type: none"> 1. Providers views on vaccination – Many providers did not have one specific stance on vaccination and instead informed parents about the literature and their opinions to help parents make a decision that they were comfortable with. Two providers did not agree with vaccination and shared this with parents but did not see themselves as they primary people with which vaccination consultations should take place. 2. Providers approached vaccination discussions based on what they thought was best for the individual and family, in relation to their beliefs and experiences, rather than public health-based benefits such as herd immunity. “We first speak about vaccines generally. Then, I go over them one by one.

	And for each one, I ask [the patients] what types of information they had sought out. What information do they already have? What are their concerns about vaccinations? (...). I tell them the FOPH recommendations. Then, I tell them my information”
Additional information	Interviews and observations were based on childhood vaccinations, but no information about specific ages and vaccines

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research has some value
Overall risk of bias and relevance	Overall risk of bias	Low
Overall risk of bias and relevance	Relevance	Highly relevant

2

Donaldson, 2015

3

Bibliographic Reference Donaldson, Beverly; Jain, Prerna; Holder, Beth S; Lindsey, Benjamin; Regan, Lesley; Kampmann, Beate; What determines uptake of pertussis vaccine in pregnancy? A cross sectional survey in an ethnically diverse population of pregnant women in London.; Vaccine; 2015; vol. 33 (no. 43); 5822-5828

4 Study Characteristics

Study design	Open ended question from a survey or questionnaire
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Aim of study	To evaluate women’s awareness, attitudes towards and acceptance of the current pertussis vaccination programme in order to identify potential barriers that could be addressed in order to improve implementation.
Behavioural model used	Health Belief Model Precaution adoption process model
Study location	UK
Study setting	Community - antenatal (out patient) clinic
Study dates	2013 to 2014
Sources of funding	Imperial College Biomedical Research Centre
Study methods	<p>This study adopted qualitative and quantitative research techniques in the form of a cross-sectional questionnaire survey. Self-reported qualitative information on attitudes to vaccines and experiences was gained from the analysis of the free text.</p> <p>Ethical approval was granted by the London-Hampstead Research Ethics Committee.</p> <p>A four part, anonymised questionnaire was developed based upon the Precaution Adoption Process Model and the Health Belief Model of health behaviour. Consideration was given to the potential for inaccuracy in self-reported vaccination status and questions were phrased in order to highlight any discrepancy and allow further questions to be asked.</p> <p>A pilot survey was conducted with six pregnant women from the target population to optimise the questionnaire to ensure that the ‘instrument’ was logical and comprehensive for the domain that it was intended to measure. A convenience sampling strategy was adopted.</p> <p>The questionnaire was administered to an ethnically diverse sample 166 of pregnant women who were over 18 years old, at least 27 weeks pregnant and attending for routine pregnancy care over a one year period from May 2013 to June 2014. When approached by the Research Midwife in the antenatal clinic waiting area, each woman was given a full explanation of the survey, supported by an information leaflet and sufficient time to ask questions before making an informed decision to participate. All questionnaires were returned to the Research Midwife in a sealed envelope prior to leaving the clinic.</p> <p>Quotes from the questionnaires were tabulated and repeated words and phrases were highlighted according to categories. Themes were derived from these to discern factors influencing women’s decisions to accept or decline vaccine.</p>
Population and perspective	There were 166 participants. The average age of the respondents was 31.4 years (median, 31: range 18 – 34), the average gestation was 32 weeks (range 27 – 41weeks) and 46.0% (93) of the respondents were nulliparous. The respondents were of diverse ethnicities.
Inclusion Criteria	Women who are currently pregnant
Exclusion criteria	None reported

Relevant themes	4 themes were identified by the investigators using content analysis of the free text:
	1. Lack of information, awareness and professional encouragement: The main reasons for declining the vaccine were the lack of information and awareness of the vaccine combined with a lack of encouragement from familiar healthcare professionals.
	2. Natural is better: Women thought that over-medication could be a hazard during pregnancy and that 'natural was better'. There was a firm belief that 'nature would take care of things'.
	3. Perceived risks and safety concerns: Some women worried about the side-effects of the vaccine on their unborn baby and to themselves.
	4. Not needed as low perceived susceptibility: The vaccine was also considered unnecessary by some women who did not perceive that they were at sufficient risk of contracting the disease.

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	No <i>(Qualitative data was derived from free text in a survey.)</i>
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Can't tell
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research has some value
Overall risk of bias and relevance	Overall risk of bias	Moderate <i>(Qualitative data was derived from free text in a survey.)</i>
	Relevance	Highly relevant

2

Downs, 2008

1

Bibliographic Reference Downs, J.S.; de Bruin, W.B.; Fischhoff, B.; Parents' vaccination comprehension and decisions; Vaccine; 2008; vol. 26 (no. 12); 1595-1607

2 **Study Characteristics**

Study design	Semi-structured interviews
Aim of study	To explore parents' decision-making regarding vaccines for their children.
Behavioural model used	Mental models
Study location	USA
Study setting	Community
Study dates	Not provided
Sources of funding	Centres for Disease Control and Prevention
Study methods	<p>Mental models interviews were conducted with thirty parents, recruited by a market research company from three cities identified by the company as providing diversity in race, background, and vaccination attitudes: Kansas City (Missouri), Philadelphia (Pennsylvania), and Eugene (Oregon).</p> <p>Parents were eligible if they had a child between 18 and 23 months of age.</p> <p>The sample size of 30 balances the resource-intensive demands of in-depth interviews and their analysis against the marginal return of new insights from additional participants.</p> <p>One-on-one interviews were conducted by telephone. The interview protocol had two segments: mental models, assessing beliefs about vaccination, and communication assessment, measuring trust in communications designed with different information properties. The mental models portion used 24 questions, starting with how vaccines work, and then proceeding to decisions about vaccination. The protocol included structured questions eliciting quantitative ratings on several topics, including the risks and benefits of vaccination, trust in information sources, and the adequacy of official information, on scales anchored at 1 (not at all) and 7 (completely or extremely safe, trustworthy, sufficient, etc.). Interviewees were asked to explain their ratings.</p> <p>The communication assessment segment presented two vaccine communications, varying on three dimensions: (a) position (pro-vaccine vs. anti-vaccine), (b) evidence (statistical vs. anecdotal), and (c) structure (a logical argument with “linked” concepts vs. repetition of key concepts).</p> <p>These dimensions were crossed orthogonally to create eight communications. In order to avoid presenting communications with repeated content, each interviewee received two complementary communications, with opposite values on each dimension. This design allows us to explore main effects of each of the three dimensions using within-subjects comparisons, while controlling for the other two</p>

	<p>dimensions, not considering interactions. Each communication was rated on a scale anchored at 1 (do not trust) and 3 (trust highly).</p> <p>Interviews were transcribed verbatim. As mentioned, respondents were prompted to clarify their thinking, recognising that the ensuing ambiguity or confusion could be revealing. Responses to the structured questions were used only if the interviewee initially gave an unequivocal response (e.g., giving a number rather than saying “not a lot”), before any request to elaborate.</p> <p>Each sentence in the transcript was coded by two independent judges. They were trained by the first author until they could accurately and reliably apply the coding scheme.</p>
Population and perspective	26 (87%) of the 30 participating parents were mothers. 22 (73%) were white, 7 (23%) African American and 1 (3%) Native American. Given the small sample, no gender or race comparisons were made. 19 (63%) had attended college. In all but one case, the focal child had been given all prescribed MMR shots.
Inclusion Criteria	Parents of children who had a specified age range Aged 18 to 23 months
Exclusion criteria	None reported

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low

Section	Question	Answer
	Relevance	Highly relevant

1

Dube, 2019

2

Bibliographic Reference Dube, E.; Gagnon, D.; Clement, P.; Bettinger, J.A.; Comeau, J.L.; Deeks, S.; Guay, M.; MacDonald, S.; MacDonald, N.E.; Mijovic, H.; Paragg, J.; Rubincam, C.; Sauvageau, C.; Steenbeck, A.; Wilson, S.; Challenges and opportunities of school-based HPV vaccination in Canada; Human Vaccines and Immunotherapeutics; 2019; vol. 15 (no. 78); 1650-1655

3 Study Characteristics

Study design	Focus Groups Unstructured interviews
Aim of study	To better understand the determinants of low HPV vaccine uptake and identify strategies to enhance vaccine acceptance.
Behavioural model used	Social Ecological Model
Study location	Canada
Study setting	Education: Parents of girls at school who were eligible to receive the HPV vaccine
Sources of funding	2015 to 2016
Study methods	<p>This multi-site qualitative study took place in three areas of Quebec where the HPV vaccine uptake was the lowest since the launch of the HPV school-based vaccination program (Montreal, Laval and Laurentides areas, identified using immunization data compiled by the ministry of Health).</p> <p>The sample included individuals involved in the HPV school-based vaccination program at different levels. At the macro level, the key informants included parents of 9-year-old girls. First, interviews were conducted with key informants at the macro level. A data collection grid was developed to have an overview of the organization of school-based vaccination services in each participating area. An analysis of HPV uptake at the school level in the three areas was conducted. Schools were purposively selected in each region in order to present similar demographic characteristics (school size, teaching language, deprivation index), but having HPV vaccine coverage below and above the regional average rate.</p> <p>Interviews were conducted to further assess the barriers and facilitators of HPV vaccination identified during the first interviews (macro level). Interview grids and sociodemographic questionnaires were developed, pretested and adapted for each category of key informants. Main topics explored during these interviews were: operation and involvement in school-based vaccination programs, attitudes regarding HPV vaccination, perceived barriers and enabling conditions of the school-based program, perceived acceptability of the vaccine by the parents, suggestions to improve the HPV school-based vaccination program.</p> <p>Focus groups with parents were conducted in November-December 2016. Parents were recruited in the selected schools.</p> <p>Parents were asked questions about their perceptions of the importance of</p>

	<p>vaccination in schools and of risk and benefits of HPV vaccine. Parents were also asked questions about the issues faced when making their decision regarding their child's vaccination and, for those who had their child vaccinated, their perception of the vaccination process in schools.</p> <p>Parents received a 50\$ compensation for their time.</p> <p>All interviews were recorded and summarized or transcribed verbatim. Most participants were offered the opportunity to review the summary of their interviews for accuracy and confidentiality. Thematic content analysis was conducted using the categories of the Socio-Ecological model as main themes.</p> <p>The study protocol has been approved by the Ethics Review Board of the CHU de Québec-Université Laval.</p>
Population and perspective	<p>3 Themes were identified by the investigators that came from parents:</p> <ol style="list-style-type: none"> 1. Parents' lack of knowledge and negative attitudes towards the HPV vaccine. This was a frequently mentioned barrier to HPV uptake. As HPV is a vaccine against a sexually transmitted virus, some parents indicated being uncomfortable discussing sexuality with their child, especially at 9 or 10 years of age: "I did not have my daughter vaccinated. [...] I think the vaccine is too new and I have read about some adverse events that made me wonder. I thought that my daughter was not sexually active, so why vaccinate? She's only in Grade 4 [i.e., aged 9 years-old], so maybe when she will be 13 or 14-years-old. So I thought she was too young." 2. Limited time for parents to make a decision. There were only a couple of days between when the consent and information forms were sent to parents and when parents needed to return the signed form to the school. This short delay was judged by parents as problematic to make an informed decision regarding their child's vaccination. For example, feeling "being rushed to accept", lack of time to call the school nurse or the family doctor to have more information about the vaccine. 3. A barrier frequently reported by parents was the negative impact of misinformation from the Internet and social media that created doubts and concerns about the rationale, safety and effectiveness of the HPV vaccine: "I looked on the Internet, I did some searches and, I don't recall what the website was, but there was a lot of information and testimonies. That was not positive, that was not reassuring."
Inclusion Criteria	<p>Parents Of 9-year-old girls who were eligible to receive the HPV vaccine</p>
Exclusion criteria	<p>None reported</p>
Additional information	<p>This study also included data from school nurse. However, this data was excluded because we already have sufficient from UK sources.</p>

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes

Section	Question	Answer
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Can't tell <i>(They do not say how many parents they recruited.)</i>
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low <i>(Although they do not say what proportion of the 70 participants were parents, the data extracted seems reasonable.)</i>
	Relevance	Highly relevant

1

Eilers, 2015a

2

Bibliographic Reference Eilers, Renske; Krabbe, Paul F M; de Melker, Hester E; Motives of Dutch persons aged 50 years and older to accept vaccination: a qualitative study.; BMC public health; 2015; vol. 15; 493

3 **Study Characteristics**

Study design	Focus Groups
Aim of study	The aim of this study is to explore the motives to accept or refuse vaccination among community-dwelling persons aged 50 years and older in the Netherlands.
Behavioural model used	None stated

Study location	The Netherlands
Study setting	Community
Study dates	2013
Sources of funding	The Dutch Ministry of Health, Welfare and Sport. The Dutch Ministry of Health, Welfare and Sport
Study methods	<p>In total, 13 focus groups of individuals of 50 years or older (n = 80) were composed.</p> <p>A list of foundations for the welfare of older adults, sheltered housing institutions, care homes, and residential groups across the Netherlands was compiled based on an internet search. Locations were selected from this list, whereby the geographical distribution and degree of urbanization were taken into account to ensure nationwide distribution and inclusion of individuals in both urban and rural areas. In addition, two commercial agencies were approached to recruit persons aged 50 and older. Letters were sent out to the different organizations inviting persons to participate in the study. Candidate respondents received an information letter describing the background, objectives, and procedures of the study and enclosing an informed consent form. Those willing to take part returned the form containing their personal information. The participants ranged from 52 to 92 years of age and were classified as living independently (n = 31), in a residential group (n = 37), in a care home (n = 2), or in sheltered housing (n = 10).</p> <p>All 13 focus groups had the same moderator, accompanied by an assistant to take notes. The duration of each session varied from 65 to 98 min. Every participant received a gift voucher of €20 after attending.</p> <p>The groups were guided using a semi-structured open-ended topic list. Since the aim was to explore all opinions that arose, the questions were not based on existing formats such as the Health Belief Model, which might restrict the range of topics to be raised.</p> <p>Each session started with an introduction to the research and the aim of the focus group. The purpose of the study was explained as follows to the participants: "In an aging society, the prevalence of infectious diseases will rise. Vaccination could protect older adults against several infectious diseases and promote healthy aging. In that light, it is important for us to know how you feel about vaccination and what your reasons are to either accept or reject vaccination." In addition, the group members were asked permission to record the session.</p> <p>The participants were then asked to give their thoughts on vaccination in general and to write down the pros and cons of accepting vaccination. This topic covered not only influenza vaccination but also, expansion of the current program to include vaccines for herpes zoster, pneumococcal disease, and pertussis. Their views were discussed during the session. Furthermore, the contribution of vaccination to healthy aging was discussed, drawing special attention to the role of the general practitioner.</p>
Population and perspective	The 80 participants ranged from 52 to 92 years of age and were classified as living independently (n = 31), in a residential group (n = 37), in a care home (n = 2), or in sheltered housing (n = 10).
Inclusion Criteria	People aged 50 years or older
Exclusion criteria	None reported
Relevant themes	9 Themes were identified:

- 1) Prevention and the influenza vaccination programme
There was agreement that prevention is part of a GP's job, and that prevention forms an increasing part of their daily workload. Most considered the influenza vaccination programme useful for this.
"Once more, I believe it to be a very effective, inexpensive method to prevent lots of trouble and suffering"
- 2) Usefulness of additional vaccines
The majority of the GPs thought that availability in itself did not justify distributing the vaccine.
"Yes, and I also think, like from the moment that you offer vaccinations for shingles that – oh, so shingles is apparently a serious illness. What I mean to say is that people's perception will change."
- 3) Evidence-based practice
Evidence-based practice was considered very important, especially regarding a vaccine's effectiveness and side effects.
"You have to be sure it is useful, you have to be sure it helps, that it has no negative effects and that you can really prevent problems."
- 4) Severity of the infectious disease
Although the initial disease burden of herpes zoster was perceived to be quite low, its consequences could be severe, justifying vaccination. Pneumococcal disease was considered severe enough to warrant vaccination due to its mortality rate.
"Essentially, the number of complaints that people have while they are suffering from that seems to be reasonable, as far as I can tell, but what counts is the number of complaints afterwards"
- 5) Target population
It would be preferable to select people for vaccination on the basis of criteria such as co-morbidities to identify a high-risk population
"And again, that is the point, what do we gain by vaccinating the entire elderly population?"
- 6) Participating organizations
All interviewees agreed that the GP's office should be the central point for new vaccination campaigns. Using the GP's practice ensures high coverage because GPs can effectively reach the target population and if a vaccination programme is based on for example co-morbidity criteria, that selection process would necessarily involve the GPs.
"I think it would be silly, going to your GP for your flu shot, but to the GGD [Public Health Service] for a vaccination for pneumococcal disease."
- 7) Potential barriers
Some GPs remarked that organizing the influenza vaccination programme alone is an extensive undertaking. Vaccine-specific selection criteria would add to the workload.
"Well, see, assume that you could give it as one shot, then that would be easier, it would be less work, but then there might be people who say they want the one shot but not the other. I could imagine that that would complicate things."
- 8) Autonomy
Several GPs questioned their ability to refuse to distribute the vaccinations, indicating that a positive attitude is not always necessary
"If it is being offered, then it has been decided that it is worth it. Then I'll just go along with it."

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	No
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Relevant (They included all people who were aged 50 years and over. This review is interested in people who are age 65 years and over.)

1

Eilers, 2015b

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Bibliographic Reference Eilers, Renske; Krabbe, Paul F M; de Melker, Hester E; Attitudes of Dutch general practitioners towards vaccinating the elderly: less is more?.; BMC family practice; 2015; vol. 16; 158

3 **Study Characteristics**

Study design Semi-structured interviews

Aim of study	This qualitative study explores Dutch GPs' attitudes regarding vaccination in general, and their attitudes regarding the incorporation of additional vaccines in the current Dutch influenza vaccination programme.
Behavioural model used	None stated
Study location	The Netherlands
Study setting	General practices
Study dates	2013
Sources of funding	The Dutch Ministry of Health, Welfare and Sport
Study methods	<p>Volunteer sampling was used to recruit the GPs. An information letter was sent to regional societies of general practitioners which was forwarded to affiliated practices. Unfortunately, the response rate was low. To include more GPs, practices across the Netherlands were selected randomly, taking into account location and type of practice, and approached directly by letter, followed by a phone call. If the attending GPs wished to participate, an appointment was made. In total, ten GPs agreed to be interviewed. All participants received a gift voucher following the interview. Informed consent was either obtained verbally by telephone or in writing by e-mail by the active enrolment of the GP's for an interview.</p> <p>The selected data collecting method was face-to-face interviews. Focus groups were not considered feasible due to the GPs' high workload. Interviews lasted a maximum of 30 min (as informed beforehand). All interviews were conducted by the same researcher. Saturation was reached after eight interviews, meaning that after eight interviews, no new concepts emerged from the interviews. The conversation was based on a semi-structured topic list. This topic list was based on the literature and a focus group study among older adults in which the role of the GP was discussed. The open-ended questions covered four topics: 1) the perceived role of the GP concerning prevention in general; 2) his/her attitude regarding the current influenza vaccination programme; 3) his/her attitude towards herpes zoster, pneumococcal disease and pertussis, and reasons to vaccinate (or not) against these diseases; and, 4) the organisation and practicality of vaccinating against additional infectious diseases. The potential candidates for immunization of persons 50 years and older were herpes zoster vaccine, pneumococcal vaccine and pertussis vaccine.</p> <p>Each interview started with discussion of vaccination from a broad perspective, and became more vaccination specific towards the end. This was achieved by stating that besides influenza, herpes zoster, pneumococcal disease and pertussis were also prevalent in elderly persons. No more information was given. In general, influenza vaccination was discussed in the beginning of the interview, and later on the conversation focussed on the potential vaccine candidates. Following each interview, the GPs were given the opportunity to indicate if they felt any topics were missed regarding their attitudes towards the vaccination of older adults, and to contribute additional information. However, this was infrequently the case. All interviews were recorded with a digital voice recorder and transcribed verbatim.</p>
Population and perspective	10 GPs: 5 women and 5 men
Inclusion Criteria	Practicing healthcare professionals GPs

Exclusion criteria	None reported
Relevant themes	<p>8 Themes with 10 sub-themes were identified:</p> <p>1) Healthy aging The participants defined healthy aging as remaining independent and self-reliant. There was no consensus on whether vaccination could contribute to healthy aging. “Anyway, even if it does not help, at least you tried and that is encouraging.”</p> <p>2) Usefulness of vaccination in older age Some participants felt you should let nature run its course instead of trying to prevent the inevitable. To some participants, the perspective of having more vaccines available in the future was indicative of a medicalization of aging “And it makes a difference how you age. And let’s face it, there comes a time when death can be a blessing.”</p> <p>3) Risk of getting an infectious disease a) Vulnerability In general, participants did not feel vulnerable to infectious disease, even though their age in itself put them at risk. “I believe I’m healthy enough to deal with a possible bout of flu, and then I think it is not really necessary.” b) Prior sickness If people had been ill themselves or had seen a loved one suffering, they felt more vulnerable and were more inclined to accept Immunization. “Never been ill a day in my life, I never had the flu, so why should I do it now?” c) Epidemic In the case of an epidemic, vaccines would also be more easily accepted.</p> <p>4) Vaccine characteristics a) Vaccine effectiveness Participants considered the effectiveness important: the minimum effectiveness for acceptance of a vaccine varied from 50 to 70 percent. “Viruses can also mutate very quickly, so you can never be assured that you won’t get the flu.” b) Side effects of the vaccine Side effects were accepted as part of vaccination, however, if the side effects would interfere with everyday life, the acceptance rate could be much lower. “And then the dangers of it, because, yes, so there are ... see, they don’t say much about it but so many poisonous substances are added to the vaccine and these are all stored up in your body, they poison your body, which means that your immunity is lowered even further.”</p> <p>5) Severity of the disease and its implications a) Perceived severity Participants would accept vaccination against diseases that would affect their quality of life, increase mortality, cause suffering, produce pain and discomfort, or lead to invalidity. “If there would be an injection against Alzheimer’s, I wouldn’t hesitate a moment!” b) Protection of others Participants were willing to protect people around them, especially their grandchildren and vulnerable spouses “Well, for me that was the reason to accept a flu shot, because you are always working with older people, who are more vulnerable after all.” c) Staying independent Becoming ill meant that it is more difficult to take care of themselves, and they didn’t want to burden others by asking them to help out.</p>

	<p>“You want to remain independent as long as possible, and to me that is a reason to be vaccinated.”</p> <p>6) The experiences of previous vaccinations Negative experiences with the influenza vaccine led to more hesitation about accepting the next influenza vaccination and perhaps other vaccines as well. “And that is exactly why I often thought that I would not do it again, because it always makes me so sick.”</p> <p>7) The influence of healthcare workers and other people a) The general practitioner The first role is leadership, meaning that the GP’s advice is the main reason, and sometimes the only one, to accept or reject vaccination. The second role is an advisory one, meaning that a person will ask the GP for advice, though not necessarily take it. “I think it is right, but I also have my own opinion. I would not blindly follow his advice.” b) Friends and family The role of family and friends involves talking about vaccination more than giving advice, but especially discussing the experiences, either positive or negative.</p> <p>8) The need for information. Obtaining this information is seen as a condition for accepting any vaccination. Participants wanted a guarantee that information coming from the GP or the government is objective, independent, and research-based. “And then there are those publications, on television and in the newspapers, saying that it was all greed, and yes, that made me quite hesitant. I thought, should I go along with it or not? That is obviously not the right thing to do.”</p>
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1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Yes

Section	Question	Answer
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	No
Research value	How valuable is the research?	The research has some value
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Relevant <i>(They asked GPs about people who were aged 50 years and over. This review is interested in people who are age 65 years and over)</i>

1

Ellis, 2020

Bibliographic Reference Ellis, N.; Walker-Todd, E.; Heffernan, C.; Influences on childhood immunisation decision-making in London's Gypsy and Traveller communities; British journal of nursing (Mark Allen Publishing); 2020; vol. 29 (no. 14); 822-826

2 Study Characteristics

Study design	Focus Groups Semi-structured interviews
Aim of study	To explore the interaction between Gypsy, Roma and Traveller mothers of children aged 0–10 years old, health professionals and their communities and how this impacts upon their decision-making around childhood immunisations in the London Borough of Kingston
Study location	UK
Study setting	Community
Study dates	1 March 2018 - 30 April 2018
Sources of funding	None reported
Study methods	Interviews were conducted by three female researchers. Two of the researchers were not known to the participants. The other did outreach work with the community, which is how the contacts were established. The interviews and focus group were conducted in the participants' homes on council and privately owned sites. An interview topic guide was used to structure the discussion, which allowed for flexibility and elaboration around each participant's experience. This took a chronological approach, covering care and decision-making in pregnancy, childbirth and postnatally. The guide was developed from a review of the literature on GRT views of child health and health services. All interviews were conducted face to face and in English. Interviews were audio-recorded, transcribed by a third party and anonymised. Field notes were also made during the interview. An inductive process was used to analyse the data by organising it into themes which were then linked together to form theoretical statements. Thematic coding was undertaken by two researchers independently and then the coding was shared and themes agreed with a fourth

	researcher, not involved in the interviews. Open, axial and selective coding was used. Concepts were developed and organised into five core themes.
Population and perspective	Seven women took part, aged 15–54 years. Two identified as Irish Travellers, three as English Gypsy and two as ‘other travellers’
Inclusion Criteria	<p>Mothers who were settled or nomadic and identified as one of the Gypsy, Roma or Traveller community</p> <p><i>Community defined as English Gypsy, Roma Gypsy, Romany Gypsy, Irish Traveller, New Age Traveller, Circus, Bargees or Show People</i></p> <p>Given birth at hospitals within Kingston or neighbouring local authority areas in the previous 10 years</p> <p>Grandmothers with children who had delivered a baby at these hospitals in the past 10 years</p>
Exclusion criteria	None reported
Relevant themes	<p>Five relevant themes were identified:</p> <ol style="list-style-type: none"> 1. Adherence with antenatal care: Women reported that they attended scheduled appointments and were satisfied with care but had limited knowledge of available screening programmes and maternal vaccinations "If I wasn't pregnant I would have had it, but I don't know, I didn't like the thought of it when I was having the baby, no." 2. Parenting experience: Women felt that their own knowledge of their children was more important than the knowledge of health professionals, and that being around children in their community gave them the necessary knowledge "The midwife was very surprised by me because I knew more than her, I literally knew more than her, because travellers are brought up with kids so even though I was 16, I knew everything about children. I knew about temperatures, I knew about rashes." 3. Female family support: Support from female family members was considered important and their past experiences influenced decisions making "That's the experience she's had: I would never, never let her come back to this hospital and have another child. I've had four children and where I live, there's always a woman there pregnant, always." 4. Childhood immunisations keep children healthy: Women discussed the importance of keeping their children healthy and felt that vaccines protected against disease "The way I look at it, if you don't have it, if they did get something, it's your fault not getting this to save this baby. That's the way I look at it, one way or the other. It's like measles, everything can be dangerous, can't it?" 5. 'They say wait on the MMR until they are talking': A common theme was families advising to delay the first dose of the MMR vaccine "My mum always said, "leave them until they're talking"

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Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes

Section	Question	Answer
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Can't tell
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research has some value
Overall risk of bias and relevance	Overall risk of bias	Low
Overall risk of bias and relevance	Relevance	Highly relevant

1

2

Evans, 2001

3

Bibliographic Reference Evans, M; Stoddart, H; Condon, L; Freeman, E; Grizzell, M; Mullen, R; Parents' perspectives on the MMR immunisation: a focus group study.; The British journal of general practice : the journal of the Royal College of General Practitioners; 2001; vol. 51 (no. 472); 904-10

4 Study Characteristics

Study design	Focus Groups
Aim of study	To investigate factors that influenced parents' decisions about MMR, with emphasis on the impact of the then recent Wakefield MMR controversy.
Behavioural model used	Grounded theory
Study location	UK
Study setting	Community
Study dates	Not provided

Sources of funding	Not provided
Study methods	<p>6 focus groups were held with parents in Avon and Gloucestershire. Three groups comprised parents who had accepted MMR for their youngest child ('immunisers') and three comprised parents who had refused MMR ('non-immunisers'). Their children had a range of histories for immunisations other than MMR. Sampling was purposeful, so that parents were included from a variety of socioeconomic backgrounds who had either accepted or refused MMR immunisation for their youngest child, aged between 14 months and 3 years at the time of recruitment. Ethical approval was obtained from Bristol, Frenchay, Bath, and Gloucestershire local research ethics committees. Each focus group was facilitated by a moderator and assisted by a different member of the research steering group. The discussions were tape-recorded and fully transcribed. The moderator used a series of open-ended questions about child health, attitudes towards immunisation, the decision-making process, and the effects of the media and other influences on immunisation decisions, but participants were encouraged to explore issues about immunisation that were important to them. The discussions lasted between one and two hours and were held in a convenient location for the parents where a crèche was provided.</p> <p>Data collection and analysis proceeded simultaneously until theoretical saturation was reached, according to the constant comparative method. Transcribed data were analysed using modified grounded theory techniques by the research team. The transcripts were scrutinised, emerging themes and sub-themes were agreed, and an initial coding index was developed. Sections of text were coded and these codes were applied to subsequent transcripts. Further codes were added as new themes emerged. 3 members of the team coded some transcripts independently and a high level of consensus was achieved. Microsoft Word was used to develop individual files for each theme, allowing the text to be sorted and analysed in detail.</p>
Population and perspective	6 focus groups in total having a total of 48 participants (43 female, 5 male)
Inclusion Criteria	Parents of children who had a specified age range Aged 14 months to 3 years
Exclusion criteria	None reported
Relevant themes	<p>4 Themes were identified:</p> <ol style="list-style-type: none"> 1. Beliefs about the risks and benefits of immunisation compared with the risks associated with contracting measles, mumps or rubella: "You have this doubt in your mind, however small I may feel it may be ... autism ... Crohn's disease ... why put parents through the anxiety of thinking, 'Well did I do it by giving them the immunisation or would it have occurred naturally?'" 2. Responses to information from the media and other sources about vaccine safety: "It was because of the media and the press that I looked into the MMR and decided well whoa, I'm not having that you know, otherwise, before, I didn't just didn't think anything of it." 3. Confidence and trust in the advice given by health professionals and attitudes towards compliance with medical recommendations: "Sometimes the doctors and nurses at the surgery can be too much you know, you must have it, you know? And that's what puts a lot of people's backs up doesn't it really really, your choice is gone a bit isn't it?"

4. Views on the importance of individual choice within government policy on immunisation: "They [the government] are making decisions for what they see as society as a whole and we're making decisions for our individual children so we are polarised to start with."

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Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

4

Forster, 2017

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Bibliographic Reference Forster, Alice S; Rockliffe, Lauren; Marlow, Laura A V; Bedford, Helen; McBride, Emily; Waller, Jo; Exploring human papillomavirus vaccination refusal among ethnic minorities in England: A comparative qualitative study.; Psycho-oncology; 2017; vol. 26 (no. 9); 1278-1284

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2 **Study Characteristics**

Study design	Interviews (structure not specified)
Aim of study	The researchers aimed to explore the factors that have prevented parents from ethnic minority backgrounds from vaccinating their daughters against HPV. Secondary aims explored (1) if any of these factors are expressed by nonvaccinating White British parents (suggesting that the factors are not specific to ethnic minority parents) and (2) if any of the factors are expressed by vaccinating ethnic minority parents (suggesting that the factors are not sufficient to stop parents from vaccinating).
Behavioural model used	None stated
Study location	London
Study setting	Community
Study dates	March 2015 to March 2016
Sources of funding	Cancer Research UK
Study methods	<p>Parents of 13- to 16-year-old girls were recruited through London schools, community groups, online advertising, and through word-of-mouth. The focus of this study was nonvaccinating ethnic minority parents (see population for more details). They also recruited a group of vaccinating ethnic minority parents and nonvaccinating White British parents for comparison.</p> <p>Data were collected via interviews as parents' responses were anticipated to be sensitive. Interviews were audio recorded and transcribed verbatim. Participants provided informed consent. A depth topic guide was used, focusing on participants' experience and opinions about the HPV vaccine. Interviewers took detailed notes following interviews, and occurring themes were discussed between the researchers. Recruitment continued until no new themes were arising.</p> <p>Data were analysed using framework analysis, facilitated by NVivo 11, as it allows comparison of commonalities/ differences across participants groups, which was a study aim. Interpretation of the framework was conducted by 3 researchers and discrepancies resolved through discussion. The results presented are a summary of themes arising from the interviews with nonvaccinating ethnic minority parents. Interviews with vaccinating ethnic minority parents and nonvaccinating White British parents were used to identify where themes/subthemes were exclusive to nonvaccinating ethnic minority parents. Quotes reported are with participant number and ethnicity.</p> <p>Ethical approval for the study was obtained from the University College London Ethics Committee.</p>
Population and perspective	Thirty-three parents of 13- to 16-year-old girls; Fourteen parents from ethnic minority backgrounds had not vaccinated their daughters against HPV (4 had daughters who had started the series but not completed it; "partially vaccinated"). Most were from non-British White or Bangladeshi backgrounds and had a religion. This compares to the London ethnic minority population of whom the largest groups are non-British White and Black African. The majority spoke English at home and were born in the UK.

	<p>They also conducted interviews with 10 ethnic minority parents who had vaccinated their daughter and 9 White British parents who had not.</p> <p>The ethnic groups included people who were born in the UK or abroad from Bangladeshi (largest group), African (unspecified), Caribbean, Somali, Indian, Pakistani, and mixed- race backgrounds.</p>
Inclusion Criteria	<p>Parents of children who had a specified age range 13-16 year old girls</p> <p>Parents of adolescent girls</p>
Exclusion criteria	<p>None reported</p>
Relevant themes	<p>1. Concerns about the vaccine</p> <p>a. Concern about side effects: Nonvaccinating and partially vaccinating parents from various ethnic backgrounds expressed concerns about the research behind the vaccine, which made parents worry about potential for side effects. "... the only thing that worries me is ... that we don't know the long-term effects ... that's the only worry I have"</p> <p>b. Concerns relating to perceptions of risk: Parents in all groups mentioned that the vaccine was not available when they were younger. This made ethnic minority mothers feel the vaccine was unnecessary as they had been fine without it. "I know what my daughter is like ... she goes to a girls' school, she doesn't hang out with boys ... She's not of a nature that I think she would naturally be very promiscuous at a young age ... I don't look at her and think, okay, she needs to have this"</p> <p>c. Concern that the vaccine will promote promiscuity: A number of nonvaccinating ethnic minority and White British parents felt concerned that HPV vaccination would encourage unsafe sexual practices. "... I really object to the adverts ... that say you can't stop your daughter from growing up, but you can ... reduce the risks of her getting cancer It's sending the wrong messages. It's claiming that, um, having sex is part of growing up. I don't believe it is"</p> <p>d. Concerns about the effectiveness of the vaccine: A number of nonvaccinating ethnic minority parents were concerned that the vaccine does not protect against all HPV types.</p> <p>e. Concern about motivations behind introducing the vaccine: Nonvaccinating ethnic minority and White British parents believed the vaccine was introduced to make money for pharmaceutical companies.</p> <p>2. External and internal influences</p> <p>a. Others providing information: Vaccinating and nonvaccinating ethnic minority parents sourced information regarding vaccine side-effects from others, suggesting that these discussions were not sufficient to stop parents from consenting. "I asked my friend ... because I was new in the UK ... "What is this?" She says, "Yes, these are the side effects""</p> <p>b. Experience of others: parents made reference to other girls they knew in person or online, who had become unwell after receiving the vaccine. "... there was a girl that died. She had it and then she went into hospital She died, and then they traced it back to this vaccination. So that, I suppose, has put me off a bit as well"</p>

	<p>c. Influence of emotion: Some ethnic minority parents reassured themselves of their decision to not vaccinate by believing that future events are uncertain. "I haven't got any sort of emotional connection to it, to be honest. I don't feel any way. I just feel like, um, she'll be fine. Life goes on"</p> <p>3. Information needs of parents</p> <p>a. Information requirements: Linked to parents' concerns about safety, many felt insufficiently informed of the side effects from vaccine information they were provided with. "... if you get medication ... there's this huge list of side effects that's listed in the packet ... I don't feel the same degree of care was provided around this There was no information provided about the potential side-effects.... You couldn't possibly make an informed decision from that"</p> <p>b. Further research: Parents differed in the extent that they had done further research into the vaccine.</p> <p>4. Preventing HPV-related cancer using means other than vaccination</p> <p>a. Illness prevention informed by complementary and alternative medicine and idiosyncratic beliefs: Many parents used methods to prevent illness that were based on these idiosyncratic beliefs, including building immunity "naturally" and preventing cancer/illness with a healthy lifestyle. "... as long as we lead a healthy lifestyle without any bad habits ... I should be able to protect myself from any kind of illness. Like ... cancer and stuff like that"</p> <p>b. Preventing cervical cancer using approaches other than vaccination: Many parents who had not vaccinated their daughter explained that they would prefer to use approaches other than vaccination to prevent cervical cancer. "... if we want to avoid HPV, let's go out there and use condoms It's ... good sexual dialogue with your teenagers. I think that's more important for them than having a vaccination ..."</p> <p>c. External forces: Two nonvaccinating ethnic minority parents believed that cancer is controlled by fate or God. "... what I believe cervical cancer is ... if you get that, it's a gift from the God"</p>
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1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes

Section	Question	Answer
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Frawley, 2020

2

Bibliographic Reference Frawley, Jane E, McKenzie, Kirsty, Cummins, Allison et al. (2020) Midwives' role in the provision of maternal and childhood immunisation information. *Women and birth : journal of the Australian College of Midwives* 33(2): 145-152

3 **Study Characteristics**

Study design	Semi-structured interviews
Aim of study	This study explores midwives' experiences of engaging with women and their families about immunisation, along with their confidence to answer parent's questions.
Behavioural model used	None stated
Study location	Australia
Study setting	Participants were recruited via an email and newsletter forwarded by the Australian College of Midwives to their members.
Study dates	2017
Sources of funding	National Health and Medical Research Council (NHMRC) Australia
Study methods	<p>The newsletter and email contained information about the study, including contact details of the researcher conducting the interviews, and invited midwives to take part in an interview to share their experiences of communicating with parents about immunisation. All participants were unknown to the researcher conducting the interviews and performing data analysis.</p> <p>Semi-structured interviews were conducted after informed consent was obtained from each participant. The authors developed an interview guide with broad questions focusing on key aspects of the research topic including adequacy of midwifery education about immunisation; advising on immunisation as part of the role of a midwife; how comfortable midwives felt discussing immunisation; and barriers and</p>

	<p>facilitators to providing information to parents. The interview guide was designed to be used with flexibility so that participants had the opportunity for more detailed discussion of topics or experiences they deemed to be most pertinent. Probing questions encouraged more in-depth explanations and elaborations. They conducted all interviews over the telephone. Interviews were between 23 min and 51 min, averaging 33 min. Interviews were recorded, transcribed verbatim, and coded as soon as possible after each interview. Data collection and analysis were conducted in an iterative, concurrent manner to allow for further probing of emerging themes during later interviews. Data saturation was achieved.</p> <p>Reflexivity – thoughtfulness about the ways the research process and the researcher shape the data collected – is an essential component of qualitative research. The researcher who conducted and analysed the interviews was herself a mother of two primary school aged children and had consumer experience of interacting with midwives about childhood immunisation. Before data collection and analysis, this researcher reflected on her own experiences and personal beliefs about maternal and childhood immunisation, and ways that this might impact on impartiality. This reflexive practice was continued throughout data collection and analysis, through ongoing identification of points of tension between the researcher's own experiences and beliefs, and those of the participants. This reflexivity allowed the researcher to be aware of her own experiences and perspectives consciously and more accurately portray the beliefs and experiences of the participants.</p>
Population and perspective	<p>They conducted interviews with 23 registered midwives from throughout Australia. The midwives were all female. Most of the participants worked in a public or private hospital setting, although several also worked in private practice and one worked only in private practice. Of the participants, the majority had midwifery qualifications at Bachelor's degree or higher; had been practising for more than five years; and practised in NSW.</p>
Inclusion Criteria	<p>Registered midwives</p>
Exclusion criteria	<p>None reported</p>
Relevant themes	<p>Three themes comprising 7 sub-themes were identified:</p> <ol style="list-style-type: none"> 1. Professional roles <ol style="list-style-type: none"> a) Respecting women's choice Midwives felt that their role was to provide information to the parent, including potential consequences each decision, so they could make their own choice. "I make it very clear to them that I'm here to help them through this journey. It's my job to outlay all that information, but at the end of the day it's their choice in what they want to do. It's my job to support them whether I agree with it or not. It's my job to advocate for them and I guess immunisations fall into that." b) Tensions Midwives described tension with respect to communicating with parents about immunisation. Some midwives found it difficult when parents declined immunisation. "I think it can be quite challenging sometimes, especially if the parents do come back and decline it. Just because I think we do — obviously, we don't judge women on their decision. But it can be quite challenging sometimes." c) Changing minds Although midwives provided information to parents with concerns, many felt that parents who had already made up their minds were "unswayable". "I certainly give them the blue book... the hand out on immunisation I always put into the blue book. Often they'll just hand it straight back to me. [Laughs]. Without even looking at it, but anyway." 2. Education <ol style="list-style-type: none"> a) Uninformed and unprepared

	<p>Many of the midwives expressed misgivings about their ability to provide information to parents with concerns, due to inadequate immunisation education during their training.</p> <p>“Women often have a lot of questions . . . But a lot of the time I felt like I wasn’t able to answer the questions, which does make you feel slightly incompetent.”</p> <p>b) Content and communication</p> <p>Midwives described what education they would have liked, including more detailed information individual vaccines, including “what’s in it”, side-effects, and risks.</p> <p>“Well I think one of the kind of things you could come across a lot as a midwife, are parents declining immunisations. So, more information on how to address the concerns, and I’m trying to ensure that I provide unbiased information. So just making sure that I’ve got all the facts and all the evidence for them, and . . . not just assume everyone will say yes to immunisations, because they don’t”</p> <p>3. Workplaces</p> <p>a) Time</p> <p>Many felt that there was not enough time to do everything well. Participant P09 spoke of providing information about immunisation as a “cram-in”. Others commented that there was “never” enough time, especially when there had been complications in a previous appointment.</p> <p>“I think the time factor is difficult because staffing is really hard at the moment and we always try to fill the immunisation role, but you think oh far out. Maybe they should just get a registered nurse in to do this for us. But because there is no-one else, it's just another thing that we have to do. But we do see it as a vital role — service to have.”</p> <p>b) Continuity of care</p> <p>Midwives described continuity of care as the best model for providing care and helping women make informed decisions. While continuity of care was the model in which some midwives worked, many worked in settings where they were trying to inform women, whom they were meeting for the first time, about vaccines.</p>
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1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes

Section	Question	Answer
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Fredrickson, 2004

2

Bibliographic Reference Fredrickson DD; Davis TC; Arnould CL; Kennen EM; Hurniston SG; Cross JT; Bocchini JA; Childhood immunization refusal: provider and parent perceptions.; Family medicine; 2004; vol. 36 (no. 6)

3 **Study Characteristics**

Study design	Focus Groups
Aim of study	To explore reasons for immunisation refusal.
Behavioural model used	None stated
Study location	USA
Study setting	Community
Study dates	1998
Sources of funding	Health Resources and Services Administration
Study methods	<p>Separate focus groups were conducted for family physicians and paediatricians, nurses in the same offices, and public health nurses. The academic collaborators arranged for access to local academic centres, private practices, and (in Kansas and Louisiana only) public health clinics. Providers were recruited primarily by posted signs describing the purpose of the focus groups, the target audience (i.e. the specific provider type), and the \$100 incentive for physicians/\$50 incentive for nurses. The sign instructed providers who were interested in participating to notify the local academic collaborator. Potential participants then received a reminder phone call or e-mail the day of the group.</p> <p>Scripted questions elicited providers' experience with parents who were hesitant to vaccinate or refused some or all vaccines. When appropriate, they probed the providers for specific concerns expressed by the parents, subsequent provider responses, and immunisation outcomes (in other words, did the child eventually get immunised and if so, at that visit or a later one). To get more information on this communication process, they asked providers to demonstrate what they would say, how they would say it, and what parents might say to them.</p>

	<p>All focus groups were moderated by a team of two authors. In each case, the team was comprised of Dr Davis (a PhD psychologist trained in group dynamics) and one physician. Each group also had a notetaker from the research team and was audiotaped.</p> <p>Data retrieved from the focus group discussions were analysed qualitatively. Audiotapes were transcribed verbatim into a computerised database of text documents that could be searched for specific content information. Qualitative analysis based on grounded theory was accomplished through the examination of transcripts as well as through notes taken by the facilitators in each group. Themes defined in the questions/scripts and unanticipated emergent themes derived from focus group discussions were analysed and recorded. Participant comments were extracted and referenced within the generated themes, then reviewed again to confirm the validity of the themes.</p>
Population and perspective	<p>19 focus groups (5 groups of family physicians, 5 of paediatricians, 6 of family medicine and paediatric clinic nurses who immunise children (the study says “young children” so presumably 0-5 years of age), 3 of public health immunisation clinic nurses) in 6 cities (Albuquerque; Cleveland; Shreveport, La; Rochester, NY; Santa Fe, NM; and Wichita, Kan). These cities were chosen for their geographic representation, ethnic and socioeconomic diversity, and the presence of academic collaborators. Each focus group contained between 5 and 10 participants.</p>
Inclusion Criteria	<p>Practicing healthcare professionals Who were involved in vaccinating children</p>
Exclusion criteria	<p>None reported</p>
Relevant themes	<p>4 themes were identified by the investigators:</p> <ol style="list-style-type: none"> 1. Concerns and refusals. Providers in focus groups reported that parents rarely refused all vaccines but occasionally resisted specific vaccines. Providers thought resistance was based on parents’ lack of understanding of the vaccine’s importance for their child. Some providers identified cultural differences as a cause for resistance, particularly with recent immigrants. Both public health nurses and physicians reported, “Most parents with concerns ended up vaccinating after patient education.” 2. Sources of vaccine information that might influence refusal. Almost all parents had seen television reports of children diagnosed with autism or brain damage after immunization but were also aware that media reports may distort the problem. Refusing parents felt that information on childhood immunization issued by either the Centres for Disease Control (CDC) or some anti-immunization Internet sites was likely to be biased. 3. Sources of trusted information. Parents in all focus groups, including those who refused to immunize their children, trusted the information given to them by their physicians. Refusers saw this information as credible and honest even if they did not follow through with the immunization. 4. Doctor-Patient Communication. Parents in all groups wanted physicians to recognize that “my child is the most important thing to me.” Parents wanted a personal relationship with the doctor. They wanted continuity of immunization education as well as continuity of immunizations and well-child care.
Additional information	<p>This study also included data from parents. However, this data has not been used because we already had enough UK data from parents.</p>

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Can't tell
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Gardner, 2010

2

Bibliographic Reference Gardner, Benjamin; Davies, Anna; McAteer, John; Michie, Susan; Beliefs underlying UK parents' views towards MMR promotion interventions: a qualitative study.; Psychology, health & medicine; 2010; vol. 15 (no. 2); 220-30

3

Study Characteristics

Study design	Focus Groups
Aim of study	To identify and describe beliefs underpinning parents' responses to possible MMR uptake interventions.
Behavioural model used	None - they adopted a realist epistemological stance
Study location	UK

Study setting	Community
Study dates	2008
Sources of funding	National Social Marketing Centre, UK
Study methods	<p>Focus groups were conducted with five groups of London-based parents. Parent-and-toddler groups were randomly selected from lists on five local council websites. Group leaders were approached by telephone. Group leaders who permitted focus groups to take place during regular group sessions were sent flyers and posters to distribute to group members advertising the date and time of the focus group. Participation was voluntary. In two instances group leaders did not allow us to conduct focus groups, and so alternative parent-and-toddler groups from the same locality were randomly selected.</p> <p>Focus groups were conducted in five different Primary Care Trust areas, each of which reported MMR uptake levels below the 95% rate required for herd immunity and the 2007/08 UK average (85%; National Statistics, 2008): Greenwich (Group 1; 64% uptake); Westminster (Group 2; 2007/2008 data unavailable, but 81% uptake in 2006–2007; National Statistics, 2007); Sutton and Merton (Group 3; 78%); Brent (Group 4; 76%); and Camden (Group 5; 63%).</p> <p>Focus group discussions lasted between 45 and 90 minutes. Discussions were informed by a booklet (available from the authors) describing six potential MMR promotion interventions (three motivational, three organisational), as identified by a previous literature review and discussion with experts. Descriptions were based on published reports and documentation obtained from intervention developers. The three motivational interventions were primarily information-based: a website outlining vaccination benefits and risks; an information pack for health professionals to inform discussions with parents; and parent-led group MMR discussions. Two organisational interventions entailed restructuring provision of MMR vaccines: “immunisation champions”, i.e. healthcare workers who coordinate vaccination procedures and liaise with staff and parents; and mobile vaccination units to increase awareness and access. The third organisational intervention concerned legislative change to withhold child benefit payments or school attendance from non-vaccinators.</p> <p>The focus group began by asking parents to describe their initial responses to each intervention. Discussion progressed with minimal facilitator involvement, though prompts were used where the following areas were not spontaneously addressed in relation to each intervention: perceived usefulness, feasibility, ease or difficulty of implementation, awareness of similar interventions. Audio-recordings of discussions were transcribed verbatim. The study was given ethical approval by the UCL Psychology Department Ethics Committee.</p> <p>Thematic analysis was used to extract latent psychological themes observed to recurrently underpin discussions. Initial coding assigned conceptual labels to topics. Labels were refined and organised into discrete themes, the validity of which was reviewed in relation to the wider data set.</p> <p>Their analysis adopted a realist epistemological stance, and was inductive in that coding and analysis were not constrained by pre-existing coding frames or theoretical predispositions. Analysis was undertaken by an investigator, with emergent themes and data interpretation regularly discussed with the research team and verified with recourse to transcripts and/or comparison with quotations elsewhere in the data.</p>
Population and perspective	<p>The five groups comprised a total of 28 parents, who reported a total of 49 children below 16 years. Nine (18%) of these children were not vaccinated, because the child was too young (six children), or parents had chosen to delay (two children) or not vaccinate (one child). The majority of parents were: White British (14 parents) or other White ethnicity (3 parents); married (17 parents); and, educated to degree level or above (17 parents).</p>

Inclusion Criteria	Parents of children Parents who were in toddler groups
Exclusion criteria	None reported
Relevant themes	<p>5 Themes were identified:</p> <p>1. Parents' information needs. Many parents' felt under-informed and uncertain about risks of vaccination, and experienced barriers to accessing information to address these concerns. Some felt that the quantity of information available surrounding their child's health made it difficult to isolate, and assess the quality and relevance of, MMR-specific information: "I struggled to find the information that I wanted . . . about autism and all the rest of it. [. . .] People don't have time to wade through tons of stuff."</p> <p>2. Distrust of Government sources. Parents distrusted information from the Government, which was perceived to be biased towards pro-MMR arguments, possibly due to vested financial interests in vaccination: "Obviously if it's people that are selling the MMR wanting people to [vaccinate], they're not going to give negative information on it, are they?"</p> <p>3. Trust of other parents. Parents empathised with and trusted other parents, who were seen to offer honest and unbiased advice unavailable from official sources: "Parents trust advice from other parents . . . [you] take it on board. You listen to them."</p> <p>4. Attentional bias towards risk information. Information on unlikely high-risk consequences of MMR vaccination appeared disproportionately more salient to parents than information on likely beneficial consequences: "[On this website] you've got disadvantages and advantages. We parents, we're looking at disadvantages."</p> <p>5. Problems of achieving 'balance' in MMR information. Parents wanted 'balanced' information about benefits and risks of MMR vaccination: "It has to be evenly balanced. As long as it's the truth, that's what you want."</p>

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell

Section	Question	Answer
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Gauld, 2016

2

Bibliographic Reference Gauld, Natalie J; Braganza, Crystal S; Babalola, Ola O; Huynh, Tung T; Hook, Sarah M; Reasons for use and non-use of the pertussis vaccine during pregnancy: an interview study.; Journal of primary health care; 2016; vol. 8 (no. 4); 344-350

3 **Study Characteristics**

Study design	Structured interviews
Aim of study	The aim of this study was to investigate the enablers and barriers for uptake of the pertussis vaccine by pregnant women, including various ethnicities and areas of high or low deprivation. A secondary objective was to explore the acceptability of providing the pertussis vaccine for pregnant women in pharmacies, and whether having funded pertussis vaccines in pharmacies might encourage Tdap vaccination during pregnancy.
Behavioural model used	None stated
Study location	New Zealand
Study setting	Pharmacies
Study dates	2014
Sources of funding	This study received no funding.
Study methods	Women who had given birth to a child in the last 12 months were interviewed in NZ community pharmacies by final year pharmacy students in July 2014. The pharmacies were purposively selected from five regions to include rural, town and city locations, and ensure variation in socioeconomic status and ethnicities of respondents and their access to services. The interviewers (eight pharmacy students) were placed in pharmacies for three consecutive week days. The aim was to achieve a maximum variation sample rather than to stop after data saturation. Women who appeared to be of child-bearing age were approached

	<p>for the study. Women with a child aged 1 year or younger, who provided written informed consent, were interviewed in a private room in the pharmacy or by telephone. No information was collected on the number of, or reasons for, women declining invitations to participate. Women were interviewed for 4–10 min using a structured questionnaire. The questionnaire, developed following a literature review and with input from the supervisors, explored who or what influenced women’s decisions to obtain the pertussis vaccine during pregnancy, their opinions on vaccination, who they spoke to about getting the vaccine, whether cost was a factor, their interest in receiving the vaccine at a pharmacy, and demographic information. Two interviewers trialled the questionnaire with one woman fitting the inclusion criteria and modified it before use. Interviews were audio-recorded and transcribed verbatim by interviewers, with a second interviewer checking accuracy.</p>
Population and perspective	37 women who had given birth during the previous 12 months. The age range of the mothers was 18 to 43 years.
Inclusion Criteria	Women who had recently given birth During the previous 12 months
Exclusion criteria	None reported
Relevant themes	<p>Four themes were described in the results:</p> <ol style="list-style-type: none"> 1. Influences for women who received the Tdap vaccination during pregnancy <ol style="list-style-type: none"> a) Information from public health campaigns, news media, antenatal classes, friends and health professionals Multiple influences were common. “Advertising on the TV, news reports... and my GP is very pro-vaccination” b) Proactive role of health professionals Health professionals sometimes alleviated concerns about the vaccination. “The nurse from the clinic rang up and said we’d just been told you’re pregnant, you could come in for whooping cough vaccination... and so I did.... I wasn’t actually going to get it and then I decided to. I don’t know why” c) Occupation Two teachers were vaccinated, worried that their occupation could expose them to pertussis. A hospital employee mentioned the influence of medical colleagues and ease of vaccination at the hospital. 2. Reasons for not getting the Tdap vaccine during pregnancy <ol style="list-style-type: none"> a) Lack of knowledge Some respondents could not recall any discussion about pertussis vaccination during pregnancy “I’ve seen fliers through doctors...in the doctor’s rooms, but I haven’t had anyone discuss it with me, not even when I was pregnant. My midwife didn’t tell me either...” b) Misinformation Some respondents thought they were up to date or did not need the vaccine during pregnancy. “I didn’t do it during my pregnancy because I got the flu vaccine” c) Personal reasons or safety concerns Some respondents had concerns primarily for the baby, or their own health “I’ve heard about it from my midwife, but my family told me not to take any vaccines because it may affect my child” d) Time and access For example, being too busy with studies to get the vaccine.

	<p>3. Anti-vaccination sentiments No participants appeared to be anti-vaccination.</p> <p>4. Potential role of pharmacists in community pharmacy No participants reported pharmacists influencing their pertussis vaccination decisions. Some (including women not vaccinated) thought pharmacy availability would help raise awareness and provide convenience. “I live so close to the pharmacy so it’s easily accessible. A lot of people where I live would be more likely to visit a pharmacy I’d think since they don’t have cars”</p>
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1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	No <i>(This study included participants who had been pregnant up to a year previously. This is a long time to reflect back on how they would have felt then.)</i>
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Moderate
	Relevance	Highly relevant

2

Gauld, 2020

1

Bibliographic Reference Gauld, N.; Martin, S.; Sinclair, O.; Petousis-Harris, H.; Dumble, F.; Grant, C.C.; A qualitative study of views and experiences of women and health care professionals about free maternal vaccinations administered at community pharmacies; *Vaccines*; 2020; vol. 8 (no. 2); 152

2 Study Characteristics

Study design	Semi-structured interviews
Aim of study	To explore the effect of funding maternal Tdap and influenza vaccinations through community pharmacies on accessibility and uptake, the awareness and views of health professionals and women of this service, the experience of women in using this service, and barriers and enablers to uptake.
Study location	New Zealand
Study setting	Community from one region in New Zealand
Study dates	November 2018 – May 2019
Sources of funding	The Health Research Council of New Zealand and GlaxoSmithKline Biologicals SA
Study methods	<p>Following informed consent, interviews were conducted face-to-face at the participant's workplace, in their home, in a pharmacy consultation room, or at a café, according to the participant's preference, or by telephone. A token gift of a NZ\$30 supermarket voucher was provided to each participant. The interview topics varied by group, i.e., woman eligible for a vaccination, midwife, pharmacist or general practice staff. The key topic discussions used were: views and experiences of maternal vaccinations in pharmacy; awareness of maternal vaccinations during pregnancy; barriers and enablers for vaccine access relevant to pharmacy administration; the woman's journey to having (or not having) a vaccination during pregnancy; barriers and enablers for pharmacy to provide vaccinations during pregnancy; and communication between pharmacy and other health care providers regarding vaccination during pregnancy or vaccination in general. Interviews were audio-recorded (with consent) or notes were taken.</p> <p>Recorded interviews were transcribed verbatim and checked against the recording. Transcripts and notes were read and reread by the first author, then coded using NVIVO Pro. The interviews were coded within four groups: pregnant women, midwives, pharmacists and GP staff. Within each group, coding nodes included specific topics discussed (deduction) and emerging themes (induction). Analysis took place through a framework approach, by each of the four groups, systematically working through each coding node. Comparisons were made between and within groups for opinions, and experiences, and emerging themes were documented. Findings were shared and discussed between the researchers.</p>
Population and perspective	Nine Maori, one Cook Island Maori and eight non-Maori pregnant women, 12 pharmacists, 12 people working in general practice, and 11 midwives were interviewed (53 participants in total).

Inclusion Criteria	Women who are currently pregnant or who had a young infant Registered midwives Community pharmacists Staff in GP practices
Exclusion criteria	None reported
Relevant themes	3 relevant themes were identified: 1. Access – Pharmacies were considered easier and quicker to access than GPs by most women, with longer opening hours and no need to book appointments “through the GP it’s a bit of a pain to make an appointment and go in and with a pharmacy you basically just walk in. Which is quite easy.” However, not all GPs and midwives made women aware of the option of vaccination at pharmacies, which may be a barrier to vaccination 2. Trust – pregnant women were happy with the idea of vaccination at pharmacies, particularly if they already know and trust that pharmacy 3. Vaccine safety – Some midwives and pharmacists discussed the safety of vaccination at pharmacies, and whether they had the ability to help anyone who had adverse events

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes

Section	Question	Answer
Research value	How valuable is the research?	The research has some value
Overall risk of bias and relevance	Overall risk of bias	Low
Overall risk of bias and relevance	Relevance	Highly relevant

1

Godoy-Ramirez, 2019

2

Bibliographic Reference Godoy-Ramirez, K; Bystrom, E; Lindstrand, A; Butler, R; Ascher, H; Kulane, A; Exploring childhood immunization among undocumented migrants in Sweden - following qualitative study and the World Health Organizations Guide to Tailoring Immunization Programmes (TIP).; Public health; 2019; vol. 171; 97-105

3 Study Characteristics

Study design	Semi-structured interviews
Aim of study	To explore determinants to vaccination among undocumented immigrants.
Behavioural model used	None stated
Study location	Sweden
Study setting	Community
Study dates	2013
Sources of funding	The Public Health Agency of Sweden and the WHO European Regional Office (WHO Europe)
Study methods	<p>This study was designed according to the formative research phase of Tailoring Immunization Programmes (TIP), consisting of three steps: (i) an initial workshop to define the situation and problem statement; (ii) qualitative study for increased understanding of the vaccination practices of children in the undocumented community; and (iii) a second workshop to incorporate the qualitative interview findings together with data from key stakeholders and into a conceptual framework.</p> <p>A 2-day stakeholder workshop hosted by the Public Health Agency of Sweden and the WHO was held to apply the TIP diagnostic framework in Stockholm. Specific objectives were to share and gather information on the current immunization situation and system, conduct a Strengths, Weaknesses, Opportunities, Threats (SWOT) analysis, create a common understanding of the steps of the TIP approach, and review current knowledge regarding the MMR vaccination status and social and health-seeking behaviour determinants of the undocumented community in Sweden. The highly participatory workshops were facilitated by the WHO and involved a broad range of partners and key stakeholders including representatives of the Health Communications Unit, Karolinska Institute, Regional Preventive Child Health Services, Stockholm County Council, and the WHO Europe. Notes were taken during</p>

the workshops to summarize the findings. A consensus on a problem statement and the methodology of the following parts of the project were reached at the end of the workshop.

Individual in-depth interviews with seven parents and three child health nurses were conducted. The undocumented parents with preschool children (<7 years) were recruited through purposive sampling in close collaboration with clinics serving undocumented immigrants in Stockholm and Gothenburg, Sweden. They were recruited either through announcement in pamphlets, by direct invitation by the healthcare providers or by the author assisted by a volunteer at the NGO clinics. Information about the study and the invitation to participate were provided in English, Spanish, Mongolian, Dari, and Russian and posted in the waiting room at the Red Cross clinic in Stockholm. In Gothenburg, the information was given orally by the healthcare providers.

Three CHC nurses working in areas with a high proportion of immigrants were also included in the study. They were recruited with the assistance of senior Public Health Paediatricians in Stockholm and Gothenburg.

A semi structured interview guide was developed, based on the problem statement and conclusions from the first TIP workshop, including exploring experiences of child immunizations, attitudes, barriers, and motivators to vaccination and access to health care. Interviews were held in locations and time points chosen by the participants. Each interviewee gave their informed consent, either written or orally. It was emphasized that participation was voluntary and that the information would be confidential and anonymous.

Data were collected by the first author, and saturation was reached with seven parents where no additional information was forthcoming. All three nurses available in Child Health Centres serving undocumented families were interviewed. Interpreters were used for all interviews with parents, except for Spanish and English. Interviews with nurses were conducted in Swedish.

The process of data analysis was performed in a sequential way: firstly, content analysis of the qualitative interviews, followed by a second workshop where the qualitative findings and data obtained from key informants and stakeholders were all mapped onto a conceptual framework. All interviews were audio-recorded, transcribed verbatim, then reviewed, and analysed using content analysis. Once transcribed, texts were read through several times by the author to obtain a sense of the material. The data were analysed using Swedish and English: the initial coding was done in Swedish, except for the single interview conducted in English. The texts were coded and related to different topics. All codes were translated to English by an investigator to analyse with another investigator. Afterwards, codes were grouped into themes. The developed themes were refined.

A second stakeholder workshop was subsequently held with the research team to discuss the research findings and identify possible evidence-based solutions and interventions. This included a description of parental profiles, mapping of parental motivators and barriers to vaccination, communication needs, and preferred channels, as well as an understanding of their key influencers, facilitators, and relationships with healthcare providers. Additional information of the contextual aspects was obtained from the key informants present during workshop 2 - an interdisciplinary group with broad knowledge represented by vaccine experts, senior paediatricians, health communicators, stakeholders at the county councils, researchers as well as volunteers and care providers working at nongovernmental clinics serving undocumented immigrants.

The additional information along with the results of the qualitative interviews of the parents were combined by the research team into a conceptual framework in terms of facilitators and barriers for childhood immunizations, using the illustrative profile of bubble maps included in the TIP guide.

	The study received ethical approval for the interviews from the Regional Ethics Committee in Stockholm, Sweden.
Population and perspective	Interviews of 7 undocumented parents recruited at non-governmental clinics, 3 nurses at Child Health Centres, and information from key stakeholders retrieved at workshops. The parents came from six different countries, Africa, South America, Asia, and the Middle East, and the majority were former asylum seekers being undocumented for less than 3 years.
Inclusion Criteria	Registered nurses Immigrants Parents of children <7 years of age
Exclusion criteria	None reported
Relevant themes	<p>5 Themes were identified:</p> <p>1. Fear of being detected. Fear of being asked of their legal status or being identified were always present, affecting the everyday life of the undocumented families and children. Parents expressed a strong sense of fear of disclosure when seeking health care for either their children or themselves. Some had previously sought healthcare services for adults while others had never dared to seek as an undocumented migrant: "I'm so scared and so ashamed that I don't have a residence permit. It's difficult to seek health care. I'm always so scared because I have no address, I'm afraid of what will happen and I feel constant fear of being discovered."</p> <p>2. Difficulties in immunization follow-up: The families move frequently because of their illegal status, which complicates the follow-up of children's health and immunization status at the CHCs. The nurses observed that many undocumented children had incomplete vaccination histories and individualized schedules. The greatest challenge for the nurses was to get the parents to come to the centres for follow-up visits. Some parents, however, did choose to travel far to visit the same CHC where they felt safe. Mostly, parents who keep in contact with the CHC often complete the immunization schedule: "I know they have received vaccines against measles, rubella and hepatitis in country X."</p> <p>3. Distrust overriding the knowledge of rights. In the spring of 2013, the degree of entitlement to health care varied depending on whether or not the undocumented parents had previously applied for asylum. Parents expressed awareness of their children's entitlement to health care. However, when they sought health care for their child at primary healthcare facility, they had (incorrectly) been turned away because of lack of personal identification papers (ID). They expressed not trusting the nurses to provide them access to care, either because of rumours or their previous experiences.: "The children have the right to go to the hospital for treatments even if they don't have the permit or a phone number. But if I go to the hospital, they tell me to bring an ID."</p> <p>4. Vaccine acceptance. All parents expressed gratitude for their access to childhood immunizations: "My girl was born here. There is no vaccine that I have declined. I've always been very careful to vaccinate."</p> <p>5. Knowledge of importance of vaccines. Parents were aware of the importance and benefits of immunizations, although they mainly wanted to vaccinate their children to keep them healthy, avoid diseases, and thereby avoid seeking health care: "In the past when there were no vaccines, many got measles and died. With vaccines they get a milder disease."</p>

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	No <i>(There is no information on how the nurses were selected.)</i>
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Moderate <i>(There is no information on how the nurses were selected.)</i>
	Relevance	Highly relevant

1

Gordon, 2011

2

Bibliographic Reference Gordon, Daniel; Waller, Jo; Marlow, Laura A V; Attitudes to HPV vaccination among mothers in the British Jewish community: reasons for accepting or declining the vaccine.; Vaccine; 2011; vol. 29 (no. 43); 7350-6

3 **Study Characteristics**

Study design	Semi-structured interviews
Aim of study	The study aimed to explore attitudes to HPV vaccination in British Jewish mothers who had recently made a decision about vaccinating their daughter in the context of the national vaccination programme.

Behavioural model used	None stated
Study location	UK (North London)
Study setting	Community
Study dates	June to September 2010
Sources of funding	Not stated
Study methods	<p>A qualitative approach was used to explore maternal attitudes towards HPV vaccination. Participants were mothers of girls who had been offered HPV vaccination and were purposively sampled through Jewish secondary schools in North London. One was a mixed, fee paying school, while the other was a girls-only comprehensive (free) school. Both schools were self defined as Orthodox. The schools sent an email about the research to all parents with a daughter in year 8 (approximately 150 parents) and interested mothers were asked to respond by taking a short online survey. Of the 30one mothers who responded , twenty mothers were purposively selected for interviews on the basis of whether they had accepted or declined HPV vaccination for their daughter and the school their daughter attended (5 acceptors and 5 decliners from each of the two schools).</p> <p>Face-to-face interviews lasting 20-30 minutes were conducted with vaccine-accepting (n = 10) and vaccine-declining (n = 10) mothers in their homes. Interviews were conducted using an interview guide which was developed from previous qualitative research with mothers in the UK. Interviews were transcribed verbatim and analysed using a framework approach (a type of thematic analysis).</p> <p>The study was approved by the UCL research ethics committee.</p>
Population and perspective	Mothers of girls in year 8 (age 12-13) from the British Jewish community. Ten vaccine-accepting and ten vaccine-declining mothers were interviewed. Most mothers were married, home owners and employed in some capacity. All were Jewish, had at least one child in a Jewish faith school and reported attending synagogue weekly.
Inclusion Criteria	<p>Parents of children who had a specified age range 12-13</p> <p>Parents who are part of a specific community British Jewish</p>
Exclusion criteria	None reported
Relevant themes	<ol style="list-style-type: none"> 1. General attitudes and experience of vaccinations: Most mothers reported positive experiences of previous vaccinations, and had ensured their children received all their vaccinations. "I just accepted that you know the kids need them. I had them as a child, what was available at the time, and I've just taken it as granted that one gets your child vaccinated against everything" 2. Awareness of cervical cancer and HPV: There was considerable variability in what mothers reported knowing about cervical cancer and its link with HPV, before receiving the invitation and accompanying information about the vaccine. "I've also been told that Jewish women are less likely, one of the cancers we're less likely to get, if you sleep with men who've been circumcised, or use a condom or both, and stay with the same partner who is hopefully not fooling around, you've got less chance of getting, not no chance, but it's lowered"

	<p>3. General attitudes and experience of the HPV vaccination programme: Most of the mothers (both those who had accepted and declined the vaccine) were satisfied with the information they received and did not feel they needed any more information about the vaccine. “I think it has to be a good thing. My general gut feeling is that as I said if this has been developed and it is a preventer of cervical cancer, then it has to be a good thing”</p> <p>4. Reasons for accepting HPV vaccination: Among vaccine-accepting mothers, women expressed the feeling that although they hoped their daughters would lead a particular lifestyle, they were not able to ‘control’ or ‘predict’ their behaviour, and it was therefore better to be protect them. “I went to the same school and I had a religious upbringing but a lot of my close friends who I grew up with are actually not religious now and they are living a different lifestyle than I am . . . my daughter may not grow up to live the way I do”</p> <p>5. Reasons for declining HPV vaccination: Almost all the mothers who declined HPV vaccination for their daughter explained how they perceived their daughter’s risk of HPV to be low. “Had I considered my children to be particularly at risk of having cervical cancer early in life I would have considered the vaccine. My feeling was that they could wait . . . they are both religious, chances are they won’t have sex before marriage . . . they could have it when they are 18 by which time it will be that much more tested”</p>
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1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low

Section	Question	Answer
	Relevance	Highly relevant

1

Gorman, 2019

2

Bibliographic Reference Gorman, D.R.; Bielecki, K.; Willocks, L.J.; Pollock, K.G.; A qualitative study of vaccination behaviour amongst female Polish migrants in Edinburgh, Scotland; *Vaccine*; 2019; vol. 37 (no. 20); 2741-2747

3 **Study Characteristics**

Study design	Focus Groups
Aim of study	The aim of this study is to explore Polish migrant women's views on the childhood vaccination programme in Edinburgh, Scotland, in the context of the trust held in various aspects of the programme and with a specific focus on influenza and HPV vaccination.
Behavioural model used	None stated
Study location	Edinburgh, Scotland
Study setting	Community health projects with Polish services in Edinburgh
Study dates	March 2018
Sources of funding	Not stated
Study methods	<p>A topic guide was used to lead discussion and allowed flexibility in conversation to express and elaborate on the participants' thoughts to encourage production of a wide breadth of data. It was developed following a literature review and discussions with local Polish health workers to identify areas of interest. Topics included: general views about healthcare and experience of vaccination in Poland and Scotland; sources of information about vaccination; vaccine safety and exposure to anti-vaccination messages or sentiment; risks posed by infectious diseases and the relevance and availability of NHS produced information.</p> <p>Refreshments were provided and bus fares were refunded, but no other incentive was offered. Each focus group lasted between 45 and 90 min.</p> <p>The focus groups were conducted in Polish in March 2018, by a bilingual female public health researcher (KB) and recorded. Recordings were transcribed into Polish and then translated into English by the NHS Lothian interpretation and translation service.</p> <p>The researchers used a thematic analysis method whereby two authors (KB& DG) conducted an initial scan of the transcripts for emerging themes (e.g., autism, health service general, vaccine fears). All authors reviewed the translated transcripts</p>

	<p>independently, and then met in face-to-face and virtual meetings to refine the themes and agreed the central themes from the analysis.</p> <p>The evaluation was discussed with the Research Ethics Scientific Co-ordinator who confirmed in writing that as this was a service evaluation formal ethical approval was not required.</p>
Population and perspective	<p>Polish caregivers identified through community health projects in Edinburgh by the researchers with the help of 2 Polish link workers who were asked about vaccination issues and who offered to facilitate focus groups on the subject. Two groups were held of the regular attenders of a mother and toddlers' group, with a third group recruited opportunistically by the link worker from community health project users.).</p> <p>Thirteen female participants: one was in her late 20s, nine in their 30s, one in her 40s and two over 60, who were grandmothers to young children (and attended with their own daughters who were themselves parents of young children).</p>
Inclusion Criteria	<p>Parents</p> <p>Family members</p>
Exclusion criteria	<p>None reported</p>
Relevant themes	<ol style="list-style-type: none"> 1. Trust in the national vaccination policy: The participants used the Polish system as a benchmark, and differences in Scottish healthcare and vaccination policy were recognised. "There is a group of people who do not completely trust the health service and get treatment in Poland...mothers are taking children to Poland to vaccinate, because they do not trust vaccines here." 2. Trust in the vaccination providers (health professionals): Respondents consistently compared the expertise of the main vaccination staff groups, favouring the medical input of Poland to the Health Visitor (nurse) in Scotland. "I do not like that the doctor [in UK] does not examine the child before vaccination... I strongly asked for him to be auscultated when he was last vaccinated. They were a little surprised that I insisted on it." 3. Trust in the individual vaccines: There was speculation from our participants about the differences in the composition of vaccines used in each country. "Oh no! Absolutely not [HPV]! I've heard about girls who have had paralysis after these vaccinations, I've heard about many, many cases, I do not think it's made up and I would absolutely not agree." 4. Language and communication: Challenges due to language and operating in an English language medical culture were universally raised. "Everything I was given was in English. I did not get anything in Polish. I need to run everything through Google translator, and translate everything myself if I don't understand something." 5. Balancing the risk of disease: HPV was controversial. "Especially since the smear test here is only every three years, and the period of sexual initiation keeps getting younger ... If I had the opportunity, I would have vaccinated myself for [HPV]."
Additional information	<p>Although this study had a particular focus on HPV and flu vaccination the actual findings covered vaccinations of younger children, adolescents and pregnant women. As a result, this study was analysed under the studies spanning multiple age/ life stage categories section. Any themes and quotes relating specifically to flu vaccination were not extracted.</p>

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Relevant (The study looked at all routine vaccinations including flu and it was not always possible to tell if the findings were related to the flu vaccination during data extraction.)

1

Gottvall, 2017

2

Bibliographic Reference Gottvall, Maria; Stenhammar, Christina; Grandahl, Maria; Parents' views of including young boys in the Swedish national school-based HPV vaccination programme: a qualitative study.; *BMJ open*; 2017; vol. 7 (no. 2); e014255

3 **Study Characteristics**

Study design Semi-structured interviews

Aim of study	To explore parents' views of extending the human papillomavirus (HPV) vaccination programme to also include boys.
Behavioural model used	None stated
Study location	Sweden
Study setting	Schools in the central region of the country
Study dates	Interviews were conducted between March 2012 and April 2013.
Sources of funding	This work was supported by the Swedish Cancer Society and Uppsala-Örebro Regional Research Council.
Study methods	<p>The heads of the school health services in the different municipalities asked school nurses to assist in the recruitment of parents. Nurses distributed an invitation letter to all parents of 11–12 years old girls in their schools. Approximately 3000 invitation letters sent for distribution. Parents interested in sharing their views about HPV vaccination in an interview and who had been offered HPV vaccination for their daughter were asked to contact the researchers for more information and to suggest a time and place for the interview. Interviews took place at a location most convenient for the parent, for example, at their homes or the parent's or the researcher's workplace. No one besides the researcher and the parent were present at the interview. Every interview started with verbal information about the aim of the study and acknowledging that participation was voluntary. Parents were asked to sign a consent form and to fill in a short questionnaire with demographic questions. If the parents had questions to the researcher about the subject, those were responded to and discussed after the interview.</p> <p>The researchers audio-recorded the interviews, which between 30 and 45 min in general. The parents received a movie ticket in return for their participation. Data collection continued until little new information emerged from the interviews. Each interview was transcribed verbatim. The interviewers were registered nurses or midwives and experienced in qualitative interviewing, and they had similarities with the informants in that they were also mothers. No previous relationship between the researcher and the informant existed before the informant contacted the researcher about the interview.</p>
Population and perspective	Forty-two parents of girls who had been offered the HPV vaccine.
Inclusion Criteria	Parents of adolescent girls Whose daughters had been offered the HPV vaccination
Exclusion criteria	None reported
Relevant themes	<p>1. Equality from a public health perspective:</p> <p>a. Preference for gender-neutral vaccination: Many of the interviewed parents were in favour of a gender-neutral vaccination programme for HPV. Some of the parents who had not accepted HPV vaccination for their daughters were willing to accept vaccination for their sons if they were offered the vaccine. "Because girls get it from boys, so that's an interesting question, why are they not all vaccinated? It is actually really strange."</p> <p>b. Preference for increased sexual and reproductive health promotion: Parents expressed that vaccination should be complemented by information given to young</p>

	<p>people about other preventive measures such as condom use and delay of sexual debut, because they believed that information could also have a preventative effect. "What I have missed and what makes me really sad is that the information is so bad, I think...that we don't talk to our children and young people about preventative measures... why can we not propagate more to inform more and not to be in such a rush...this has to do with your health, wait, and use a condom and all that. Why don't the authorities work more like that, I think?"</p> <p>c. Trust and distrust in authorities decision: Many parents could understand why only girls receive the vaccine for free in the national programme and expressed a trust in the authorities' ability to make good decisions. They believed economical assessments and cost-effectiveness had played a big role in the decision. "I guess that there has been some economic assessment, how much money we will spend on it and then they have made a choice, and one is forced to do that."</p> <p>2.Perception of risk for disease</p> <p>a. Inadequate knowledge about HPV and HPV vaccine: Some parents could not see any reason for including boys in the HPV vaccination programme since they believed the vaccine gave protection against a type of cancer that only women could be affected with and therefore, boys were not at risk for developing HPV-related disease. "If it is about cervical cancer then it is not a vaccine that is something that one needs to waste on boys, it is well understood that if you don't have a cervix you should not have this vaccine."</p> <p>b. Girls face higher risk of dying but are more vulnerable to side effects than boys: Parents expressed that even if boys could be affected by the virus and contract condyloma, girls were more vulnerable and faced higher risk of deadly diseases associated with HPV. Very few parents mentioned that HPV could cause cancer in boys. "So, there's the risk of cancer for girls and that is a greater risk. And I know too little about what it would mean for men. So, if men were to also get vaccinated, it's about...if it's some kind of disease transmission then or if there are types of cancers that may arise. I know too little about it."</p>
Additional information	The study was carried out before HPV vaccination was available for boys in Sweden.

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	No <i>(The study did not recruit parents of boys who would be vaccinated if the programme was expanded, but rather included parents of girls who had been offered the HPV vaccination.)</i>

Section	Question	Answer
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Moderate <i>(Parents of girls were recruited but study looked at vaccinating boys.)</i>
	Relevance	Relevant <i>(Study concerns views about HPV vaccination that was not on the routine schedule for boys in Sweden at the time of the study but was due to be introduced soon. Included due to a shortage of studies looking at views about vaccinating boys that met the review protocol.)</i>

1

Grandahl, 2014

2

Bibliographic Reference Grandahl, Maria; Oscarsson, Marie; Stenhammar, Christina; Neveus, Tryggve; Westerling, Ragnar; Tyden, Tanja; Not the right time: why parents refuse to let their daughters have the human papillomavirus vaccination.; Acta paediatrica (Oslo, Norway : 1992); 2014; vol. 103 (no. 4); 436-41

3 **Study Characteristics**

Study design	Semi-structured interviews
Aim of study	To explore why parents refused to allow their 10- to 12-year-old daughters to receive the HPV vaccination from the Swedish school-based vaccination programme.
Study location	Sweden
Study setting	Education: Parents of girls attending school.
Study dates	Not provided. However, HPV vaccine was on the routine schedule.

Sources of funding	Swedish Cancer Society, the Swedish Government funds for clinical research (ALF), the Medical faculty at Uppsala University and the Gillberggska Foundation.
Study methods	<p>This was an explorative, qualitative study with face-to-face interviews. Parents were eligible for inclusion if they had refused to let their daughter receive the HPV vaccination as part of the school-based vaccination programme and agreed to share their views on the subject.</p> <p>The heads of the School Health Service of eleven municipalities received information about the study and gave their permission. They informed school nurses, who distributed information letters to parents. Parents who agreed to participate in the study were asked to contact the researchers by email or telephone and were offered a cinema ticket as a reward.</p> <p>The recruitment continued until no new material emerged from the interviews. Interviews were performed at a place chosen by the parent, who also completed a brief background questionnaire and gave written informed consent. The main open-ended question during the interviews was as follows: Can you tell me about your reasons for refusing to let your daughter have the HPV vaccine? Additional questions were asked to clarify the parents' statements. The interviews lasted between 30 and 60 min, and the average interview was 40 min. The researchers provided parents with contact details, so that they could ask further questions about the study if they needed to. The interviews were carried out by three of the authors and were transcribed verbatim.</p> <p>The interviews were analysed using latent content analysis. First, the transcriptions were read several times according to the aim of the study. This was followed by an open coding session, during which data were named and identified with notes in the margin. Then, the data were coded and grouped together into labelled categories. Each category was checked again by returning to the transcribed interviews. During the final step, themes emerged from the data. The initial analysis was carried out by investigators and was validated by the co-authors, who individually read the transcripts and identified the categories.</p> <p>No need for changes was identified during this process, but the categories and themes were discussed among the authors until consensus was reached.</p> <p>The study was approved by the Regional Ethical Review Board in Uppsala.</p>
Population and perspective	<p>A total of 25 parents, representing a wide variety of urban and rural areas, were recruited and agreed to participate.</p> <p>Their mean age was 44 years (range 37 to 59). 23 were women and 2 were men.</p>
Inclusion Criteria	<p>Parents</p> <p>Parents who had declined the HPV vaccine for their daughters.</p>
Exclusion criteria	<p>None reported</p>
Relevant themes	<p>16 Themes were identified by the investigators:</p> <ol style="list-style-type: none"> 1. She is too fragile. A common reason for declining the vaccination was the daughter's young age. The parents believed that it would be several years before she would become sexually active. There were also concerns about the possible harmful effects on a young, growing body: "And then we feel, well, she is just twelve and not sexually active. She is still just a girl, so we feel that we can vaccinate her later if we feel that there is a need for it." 2. Vaccination would be a problem because of existing health issues. Another ground for declining the vaccination was related to the child's health. Parents said that they did not want their daughter to be vaccinated because she had medical issues,

such as diabetes, asthma or allergies. Their child had previously been exposed to numerous medical procedures, and they wanted to protect her from yet another one.

3. She is afraid of needles. Some parents decided not to vaccinate because their daughter was afraid of needles. This was a hard decision, because they wanted the daughter to be vaccinated, but it would not be possible without sedation or the use of force.

4. She will make her own decision later. Some parents felt that, out of concern for their daughter's autonomy, they could not make the decision for her at this time. She was considered too young to fully understand the matter. But because she was involved in decisions regarding other important matters, it was felt appropriate to postpone the vaccination and let her decide for herself at a later date.

5. Not enough written information. The parents felt that the information they received from the school health authorities was insufficient, as it mainly talked about how the vaccination would be administered and did not talk about the actual vaccine and why it was needed. They wanted transparent, unbiased information about all aspects of HPV and the HPV vaccination, together with links to reliable sources of more information: "We haven't received any explanation... no information about HPV has been given. The only thing we got was a vaccination appointment."

6. Overwhelmed and pressured to make a quick decision. The parents felt that the vaccination programme was rushed, and they felt pressured to make a quick decision. Because the HPV vaccine was considered important, they felt they needed more time to make an informed decision and refused to have their daughter vaccinated for the time being.

7. Perceived recommendation not to vaccinate Recommendations from significant others, such as family, friends or healthcare professionals, had an impact on some parents' decision not to vaccinate.

8. Encouraging adolescents to wait for sex. Parents believed that girls today are exposed to sex at an early age and in a negative way through TV, films and the internet. They felt it was important to strengthen their daughters' self-esteem and encourage them to adopt another lifestyle than the one they were exposed to through the mass media. They wanted their daughter to postpone their first sexual experience and to only have a small number of partners: "...to encourage and, so to say, especially strengthen young girls' self-confidence and ability to say no. And in a way I think that this vaccination thing... it can give a false sense of security."

9. The HPV vaccine is unnecessary. Religious faith and family values were other reasons to decline. The vaccine was not needed because the daughter was only supposed to have one partner and was not going to lead that kind of life of lax morals. Parents believed the decision to decline the vaccine was right, as long as their daughter lived up to these expectations. Otherwise, it would be preferable to ensure she received the vaccine.

10. Not enough information given about STIs in general. Parents felt it was important that their daughters were well informed about preventing sexually transmitted infections (STIs) before she became sexually active. This included the importance of using condoms and related health advice, such as taking part in future cervical cancer screening programmes. It was felt that offering the girls the HPV vaccine, without such information, could give them a false sense of security.

11. Not enough is known about the HPV vaccine. The HPV vaccine was considered to be different to the other childhood vaccines, with possible, new, unknown side effects and a perceived lack of evidence. Parents were worried that the HPV vaccine could have negative effects on the daughter's future health, such as causing

- autoimmune diseases or decreasing fertility. Furthermore, the parents questioned how long the vaccine would remain effective.
12. Suspicion about vaccines in general. They believed that vaccinations were unnatural and that their child's health would be improved, and their immune system strengthened, by having flu or the usual childhood diseases. Although most of the parents who took part in the study had let their daughter have the normal childhood vaccinations, some had declined all of them: "...if you get diseases then the body's own immune defence will build much better defence afterwards than a vaccine can ever do.
13. No trust in the government's recommendations. Some parents did not trust the recommendations of the Swedish government and believed that mass vaccinations were a way to exert control over the population, a Big Brother phenomenon that told peoples what to do. They also questioned how much government money had been spent on the HPV vaccination and felt that the money could have been put to better use in the healthcare system.
14. Narcolepsy as a side effect of the vaccination against the swine flu The government-supported mass vaccination against (A) H1N1, the so-called swine flu, was later found to have caused or precipitated narcolepsy. This was a commonly cited reason for not trusting the governments' recommendations this time. The mass vaccination for swine flu was described as hysterical, and all the parents drew a parallel between the two vaccinations. They were worried that a similar thing could happen again.
15. The individual knows best. Parents felt that the decision about whether to vaccinate was a personal one and that they could make up their own minds about what was best for their child. Most of them were confident that they had made the right decision at this time. They felt that most of the other parents had just vaccinated their daughters without thinking about it. But it feels as if most of the others haven't really thought about it but just followed the flock.
16. The school nurse was not supportive enough. Some parents said that they did not trust the school nurse. She or he did not give the family enough support, or they did not feel the nurse was competent enough to provide adequate information. Parents who requested more, and better, information about HPV and the vaccination did not feel that the school nurse could fulfil that need.

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes

Section	Question	Answer
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Grandahl, 2019

2

Bibliographic Reference Grandahl, Maria; Neveus, Tryggve; Dalianis, Tina; Larsson, Margareta; Tyden, Tanja; Stenhammar, Christina; 'I also want to be vaccinated!' - adolescent boys' awareness and thoughts, perceived benefits, information sources, and intention to be vaccinated against Human papillomavirus (HPV).; Human vaccines & immunotherapeutics; 2019; vol. 15 (no. 78); 1794-1802

3 **Study Characteristics**

Study design	Semi-structured interviews
Aim of study	To explore awareness and thoughts about HPV and HPV vaccination, information sources, perceived benefits of vaccinating men, and intention to be vaccinated in a group of male upper secondary school students
Study location	Sweden
Study setting	Schools
Study dates	Not reported
Sources of funding	The Swedish Cancer Society, Gillbergska foundation.
Study methods	The authors estimated they needed 20–25 interviews before saturation. After about 25 interviews, nothing new came up during the interviews, but to be sure that they did not miss any thoughts in the subject they completed another six interviews. No new information was revealed and so they decided they had reached saturation power. Interviews took place in the school and used a semi-structured interview guide. The guide was based on the literature and the authors clinical experience. For validity, the interview guide was discussed with specialists in HPV virology, pediatrics, adolescents' sexual health and public health, and with the Public Health Agency of Sweden. Some minor changes were made to the interview guide after these discussions. To make sure the adolescents understood the questions the interview guide was tested on four adolescents' prior to the study. No changes were made to

	<p>the interview guide. Questions focused on the participant's beliefs concerning HPV and HPV vaccination as well as STIs and vaccinations in general.</p> <p>An inductive approach was used to analyse the results with the Health Belief Model used to discuss the findings. The interviews were analysed using thematic content analysis and categorisation was done by grouping together overlapping or related codes. The transcripts were then read again, and units of information were sorted into suitable categories. Two researchers individually read the transcripts and identified categories. All authors took part in discussing the categories.</p> <p>and themes until a consensus was reached.</p>
Population and perspective	<p>31 male upper secondary school students took part. Most were born in Sweden and six had an immigrant background.</p> <p>None of the boys were vaccinated against HPV.</p>
Inclusion Criteria	<p>Three schools chosen to represent different geographical areas in central Sweden and included students of different socio-demographic status.</p> <p>Boys in the third year of upper secondary school</p>
Exclusion criteria	<p>None reported</p>
Relevant themes	<p>5 relevant themes were identified:</p> <ol style="list-style-type: none"> 1. Promotion of equal health: The boys felt that it was unfair that only girls were vaccinated if HPV can affect boys as well "If boys can be affected by HPV, then I do not understand why they are not yet offered [the vaccine]. Yes, if the vaccine has a better effect in girls, I may understand that boys are not given priority, but if the vaccine is effective in both ... or if both may get ill, then it is clear that both should have access to the vaccine. Anyway, that's what I think." 2. Benefits to other's health: The participants thought that it was important that boys are given the HPV vaccination to reduce the risk of virus transmission. 3. Safety of vaccination: Many of the boys believed that the HPV vaccine was important with few concerns about any negatives of the vaccination. Some had a fear of needles or were concerned about potential side-effects and reported that they might not agree to vaccination for these reasons "...in that case I only see the benefits. As long as the effect is proven and there are no harmful side effects, then I have nothing against it. It's just fine then, so I am in favour" 4. Decision making: There were varied views about decision making. Some of the boys said that they would make the decision and not be influenced by family or friends. Others said they would prefer their parents to see the information as well and be involved in decision making "Well, what I feel is... myself I'm quite open with my parents, but this is perhaps not something you discuss with them. It's sort of my own decision"... "But if you're somewhat younger then I think you actually need support from your parents as well, and hear what they think" 5. Information needs: The boys had limited awareness of the vaccine and reported that they had limited information about it during lessons at their schools. They appreciated the information leaflet about the vaccination although most said that they could not remember much of the information that it contained. Most boys stated that they would have liked more information and that this should come from a trustworthy source such as the school nurse and school health services. There were mixed views about the best format and presentation of information.

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
Overall risk of bias and relevance	Relevance	Highly relevant

2

Guillaume, 2004

3

Bibliographic Reference Guillaume, L.R.; Bath, P.A.; The impact of health scares on parents' information needs and preferred information sources: A case study of the MMR vaccine scare; Health Informatics Journal; 2004; vol. 10 (no. 1); 5-22

4 Study Characteristics

Study design	Semi-structured interviews
Aim of study	To identify the information needs of parents in relation to measles, mumps and rubella (MMR) vaccination in young children.
Behavioural model used	None stated
Study location	UK

Study setting	Community
Study dates	2002
Sources of funding	Arts and Humanities Research Board
Study methods	<p>It was decided that the most appropriate study method would be semi-structured interviewing. This method was adopted in order to be able to be flexible in the approach to interviewing parents, allowing parents the freedom to expand upon their answers while adhering to a structure that allowed all the identified areas of interest to be addressed. The empirical part of the study was commenced at this time in order to collect data while the MMR vaccination scare was in progress and many of the issues surrounding the scare were currently attracting attention among parents of young children.</p> <p>A purposive sampling strategy was used to recruit parents of children under the age of five via community based childcare organizations (nursery schools and toddler groups) that provide childcare for children in this age group. This approach was used to ensure that the sample included parents whose children were due to be vaccinated or who had been vaccinated recently. Details of childcare organizations were obtained from the Sheffield Children’s Information Service (a local service dedicated to providing parents with information regarding their children’s health, welfare and upbringing) and leaders of the organizations were contacted to gain permission to attend their group. Parents in the group were given a letter and information sheet and asked to contact the researcher if they required any additional information. Arrangements for the interviews were made either when the researcher attended the group or when the participant subsequently made contact by telephone. Prior to the first interview in the study, pilot interviews were undertaken with two parents and the interview questions were refined following the feedback provided. At the time of the interview, parents were asked to complete a consent form and demographic questionnaire, the data from which were analysed using Statistical Package for the Social Sciences version 10.0. The interview data were recorded using an audio cassette recorder and were transcribed. The transcribed data were imported into ATLAS.ti, a computer program designed to facilitate qualitative data analysis using a grounded theory approach. The data were analysed using a code and retrieve method to develop codes and categories. These were then assembled and analysed to create the core category. Subsequent to the interviews, parents were contacted and requested to complete an evaluation of the results of the interviews in order to check the validity of the results. The empirical part of the study was commenced at this time in order to collect</p> <p>data while the MMR vaccination scare was in progress and many of the issues surrounding the scare were currently attracting attention among parents of young children. A purposive sampling strategy was used to recruit parents of children under the age of five via community based childcare organizations (nursery schools and toddler groups) that provide childcare for children in this age group. This approach was used to ensure that the sample included parents whose children were due to be vaccinated or who had been vaccinated recently. Details of childcare organizations were obtained from the Sheffield Children’s Information Service (a local service dedicated to providing parents with information regarding their children’s health, welfare and upbringing) and leaders of the organizations were contacted to gain permission to attend their group. Parents in the group were given a letter and information sheet and asked to contact the researcher if they required any additional information. Arrangements for the interviews were made either when the researcher attended the group or when the participant subsequently made contact by telephone. Prior to the first interview in the study, pilot interviews were undertaken with two parents and the interview questions were refined following the feedback provided. At the time of the interview, parents were asked to complete a consent form and demographic questionnaire, the data from which were analysed using Statistical</p>

	<p>Package for the Social Sciences version 10.0. The interview data were recorded using an audio cassette recorder and were transcribed. The transcribed data were imported into ATLAS.ti, a computer program designed to facilitate qualitative data analysis using a grounded theory approach. The data were analysed using a code and retrieve method to develop codes and categories. These were then assembled and analysed to create the core category. Subsequent to the interviews, parents were contacted and requested to complete an evaluation of the results of the interviews in order to check the validity of the results.</p>
Population and perspective	<p>Seventeen parents agreed to be interviewed and the interviews lasted between 30 and 90 minutes.</p> <p>Of the 17 participants, 16 were female (94.1%) and one was male (5.9%). All 17 of the participants (100%) were married or living with their partner. Sixteen (94.1%) of the 17 parents classed themselves as white and one (5.9%) as other. Two (11.8%) of the participants were working full time, three (17.6%) were working part time, two (11.8%) were on maternity leave and 10 (58.8%) were not currently employed. Of the 17 spouses of the people interviewed, and of the 13 for whom data were available, all (100%) were working full time. Data were not available for four of the participants' spouses. Children the 17 parents interviewed had 29 children. In terms of age, the modal age category was 25–36 months. The mean age was 35.5 months and the range was from 6 to 156 months. In relation to the MMR vaccination status of the children of the participants, 19 (65.5%) of the 29 children had been (or were going to be) vaccinated with the MMR vaccine and 10 (34.5%) of the children had not been (or were not going to be) vaccinated with the MMR vaccine.</p>
Inclusion Criteria	<p>Parents of children who had a specified age range Aged <5 years</p>
Exclusion criteria	<p>None reported</p>
Relevant themes	<p>4 Themes were identified:</p> <ol style="list-style-type: none"> 1. Information needs of parents. When faced with the MMR vaccination scare, parents expressed a desire for general information, and suggested that a large amount of information was required and that this information should be presented clearly: "We wanted every last piece of information that they could give to us." 2. Information sources for parents. Parents continually encountered information throughout the MMR vaccine scare. Parents cited the mass media as their initial source of information about the scare. They also used information when they were making the decision about whether to proceed with vaccination and were also aware of their exposure to the ongoing media coverage of the controversy surrounding the vaccine. Exposure to media information about the MMR vaccine scare can have a real impact on parents, with consequences for vaccination rates: "I think that they have got a very important role in exposing these issues." 3. Parents' views about MMR vaccination and the MMR scare: Most of the parents in this study supported the MMR vaccine and made the decision to proceed with the vaccine. This support was for a variety of reasons. A number of the parents interviewed had accessed the research undertaken by Andrew Wakefield that cast doubt on the safety of the vaccine, and based their support for the vaccine on their rejection of the validity of the Wakefield study: "There were one or two reported studies, one team I think which reported a potential link with autism and Crohn's disease, that wasn't substantiated by any other studies." 4. Parents' decision about MMR vaccination: In terms of the decision about whether to proceed with the MMR vaccination, some parents had had their child vaccinated, some parents had not or did not intend to proceed with having their child vaccinated, and some parents had had one child but not all of their children vaccinated: "Although

	I am doing MMR I am not 100 per cent convinced because the scare has affected you."
Additional information	The study commenced in February 2002 during the MMR vaccination scare that had arisen again as a result of suspected measles outbreaks in London and Newcastle.

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Can't tell
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

2

Harmsen, 2015

Bibliographic Reference Harmsen, Irene A; Bos, Helien; Ruiter, Robert A C; Paulussen, Theo G W; Kok, Gerjo; de Melker, Hester E; Mollema, Liesbeth; Vaccination decision-making of immigrant parents in the Netherlands; a focus group study.; BMC public health; 2015; vol. 15; 1229-1229

3 Study Characteristics

Study design	Focus Groups
Aim of study	To explore factors that influence decision-making among parents with different ethnic backgrounds in the Netherlands.

Behavioural model used	None stated
Study location	The Netherlands
Study setting	Community
Study dates	2012
Sources of funding	Not mentioned
Study methods	<p>All six focus groups were held during regular mother-baby group meetings organized by the welfare organization 'Cumulus Welzijn' in Utrecht, the Netherlands. 'Cumulus Welzijn' provides activities, services, and facilities to local residents, including parental support group meetings where the development of the new-born baby is stimulated. All mothers who were present at the respective regular mother-baby meeting participated in the focus groups. A total of six focus groups were considered to be sufficient because in the final two focus groups no new information was generated and data saturation was reached. Each focus group discussion lasted one hour.</p> <p>All focus groups were facilitated by a moderator and an assistant. Besides the moderator, the assistant, and the participants, a female group leader (who normally leads the mother-baby group meetings at 'Cumulus Welzijn') was present. In the Moroccan and Turkish groups, this group leader translated the conversation for mothers who had difficulties with the Dutch language. She had no role in leading the discussion. Informed consent was obtained and focus group participants were offered a gift voucher of €10 as a gratitude for their participation. Confidentiality of participants was assured, only the moderator and assistant had access to the data. Names and private information were not used in the transcripts and final report. The study was approved by Maastricht University's Ethics Research Board of Psychology.</p> <p>The topic list was constructed based on themes derived from available literature and in consultation with experts. The focus group topic list was pre-tested with colleagues and afterwards revised. All focus groups were semi-structured and the discussion proceeded in three parts: it started with an opening question in which participants introduced themselves and expressed whether or not they visited a CWC. The second part focused on participants' vaccination decision-making process; questions were asked about the influence of social environment, role of culture and religion, role and assessment of received information, knowledge level concerning National Immunisation Programme (NIP)-vaccinations, and possible practical barriers. In the third part, supplemental information was gathered about satisfaction of the participants with the NIP, if they would like to see some changes within the NIP, and their opinion about possible future vaccinations within the NIP.</p> <p>The focus groups were audio taped and transcribed verbatim. Qualitative computer software MAXQDA was used to analyse the content of the focus group transcripts. To identify themes and sub-themes, thematic analysis was performed. Separate analyses were performed for the Moroccan, Turkish, and mixed groups, and identified themes were compared between the groups. A coding frame was developed and transcripts were coded and analysed by the moderator. Initial codes were assigned to text fragments, and then were refined and arranged in themes and sub-themes. To enhance the reliability of data analysis, a sample of the transcripts was coded independently. Afterwards, comparison of the codes took place and differences were discussed until consensus was reached. By using this method together with peer debriefing during the research process, researcher bias was reduced.</p>

Population and perspective	<p>Six focus groups were conducted with mothers of different ethnic backgrounds who had at least one child aged 0–4 years old. The total number of participants was 33, and all participants were female. Two groups (N = 7 and 7) consisted of mothers of Moroccan nationality, two groups (N = 4 and 3) of Turkish mothers and two groups (N = 6 and 6) comprised mothers of different nationalities (Netherlands (n = 6), Morocco (n = 2), Afghanistan (n = 1), Somalia (n = 1), Poland (n = 1), Belgium (n = 1)). Moroccan and Turkish mothers participated in separate focus groups to create transparency and avoid obstacles due to cultural differences. The two mixed groups were used to study vaccination decision-making among persons with other ethnic backgrounds than Moroccan and Turkish. At the time of the focus groups, all mothers had lived in the Netherlands for at least 1 year.</p> <p>All participants were female. Most participants had one child (n = 13), 8 participants had two children, 5 participants had three children, four participants had four children, two participants had six children, and for one participant, the family size was unknown.</p>
Inclusion Criteria	<p>Parents of children who had a specified age range Age 0 to 4 years</p> <p>Immigrants Members of Cumulus Welzijn</p>
Exclusion criteria	<p>None reported</p>
Relevant themes	<p>6 Themes were identified:</p> <ol style="list-style-type: none"> 1. Participation NIP and child welfare centre. Aspects included child welfare centre visitation, accessibility and satisfaction with child welfare services: "I visit with my child the CWC. We [the mothers] all have the same opinion, that it is just very important." 2. Factors influencing parental decision making. Aspects included attitude towards vaccination, and cultural aspects and religion: "I did not really thought about whether to vaccinate or not, I thought it is just normal, you should be protected against diseases. I actually thought it was necessary. You hear it for years that children are being vaccinated and we have all been vaccinated ourselves. So it is just logical that they [the children] get vaccinated." 3. Negative experiences with vaccination and adverse events. This included symptoms and other issues such as translation: "After my daughter was vaccinated she was sick for a week, she had 40° of fever and vomited. I thought for 8 days that my daughter was dying." 4. Level of knowledge and understanding NIP: "You don't know what these injections are for. You only hear the abbreviation [of the vaccine] when they are given, but not for what kind of diseases the injections are for." 5. Information. This included evaluation of received information, perception of language received information, information seeking behaviour, and information need: "Because they don't give you an explanation during vaccination...you just receive the jabs and you are finished. How many shots you get and for which diseases, that has actually never been told." 6. Attitude towards future vaccinations: "Vaccination against diphtheria or tetanus, that kind of diseases, is required for all your children, you simply choose for that. But for new vaccines, which are new to the market and are not thoroughly investigated, I have doubts about that."

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Can't tell
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low (Although this study does not mention the specifics of recruitment, it appears the investigators targeted a mother-baby group that addressed the aims of their study)
	Relevance	Highly relevant

2

Harmsen, 2012

Bibliographic Reference Harmsen, Irene A; Ruiters, Robert A C; Paulussen, Theo G W; Mollema, Liesbeth; Kok, Gerjo; de Melker, Hester E; Factors that influence vaccination decision-making by parents who visit an anthroposophical child welfare centre: a focus group study.; Advances in preventive medicine; 2012; vol. 2012; 175694

3 Study Characteristics

Study design Focus Groups

Aim of study	To gain more insight into parents' experience at an anthroposophical child welfare centre (CWC), the factors that influence their vaccination decision-making and their need for information.
Behavioural model used	None stated
Study location	The Netherlands
Study setting	Community (anthroposophic followers)
Study dates	2011 to 2012
Sources of funding	Not mentioned
Study methods	<p>Focus groups were conducted with parents who visit an anthroposophical CWC. Doctors and nurses from three different anthroposophical CWCs in The Netherlands invited parents to participate. Parents received an information letter regarding the study objectives and procedures and could inform the researchers whether they wished to participate by sending an email to an email address. Parents who did so then received more details about the date and location of the focus group discussions.</p> <p>The focus groups were held in the evening at the anthroposophical CWC that the parents visited and lasted about 2 hours. Every focus group had the same moderator and different assistants. Informed consent was obtained and participants received a gift voucher of 30 Euros as an incentive.</p> <p>The focus groups were approved by the Psychology Ethics Committee of Maastricht University.</p> <p>The focus groups were based on a semi-structured protocol with open-ended questions. The topic list was pilot tested with colleagues and then revised. This revised and final version was used for all the three focus groups.</p> <p>The focus groups started with an introduction about the objectives of the study and the role of the participants during the focus group. After that, the participants introduced themselves with their names and family composition and reasons why they visited an anthroposophical CWC. Then parents were asked to write down what they perceived as positive and negative aspects of the Dutch NIP. Next, more in-depth questions were asked about which factors influenced their decision whether or not to vaccinate their child, the influence of their social environment in their vaccination decisions, and their need for information. At the end, the focus group was evaluated together with the participants.</p> <p>The three focus groups were recorded with a digital voice recorder and transcribed verbatim. The data were processed with the software program NVivo and then analysed based on thematic analysis to explore different factors influencing the parents' decision whether or not to vaccinate their child. Different themes were explored and an inductive process was used to derive subthemes from the six main themes. The data were analysed and coded by the moderator (IH) and an independent researcher analysed and recoded one focus group. Afterwards initial coding was compared, reviewed, discussed, and refined until consensus was achieved, leading to an improved coding scheme and criteria.</p>
Population and perspective	<p>3 focus groups (n = 16)</p> <p>The group of 16 participants consisted of two parents with one child, four parents with two children, another four with three children, one with four children, and one parent with five children. Two couples participated in the focus groups. One of these couples had one child and the other had two. Fourteen of the 16 participants</p>

	<p>were females. All parents indicated that they had postponed vaccination for at least one child. One parent had refused all vaccinations for her children, while the other parents had partially vaccinated their child. Of the parents who partially vaccinated their children, all refused the MMR, pneumococcal, and meningococcal C vaccinations. The DTIPV (Diphtheria, Tetanus, and Polio) vaccine was mostly accepted (n = 6), next the DTaP-IPV (Diphtheria, Tetanus, Pertussis, and Polio) vaccine (n = 3) and then the DTaP-IPV Hib (Diphtheria, Tetanus, Pertussis, Polio, and Haemophilus influenzae type b) vaccine (n = 2). The other parents (n = 3) had not yet decided whether or not to have their child vaccinated.</p>
Inclusion Criteria	<p>Parents who are part of a specific community Anthroposophic followers</p>
Exclusion criteria	<p>None reported</p>
Relevant themes	<p>6 Themes were identified:</p> <ol style="list-style-type: none"> 1. Positive and negative aspects of the Dutch national immunisation programme. The parents agreed that one positive aspect of the Dutch vaccination schedule is that the vaccines are free of charge and available for everyone: "I think it's good that vaccines are available to everyone, regardless of your background." And: "One thing I don't like about it is that it's considered the norm to automatically or blindly follow the program, and that if you refuse vaccination, you have to justify your reasons." 2. Anthroposophical child welfare centre. This included reasons to visit an anthroposophical child welfare centre and experience at a child welfare centre: "We chose an anthroposophical child welfare centre because it was the obvious choice for us. As a child, I always went to an anthroposophical child welfare centre, so it was part of my upbringing." 3. Factors influencing decision-making. This included lifestyle, perception of health, childhood diseases, risk perception of disease, vaccine effectiveness, vaccine components, and trust in institutions: "You can make sure your child is healthy and has a strong immune system. I think that's something I try to succeed in." 4. Responsibility for negative consequences. This qualitative study showed that, whichever choice the parents make, they are willing to take responsibility for negative outcomes: "You need a strong vision. What if your child gets polio. We thought 'okay, we can deal with that. So we took that responsibility.'" 5. Social environment. The parents discussed the different experiences they had with their social environment. Sometimes their social environment, such as their family, influenced their thinking about vaccination: "I once had a conversation with my mother about it and she said that I reacted badly to the vaccines, just like my brother and sister. Then I thought: 'okay, if we reacted badly to the vaccines, maybe I shouldn't vaccinate my child just yet'." 6. Information need. A topic that was mentioned by all of the parents was their need for information: "More information about the risks of vaccinating. Information that explains there are risks involved in getting vaccinated. There's not enough of that kind of information."

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes

Section	Question	Answer
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant (Although the ages of the children are not provided, it is obvious from the vaccinations covered that they are relevant to the 0-5 years age group.)

1

Harris, 2006

Bibliographic Reference Harris, LeWanza M; Chin, Nancy P; Fiscella, Kevin; Humiston, Sharon; Barrier to pneumococcal and influenza vaccinations in Black elderly communities: mistrust.; Journal of the National Medical Association; 2006; vol. 98 (no. 10); 1678-84

2 Study Characteristics

Study design	Semi-structured interviews
Aim of study	To understand the role of trust of medical institutions in the decision by elderly black Americans to receive pneumococcal and influenza vaccinations.
Behavioural model used	None stated
Study location	USA

Study setting	The study occurred in Rochester, a metropolitan city with a population of 1.1 million. Thirteen percent of the population is aged 65 years. Nine percent of those >65 years live below the poverty level. According to the 2000 U.S. Census of Population, 39% of the population in the city of Rochester is African-American.
Study dates	2004 to 2005
Sources of funding	Not stated
Study methods	<p>Recruitment of subjects for the study occurred at two senior adult residential facilities, two community health centres and one black church. Each facility was chosen in order to allow for a socio-economically diverse sample of participants. They used educational level as a proxy for socioeconomic grouping. Sampling was purposive rather than random to ensure the widest variation in experiences and beliefs. Snowball sampling technique was used for additional recruitment.</p> <p>Self-report of vaccine status against pneumococcal and/or influenza disease was used to define vaccinated group versus unvaccinated group. The number of interviews was based on a target sampling frame of 20 or until saturation (redundancy of themes) occurred.</p>
Population and perspective	There were 20 people (14 women and 6 men) in the sample. Groups were categorized into 11 vaccinated and 9 unvaccinated participants.
Inclusion Criteria	<p>People aged 65 years or older</p> <p>People who share specific characteristic(s) Black Americans</p>
Exclusion criteria	None reported
Relevant themes	<p>Nine themes were identified:</p> <p>1) Prevention Many of the participants in the vaccinated group were vaccinated because they saw the vaccines as a preventive measure in maintaining their health. “I believe when you get a certain age now, every little bit helps. You know. And you have to have something [vaccination] to ward off whatever is going around.”</p> <p>2) Vaccines Cause Illness A majority of the participants in the unvaccinated group felt the influenza vaccine made them sick and/or caused influenza. “I never cared about flu shots and when I did get [one], when I have gotten flu shots, I’ve gotten very sick ... Took one last year and got sick as a dog. I got a cold, couldn’t shake the cold, couldn’t do nothing, and finally it just faded away”</p> <p>3) Vaccines as Irrelevant to Health Many participants in the unvaccinated group did not believe influenza and pneumococcal vaccines were relevant to their health and would not improve their own health. “I think they are good if you really need it. You know, some people, I think, take it and they are sick. They do it in the cold season ... I’ve never taken it, and I am still doing okay.”</p> <p>4) Experience with Healthcare (Personal or Historical) Most participants reported healthcare experiences that shaped their attitudes toward the healthcare system. Several participants had negative experiences in the</p>

<p>segregated South. “I remember when I was a boy in the South, we had to take shots for everything right until the fifth grade. And the nurse down there treated you like you were an animal. They did not care. They were not sensitive. They would just jab you in your arm like you were an animal. That’s how they treated us, you see. So I don’t want any shots. I still have those memories.”</p> <p>5) Self-Advocacy For many participants, the historical medical injustices or personal experiences served as a catalyst for self-advocacy. “It’s [Tuskegee Syphilis Study] part of my memory to the extent that it makes me question how long and what’s going to happen, you know. And I want to be sure they’re telling me the truth. Not just placating me. Because sometimes I think that people are given answers that they don’t really understand and they haven’t been given enough, you know, detail to understand just what could happen, and if this happens then what we can do.”</p> <p>6) Attitudes toward Childhood Vaccinations All of the participants supported vaccinations for children, even though some refused vaccinations against influenza and pneumococcal disease for themselves. “I think kids are exposed to more, especially the ones that go to school and the nursery, I think they’re exposed more than adults.”</p> <p>7) Historical Medical Injustices or Medical Mistakes A few participants acknowledged mistrust of medical institutions due to historical abuses that occurred to black Americans or due to medical mistakes by institutions. “I heard you go into a hospital and they [doctors] sew instruments inside of you and chop off the wrong leg. And when they’re giving you treatment, they could be giving you something else”</p> <p>8) Acts of Racism (Historical or Personal) The issue of racism reported by a few participants illustrates how social trust can influence interpersonal trust. “We have a tendency to some degree to use blacks as guinea pigs and so forth. Our society is still doing that..”</p> <p>9) Mistrust of Physicians A few of the participants did not trust physicians because of a general lack of confidence in physicians or conflicting priorities “Some doctors, they stay in research for the benefit of some of the pharmaceutical companies. And their livelihood is basically on the . . . findings”</p>

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes

Section	Question	Answer
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research has some value
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Henderson, 2008

2

Bibliographic Reference Henderson, Lesley; Millett, Christopher; Thorogood, Nicki; Perceptions of childhood immunization in a minority community: qualitative study.; Journal of the Royal Society of Medicine; 2008; vol. 101 (no. 5); 244-251

3

4

5 Study Characteristics

Study design	Semi-structured interviews
Aim of study	To assess reasons for low uptake of immunization amongst orthodox Jewish families.
Behavioural model used	Grounded theory
Study location	UK
Study setting	Community
Study dates	2013
Sources of funding	Not stated
Study methods	Records of two general practices known to serve a high proportion of the orthodox Jewish community were used to select children aged between 2–3 years. Mothers were contacted by letter and telephone, with researchers emphasizing that the study

	<p>was independent of their GP and their religious community. A total of 14 women agreed to take part. They also used ‘snowballing’, where participants are asked to suggest others who may take part, and a further 11 women were recruited in this way.</p> <p>Preliminary background interviews were conducted with ten health care staff who had significant contact with the community through local GP practices and who were either responsible for implementing immunization programmes or may be expected to give advice on this to orthodox Jewish mothers. These included five outreach workers with specific links to the community (e.g. responsible for support in areas including nutrition, mental health, family support and baby clinic); one health visitor; one GP, one Practice Manager; one Practice Nurse; and one receptionist. Members of the research team also met with local Rabbis and discussed the study with GPs and health-related community workers to secure approval from religious leaders and to develop a culturally appropriate research design.</p> <p>Ethical approval was awarded by the North East London and The City Research Ethics Sub Committee and the Ethics Committee for the London School of Hygiene and Tropical Medicine.</p> <p>Semi-structured interviews with orthodox Jewish mothers were conducted by two female interviewers, as most women were breastfeeding and unable to initiate this in mixed company. It was also important that interviewers were able to build rapport with the participants. For logistical reasons interviews took place in participants’ homes – this was easier for the participants, who were commonly looking after more than one pre-school child at home – and a male interviewer could have been an intrusive presence. Interviews were scheduled in line with the religious calendar. Their interview protocol was designed to first collect demographic The interview sessions lasted between 25 and 90 minutes and were, with permission, audio-recorded and transcribed fully.</p> <p>Transcripts were read and discussed by members of the team, who marked key passages according to analytical themes. Researchers used some of the principles of grounded theory, developing analytical constructs which were then applied in an iterative manner across the sample allowing the investigators confirm, reject or modify concepts during the study. Responses to key questions were thus cross-tabulated and commonalities and differences were highlighted across all participants and for each immunization (BCG, MMR and DTP [diphtheria, tetanus and pertussis/polio]). This was designed to reflect the complexity of decision making, since it was found that most participants did not statically occupy a ‘pro’ or ‘anti’ position on immunization, varying their views over time and in relation to each kind of immunization.</p> <p>Deviant cases were particularly sought out in order to explore the factors which influenced those participants who did not adhere to community norms. No new themes emerged after analysis of 25 transcripts, which suggests that theoretical saturation had been reached.</p>
<p>Population and perspective</p>	<p>25 women in total. There were no significant differences in characteristics between the two groups. Most respondents (20 of 25) were born and had lived in the area all their lives. The mean age of mothers was 29.7 years (range 21–44). Family size varied, with women having between one and nine children (mean 4.1). Most participants (21 of 25) had no additional educational qualifications beyond completing secondary school.</p>
<p>Inclusion Criteria</p>	<p>Parents of children who had a specified age range Age 2 to 3 years</p> <p>Parents who are part of a specific community Jewish</p>
<p>Exclusion criteria</p>	<p>None reported</p>

Relevant themes	<p>3 Themes were identified:</p> <p>1. Social networks and media influence. It was clear from comments made by both mothers and local health care staff that advice circulated through informal social networks. It appeared that the importance of this was related to the community's relative lack of exposure to mass media sources: "This [child] hasn't had the MMR yet, the youngest, because of all the scares. The other two [children] had everything."</p> <p>2. Safety: The separation of the community from outside influence led to feelings of safety about tuberculosis and therefore a lack of need for the BCG vaccination, a situation that local health care providers occasionally supported, although this was not done consistently. It was clear that non-uptake of BCG was a long-standing practice in the community, to the extent that it was accorded the status of a 'Jewish belief': "The Jewish community don't give it because we don't need the BCG. We don't have anything to do with other ethnic groups. We've only got to do literally with Jewish people. We don't bathe together. We don't have anything to do with them."</p> <p>3. Danger. MMR and the whooping cough vaccine carried very different connotations, largely involving anxiety about a wide variety of adverse effects, evidence for which came from knowledge of local children within the community believed to have suffered them: "In my head it's like this. I have a healthy child and an immunization is a disease. I am putting the disease in the child. Who knows how good this immunization is? You know all the stories about immunizations and there are bad batches."</p>
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1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable

Section	Question	Answer
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Henderson, 2011

Bibliographic Reference Henderson, Lorna; Clements, Alison; Damery, Sarah; Wilkinson, Clare; Austoker, Joan; Wilson, Sue; HPV Core Messages Writing, Group; 'A false sense of security'? Understanding the role of the HPV vaccine on future cervical screening behaviour: a qualitative study of UK parents and girls of vaccination age.; Journal of medical screening; 2011; vol. 18 (no. 1); 41-5

2 Study Characteristics

Study design	Semi-structured interviews
Aim of study	To develop evidence-based core HPV messages, relevant to the new testing and vaccination programmes.
Behavioural model used	None stated
Study location	South-East of England
Study setting	Participants' homes or schools
Study dates	October 2008 - June 2010
Sources of funding	Cancer Research UK
Study methods	<p>One of the authors interviewed the parents between July 2009 and June 2010. The majority of interviews were conducted in the parents' home, and with the exception of two interviews which took place with both parents, were conducted solely with the mothers. The girls were interviewed between October 2008 and April 2010.</p> <p>Thirty-eight girls chose to be interviewed in their own homes, two with their mothers present; and six girls chose small group discussions at their school. Semi-structured interview topic guides were used to explore parents' and girls' reasons for accepting or declining the HPV vaccination. The topic guide provided a flexible set of content areas (including understandings of the purpose of the vaccine, the relationship between HPV and cervical cancer, the decision-making process, reasons for uptake and non-uptake, information needs, and future vaccination intentions) to direct the interview process, while allowing the participants to raise areas of relevance to them.</p> <p>Cervical screening as an area of uncertainty and relevance to the decision-making process originated from the parents, and, as the study progressed, subsequent interviews explored the understandings of the HPV vaccine in relation to cervical screening. The interviews lasted thirty minutes to one hour and were digitally audio-taped, transcribed verbatim, and anonymized.</p>

	The transcripts were reviewed to identify instances when parents or girls discussed cervical screening. Data was retrieved from twenty-six parent, and nine girl interviews. From analysis of these data, themes emerged surrounding the level of protection offered by the HPV vaccine, the need for future cervical screening, and decision-making in the context of awareness of the need for future screening. A thematic analysis was combined with constant comparison of the data. The interviews were compared by selecting text which described similar or opposing experiences, both between interviews as well as in the context of each interview. A qualitative software package was used to help with the management of the data. The investigators regularly discussed the coding and interpretation of the data to ensure a deep understanding, and to limit inconsistencies in the analytic process.
Population and perspective	The study recruited 37 parents whose 12–13-year-old daughters had been offered the HPV vaccine, and 44 girls aged 12–13 years who had been offered the HPV vaccine during the first wave of the HPV programme (September 2008) within one Primary Care Trust (PCT) in the South-east of England. Of these, 26 parents and 9 girls commented on cervical screening issues that are presented in this paper. All were white British and the majority of parents were mothers. Twelve parents declined vaccination and 14 accepted vaccination.
Inclusion Criteria	Girls aged 12-13 Parents of children who had a specified age range (12-13 years) HPV vaccination during the initial phase of the vaccination program (2008)
Exclusion criteria	None reported
Relevant themes	<ol style="list-style-type: none"> 1. The level of protection offered by the HPV vaccine: The interviews revealed a range of understandings among parents about the level of protection the HPV vaccine offers against cervical cancer. "At the end of the day it's only against one form of cervical cancer isn't it? It's only a minor prevention really." 2. Decision-making based on future cervical screening: It became clear that some parents had made the decision about whether their daughter would receive the HPV vaccine based on misconceptions about the need for cervical screening in the future. 'It sounded very positive! (the HPV vaccine) . . . If it meant that people didn't have to have smear tests when they were older that was great! . . . I don't like smear tests!' 3. Information needs in relation to the HPV vaccine and future cervical screening: Several parents did not recall having received any information about the need for vaccinated girls to attend cervical screening in the future. "To my knowledge it's not advertised in school that they should get that (screening) done anyway, unless, at some point later we start getting leaflets to be aware of these things . . . I think a lot of the information is purely what you can find out as a family really."

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Can't tell (<i>Stated objective gives context but isn't specific about the aim of the research itself</i>)
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes

Section	Question	Answer
Research Design	Was the research design appropriate to address the aims of the research?	Can't tell (Due to vague aims)
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell (This is not discussed)
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Moderate
	Relevance	Highly relevant

1

Hill, 2013

Bibliographic Reference Hill, Marie C; Cox, Carol L; Influencing factors in MMR immunisation decision making.; British journal of nursing (Mark Allen Publishing); 2013; vol. 22 (no. 15); 893-8

2 Study Characteristics

Study design	Semi-structured interviews
Aim of study	To provide the foundation for a larger study that will discern influencing factors in parental decision making associated with the MMR vaccine.
Behavioural model used	Grounded theory
Study location	UK
Study setting	Community
Study dates	Not provided. Study was accepted for publication in 2013

Sources of funding	Not stated
Study methods	<p>The first author approached three general practices in London to participate in the study. All agreed to be involved. Each general practice was based in a different NHS Trust.</p> <p>Data were gathered through semi-structured interviews conducted by the first author, who obtained written consent from each participant beforehand.</p>
Population and perspective	<p>5 parents in total. 4 (80%) parents were female and one (20%) male. There were 7 children in total, aged between 14 months and 6 years.</p> <p>The mean age of the parents was 32 years. The variance was not provided.</p>
Inclusion Criteria	<p>Parents Who had children immunised with MMR within the previous 12 months.</p> <p>Parents had to have parental responsibility</p> <p>Participants had to be fluent in English</p> <p>Participants had to be in a specific age range Parents had to be aged 18 to 45 years</p>
Exclusion criteria	None reported
Relevant themes	<p>3 Themes were identified:</p> <p>1. Factors influencing immunisation decision making. These include the prevention of disease, the consequences of contracting infectious diseases, perceived pain, and the media: "The fact of nine injections to put my son through. Nine injections, she [practice nurse] made that very clear to me... and that was also a big influence. Am I going to put my child through nine injections and put myself through nine injections?"</p> <p>2. Sources of information. The findings suggest that participants did not rely on a single source of information, but on multiple sources such as NHS websites; family members; online parents' forums; health professionals; and NHS leaflets: "I asked the nurse... and I went home and I asked my sister, who is a [GP]."</p> <p>3. Professional role and status of health professionals. Parents tended to associate the status of a health professional with their level of knowledge. The higher their status, the more they were perceived to know: "More enlightened...I think, because he is a doctor: he has studied."</p>

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes

Section	Question	Answer
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Can't tell
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Hill, 2021

Bibliographic Reference Hill, M.C.; Salmon, D.; Chudleigh, J.; Aitken, L.M.; Practice nurses' perceptions of their immunization role and strategies used to promote measles, mumps, and rubella vaccine uptake in 2014 - 2018: A qualitative study; Journal of advanced nursing; 2021; vol. 77 (no. 2); 948-956

2 Study Characteristics

Study design	Semi-structured interviews
Aim of study	To explore which aspects of their role practice nurses perceive to be most influential and the strategies they employ to promote the MMR vaccine.
Study location	UK
Study setting	GP surgeries
Study dates	2014 and 2018
Sources of funding	None
Study methods	Interviews used open-ended questions that remained the same for the 2014 and 2018 participants. Questions were developed based on the author's expertise, consultations with other practice nurses and existing evidence. Questions focused on the practice nurses' views about the MMR vaccine, their discussions and consultations with parents and immunization resources they accessed. Data were analysed using qualitative content analysis and a process of reflection and discussion resulted in agreement amongst all authors, which led to the identification, refinement, and agreement of codes, sub themes, and themes. This was an iterative process until there was consensus on the final number of themes. Member checking was used to ensure correct interpretation of the data

Population and perspective	15 London practice nurses who were employed in England as practice nurses and were involved in the administration of the Healthy Child Programme: Pregnancy and the First 5 Years of Life and consequently the MMR vaccine
Inclusion Criteria	Registered nurses Involved in the administration of the Healthy Child Programme: Pregnancy and the First 5 Years of Life
Exclusion criteria	Employed in organisations other than general practice Not currently on the Nursing and Midwifery Council register in the UK Not involved in the administration of the MMR vaccine
Relevant themes	Three relevant themes were identified: <ol style="list-style-type: none"> 1. Promoting vaccination. Practice nurses highlighted the importance of helping parents with informed decision making, discussing benefits of vaccination and answering parent's concerns "it's a national programme...it's trying to keep society safe, so that [the] majority, those who slip through the net will be protected by the greater majority of people, who are vaccinated" 2. Assisting parents to make informed decisions. Practice nurses were aware of factors that influence parents' decisions on vaccination and guided parents to sources of the most credible information "... but for those [parents] who, maybe are uncertain, I think we have a huge influence, because often people have been influenced by family members" 3. Strategies and organisational factors that promote MMR uptake: Practices nurses highlighted the importance of strategies to remind parents that their child's vaccination is due but felt that time pressures hindered their ability to discuss any questions that parents have about vaccination "I think [I] could potentially change their minds more often if we spent more time with them"
Additional information	Data collection happened at 2 timepoints (2014 and 2018). The 2018 data collection took place after an increase in the incidence of measles in Europe

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Can't tell

Section	Question	Answer
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
Overall risk of bias and relevance	Relevance	Highly relevant

1

Hilton, 2007a

Bibliographic Reference Hilton, S; Hunt, K; Petticrew, M; Gaps in parental understandings and experiences of vaccine-preventable diseases: a qualitative study.; Child: care, health and development; 2007; vol. 33 (no. 2); 170-9

2 Study Characteristics

Study design	Focus Groups
Aim of study	To explore parents' understandings of the diseases included in the current UK Childhood Immunization Programme (CIP), and the role of first- and second-hand experiences of these diseases in assessments of their severity.
Behavioural model used	None stated
Study location	UK
Study setting	Community
Study dates	2002 to 2003
Sources of funding	Medical Research Council
Study methods	18 focus groups were conducted in Scotland. Because they sought to include a diversity of views about vaccination within their sample, focus groups were purposively selected to ensure the maximum variation practicable across a number of dimensions. First, because past adverse publicity about vaccine safety has had a greater impact on vaccine uptake in parents from higher social classes, and because they anticipated different views in high and low vaccine uptake areas, they identified two postcode sectors with high MMR uptake rates (more than 95%, using information from the Scottish Standard Immunization Recall System) and two postcode sectors with low rates (less than 75% uptake). Within each of these, they selected one postcode characterized as affluent using the Carstairs Deprivation scores and one characterized as deprived (Depcats 6 and 7). Appropriate community-based groups of parents with young children were identified in each locale. Second, they sought to include parents in different family circumstances (i.e. single mothers and single fathers, as well as those with partners), and with different levels of parenting experiences (first-time parents and those who also had older children). To maximize the range of views about immunization, they sought one group with parents who had

	<p>opted for single vaccines, one with those who had rejected MMR, and one with parents who had rejected all vaccinations. Finally, four groups were conducted with parents who were anticipated to have a particular interest in vaccination: two with parents who had a child with autism, and two with parents who had a child with a compromised immune system following chemotherapy.</p> <p>With the exception of the groups with parents of immunocompromised children, all participants had young children (age 6 years and below), and most had a child aged 2 years or below.</p> <p>For each group, initial contact was made through an appropriate gatekeeper [e.g. the co-ordinator of a local National Childbirth Trust group, a Saturday club, a family resource unit, a private health clinic (for the single-vaccine groups) and the National Autistic Society (to identify parents with autistic children)].</p> <p>Because these gatekeepers passed on letters of invitation and information sheets to potential participants, it is not possible to accurately calculate refusal rates. By necessity, given their sampling design, some focus groups were with participants from pre-existing groups, some with people who had passing acquaintance (e.g. children in same play scheme), and some with people who were strangers to each other. A topic guide, developed through pilot work, included beliefs about childhood immunization and the vaccines in the current programme, experiences of childhood infectious diseases, and factors affecting vaccination decision-making. Given the lack of evidence on parents' understandings, they also focused on knowledge about symptoms and modes of transmission, perceived severity and the role of experiences in evaluations of these diseases.</p> <p>All groups were facilitated by an investigator and recorded with the respondents' permission and transcribed in full. All authors discussed the transcripts to identify common themes and explore participants' underlying reasoning. More detailed analysis in which the transcripts were repeatedly re-examined and cross compared was undertaken. Particular attention was paid to deviant cases to explore the reasons why contradictory or unusual views were expressed. NVivo was used to facilitate the organization and retrieval of data.</p> <p>Ethical approval for the study was obtained from the university ethics committee for non-clinical research involving human subjects.</p>
Population and perspective	66 parents (58 mothers and 8 fathers) of children aged 6 years and below, and six mothers of immuno-compromised children, took part in 18 focus group discussions.
Inclusion Criteria	<p>People with certain health conditions Some of the children were immunocompromised. Age restrictions were relaxed for them.</p> <p>Parents of children who had a specified age range Age 6 years and under.</p>
Exclusion criteria	None reported
Relevant themes	<p>3 Themes were identified:</p> <p>1. Severity of meningococcal disease type C necessitates vaccination. Meningococcal disease, which participants directly associated with meningitis, was perceived to be the most severe of the diseases included in the CIP. Participants equated 'severe' with 'life-threatening' or as having the potential to cause long-lasting damage.: "...meningitis is bad if yer wean [child] gets it. I think it kills most weans."</p> <p>2. Mixed messages regarding measles, mumps and rubella: "...they give you this funny mixed message, ... they say 'the MMR, measles is a dreadful disease...'. But then if you actually research into it a wee bit further, you'd discover ... that it's not the measles that they're actually worried about, it's the German measles, rubella, that's what they really want you to take it for. But it's almost like they've got this scare tactic, we'll frighten them into getting it because of measles ... They're not going to do it for</p>

	<p>rubella ... They've combined it in this nice convenient package... because they wouldn't get take-up because the parents of boys wouldn't take their babies to get immunised for rubella because the parents would consider it irrelevant."</p> <p>3. Diphtheria, poliomyelitis, Haemophilus influenzae type b and tetanus were not considered to be a major or immediate threat: "Something in the past." Opinion was divided with regards to pertussis: "that's a nasty one, that's a long horrible cough." However, there was little mention of potential long-term consequences of whooping cough (convulsions, pneumonia, lung damage, brain damage, etc.), and no recognition that it could be life-threatening.</p>
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1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

2

Hilton, 2013

Bibliographic Reference Hilton, S; Patterson, C; Smith, E; Bedford, H; Hunt, K; Teenagers' understandings of and attitudes towards vaccines and vaccine-preventable diseases: a qualitative study.; Vaccine; 2013; vol. 31 (no. 22); 2543-50

3 Study Characteristics

Study design	Focus Groups
Aim of study	The study aims to explore teenagers' understandings, beliefs and experiences of nine diseases routinely vaccinated against (HPV, meningitis, tetanus, diphtheria, polio, whooping cough, measles, mumps and rubella) and two vaccine-preventable diseases that, it has been suggested, should be added to the UK's teenage immunisation programme (hepatitis B and chickenpox).
Behavioural model used	None stated
Study location	Scotland
Study setting	Community
Study dates	Between November 2010 and March 2011
Sources of funding	This study was funded by the Medical Research Council and the Chief Scientist Office of the Scottish Government Health Directorates for work in the Understandings and Uses of Public Health Research programme
Study methods	<p>Focus groups were facilitated by the investigators and carried out in local community facilities. Discussions lasted between 45 and 80 min, covering issues relating to participants' understandings of diseases and vaccines. In each group the researcher first asked participants about their vaccination histories since childhood, then prompted them to describe their understandings of specific diseases and their symptoms, and finally prompted them to discuss their experiences of, and attitudes towards, vaccinations. With participants' permission, discussions were audio-recorded and transcribed verbatim.</p> <p>Each transcript was checked and imported into NVivo 8 to enable systematic comparisons to be made across the large amount of data.</p> <p>Data were thematically coded and systemically charted following framework analysis principles, allowing data to be rigorously examined and cross-compared to identify common reasoning and themes, and ideas that are less common or are specific to certain subgroups or individuals. Themes were coded by the investigators.</p> <p>Attention was paid to deviant or contradictory cases and to group dynamics, using full transcripts supplemented by field-note observations. To report data they selected concisely-expressed quotations that typify responses around key themes, and some discussion extracts that convey the types of group interactions that occurred. Focus group methods can generate dynamic data by encouraging discussion between group members. Chaotic conversations in more animated groups can make individual speakers difficult to identify; field notes taken during the discussions facilitated identification of speakers. Participants have been assigned pseudonyms to contextualise contributions while preserving anonymity.</p> <p>Ethics approval was obtained from the research ethics committee of the University of Glasgow's Law, Business and Social Sciences Faculty.</p>
Population and perspective	<p>To allow recruitment from a broad range of socio-economic backgrounds, key community leaders in socially deprived and advantaged areas were approached to help identify community groups. Groups predominantly consisted of friendship groups.</p> <p>59 Teenage girls and boys, aged 13-18. Teenagers were recruited through posters, leaflets and advertisements placed in settings including schools, community facilities and sport facilities and websites such as Facebook and Bebo.</p>

Inclusion Criteria	Adolescent girls 13-18 years Adolescent boys 13-18 years
Relevant themes	<ol style="list-style-type: none"> 1. Perceptions of diseases: When assessing how threatening a disease is, participants tended to talk about two key factors: its prevalence in the UK and whether it could be fatal or cause long-term, debilitating and irreversible damage. "can you not just die from all of them if you were in like living in Africa or somewhere like that?" 2. Understandings and concerns about immunisation: Participants expressed varied views about whether immunisation is a positive or negative intervention. Just over half of the participants presented positive images of vaccines protecting the population against disease. "Until I had that last jag, the HPV I had, I imagined them (the needle) being quite a big thing. . ." 3. Beliefs about choice and responsibility: Two positions were commonly presented: choice about vaccinations is desirable, and universal immunisation is advantageous. ". . .people have a responsibility to receive vaccines if they want to keep themselves safe and not pass it on to the others." 4. Experiences of vaccination and decision-making: Participants discussed circumstances of vaccinations administered in school. "my mum will probably just say 'do you want it?' and I'll be like 'not really' but she'll just sign it (consent form) anyway no matter what."
Additional information	The study discussed a number of routine vaccinations (including HPV) but not all are offered to the 11-18 age group this paper was analysed under. Data was not extracted for these other vaccines and for boys' views about HPV where possible

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes

Section	Question	Answer
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Relevant (They discussed a number of routine vaccinations (including HPV) but not all are offered to the 11-18 age group this paper was analysed under and boys were not eligible for HPV at the time of the study.)

1

Hilton, 2011

Bibliographic Reference Hilton, Shona; Hunt, Kate; Bedford, Helen; Petticrew, Mark; School nurses' experiences of delivering the UK HPV vaccination programme in its first year.; BMC infectious diseases; 2011; vol. 11; 226

2 Study Characteristics

Study design	Semi-structured interviews
Aim of study	To investigate school nurses 'assessment of the HPV vaccine, their experiences of delivering the school based programme in its first year, and their views on parental decision-making about HPV vaccination which may help guide its future implementation.
Behavioural model used	None stated
Study location	UK
Study setting	Education
Study dates	Between September 2008 and May 2009
Sources of funding	This study was funded by the Medical Research Council, Population Health Science Research Network
Study methods	The interview schedule was developed from the literature and by first conducting several short telephone interviews with immunisation and child health specialists, public health specialists and health policy makers (n = 10) to gather information on the key issues. The interviews were semi-structured using open-ended questions enabling a qualitative approach to gain deeper insights to explore school nurses'

	<p>views and experiences of these key areas. Inductive modes of thinking are particularly useful when the aim is to describe, explore, understand, or explain a particular phenomenon. The schedule included broad questions examining their assessment of the HPV vaccine, their experiences of delivering the school-based programme, and their views on parental decision-making about HPV vaccination. In addition, the schedule contained more specific probing questions, and the interviews allowed flexibility for nurses to raise issues themselves.</p> <p>To obtain a diverse sample, prior to conducting the interview all the potential respondents were asked questions about the number of years' experience as a school nurse, age, geographical location, parental status, caseload. At this stage they were posted a consent form to return in a pre-paid envelope and a time and date for the interview were arranged. All the interviews were conducted by the investigators by telephone from their own home, and lasted approximately 45 minutes. All the interviews were recorded and transcribed verbatim.</p> <p>Each transcript was checked against the audio-recording, then re-read and thematically coded. Following the principles of the constant comparative method and rigorous analysis, which enable systematic comparisons to be made across the large amounts of data, each transcript was repeatedly re-examined and cross-compared to identify common themes. Once all the relevant themes were coded, a coding frame was developed and the investigators reviewed the data to identify links between themes, dominant discourses and to identify deviant or contradictory cases.</p> <p>Ethical approval for the study was obtained from the research ethics committee of the University of Glasgow's Law, Business and Social Sciences Faculty</p>
Population and perspective	<p>30 School nurses delivering the HPV immunisation programme for girls aged 12 and 13 years old. Purposive sampling was used to obtain a diverse sample of school nurses in terms of the number of years' experience as a school nurse, age, geographical location and parental status. School nurses were also targeted to include those working in schools in deprived, affluent, rural and urban locations.</p>
Inclusion Criteria	<p>School nurses Involved in delivering the HPV immunisation programme</p>
Exclusion criteria	<p>None reported</p>
Relevant themes	<ol style="list-style-type: none"> 1. Confidence in the HPV vaccine and programme: Most of the school nurses were supportive of the programme and considered themselves well placed to implement it. 'We (school nurses) have stressed to the girls that they're a very fortunate group of young ladies, you know, the first people that will actually have had a vaccine that will help prevent a cancer and for us to be part of that, it's really actually quite something.' 2. Feelings about HPV vaccination policy: Four main issues arose: the age range of the girls; the decision to target girls and exclude boys from the programme; the decision to opt for the Cervarix® vaccine over its competitor, Gardasil®; and the perceived policy decision to market the vaccine to prevent cervical cancer rather than to protect against the sexual transmission of HPV infection. 3. Experiences of implementing the programme: Many nurses described the introduction of the programme as 'rushed,' 'too hurried' or 'too fast' and many of them stated that in the weeks leading up to its introduction they felt ill prepared. "In theory, we did have extra resources to manage but it never materialised on the first round and we were doing everything so had to cut out our usual work." 4. Perspectives on parental vaccine decision-making: All the school nurses spoke of readying themselves for a deluge of phone calls from concerned parents, but found that in fact few parents telephoned to ask for more information or express their concerns about the HPV vaccine. "...although in

	<p>our covering letter it said please contact the school nurse, nobody wanted more information, they all signed the consent and wanted the vaccine”</p> <p>5. Experiences of trying to influence parents and school girls: Commonly, nurses suggested that those parents who did phone or attend information sessions were those in least need of the information. Conversely those that they felt would benefit the most tended not to phone or show up .“the same faces turn up...parents that have already made their decisions, whereas the hard to reach parents that haven’t given it any thought don’t turn up. They look to you (school nurse) to rectify any problem and just sort it out getting their child immunised”</p>
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1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

2

Hilton, 2007b

Bibliographic Reference Hilton, Shona; Hunt, Kate; Petticrew, Mark; MMR: marginalised, misrepresented and rejected? Autism: a focus group study.; Archives of disease in childhood; 2007; vol. 92 (no. 4); 322-7

3 Study Characteristics

Study design	Focus Groups
Aim of study	To explore how the MMR vaccine controversy impacted on the lives of parents caring for children with autism.
Behavioural model used	None stated
Study location	UK
Study setting	Community
Study dates	2003 to 2005
Sources of funding	The Medical Research Council and the Chief Scientist Office of the Scottish Executive Department of Health
Study methods	<p>To recruit parents across the UK, internet searches were conducted to identify autism and carer support groups. Fifteen group leaders were contacted via email and sent information sheets to distribute to parent members; the members from 10 groups agreed to take part. Before commencing group discussions, informed consent was obtained and after completing the session any travel expenses and childcare costs were reimbursed.</p> <p>The final sample included parents with children with autism under 14 years old (mean age 7 years), whose autism had been diagnosed after the publication of Wakefield's paper and covered a range of severity. They also included parents with a range of different MMR vaccine decision-making outcomes for their children in order to select the most diverse sample.</p> <p>A topic guide was developed following analysis of two pilot groups which included the following topics: experiences of getting the diagnosis; living with a child with autism; feelings about childhood immunisation and vaccine decision-making; and thoughts on the MMR controversy and its impact on their lives. Each group discussion began with parents introducing themselves and speaking about when they first suspected something was wrong with their child. All 10 groups were facilitated by an investigator and parents were encouraged to direct conversation between themselves with minimal interference from the facilitator. However, there were occasions when the facilitator prompted parents to explain, confirm or justify their position so that their opinions could be examined in greater depth. All groups were recorded with the respondents' permission and transcribed in full. The transcripts were checked against the recordings and imported into NVivo to facilitate systematic comparisons across the large amounts of data. Data were thematically coded. Following the principle of the constant comparative method, each transcript was repeatedly re-examined and cross-compared to identify common themes and explore parents' underlying reasoning. Particular attention was paid to deviant or contradictory cases and to the group dynamics.</p> <p>Ethical approval for the study was obtained from the Faculties of Law, Financial Studies and Social Sciences Ethics Committee at the University of Glasgow.</p>
Population and perspective	10 parents. Mean age of children was 7 years.
Inclusion Criteria	<p>People who share specific characteristic(s) The children had autism</p> <p>Parents of children who had a specified age range Aged 14 years and under</p>

Exclusion criteria	None reported
Relevant themes	<p>3 Themes were identified:</p> <p>1. Raised uncertainty about MMR as a cause of autism. A prominent theme of the discussions was that the MMR controversy had contributed to considerable uncertainty among the parents about the causes of autism.: "...if you look at my son he has all these severe allergies and he reacts to everything and I mean, we have to prepare all his food separately and all the rest of it, and he's so sensitive, and I always say his immune system is wonky... totally off kilter..."</p> <p>2. Self-blame and anger. Another important theme which arose spontaneously in all the groups was that some parents believed that they had ignored early warning signs that their child was not healthy, and had then sanctioned a vaccine that may have caused autism.: "I blame myself... being his mum, I had to have done something wrong for him to be like that... the majority of people need a cause... everybody needs to know why your child is the way they are."</p> <p>3. Difficulties in subsequent decision-making and the role of health professionals. It was common for parents to describe how the controversy had made them anxious about subsequent MMR decision-making: "I thought... God forbid, I don't want both my children having autism; if I had a choice there's neither of them would. But after what's happened to our son there's no way on God's earth I wanted this to happen to my second one."</p>

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research has some value

Section	Question	Answer
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Hilton, 2006

Bibliographic Reference Hilton, Shona; Petticrew, Mark; Hunt, Kate; 'Combined vaccines are like a sudden onslaught to the body's immune system': parental concerns about vaccine 'overload' and 'immune-vulnerability'.; Vaccine; 2006; vol. 24 (no. 20); 4321-7

2 Study Characteristics

Study design	Focus Groups
Aim of study	To explore parents' concerns about immune overload and examine how parents relate this concept to their own children's health and vaccine decision-making.
Behavioural model used	None stated
Study location	UK
Study setting	Community
Study dates	2002 to 2003
Sources of funding	Medical Research Council
Study methods	<p>A brief topic guide developed through pilot work included beliefs about childhood immunisation and the vaccines in the current Childhood Immunisation Programme, experiences of childhood infectious diseases, and factors affecting vaccination decision-making.</p> <p>All groups were facilitated by an investigator, recorded with the respondents' permission and transcribed in full. The topic guide was kept brief and the investigator encouraged parents to lead much of the discussion. The investigator only intervened to prompt parents to explain, confirm or justify their position so that their opinions could be examined in greater depth. Incorrect assumptions were only clarified by the facilitator during the debriefing session that followed the focus groups and parents were encouraged to take leaflets and seek explanations from trained professionals.</p> <p>To enable systematic comparisons to be made across the large amounts of data, each transcript was checked and imported into NVivo 2.0. Data were thematically coded and, following the principle of the constant comparative method, each transcript was repeatedly re-examined and cross compared to identify common themes and explore parents' underlying reasoning. Once all the relevant extracts of data pertinent to 'fears about vaccines', 'immune-overload' and 'status of the immune system' had been retrieved and checked they started to develop a coding frame around which to develop research questions. Particular attention was paid to deviant or contradictory cases and to group dynamics.</p> <p>Ethical approval for the study was obtained from the University of Glasgow ethics committee for non-clinical research involving human subjects. All names used are pseudonyms.</p>

Population and perspective	<p>Eighteen focus groups were conducted. This method was selected because it offered considerable scope for participants to set the agenda and develop discussion around topics important to them.</p> <p>The 72 participants were purposively selected to ensure the maximum variation possible. Participants were from a range of ages, socio-economic circumstances, and family circumstances, including first-time mothers, more experienced mothers, single fathers, and parents with multiple social problems. The sample also included parents with a range of vaccine decision-making outcomes, including parents who had fully immunised, opted for single vaccines, rejected MMR, and rejected all vaccinations. Four groups were conducted with parents who were anticipated to have a particular interest in vaccination: two with parents who had autistic children, and two with parents who had an immune-compromised child following chemotherapy.</p> <p>By necessity, some focus groups were with parents from pre-existing groups, some with people who had passing acquaintance (e.g. children in same play scheme), and some with people who were strangers to each other. The pilot work suggested that parents were highly involved with the topic and that small groups, of between three and five persons, were necessary to allow each parent enough time to express their views and opinions.</p>
Inclusion Criteria	<p>Parents of children Selected to ensure maximum variation</p>
Exclusion criteria	<p>None reported</p>
Relevant themes	<p>2 Themes were identified:</p> <p>1. Conceptualising immune-overload. A main concern parents raised about the current Childhood Immunisation Programme was that some children might be prone to 'immune-overload': "I mean but you think about it, you know, if you were given a shot of caffeine and it was just caffeine with no water in it, you know, that's gonna be far more potent for your body than you know, giving it with water, caffeine with water. You know, so why would you not expect your children to have a bad reaction if they're given something that's so potent?"</p> <p>2. Immune vulnerability. Parents commonly spoke about ensuring that their children were in good health on the day of immunisation and about how they would not take an ill child for vaccination even if the illness was minor. There were many instances where parents spoke about deciding not to immunise with MMR on the grounds that they believed that their child's immune system was unable to cope with the stress of receiving several antigens at once. For example, one mother stated: "If they're not well I just cancel the appointment, cos I don't think it is worth the risk of causing them long-term problems."</p>
Additional information	<p>During the main fieldwork period the Iraqi War dominated the news in Britain, and news coverage of the MMR vaccine had a low profile.</p>

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes

Section	Question	Answer
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Can't tell
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low <i>(The details of how recruitment was conducted is not given. However, the principles of recruitment and the people recruited appear to be alright.)</i>
	Relevance	Highly relevant

1

Hilton, 2007c

Bibliographic Reference Hilton, Shona; Petticrew, Mark; Hunt, Kate; Parents' champions vs. vested interests: who do parents believe about MMR? A qualitative study.; BMC public health; 2007; vol. 7; 42

2 Study Characteristics

Study design	Focus Groups
Aim of study	To examine parents' views on the role the media, politicians and health professionals have played in providing credible evidence about MMR safety.
Behavioural model used	None stated
Study location	UK

Study setting	Community
Study dates	2002 to 2003
Sources of funding	Not reported
Study methods	<p>Eighteen focus groups were conducted with parents living in Central Scotland. Purposive sampling was used to obtain a diverse sample of parents in terms of age, socio-economic circumstances, likely views about vaccination, and family circumstances, including first-time mothers, more experienced mothers, single fathers, and parents with multiple social problems. The sample also included parents with a range of vaccine decision-making outcomes, including parents who had fully immunised, opted for single vaccines, rejected MMR, and rejected all vaccinations.</p> <p>Two additional groups were conducted with parents who had autistic children and with parents who had an immune-compromised child following chemotherapy. Following pilot work, the focus groups were held with small groups of between three and five people to allow each parent enough time to express their views and opinions and to facilitate later identification of individuals.</p> <p>A topic guide for the discussions was developed through pilot work. The guide included parents' understanding of the evidence about the safety of the MMR vaccine and their perceptions of the role that the media, politicians, and health professionals have played in the controversy. The discussions lasted between one and two hours and were facilitated by an investigator. To enable systematic comparisons to be made across the large amounts of data, each transcript was checked and imported into NVivo. Data were thematically coded and, following the principle of the constant comparative method, and rigorous analysis, each transcript was repeatedly re-examined and cross compared to identify common themes and explore parents' underlying reasoning. Once all the relevant extracts of data had been retrieved and checked they started to develop a coding frame around which to examine parents' concerns and views about MMR safety. Particular attention was paid to deviant or contradictory cases and to group dynamics using field note observations. Ethical approval for the study was obtained from the Glasgow University Ethics Committee for non clinical research involving human subjects.</p>
Population and perspective	Eighteen focus groups were conducted with a range of parents, including 64 mothers (age range 15 to 53 years, mean age 32 years), and eight fathers (age range 31 to 51 years, mean age 39 years).
Inclusion Criteria	<p>People with certain health conditions Some children were immunocompromised. Age restrictions were relaxed for them.</p> <p>Parents of children who had a specified age range Age 6 years and under</p>
Exclusion criteria	None reported
Relevant themes	<p>5 Themes were identified:</p> <ol style="list-style-type: none"> 1. Other parents as credible sources of information on the risks of MMR: "I just don't think enough research has been done really, one way or the other, to say whether it is completely safe." 2. The credibility of the media as a source of evidence: "... I think there's a sense that there's a kinship with other parents that you just don't have with, you know, doctors... And I think as well, you know, that the evidence that scientists use, it's just stuff that just goes in and out your ears. You just can't comprehend it. It's not written for

	<p>parents, and then when they do write it for parents you just wonder, you know, what their motives are because there are so many big players, so many people with their own interests that it's easier to believe other parents. You want to believe other parents."</p> <p>3. The credibility of politicians as a source of evidence: [Discussing Tony Blair] "I don't really think it is an issue of the baby's privacy, either he has had it, or not... He should come out and say."</p> <p>4. Health care professionals as sources of evidence on MMR: "What do you do as a parent? You don't know who to trust. Because these are the people- you're meant to trust your doctor implicitly and yet people are saying well, you know, they're getting paid for having so many people vaccinated and all this, and you start thinking 'well... who's got my wee boy's best interests at heart'."</p> <p>5. "That doctor..." Andrew Wakefield as a credible source: "See, really, afore this all came out, that doctor, that doctor should have had their facts perfect, the facts that they should have been right before they came away out with all this. It just seems as if they've blew it all out of proportion and then they retract some of it".</p>
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1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

2

Hilton, 2011

Bibliographic Reference Hilton, Shona; Smith, Emily; "I thought cancer was one of those random things. I didn't know cancer could be caught...": adolescent girls' understandings and experiences of the HPV programme in the UK.; Vaccine; 2011; vol. 29 (no. 26); 4409-15

1 Study Characteristics

Study design	Focus Groups
Aim of study	This study therefore explores adolescent girls' understandings of ~HPV and its link with cervical cancer, and their experiences of vaccination in the year following the introduction of the vaccination programme, in order to identify gaps in knowledge which could have important implications for future cervical cancer prevention in the UK.
Behavioural model used	None stated
Study location	UK: Scotland (Strathclyde and Lothian regions) and nine in England (London region)
Study setting	Community
Study dates	Between December 2009 and May 2010
Sources of funding	This study was funded by the Medical Research Council.
Study methods	<p>Girls were recruited through posters, leaflets and adverts which were placed in a range of community settings including educational, community, and leisure and sport facilities. Adverts in local newspapers and strategically chosen websites such as Facebook, Bebo, and Jo's Trust (a cervical cancer support website) invited interested parties to contact the researcher. Girls were also recruited through community group leaders such as Girl Guide leaders, community workers running youth groups in socially deprived areas, school teachers or parents. Purposive sampling was used to recruit a diverse sample in terms of socio-economic circumstances.</p> <p>A topic guide, which was developed from the literature and pilot work, explored the following themes: knowledge and understandings about HPV infection and its link to cervical cancer; beliefs about safer sex and personal risk in relation to HPV; understandings and concerns about HPV vaccination; vaccination experiences; and understandings of the importance of cervical cancer screening. The group discussions were facilitated by ES and lasted between 1 and 2 h. All discussions were audio recorded (with participants' permission) and transcribed verbatim. To enable systematic comparisons to be made across the large amounts of data, each transcript was checked and imported into NVivo 7. Data were thematically coded and systemically charted, following the principles of framework analysis. One of the benefits of framework analysis is that it allows a team of researchers to rigorously examine and cross compare data to identify common reasoning and themes, and ideas that are less common or specific to certain subgroups or individuals. Throughout the analysis attention was paid to any deviant or contradictory cases and to group dynamics using the full transcripts supplemented by field-note observations.</p>
Population and perspective	Eighty-seven schoolgirls aged between 12 and 18. Seventy eight girls had been vaccinated against HPV, four had refused the HPV vaccination, and four had delayed vaccination as they were undecided; data were missing for one girl.

Inclusion Criteria	<p>People who had a specified age range 12-18</p> <p>Adolescent girls</p>
Relevant themes	<ol style="list-style-type: none"> 1. Understandings about HPV infection: Typically, participants knew very little about HPV infection and its transmission. "Sally: Boys should be tested. Lorne: But you won't find HPV in an STI screening. Sally: What do you mean? Lorne: They won't be looking for it. Sally: Cervical cancer? Lorne: They might look for something else. How's the clinic going to tell you that he's got cervical cancer? Sally: I'm not sure. Can they? Facilitator: No" 2. HPV and its link with cervical cancer: Around half of the girls were aware that HPV infection could lead to the development of cervical cancer, but there was also some confusion about whether cancer could actually be prevented. "Cervical cancer. I thought it was just like any cancer, like kind of like lung cancer, it just kind of appears. . . like one minute you're all right and the next minute it's like you've got cancer. I thought it was like that, I thought cancer was one of those random things. I didn't know cancer could be caught like sexually transmitted at all" 3. Understandings of HPV vaccination: Typically girls referred to the HPV vaccine as the 'cancer jab' but struggled to provide more specific detail about what the vaccine protects against. "I think the vaccine, doesn't prevent you from having cervical cancer. But it can, it stops you from getting it bad. You might not get the full dose of cancer, but you still get a small dose" 4. Understandings about future cervical cancer prevention: It was common for girls to recall that during their HPV vaccination school nurses had told them they would still need to go for smear tests in the future. "Anna: I think she [Goody] hadnae been for a smear or something. Beth: But I would never no' go for one, though. . . it would be quite embarrassing. Sheona: You need to go. Lily: Well if I didn't go, I'd feel dead like guilty, like it would be like eating away at me. And then imagine if you didnae go for it and that happened? Like, that's quite bad. . . she could've stopped that a lot sooner." 5. Experiences of vaccination: Across the focus groups, it was common for girls to discuss feeling scared about getting the vaccine and worried about the level of pain caused by the needle. "Annie: To be honest, I'm not even sure if it's [the needle] clean. Izzy: No, I watched her, the nurse to made sure she took a new needle. Michelle: I know my doctor's is clean – I'm not sure about the school. You never know if the cleaners came in that day and they put the things for vaccination on the dirty table. Not clean at all."

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes

Section	Question	Answer
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Jackson, 2016

Bibliographic Reference Jackson, C.; Dyson, L.; Bedford, H.; Cheater, F.M.; Condon, L.; Crocker, A.; Emslie, C.; Ireland, L.; Kemsley, P.; Kerr, S.; Lewis, H.J.; Mytton, J.; Overend, K.; Redsell, S.; Richardson, Z.; Shepherd, C.; Smith, L.; UNderstanding uptake of immunisations in travelling aNd gypsy communities (UNITING): A qualitative interview study; Health Technology Assessment; 2016; vol. 20 (no. 72)

2 Study Characteristics

Study design	Semi-structured interviews
Aim of study	(1) Investigate the barriers to and facilitators of acceptability and uptake of immunisations among six Traveller communities across four UK cities; and (2) identify possible interventions to increase uptake of immunisations in these Traveller communities that could be tested in a subsequent feasibility study.
Behavioural model used	Social Ecological Model The Social Ecological Model (SEM) recognises that the determinants of individuals' behaviour are complex, multifaceted and operate at a number of levels (intrapersonal, interpersonal, institutional, community, policy). The researchers used the SEM to ensure that all levels of potential influence on immunisation behaviours were explored. Acknowledging the multi-level influences on immunisation uptake is particularly relevant for understanding health behaviours in socially excluded communities such as Travellers and for informing future interventions for both policy and practice.
Study location	UK (Bristol, Glasgow, York and London)
Study setting	Community (travellers) Healthcare (healthcare providers)
Study dates	Recruitment and data collection occurred between December 2013 and April 2015.

<p>Sources of funding</p>	<p>This project was funded by the National Institute for Health Research (NIHR) Health Technology Assessment programme.</p>
<p>Study methods</p>	<p>Phase 1: Gatekeepers who had longstanding relationships with the communities initially spoke with Travellers about the study and distributed printed information sheets that had been developed using community involvement. They identified potential participants. Snowball sampling also occurred. Participants were given a £15 gift voucher to thank them for their time.</p> <p>A mixture of one-to-one and small group interviews, depending on participant preference, with members of the same family/peer group were conducted. Interviews were held in locations known to participants, for example at home or in a community centre. Almost all interviews with the Roma participants were conducted with the assistance of an interpreter. With the consent of participants, interviews were recorded digitally.</p> <p>The discussions were carried out using a topic guide to ensure consistency of data collection although the format was flexible to allow participants to raise additional issues they considered important. The researchers focused primarily on issues arising from the UK childhood immunisation schedule but also explored views on antenatal whooping cough and flu vaccine in pregnancy as well as in older and at risk adults. Throughout the interview participants were prompted to consider the influence of the five levels of the SEM (described to participants as: self, family/friends, community, health professionals, local/national policy makers) on their views, experiences and ideas.</p> <p>A data analysis protocol was developed to ensure consistency across the teams as members were spread across the cities. The interviews were transcribed verbatim and data subjected to thematic analysis using the Framework approach. The stages of Framework analysis were undertaken independently for each Traveller community. Participant based group analysis was used to analyse the group interviews, with the contribution of each individual within the interview being analysed separately. A thematic framework was developed using interview transcripts selected to reflect a mix of participants and refined when necessary. The thematic framework was systematically applied to the interview data from across all four cities. The final step was a thematic cross-community synthesis. The final themes and sub-themes were mapped to the five levels of influence within the SEM.</p> <p>Phase 2: The researchers purposively sampled service providers in each of the four cities to ensure they interviewed a mix of 'frontline workers' (e.g. health visitors, practice nurses, community midwives, school nurses, GPs, range of community workers including third sector) and those working in more strategic/commissioning roles (e.g. local decision-makers in health protection/public health/health and wellbeing boards/CCGs). List of relevant service providers (their organisations and roles) were compiled from conversations with gatekeepers and local service providers), interviews with Travellers and service providers as well as the researchers own knowledge and professional practice.</p> <p>Interviews with service providers were predominantly one to one, with the exception of a small number of small-group interviews. Similar to phase 1, topic guides were developed and used to help ensure consistency both within and across the six communities, although the format was flexible. Use of the SEM informed the questions and key issues raised in phase 1 were integrated into the topic guide for discussion. Analysis was carried out in a similar manner to phase 1.</p> <p>Phase 3: A series of workshops with a subsample of participants from phases 1 and 2 who had agreed to be re-approached. These workshops are not relevant for this review and, as a result, the details are not presented here.</p>

	The National Research Ethics Service Committee Yorkshire and The Humber – Leeds East approved the study on 23 August 2013.
Population and perspective	<p>One hundred and seventy-four travellers were interviewed. They included a mix of gender (139 female, 35 male) and generations (83, parents, 38 grandparents, 29 adolescent girls, 5 pregnant women) as intended. There were 19 adults without children. Most participants lived on an authorised caravan, trailer or chalet site or were housed and no participants were currently living on the roadside or on unauthorised encampments.</p> <p>Thirty-nine service providers were interviewed. Twenty-two participants were frontline workers employed across a wide range of roles in the NHS (n = 13), local authorities (n = 5), education (n = 2) and the voluntary sector (n = 2). Seventeen participants were in more strategic roles in the NHS (n = 13 in children’s services, primary care and community services, screening and immunisation and health improvement) and local authorities (n = 4).</p>
Inclusion Criteria	<p>Women who are currently pregnant</p> <p>People aged 65 years or older</p> <p>Adolescent girls Eligible for HPV vaccine (given at 12–13 years in school) and for their three in- one booster (diphtheria, tetanus, poliomyelitis, given at 13–18 years).</p> <p>Adolescent boys Eligible for their three in- one booster (diphtheria, tetanus, poliomyelitis, given at 13–18 years)</p> <p>Parents who are part of a specific community Travellers</p> <p>Women Young women planning families</p> <p>Travellers living in extended families across generations The researchers aimed for approximately 1/4 to be men and 3/4 women.</p> <p>Grandparents</p> <p>Adults eligible for the flu vaccine Pregnant women, over 65 years and those with specified long term conditions</p>
Exclusion criteria	None reported
Relevant themes	<p>There were many common accounts, particularly across the English-speaking communities. Roma communities experienced additional barriers in terms of language and moving to a new country. Generally, men and women described similar barriers to and facilitators of immunisation uptake.</p> <p>The study identified many themes:</p> <ol style="list-style-type: none"> 1. Knowledge: There was widespread understanding among Travellers that immunisation protects against diseases and this appeared sufficient to encourage immunisation. A minority had good understanding and knowledge of specific immunisations was variable, better for childhood than adult vaccines. 2. Sources of information and advice: Health professionals were the key source of written and verbal immunisation information, especially for the current generation of parents. Schools were another source of information for mothers and adolescent girls in the English-speaking communities. Media, social media [particularly Facebook] and the internet were viewed as both positive and negative information sources. Female

members of the Scottish Showpeople community focused on negative information about the measles, mumps and rubella (MMR) vaccine.

3. Acceptance of immunisation: Many Travellers believed that the protective benefits of immunisation outweighed the risks, leading them to take up immunisations for themselves and their children. This was expressed by almost all of the Bristol and Glasgow Roma, three-quarters of the Bristol English Gypsy/Irish Traveller communities and Scottish Showpeople and half of the York English Roma and London Irish Traveller communities. Many followed the advice of health professionals and saw it as a normal thing to do; others weighed up the pros and cons and usually went ahead. Service providers, while cautious in expressing a view, believed that most Travellers now accept vaccinations.

4. Concerns about immunisation: A small minority of Travellers were anxious about their children experiencing pain and contamination from needles, but this did not usually deter them. A minority of English-speaking Travellers were concerned about multiple or combined childhood vaccines, particularly MMR, with some paying for single injections and a few completely rejected immunisation.

5. Beliefs about specific vaccines: There was general acceptance of immunisation in pregnancy except in the Bristol English Gypsy/Irish Traveller community, in which views varied, particularly about the whooping cough vaccine. MMR vaccine was a particular concern for Scottish Showpeople, whereas in Bristol, York and London previous measles outbreaks meant that most now accepted MMR vaccination. A few women worried about the safety of human papillomavirus (HPV) vaccine. A minority of mothers, fathers and grandfathers (particularly among the Bristol English Gypsy/Irish Travellers) were concerned that their daughters having HPV vaccine would imply that they were promiscuous. Concern that the adult flu immunisation caused flu was expressed by some English-speaking Travellers.

6. Intergenerational change: Many Travellers and service providers observed that the current generation of parents were more positive about immunisation than previous generations, and this was attributed to greater integration, improved literacy and increased trust in health professionals. This view was not expressed by Scottish Showpeople or their service providers.

7. Interpersonal influence: Experiential knowledge and advice was still passed down through generations, especially among Irish Travellers in Bristol and London. Very few spoke of friends influencing immunisation decisions.

8. Decision-making: Mothers tend to see themselves as the main decision-maker about childhood immunisation and believed this to be the community norm; some jointly make decisions with their partners.

9. Language and literacy: Language and literacy barriers existed for the Bristol and Glasgow Roma communities, leading to a strong reliance on interpreters, who are in short supply. Literacy was also a barrier among the English-speaking communities. There was a widespread preference for simple, written immunisation information with pictures and clear verbal explanations.

10. Discrimination: A small minority in the English-speaking communities described experiencing discrimination from health services. No Roma participants expressed this. Service providers in each city gave examples of discrimination against Travellers by NHS staff, suggesting that this was mainly a result of poor understanding of Traveller culture and inexperience of working with Travellers.

11. Housing: Service providers in Bristol, York and Glasgow suggested that isolation and Traveller families being forced to move home were barriers to immunisation

uptake. Glasgow service providers spoke of poor, crowded housing conditions for the Romanian Roma families.

12. Travelling: York English Gypsy and Scottish Showpeople were perceived to be settled, which facilitated uptake of immunisation. Views on the influence of travelling on immunisation were more mixed for the Bristol English Gypsy/Irish Traveller and London Irish Traveller communities. Travelling by the Roma communities was mainly discussed in terms of arrival in the UK.

13. Attendance at school: School attendance was mainly discussed by female Traveller participants and service providers, with a minority commenting that some adolescent girls do not attend secondary school, which is a barrier to receiving immunisations such as HPV. This was not perceived to be an issue for Scottish Showpeople.

14. Poverty: Service providers spoke of the impact of poverty on the Bristol Roma, York English Gypsy and Glasgow Roma (particularly Romanian families), and saw it to be linked to language, employment, benefit systems and housing.

15. Access to health services: A minority of Travellers and service providers described problems accessing health services [e.g. registering with a general practitioner (GP) practice, booking appointments and lack of time with GPs]. This led some to use out-of-hours doctors or the accident and emergency department. Service providers working with Roma communities identified other barriers (e.g. a lack of understanding of how the NHS works when first arriving in the UK).

16. Relationships with health professionals: Trustful relationships and continuity of care were valued. Many Travellers described positive immunisation encounters with health professionals. A minority of the English Gypsy and Irish Traveller communities in Bristol, York and London described a lack of trust in doctors (usually based on a particular incident). Roma participants did not describe any negative experiences with health professionals and the Scottish Showpeople were rarely negative. Service providers acknowledged the time taken to develop good relationships with Travellers and emphasised having the 'right person' in specialist roles.

17. Recall and reminders: Most Travellers considered recall letters, reminder texts and telephone calls to be effective. Face-to-face reminders were appreciated, as they provided the opportunity for discussion. Service providers used everyday contact with Travellers to prompt them about immunisation. In Bristol and Glasgow, the recall and reminder systems had been adapted for the Roma communities.

18. Attending appointments: A minority of Travellers described their frustration in waiting several weeks for appointments. Suggestions for improving attendance were drop-in sessions and walk-in clinics. Service providers described a flexible approach to providing appointments (e.g. opportunistic immunisation, specific clinics for Roma families). Delivering immunisations on Traveller sites was viewed by most Travellers and service providers as only appropriate for those who cannot attend the GP practice.

19. Record keeping and monitoring: Service providers commonly observed that NHS systems did not routinely record Traveller ethnicity, with the result that uptake of immunisation was unknown, affecting funding and targeting of services. A different challenge was identified by those working with the Glasgow Roma community, namely a lack of records on individuals' immunisation histories.

20. Joined-up working: A common view among service providers was that working in partnership within, and across, organisations is important. Examples were offered

	<p>within health, between health and education, health and social care/housing, health and local authorities and with the police.</p> <p>21. Local and national strategies: A small minority of Traveller women spoke of national policy in the context of valuing free immunisations and mandating for childhood immunisation. Service providers working with the Glasgow Roma community spoke extensively of local and national strategies for Roma. Specialist health visitor and community health link roles were unanimously viewed as important.</p> <p>22. Funding: Many service providers said a lack of/cuts in funding inhibited their general immunisation work, as well as their targeted work with Travellers, including a loss of specialist health visitor posts. Those working with the Roma communities suggested that there was little recognition of the complexity of this work, which impacted on funding.</p> <p>23. NHS reforms: Service providers described how the 2013 reforms in England challenged the delivery of immunisation and health visiting services, as well as threatening targeted services for Travellers.</p>
Additional information	<p>The 19 adults without children do not fall into the target population for this review which covers all people who are eligible for vaccines on the routine UK immunisation schedule and their families and carers (if appropriate). Where possible the views of these people were not extracted.</p> <p>Themes specific to influenza vaccination were not extracted as this is covered by another guideline and is out of scope for this review</p>

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes

Section	Question	Answer
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant <i>(Although some of participants did not match the population for the review, they were only 11% of the participants. Since the vast majority of participants did match the review protocol the study was not downgraded for relevance. In addition, themes relating to flu vaccination specifically were not extracted.)</i>

1

Jackson, 2017a

Bibliographic Reference Jackson, Cath; Bedford, Helen; Cheater, Francine M; Condon, Louise; Emslie, Carol; Ireland, Lana; Kemsley, Philippa; Kerr, Susan; Lewis, Helen J; Mytton, Julie; Overend, Karen; Redsell, Sarah; Richardson, Zoe; Shepherd, Christine; Smith, Lesley; Dyson, Lisa; Needles, Jabs and Jags: a qualitative exploration of barriers and facilitators to child and adult immunisation uptake among Gypsies, Travellers and Roma.; BMC public health; 2017; vol. 17 (no. 1); 254

2 Study Characteristics

Secondary publication of an included qualitative study - see the evidence table and risk of bias/relevance judgements under the main reference	Please refer to UNderstanding uptake of immunisations in travelling aNd gypsy communities (UNITING): a qualitative interview study by Jackson, C.; Dyson, L.; Bedford, H.; Cheater, F.M.; Condon, L.; Crocker, A.; Emslie, C.; Ireland, L.; Kemsley, P.; Kerr, S.; Lewis, H.J.; Mytton, J.; Overend, K.; Redsell, S.; Richardson, Z.; Shepherd, C.; Smith, L. in Health Technology Assessment; 2016; vol. 20 (no. 72).
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3

Jackson, 2017b

Bibliographic Reference Jackson, Cath; Yarwood, Joanne; Saliba, Vanessa; Bedford, Helen; UK parents' attitudes towards meningococcal group B (MenB) vaccination: a qualitative analysis.; BMJ open; 2017; vol. 7 (no. 4); e012851

1 Study Characteristics

Study design	Focus Groups Predominantly focus groups Semi-structured interviews
Aim of study	To explore existing knowledge of, and attitudes, to group B meningococcal disease and serogroup B meningococcal (MenB) vaccine among parents of young children. To seek views on their information needs.
Behavioural model used	None stated
Study location	UK
Study setting	Community
Study dates	2015
Sources of funding	Public Health England
Study methods	<p>They set out to recruit 60 parents of children under the age of 2 years across different parental age, socioeconomic status (using education as a proxy), ethnicity and number of children. Parents were recruited in London and Yorkshire. In London, parents were recruited in five Children's Centres (CC) from two London districts, which were selected for their sociodemographic mix. Written permission was secured to conduct the study in these CCs. The investigator attended mother and baby sessions in the CCs and distributed study information to parents, returning a week later to conduct interviews with consenting parents. In Yorkshire, parents were recruited from two mother and toddler groups (after securing permission from group leaders) by distributing study information and via an advert posted to a midwife-led Facebook group. Interested mothers contacted the investigator for more information and interviews were conducted subsequently. They did not formally record how many parents were approached and then agreed/ declined to be interviewed. A prespecified number of parents was recruited (60 parents).</p> <p>Individual and group interviews were conducted by the investigators prior to the announcement of the introduction of MenB vaccine. Both had considerable experience as immunisation researchers; and one was previously a health visitor. They presented themselves to participants as independent to the MenB vaccination programme and advised that any specific questions about immunisation would be answered after the interviews. The written study information reassured parents that they could end/leave the interview at any point without offering a reason why. Parents who individually contacted the research team to participate were interviewed on their own in their home or workplace.</p> <p>Parents recruited through the CCs and mother and toddler groups took part in group interviews conducted away from the main mother and baby session. The topic guide was piloted with four parents of children under the age of 2 years. No changes were made. Interviews explored:</p> <ul style="list-style-type: none"> > Awareness of MenB disease and vaccine > Perceptions of fever > Attitudes to use of paracetamol as a prophylactic for fever

	<ul style="list-style-type: none"> > Attitudes to an increased number of injections at each vaccination visit > Preferences for the number of injections at each vaccination visit > The most important information needed in the MenB leaflets <p>In the group interviews, the researcher asked participants in turn to respond to the interview questions.</p> <p>Individual interviews lasted between 28 and 57 min. Group interviews lasted between 30 and 65 min. All interviews were digitally audio-recorded.</p> <p>The audio-recordings were transcribed verbatim and personal data anonymised. The individual and group interview data were analysed together using the six steps of thematic analysis. The six steps were as follows:</p> <ul style="list-style-type: none"> > Familiarisation: both researchers became immersed in the raw data by 'repeated reading' of the transcripts and listed key ideas for coding. > Generating initial codes: initial codes and a coding framework were developed by an investigator, informed predominantly by the study objectives (a deductive approach), although novel views expressed by participants were also captured (an inductive approach). The interview data were then coded to this framework using NVivo. > Searching for themes: the codes were then organised into potential themes and subthemes. At this point, similarities and differences in views across education, ethnicity and number of children were explored. > Reviewing themes: the coded data within each potential theme were reviewed and the themes modified to ensure that they formed a coherent pattern. Each theme was then reviewed to see if it 'worked' in relation to the entire data set. > Defining and naming themes: a short paragraph was produced by an investigator for each theme and subthemes to define the 'essence' of the theme/subthemes and names were allocated. > Producing the report: the thematic analysis was written up. <p>Saturation of themes was reached. University College London Research Ethics Committee approved the study and parents gave written informed consent to take part.</p>
<p>Population and perspective</p>	<p>Information was gathered from 60 parents through 7 individual and 12 group interviews (range 2–7 parents). While the sample size was prespecified, data saturation occurred in that no new relevant knowledge emerged in the final few interviews. Two-thirds (62%) lived in London and one-third (38%) were from Yorkshire. Participants were predominantly female (92%) and two-thirds (65%) were first time parents. Their age range was 20–43 years. Half were white British (55%). Half (55%) were educated to Bachelor degree or higher. Two parents were medically trained. Participants' children (n=62) ranged from 12 days to 24 months of age. Almost all participants (92%) self-reported that their child/children were fully immunised.</p>
<p>Inclusion Criteria</p>	<p>Parents of children who had a specified age range Age 2 years and under</p>
<p>Exclusion criteria</p>	<p>None reported</p>
<p>Relevant themes</p>	<ol style="list-style-type: none"> 1. Knowledge about MenB and perception of risk of the disease: "I know that it can cause fatality, it's very important to be identified quickly, and get the child medical help as, as soon as possible; and you usually associate it with the rash, like you know the clear glass you put on the, on the rash, it doesn't go away." 2. Knowledge of and attitudes to MenB vaccine: "It's gonna need more information, I think, because it's a new vaccine, everyone's gonna be wary of it, it's not an old vaccine that's been around for years already, and I think for a new vaccine they're gonna need to put more information than that on it, personally, because obviously everyone's gonna be wary of it."

3. Managing fever: "Yeah, it's, it's scary. Two weeks ago she had a fever, she had it at about, almost 40 her fever was, and it, it is really scary, cos she would literally get really hot to where her face goes red, she's all sweating, then she'll cool down and get really, really hot again, and it's really hard to manage cos you don't know what to do, cos you don't know whether you should be putting cold, cold towel on them like, but you don't wanna shock their body into like all this cold, coldness at once, cos that's where they start, they start fitting. She had a, a small little fit, like a small convulsion, cos she got too hot."

4. Concerns about fever: "It (NHS Choices) tells you if a temperature lasts more than three, seventy two hours that you should be worried. I know from my personal experience when (name of daughter) had a temperature and I have, and it's not been breaking for more than about forty-eight hours, that's when I've started to worry."

5. Fever caused by vaccination: "And, and what I find reassuring with the imm, immunisation induced fevers you sort of know what it is, whereas if it's just a random, you know, incident, you'd never, I don't know, I'd be more worried if I, if it was non-immunisation related."

6. Would the fever deter parents from accepting MenB vaccine? The overwhelming majority of parents said that despite the link with fever, it would not prevent them having MenB vaccine.

7. Acceptability of administering paracetamol post-vaccination Routine administration of paracetamol: "About two months I didn't, but now he's getting a bit older I have got some in, in, just in case, cos of teething and vaccinations and everything else. But at, at, at two months probably not."

8. Administration of paracetamol as a preventive measure: "I'll prefer to split because her immune system, you know, can be built and have a chance; if you give too much, you never know what could happen. OK, it's in one sense that's like, you know, we have to come back a few times, but on the other hand it's my baby, you know, health, so..."

9. Acceptability of four injections at the 12-month booster visit: "I just put my trust in the fact that it's the best thing for her and I'm sure the healthcare professionals know what they are doing and so I don't think about it too much."

10. Information about MenB disease: "Well I like, obviously that, you know, this would make me, the statistics would make me think oh right, I need to get that done, the fear of the disease, you know, knowing what it is and what it can do would make, help me make the decision as well. And then, but then this one has all about the signs and symptoms and things like that, which, I mean you would want to know especially after the injection, more information about how to deal with the effects of the illness itself."

11. Information about MenB vaccine: "Well I like, obviously that, you know, this would make me, the statistics would make me think oh right, I need to get that done, the fear of the disease, you know, knowing what it is and what it can do would make, help me make the decision as well. And then, but then this one has all about the signs and symptoms and things like that, which, I mean you would want to know especially after the injection, more information about how to deal with the effects of the illness itself."

12 Information about fever and paracetamol: Parents identified the most important information about fever and paracetamol to be about how to administer paracetamol following MenB vaccination.

13: Timing of information: "I guess maybe with the letter that you get to take, you know. Yeah, cos I wouldn't want it to arrive for the vaccination and be like, right,

here's a leaflet do you want it now? I'd be like oh my gosh, I don't know, but maybe with a letter when you're due for your vaccination saying, you know, this is the new one, would you be happy to have it? At least then I can book then..."

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

2

Jama, 2018

3

Bibliographic Reference Jama, Asha; Ali, Mona; Lindstrand, Ann; Butler, Robb; Kulane, Asli; Perspectives on the Measles, Mumps and Rubella Vaccination among Somali Mothers in Stockholm.; International journal of environmental research and public health; 2018; vol. 15 (no. 11)

4 Study Characteristics

Study design Unstructured interviews

Aim of study	To explore factors influencing the decision of Somali parents living in the Rinkeby and Tensta districts of Stockholm, Sweden, on whether or not to vaccinate their children with the measles, mumps and rubella (MMR) vaccine.
Behavioural model used	None stated
Study location	Sweden
Study setting	Community
Study dates	2013
Sources of funding	WHO Regional Office for Europe
Study methods	<p>This study is a part of larger project using the tailoring immunization programmes (TIP) methodology developed by the World Health Organisation (WHO) to find motivators and barriers to vaccination. The study design is explorative with inductive qualitative approach. In depth interviews were used. The study was conducted in Rinkeby and Tensta, districts located in the northwest part of Stockholm with a high percentage of residents with foreign backgrounds.</p> <p>The population in Rinkeby district was 16,047 in 2013, including 1638 children under five years (8.9%). The population of Tensta was 18,866, including 1673 children under five years (10.2%). An estimated 30% of this population is of Somali origin. This sub-population was chosen for the study based on concerns expressed by health workers regarding vaccine hesitancy specifically among Somali parents, and low MMR vaccination coverage in these districts.</p> <p>Parents of children aged 18 months to 5 years were recruited for this study through different routes. A community stakeholders group consisting of local Somali nongovernmental organizations (NGOs), parent groups and mosque leaders assisted in the recruitment process. The leaders of these community groups were approached to inform potential participants, who in turn invited others who met the inclusion criteria in a process of snowball sampling. In addition, written invitations were available and posters pinned at the CHCs, but no participants were recruited through this channel. Thirteen mothers volunteered to be interviewed. Recruitment was stopped after 13 participants when no more new information was coming from the interviews. All of the invited fathers declined. One father was present during the interview with his wife but declined to comment.</p> <p>In-depth interviews (IDIs) were used to collect data. The participants chose the venues for the interviews. Most interviews took place at the interviewee's home, one took place at the CHC and three were conducted by phone. In most cases, only the interviewer, the note taker, the mother and her child were present, ensuring that confidentiality was maintained. The interviewer used probing and question rephrasing techniques to clarify questions and obtain details from the participants. The interviews were conducted in either Swedish or Somali, depending on the participant's choice. Each individual interview lasted around 30 to 60 min, with the exception of one that lasted 15 min.</p> <p>The interviews were transcribed verbatim and the researchers read all of the obtained data. The results were interpreted using a qualitative content analysis method. Peer debriefing was conducted, in which the preliminary results were shared with the rest of the team and thereafter member checking was conducted to ensure credibility.</p> <p>The study was approved by the Regional Ethics Committee, Stockholm, Sweden. All participants were given information about the study and its objectives prior to giving their verbal consent to participate. Verbal consent was chosen for anonymity of the</p>

	participants and was approved by the ethics board. The information provided to participants covered the aim of the study, voluntariness, confidentiality and the option to discontinue participation at any time during the study. The participants were also provided with the contact information of the responsible researchers. All collected data was coded to ensure anonymity and kept within the research group's locked facilities.
Population and perspective	The 13 Somali mothers were aged 25 to 42 years. Two of them had two children, six had three children, one had four children, two had five children, one had six children and one had seven children. Seven of the mothers had not vaccinated their youngest child within the selected age group for MMR and had decided to postpone the first dose of this vaccination until their child became older (delayers). The remaining six mothers had vaccinated their child for MMR at the appointed time (timely vaccinators).
Inclusion Criteria	Parents of children who had a specified age range Aged 18 months to 5 years Immigrants Somali nationals living in Sweden
Exclusion criteria	None reported
Relevant themes	5 Themes were identified: 1. Issues surrounding fear of child not speaking. Parents who chose to delay their child's vaccination had experienced peer pressure from other parents in their social network, including parents they did not know personally: "No I don't meet anyone [them] here in the playground, it's the CHC centre where we meet". 2. Unpleasant encounters with nurses. Some mothers who had had negative experiences related to how they were received at the CHC were compelled to delay vaccination: "It was bad information I think and also this nurse, she was tired of the work and maybe had worked there too long and seen too many faces. I felt the encounter was very boring. It was a burden for me to go there so I stopped going". 3. Heeding vaccinating parents' advice. All parents shared that they had friends and relatives who told them about their perceptions regarding autism being caused by the MMR vaccine: "... One of them is my best friend who is my only friend who came to this country before me and knows the language, works and knows much about health issues. She has one son and vaccinated her son". 4. Trust in nurses. Parents who had more trust in the nurses vaccinated on time, asked more questions and believed the answers they received from the nurses: "Now I ask advice from the nurse. Before it was the Somali talk I used to listen to . . . Nowadays I take what the nurse says." 5. Trust in God. All mothers who vaccinated for MMR on time had confidence in their decision to vaccinate their children: "I believe that God has given you your child yesterday and can as quickly give him something tomorrow. He can give him something after twenty years or when he is little. One should believe in God, that is very important".

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes

Section	Question	Answer
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Jama, 2019

Bibliographic Reference Jama, A.; Lindstrand, A.; Ali, M.; Butler, R.; Kulane, A.; Nurses' perceptions of MMR vaccine hesitancy in an area with low vaccination coverage; *Pediatric Health, Medicine and Therapeutics*; 2019; vol. 10; 177-182

2 Study Characteristics

Study design	Semi-structured interviews
Aim of study	To explore the perceptions, views, and experiences of CHC nurses related to vaccine hesitancy among parents in an area with low vaccination coverage
Study location	Sweden
Study setting	Districts located in northwest Stockholm
Study dates	Not reported
Sources of funding	WHO Regional Office for Europe
Study methods	Interviews lasted for 30 to 60 minutes and were guided by a few open-ended questions that prompted the nurses to give uninterrupted answers about the beliefs and attitudes of vaccine hesitant parents. The questions included: Can you tell me your experience related to hesitant parents at the child health clinics? Supportive questions were posed to obtain more detailed answers from the nurses. The

	<p>interviewers used probing and question rephrasing techniques to clarify answers and obtain further details from the participants.</p> <p>Content analysis was used to analyse the data . All interviews were audio-recorded and transcribed verbatim. Data analysis was performed by the research team and final analysis was conducted by the researchers to make use of their multidisciplinary views (public health staff, medical doctors, social scientist). Meaning units and later the condensed meaning units were used to generate codes. The categories of coded information were analysed and four themes emerged. To ensure accuracy and validity, all of the authors were involved in the data analysis.</p>
Population and perspective	11 nurses from Child Health Clinics directly responsible for vaccination programmes, with work experience ranging from 2.5 to 45 years. Most were paediatric nurses, some were district nurses.
Inclusion Criteria	Child Health Clinic nurses who were directly responsible for vaccination programmes
Exclusion criteria	None reported
Relevant themes	<p>4 main themes were identified:</p> <ol style="list-style-type: none"> 1. Vaccine hesitancy amongst Somali parents: Most parents who declined the MMR vaccine for their children were of Somali origin. Their decision not to vaccinate was made prior to visiting the Child Health Clinic and were unlikely to change their minds "Yes, it is the Somali group that is the commonest. It happens that few other people don't want to come for vaccination but yes, the largest group is the Somali" 2. Lack of confidence in MMR: MMR hesitancy was related to concerns about a link between the vaccine and autism. This was a strong belief in the Somali community and the nurses thought that peer pressure in the community discouraged parents from accepting the vaccine "some respond to me that they absolutely believe that they would like to vaccinate but are afraid that their children will become autistic and won't start to talk. And they say that they would never in their wildest imagination give such a vaccine with side effects. They say, "It is not possible you think I could do that!" I try to influence them to think otherwise but they have a very strong idea. So it has to come from within them, I think" 3. Loss of confidence in other vaccines due to the MMR: Nurses reported that some parents had started to refuse the third dose of diphtheria, tetanus, pertussis, polio, and Hib at 1 year because it was confused with the MMR, or parents thought that the MMR would be given at the same time "they often confuse it with the third vaccine [...] with MMR so they don't attend when the child is one year old and should have his third vaccine because they think it is MMR. I have had many of those cases and I have tried and sate with them and (explain) this is this and that is that and this is MMR [...] bla bla I tried different possible ways so they understand." 4. Complacency towards all vaccines: The nurses stated that some vaccines do not vaccinate at all because they believe that the diseases are not that dangerous "Yes, it does, but I have a feeling that they are really well studied and very knowledgeable about why they do not want to vaccinate. So I just have some families that do not vaccinate at all"

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3 **Assessment of risk of bias and relevance**

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research has some value
Overall risk of bias and relevance	Overall risk of bias	Low
Overall risk of bias and relevance	Relevance	Highly relevant

1

Johnson, 2014

Bibliographic Reference Johnson, Sally; Capdevila, Rose; 'That's just what's expected of you ... so you do it': mothers discussions around choice and the MMR vaccination.; Psychology & health; 2014; vol. 29 (no. 8); 861-76

2 Study Characteristics

Study design	Focus Groups
Aim of study	To explore the ways in which, in the focus group, mothers make sense of, and work with, varying advice and information (both from professional and non-professional sources), within their specific contexts and circumstances, particularly in relation to the MMR and vaccinations, and identify how this is mediated by positionings, practices and relationships.
Behavioural model used	A feminist and post-structuralist perspective
Study location	UK

Study setting	Community
Study dates	2011
Sources of funding	Not mentioned
Study methods	<p>Ethical approval was firstly gained from both Universities in which the authors are employed for a study involving a focus group with five mothers of preschool children between the ages of 12 and 18 months. The age of the children was chosen as the MMR vaccine is generally offered and administered when a child is between 12 and 13 months of age in the UK health care system (NHS) and therefore the mothers would have had recent experience.</p> <p>Participants were recruited through a Children’s Centre in the north of England who offered their facilities. A poster inviting participation was placed on a notice board at the Children’s Centre and the staff agreed to mention the study to any potential participants, offering them an information sheet explaining the study and outlining their rights as participant (it was also available near the poster). Potential participants were able to contact the researchers directly or provide contact details in a sealed envelope to be passed on to us to arrange a suitable time and date. On the day, participants were briefed verbally at the beginning of the focus group to reiterate the purpose of the study and their rights and asked to complete a participant details form and sign a consent form.</p> <p>The research focused on a specific group of women, in a particular location. These women were generally well educated, and, with one exception, not first time mothers.</p> <p>The discussion was audio recorder for later transcription and both the researchers were present. The focus group explored the participants’ experiences of engaging with advice around five broad areas:</p> <ol style="list-style-type: none"> 1. Views about immunisation and the MMR. 2. Decisions in relation to immunisation and MMR. 3. Advice about the MMR vaccination. 4. Media coverage of the MMR controversy. 5. Advice to mothers generally. <p>Participants were not asked if they had vaccinated their children. However, during the discussion all participants told us that they had.</p> <p>The focus group lasted for one hour and 20 minutes and produced particularly rich data. Though all women were encouraged to participate in the focus group, some inevitably contributed more than others, which is reflected in the quotes presented. However, their observations of the focus group were that they were comfortable and relaxed. All the participants knew each other and none of them seemed to display any concern or distress in relation to the reporting of the more vocal members. Once the discussion was completed, the participants were fully debriefed and given the opportunity to ask any questions about the research, reminded of their rights and provided with a thank you letter which included information about sources of support and advice. Participants were reminded of their right to withdraw themselves or their data from the study at anytime up to a given date, when data analysis began. They were also asked if they would like the opportunity to review the transcript or receive copies of any publications resulting from the research. None of the participants took up any of these options.</p> <p>The data were transcribed verbatim from the audio recordings and analysed from a feminist and poststructuralist perspective which looks to the construction and positioning of gendered subjectivities through attention to the production of knowledge, power and agency. As both authors acted as moderators for the focus group, both also contributed to the analysis of the data; discussing, developing and confirming the final analysis. Specifically, they each completed an initial independent analysis using thematic analysis while also noting relevant discursive features to</p>

	<p>afford context for, and provide insight into, the themes identified. This involved listening to the focus group recording while reading and rereading the transcript to identify key patterns. Once the initial analysis was completed the researchers exchanged codes and themes. The joint focus was then to employ these to explore how mothers report their experience of using advice and information in relation to the MMR and vaccinations, and to identify how these are described in relation to how mothers, in particular, are produced.</p>
Population and perspective	<p>Five mothers:</p> <p>Anna: Aged 26–35, with two children aged 15 months and 6 years. Anna described her current occupation as that of part-time sales assistant. She described her husband/partner as a skilled engineer who worked full-time. She self-defined as working class. Both Anna and her husband/partner were educated to 'A' Level or equivalent and she described herself as White British</p> <p>Emma: Aged 26–35, with two children aged 15 months and 3¼ years. Emma was not currently working and did not give any previous occupational details. She described her husband/partner's occupation as professional and full-time. She self-defined as middle class. Both Emma and her husband/partner were educated to degree level or equivalent. She described herself as White British</p> <p>Helen: Aged 26–35, with one child aged 12 months. Helen described her occupation as that of teacher and though she was not currently working, she planned to return to it. She described her husband/partner as not currently employed. She was educated to degree level and her husband/partner to 'A' level or equivalent. She described herself as Eastern European.</p> <p>Jane: Over 35 years of age, with two children aged 15 months and 5 years. Jane worked part time in Marketing. Her husband/partner was employed full-time as a skilled trader. She self-identified as working-class. Both Jane and her husband/partner were educated to GCSE level or equivalent and she described herself as White British.</p> <p>Louise: Over 35 years of age, with two children aged 13 months and 6 years. Louise described her occupation as being that of part-time IT Project Manager. Her husband/partner worked full-time in a skilled occupation. She was educated to degree level or equivalent and her husband to GCSE level or equivalent. She described herself as British.</p>
Inclusion Criteria	<p>Parents of children who had a specified age range Age 12 to 18 months</p>
Exclusion criteria	<p>None reported</p>
Relevant themes	<p>3 Themes were identified:</p> <ol style="list-style-type: none"> 1. Sourcing advice and information. Participants indicated that they had learned about the MMR and vaccinations through media coverage, the Internet, health professionals/the NHS and other mothers: "I think it's a red flag, when you see it, a red flag. I remember seeing a news report about that whereas all of the others ..." 2. Constructing 'Mother knows best'. Within this confusion, a recurring theme was that of the 'mother' as the final authority – you have to trust yourself: "You listen to everybody's advice and just go and follow your instincts in the end." 3. Negotiating agency. In comparison with other knowledge about their children's needs, knowledge about vaccinations was constructed as beyond a mother's: "Yes you know within yourself when your child's hungry, you don't know within yourself"

whether they're going to get measles therefore you trust the health care professionals."

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

2

Kaljee, 2017

Bibliographic Reference Kaljee, Linda M; Kilgore, Paul; Prentiss, Tyler; Lamerato, Lois; Moreno, Daniela; Arshad, Samia; Zervos, Marcus; "You need to be an advocate for yourself": Factors associated with decision-making regarding influenza and pneumococcal vaccine use among US older adults from within a large metropolitan health system.; *Human vaccines & immunotherapeutics*; 2017; vol. 13 (no. 1); 206-212

3 Study Characteristics

Study design	Focus Groups
Aim of study	The researchers explore barriers and facilitators for US older adults in relation to influenza and pneumococcal vaccine up-take focused on: 1) healthcare access and utilization; 2) information resources and trust in those resources; 3) social networks and norms for vaccine use; 4) experiences and perceptions regarding influenza and

	pneumonia; and, 5) experiences and perceptions regarding vaccines in general and seasonal influenza and pneumococcal vaccines.
Behavioural model used	None stated
Study location	USA
Study setting	The Henry Ford Health System (HFHS) is a large integrated health system in the Detroit Metropolitan Area. In 2014, over 290,000 patients visited 30 primary care clinics with 28% of those patients 65 y and older. Data were collected at 3 of these primary care clinics including one in downtown Detroit serving primarily African American and lower- and lower-middle income communities and 2 in suburban locations serving a more ethnically diverse mix of lower-middle and middle income communities.
Study dates	2014
Sources of funding	Not stated
Study methods	Participants were recruited by research staff during routine office visits. Potential participants were provided with information about the study and given information about time, and place of the focus groups. Reminder phone call were made the day before each group.
Population and perspective	Forty-eight out-patients participated in 8 focus group discussions including 4 each in urban and suburban clinics. In the urban clinics, 92.9% of participants were female and 100% were African American. In the suburban clinics, 70.6% of participants were female and 52.9% were African American, 41.1% White, 3% Latino, and 3% no response. Mean age = 67.1 years
Inclusion Criteria	People aged 65 years or older
Exclusion criteria	None reported
Relevant themes	Five themes were discussed: 1) Healthcare access and utilization Primary issues were costs and transportation. Respondents also discussed self-treatment for many symptoms associated with influenza and pneumonia. Some respondents were reluctant to use the emergency room because of cost and waiting time. “Not being able to get a prescription at the most convenient place. Like if your doctor’s here and the pharmacy is here, but your insurance won’t cover it (at that pharmacy), you’ve got to go somewhere else....” 2) Communication and information sources Trust in health provider was an integral component of communication and response to information provided. Respondents want to be heard and related instances in which they complained about poor service. “The pharmacist is telling you one thing the doctor is telling you something else. [You need] to put both of them together....” 3) Social networks A number of respondents discussed how their decisions regarding adult vaccines

<p>were affected by experiences and family members and friends. “...I told my mother to get it...even though she’s in her 80s, she said she never had it before...she won’t get a lot of shots...but I talked to her and told her and she went and got it this year....”</p> <p>4) Disease experience, knowledge, and perceptions Most participants had some personal experience with influenza, fewer had experience with pneumonia, In general respondents felt that pneumonia is more serious than the flu. “And I would say using myself as an example, I get many more flus than my husband because I have asthma....and he doesn’t even get the shot”</p> <p>5) Vaccine experience, knowledge, and perceptions Respondents had a wide range of experiences with use of vaccines, as well as perceptions regarding the efficacy and risks and benefits associated with vaccine use. Respondents were concerned about short- and long-term side effects and getting sick from the vaccine. Respondents were also concerned about how vaccines are developed and tested. “So, then you have all the risks that come with the vaccines and you don’t have 100% benefit”</p>

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can’t tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research has some value
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Kaufman, 2019

Bibliographic Reference Kaufman, J.; Attwell, K.; Hauck, Y.; Omer, S.B.; Danchin, M.; Vaccine discussions in pregnancy: interviews with midwives to inform design of an intervention to promote uptake of maternal and childhood vaccines; Human Vaccines and Immunotherapeutics; 2019; vol. 15 (no. 11); 2534-2543

2 Study Characteristics

Study design	Semi-structured interviews
Aim of study	They explored how midwives think and feel about vaccination; its place in their professional practice; their receptivity to delivering behaviour change oriented interventions; and the feasibility of intervention delivery in different antenatal settings.
Behavioural model used	None stated
Study location	Australia
Study setting	They interviewed seven midwives from the Royal Women's Hospital (RWH) in Melbourne, Victoria, and five from King Edward Memorial Hospital (KEMH) in Perth, Australia.
Study dates	Not provided. Study was submitted for publication in 2019.
Sources of funding	The Communicable Disease Control Directorate, Department of Health, Government of Western Australia and the University of Melbourne Bickart Clinician Research Fellowship; University of Melbourne.
Study methods	<p>They recruited midwives working in public antenatal settings within two large tertiary hospitals: King Edward Memorial Hospital (KEMH) in Western Australia and the Royal Women's Hospital (RWH) in Victoria. Studying midwives in two different institutions in two Australian states enabled them to consider the impact of differences in healthcare delivery as dictated by State governments, and hospitals within states, who make independent decisions about funding, policy, and practice. At the RWH, vaccines were not available on site and pregnant women needed to make a separate visit to their GP. At KEMH, midwives were trained and authorized to deliver vaccines to pregnant women onsite, either in the clinic rooms or at the hospital immunization clinic. For many shifts, there was also a dedicated immunization midwife who discussed vaccines with pregnant women in the waiting area.</p> <p>In each site, they engaged with clinic managers to develop an understanding of the various clinics, birthing models and care practices. They asked clinic managers to identify potential key informant midwives to interview, representing a range of roles and levels of experience, and distributed the study recruitment flyer. Interested midwives contacted the research team to organise an interview. To recruit additional midwives, clinic managers also disseminated the recruitment flyer through internal staff emails, and participating midwives were asked to share the study details with their peers (snowballing). Midwives were eligible to participate if they were involved in some aspect of antenatal care provision and were able to speak and understand English. All participating midwives were consented, completed a brief anonymous demographic survey, and received a \$25 card for their time.</p> <p>Ethics approval was obtained.</p> <p>They conducted semi-structured individual interviews, both telephone and face-to-face, based on scheduling availability and preference of the participant. Interviews</p>

	<p>generally lasted between 20 and 40 min. All interviews were audio-recorded and professionally transcribed. The two interviewers used a single, open-ended question guide. The questions focused primarily on the participants' perceived professional role, with regard to vaccination, and the nature of their current practice and communication about vaccines. They also asked them to describe how they recorded vaccine data. Research team meetings were conducted regularly via telephone so that both interviewers could compare their experiences and incorporate reflections for improving subsequent interviews.</p> <p>Thematic analysis was performed on all interview transcripts, coding them in NVivo. Given that their aim was to understand midwives' views and roles to inform intervention design, they used template analysis to keep their analysis focused on the applied purpose of the study. Template analysis is a structured yet flexible form of thematic analysis that generally begins with some a priori themes, which are then adapted through initial analysis to form a coding template. They derived a priori themes from the TIDieR (Template for Intervention Description and Replication) checklist, which outlines the key features to be reported when describing complex interventions. While these themes provide overarching categories for interview data related to intervention features, they were not specific or detailed enough to capture the full range of the interview data. Therefore, two authors separately analysed the first interview transcript, using open coding to inductively identify themes emerging from the text. Each author grouped these emerging themes into the template categories where possible, and added or modified categories as necessary. Along with a third author, they discussed and compared their initial analyses and agreed on a single customized coding template fit for our study purpose. One author then coded all transcripts with this template. Further minor additions and modifications to the template were discussed periodically with the full study team.</p>
Population and perspective	12 midwives.
Inclusion Criteria	Registered midwives
Exclusion criteria	None reported
Relevant themes	<p>Seven themes were identified in the results:</p> <p>1) WHO are midwives? a) Perceived roles and professional values Some saw vaccination as a minor or routine element, while others viewed it as a key feature of their role. There was widespread agreement that delivering and discussing vaccination was a task shared by a number of other health professionals "I think it's a really important role for us to educate the women about [maternal vaccines]...The other childhood vaccinations, we don't really discuss as much because that's generally what the child health nurse and the GP picks up." b) Previous training Most midwives received little or no training about vaccination or techniques to effectively communicate about vaccines during their degree programs "I think we did a bit at uni [university] for half an afternoon or something"</p> <p>2) HOW do midwives communicate about and/or deliver vaccines? a) Making recommendations All the midwives said they recommended maternal influenza and pertussis vaccines and infant hepatitis B, but there was considerable variation in the perceived origin of the recommendation.</p>

“Sometimes I say the doctors recommend it. I don’t actually say ‘I recommend that you have this.’”

b) Message content and framing

the midwives all shared the basic information about disease risks, side effects, vaccine benefits, and schedule. Some also said they provided details about vaccine ingredients, government policies, or more physiological details about vaccines in pregnancy.

“I usually talk a little bit more about protecting the baby with the whooping cough.”

c) Description and perceptions of vaccine delivery and related practices

Maternal vaccines are not routinely delivered at the location the midwives work. Some midwives perceived this as a potential

barrier, though it wasn’t obvious how it could be addressed.

“It would be convenient if we could provide [vaccines], but I also don’t think we’ve got the time.”

3) WHEN and HOW MUCH vaccine information do midwives provide?

a) Timing and frequency

There is no standardized point in pregnancy to discuss maternal vaccines – it is up to the individual midwives to

remember to raise the topic and make time to share information and answer questions.

“Usually at booking I would mention [maternal vaccines]...and then I’d often bring it up again after the thirty week mark just to see whether they’ve had it or not”

b) Information quantity

Most midwives agreed that vaccine discussions were relatively brief – generally 1–5 min long. Some said most women did

not need or want more detailed information, others said they lacked information to provide or did not feel confident discussing vaccines in more depth, and some described time constraints.

“It’s usually quite a brief conversation probably because there isn’t a lot of actual information that we can access”

4) WHERE do midwives practice and communicate?

Midwives work across different rooms throughout the day, with mixed access to resources.

5) WHAT vaccination resources are available or needed?

a) Currently available resources

Midwives described utilizing a range of resources to support their vaccination discussions with expectant parents, but there was no single, comprehensive resource available to them

“The book that we initially give to women, there’s like a section about this [indicates] long that talks a bit about flu, which again, it’s not really helpful for us.”

b) Suggested resources and training

The value of a single source of information was highlighted. Several midwives from Victoria also agreed that

printed fact sheets would be helpful, and the majority from both hospitals were strongly in favour of online resources, like an educational website or app for parents.

“Evidence-based websites, yeah that would be amazing, that would be really helpful”

6) PERCEPTIONS ABOUT PARENTS’ knowledge and attitudes

a) Knowledge, gaps, and challenges

Some midwives felt women were generally well informed about both maternal influenza and pertussis vaccines, but many thought there were gaps in women’s knowledge.

“Women in pregnancy are very focused on the labour and birth...I talk about vaccinations and they glaze over.”

b) Attitudes towards maternal and childhood vaccines

The midwives agreed that most women seemed relatively accepting of vaccinations,

<p>with few questions or concerns. “The flu jab, they’re used to that and it’s, they’re having it, you know. The pertussis is one that, you know, it’s more new than the flu jab”</p> <p>7) BARRIERS AND ENABLERS to Vaccination delivery and/or implementation of a vaccine promotion intervention Barriers identified were Capacity (psychological and physical ability), Opportunity (physical and social), and Motivation (reflective and automatic).</p>

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	No
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Moderate <i>(Recruitment was conducted by someone who could have been a colleague at work)</i>
	Relevance	Highly relevant

2

Kennedy, 2014

Bibliographic Reference Kennedy, Catriona; Gray Brunton, Carol; Hogg, Rhona; 'Just that little bit of doubt': Scottish parents', teenage girls' and health professionals' views of the MMR, H1N1

and HPV vaccines.; International journal of behavioural medicine; 2014; vol. 21 (no. 1); 3-10

1 Study Characteristics

Study design	Focus Groups Semi-structured interviews
Aim of study	To explore parents', teenage girls' and health professionals' views about three vaccines in Scotland: the previously controversial MMR vaccine and two newly introduced vaccines at the time of the study, the H1N1 vaccine and the HPV vaccine. The purpose was to determine views across the three vaccines and consider contextual influences on decision making.
Behavioural model used	None stated
Study location	Scotland
Study setting	Community and education
Study dates	2008 to 2010
Sources of funding	This study was funded in part through the NHS Lothian Health Service Research Programme and in part through funding from Edinburgh Napier University.
Study methods	<p>Clinical leads in the health service advertised and invited health staff to take part. Posters advertised for parent participants in mother and toddler groups, community and health centres and through clinical leads. In 2 two high schools that had volunteered to take part in the study, posters advertised the study and information packs were sent home to parents of interested young people.</p> <p>Methods were pragmatic and offered to participants flexibly according to their preference in order to encourage participation. The researchers conducted 15 interviews with mothers, two focus group discussions with girls and 12 interviews and seven focus group discussions with health professionals.</p> <p>Topics covered during discussions focused on eliciting participants' views and experiences of the MMR, H1N1 and HPV vaccines. These were digitally recorded and transcribed verbatim. The researchers followed standard methods for conducting a thematic analysis. Analysis was an iterative process. Initially, CGB coded individual transcripts for emerging categories, which she then compared and contrasted across transcripts amongst the same and different groups of participants until themes were refined and verified. Rigour was enhanced through discussion of emerging themes with other members of the research team and a study steering group.</p> <p>Ethics approval was granted for the study by the university ethics committee, local health research and development office and the education department.</p>
Population and perspective	A total of 74 participants took part in the study. Purposive sampling was used to recruit health professionals (n =51), parents (n =15; all mothers) and young people (n =8; schoolgirls aged 12–15 years). Of the 15 mothers, eight had babies or toddlers and seven had teenage girls. Mothers represented a range of socio-economic areas including areas where the MMR vaccine uptake had been lowest and different vaccination histories. These included two mothers who had either refused the MMR vaccine or had paid privately to have the vaccines administered as single doses and two mothers with teenage girls who had either refused the HPV vaccine or who had not completed three doses. Fourteen were of white British ethnicity and one was Polish. The 8 teenage girls came from two high schools where school nurses had

	<p>recently delivered the HPV vaccine and represented mixed socioeconomic backgrounds. All girls had received at least one dose of the HPV vaccine.</p> <p>The health professionals included managers involved in the organisation of the three vaccines (n =8), general practice nursing (n =7), health visiting (n =9) and school nursing (n =27) teams. Health staff worked in a range of socio-economic areas including urban and semi-urban areas. Staff differed in their involvement with administering vaccinations ranging from 'catch-up campaigns' to target those who had been missed; vaccinating specific groups (i.e., pre-schoolers or teenagers), shared vaccinations between practice nurses and health visitors and/or general practitioners, sole responsibility for vaccination. All school nurses were involved in the HPV vaccine delivery.</p>
Inclusion Criteria	<p>Parents</p> <p>Practicing healthcare professionals</p> <p>Adolescent girls 12-15 year olds</p>
Exclusion criteria	<p>None reported</p>
Relevant themes	<p>Themes were identified by the investigators relating (Influenza specific themes are not included):</p> <ol style="list-style-type: none"> 1. The MMR Legacy: 'Just that Little Bit of Doubt': Over a decade since the controversy, the MMR vaccine emerged as a contentious vaccine. "They're now saying there's no side-effects, that the MMR doesn't have any bearing on the autism, but there's still that risk factor if you couldn't say for 100 % sure that it didn't cause autism, so, but it was just mainly that little bit of doubt" (Mother). Some staff shared these doubts. "I have said to a mother in the past when the child was quite small just to wait maybe another month or so- not put [MMR vaccine] off drastically ... I don't have any scientific basis for that apart from talking to another medical person whose child had autism after the MMR vaccine" (Practice nurse). 2. New Vaccine Worries: participants also expressed concerns over vaccine safety for the two new vaccines (HPV and H1N1). "Have they tested it enough? Can they guarantee that it's not going to have long-term effects when you're 40?" (Mother) "There's always going to be...someone...that doesn't react properly and I... want to know about that as well and what happened to the people that got sick...not just they felt a wee bit sick but there was actually a reaction to it" (School girl) 3. Teenage Girls, Empowerment and the HPV Vaccine: Girls emphasised their capability for decision making for the HPV vaccine. This was echoed by mothers and school nurses who thought girls had adequate knowledge about HPV transmission and sexual health education to make informed decisions. This conviction contrasted with girls' own views. "They [Social Education classes] don't actually like tell you about smear stuff and cancer and that they just go on about smoking, drugs, alcohol and sex" (Schoolgirl). Several girls said that information about the HPV vaccine was insufficient and inconsistent, with only some receiving health leaflets. Some criticised the available information for being 'imbalanced'. Girls also said they would have preferred information highlighting personal and social experiences with the HPV vaccine from other girls to supplement official health information. School nurses shared some of the girls' views. "There needs to be more actually online, on social networking sites...And they're less likely to look at TV or pamphlets, it will be social networking sites, twitter" (School Nurse). 4. Mothers' Vaccine Roles: Mothers assumed ultimate responsibility for decision making for childhood vaccines. This could be problematic, as explained by a mother who had two boys diagnosed with autism "Like the swine

	<p>flu vaccination and any other vaccinations [my friends who have children with autism] are very nervous of giving them anything else just in case, even though they're like me and pretty much convinced that there isn't a link, there's still that: but what if?" (Mother). Underlying and unresolved vaccine concerns were apparent in vaccine decision making where concerns about one vaccine could be extrapolated to other vaccines and refused on that basis.</p> <p>5. Mothers' Vaccine Roles: these were less clear cut with HPV vaccination for teenage girls. Mothers emphasised collaborative discussions with their daughters and shared decision making. Mothers held the belief that their daughters would make 'the right decision' (i.e., opt for the vaccine). In the event that their daughter made an 'inadequate' choice due to fears of needles, mothers said they would intervene and offer guidance. Mothers still wanted to be consulted. School nurses recognised that the issue of parental consent for the HPV vaccine was poor and that public education was needed to address this issue.</p> <p>6. Health Professionals' Strategies: Engagement. Health professionals reported specific strategies to manage vaccination and vaccine concerns. Staff viewed some groups as more difficult to engage in vaccination than others. The nurse distinguished parents from deprived socioeconomic area with parents from, by implication, more affluent socio-economic areas. In affluent areas, parents were perceived to be more questioning of the MMR vaccine, to seek information online and to be influenced by 'alternative health beliefs'. Accordingly, staff related how they were required to adopt different strategies in managing different groups. Strategies for managing questioning parents, however, appeared more challenging as 'sometimes we don't have that information to give' (Practice Nurse) or there is too much information making decision making problematic. In some cases, staff acknowledged that there was little they could do: "There's one parent recently that would not under any circumstances get it done [MMR vaccine]—very fixed views and you have to wonder, what's the point really?" (Practice Nurse)</p> <p>7. Health Professionals' Strategies: Fear associated with the vaccination process was also a problem, especially with teenage girls and HPV vaccination. School nurses indicated knowledge of girls' misconceptions and their own roles in allaying fears. "We use larger and larger needles each time we come and the vaccine is about five times as strong each time! We have to reassure quite a lot it's the same." (School nurse)</p> <p>8. Health Professionals' Strategies: Trust between all parties was highlighted as essential, but easily undermined. "There was that death [reported in the media] and we were immunising at the same time. So there was a lot of concern that we had to deal with" (School Nurse).</p>
<p>Additional information</p>	<p>This study is included in the analysis for both 0-5 and 11-18 year olds. Data on the views of parents and healthcare professionals regarding MMR was extracted for the 0-5 age group. The views of teenage girls concerned HPV vaccination and are included in the 11-18 category along with parent and staff views.</p>

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes

Section	Question	Answer
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Keshet, 2021

Bibliographic Reference Keshet, Y.; Popper-Giveon, A.; "I Took the Trouble to Make Inquiries, So I Refuse to Accept Your Instructions": Religious Authority and Vaccine Hesitancy Among Ultra-Orthodox Jewish Mothers in Israel; Journal of religion and health; 2021

2 Study Characteristics

Study design	Semi-structured interviews
Aim of study	To examine the role attributed to religious leaders by Israeli ultra-orthodox Jewish parents when making decisions about childhood vaccinations
Study location	Israel
Study setting	Israeli ultra-orthodox Jewish community
Study dates	2019
Sources of funding	None reported
Study methods	<p>Snowball sampling was used to recruit Israeli ultra-orthodox Jewish mothers who declared that they do not vaccinate their children. The study intended to interview both parents, but only mothers consented to take part as they stated that they were the ones that made decisions about their children's vaccinations.</p> <p>Interviews lasted 60-90s minutes and included questions about their vaccination decision-making process and the impact that the rabbis' instructions had on it. Questions included "What is your attitude toward vaccination? Has it changed over</p>

	the years? Whom do you consult with on this matter? What sources of information do you rely on?”. Interviews were transcribed verbatim and systematic coding and inductive analysis was used.
Population and perspective	10 Israeli ultra-orthodox Jewish women (aged 29–61; average age: 39), all of whom were married with children. The women belong to different groups within Israel’s ultra-orthodox population: 3 Lithuanians, 4 Habad (Lubavitcher) hasidim, 1 Breslover hasid, 1 Sephardi, and 1 national ultra-orthodox. All participants lived in segregated ultra-orthodox communities or neighbourhoods.
Inclusion Criteria	Israeli ultra-orthodox Jewish mothers who declared that they did not vaccinate their children
Exclusion criteria	None reported
Relevant themes	<p>3 relevant themes were identified:</p> <p>1. We do whatever the Rabbi rules – Mothers stated that most ultra-orthodox parents vaccinate their children, in line with what Rabbis recommend “Ultra-orthodox women say “we do whatever the rabbi rules,” and the rabbi rules that we should vaccinate. I never heard of a rabbi who opposed it.”</p> <p>2. People who do not consult their Rabbi or defy his instructions – some mothers chose not to consult their Rabbi so that they did not have to go against his recommendations. Others thought that their Rabbi recommended vaccination without researching it and so they did not agree with his recommendations “There was, for example, a rabbi’s ruling... He said that we all should vaccinate, but I said to myself... If the rabbi doesn’t investigate the subject himself... he can’t rule on something he hasn’t tested... I took the trouble to make inquiries, so I refuse to accept your instructions”</p> <p>3. Vaccine safety – Some mothers had researched vaccination for themselves and were not convinced of their safety. Others had other children who had been ill after receiving a vaccination and attributed the vaccine to this. “I have a four-year-old nephew who was diagnosed with epilepsy half a year ago. I have no doubt that vaccines are involved... I know from my research that epilepsy is one of the problems caused by vaccination.” “How can I know for sure what will be injected into my child?... I am much more afraid [of the consequence of vaccination] than... [of being] unable to comply with the rabbi’s instructions... I realized that I’m much more afraid of the vaccines than of the diseases.”</p>

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Can't tell <i>(Few mothers recruited, only women who did not vaccinate their children were included, the ages of their children are not reported)</i>

Section	Question	Answer
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research has some value
Overall risk of bias and relevance	Overall risk of bias	Moderate <i>(Few mothers were recruited and only those who did not vaccinate their children. Ages of their children were not reported)</i>
Overall risk of bias and relevance	Relevance	Highly relevant

1

Kowal, 2015

2

Bibliographic Reference Kowal, Stephanie P; Jardine, Cynthia G; Bubela, Tania M; "If they tell me to get it, I'll get it. If they don't...": Immunization decision-making processes of immigrant mothers.; Canadian journal of public health = Revue canadienne de sante publique; 2015; vol. 106 (no. 4); e230-5

3 **Study Characteristics**

Study design	Semi-structured interviews
Aim of study	To understand how immigrant women accessed information and used it to make vaccination decisions for themselves and their children.
Behavioural model used	None stated
Study location	Canada
Study setting	Community
Study dates	2013

Sources of funding	Canadian Institutes of Health Research, Women and Children’s Health Research Institute, Health Quality Council of Alberta
Study methods	<p>They designed and conducted this research with a community partner, the Multicultural Health Brokers of Edmonton (MCHB). MCHB’s role primarily is to connect immigrant families to perinatal services as the women learn how to access health services in a Canadian context. MCHB, as a health service connector, helps ensure that women attend health appointments, where women may access vaccination and other health information. The focus of this research on vaccination during pregnancy and for young children was identified as important by the MCHB for their operations.</p> <p>MCHB members recruited participants from the South Asian and Chinese communities and from the Bhutanese refugee community.</p> <p>Eight years of age was chosen to help capture immunization experiences, both in origin countries and in Canada, across immunization events because scheduled immunisations are concentrated in children under the age of eight.</p> <p>They conducted in-person semi-structured interviews, approximately thirty minutes to one hour in duration. They co-developed the interview guide with MCHB. The interview guide contained open-ended questions on immigrant immunization experiences in origin countries and in Canada, perspectives with regard to immunisation regulations in Canada, and access to and use of health information in vaccination decisions. The questions allowed probing on prior immunization experiences, how the immigration process influenced women’s vaccination decision-making in Canada, and how communication strategies could be improved. Participants chose the language of the interview. MCHB members or translators hired through the School of Public Health, University of Alberta conducted foreign language interviews. The Health Panel of the Research Ethics Board at the University of Alberta approved this research.</p> <p>Using the content analysis method, they analysed verbatim English-language, and translated foreign-language, transcripts of the recorded interviews. They used NVivo software to organize, manage and analyse the data. They transcribed the English-language interview recordings and a professional transcription service simultaneously translated and transcribed the foreign-language interviews. They inductively coded and analysed the transcripts using content analysis informed by the constant comparison method. They coded the transcript after each interview, prior to subsequent interviews.</p> <p>By continually comparing transcripts, they explored similarities and differences between interviews, adjusted the interview guide and inductively built the codebook. A second investigator reviewed the two most complex transcripts (9% of interviews) to ensure the codes comprehensively captured key themes. To ensure credibility, they constructed a member-checking exercise that returned summary reports of individual interviews to each participant. They asked the participants to review the summaries to ensure the researchers accurately understood and interpreted participant perspectives. The report offered an opportunity for participants to add/subtract material or to ask additional questions. They integrated comments from the 21% of participants who responded into the final analysis. To further enhance the credibility of their analysis, they prepared a report of preliminary findings for MCHB, which outlined the main themes that emerged from participant interviews. They met with one MCHB representative from each immigrant community to discuss the report. They recorded and transcribed the meeting for inclusion in the final analysis.</p>
Population and perspective	<p>23 participants from the South Asian (8) and Chinese (10) communities and from the Bhutanese refugee community (5).</p> <p>Compared to other couple households with children, the household income of their sample had much lower median annual incomes than the city average of \$94,653. Furthermore, the education level of this group is low compared to the average woman</p>

	living in Edmonton, half of whom have completed some form of post-secondary education.
Inclusion Criteria	<p>Parents of children who had a specified age range Aged 8 years and under. 8 years of age was chosen to help capture immunisation experiences, both in origin countries and in Canada, across immunisation events because scheduled immunisations are concentrated in children under the age of 8 years</p> <p>Parents who are part of a specific community Inclusion criteria required participants to: 1) be born in India, Pakistan, China or Bhutan; 2) currently live in Edmonton; 3) have moved to Canada within the last eight years</p>
Exclusion criteria	None reported
Relevant themes	<p>5 Themes were identified:</p> <p>1. Vaccine Benefits Despite Adverse Reactions. Most participants trusted vaccine benefits even when they had experiences with adverse vaccination reactions: “Usually it’s for the child and so I think it’s okay. But there was once that after the vaccination, he developed a fever and a second time, he had some reaction. The first time was fine and the third time was smooth. Nothing serious and I think he is accustomed to it. He didn’t cry or fuss about it. I think it’s good.”</p> <p>2. Canadian Health Care. Participants trusted the Canadian government to ensure vaccine safety during development, manufacturing and delivery: “If these vaccinations are at the approval of the government and have gone through medical and scientific tests and it’s safe, I don’t think it’s a problem. But if it’s in China, I would be worried. Over here, I feel completely secure.”</p> <p>3. “Doctors Are God”. The participants repeatedly voiced trust in HCPs and HCPs’ health protection recommendations, including vaccination: “I think that because your doctor is supposed to be a professional, and they are the ones that suggested it, then it should not affect the baby... and I would get the injection.”</p> <p>4. Information gathering and use. The participants were passive in their information gathering. Participants received information almost exclusively from HCPs during visits to health clinics: “I just walked into the medi-centre and did not have much interaction with any doctor so I’m not really sure. Maybe if I had a family doctor they would have suggested vaccines.”</p> <p>5. Final decision-making. Participants very frequently followed HCP-recommended illness prevention and treatment strategies: Interviewer: “So how did you and your husband make the decision of which vaccines you would get?” South Asian participant: “It was nothing like that. On our first visit, we had gone to the nurse and she told us that if we are staying close to the baby, this is the list of vaccines we give... She asked me a few questions. It also depended on which origin you were from... I think that’s how she did it, how she decided which vaccines.”</p>

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes

Section	Question	Answer
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Lewendon, G. J. & Maconachie, 2002

Bibliographic Reference Lewendon, G. J. & Maconachie M; Why are children not being immunised? Barriers to immunisation uptake in South Devon; Health Education Journal; 2002; vol. 61; 212-220

2 Study Characteristics

Study design	Focus Groups Semi-structured interviews
Aim of study	To identify local factors contributing to poor immunisation uptake.
Behavioural model used	None stated
Study location	UK
Study setting	Community
Study dates	1998 to 1999
Sources of funding	Not mentioned

Study methods	<p>In addition to readily available routine data on immunisation uptake rates, postal surveys, focus groups and semi-structured one-to-one interviews were used to explore the attitudes and knowledge of parents and healthcare professionals involved in the local immunisation programme.</p> <p>Children aged 1 to 2 years of age were selected from the local Child Health Surveillance (CHS) computer dataset and their immunisation status (fully, partly or unimmunised) and postcodes established. Postal questionnaires were sent out to the principal immunisation giver in every general practice in the district to provide baseline and comparative information between areas of high and low uptake. In the UK, immunisation is almost always given in a primary care setting. The questionnaires asked about practical arrangements made for immunisation, about the procedures followed for missed appointments and refusals and about what training and updating was available and the concerns expressed to them by parents. Contemporaneous notes were taken by the interviewer, including key quotes where possible. Additionally, at each location three health visitors attached to each Child Health Clinic were individually interviewed for their views as to why some parents were refusing immunisation. Local issues that had been identified in the practice survey were incorporated into these interviews.</p>
Population and perspective	<p>Three focus groups were held with parents of children who had been either fully immunised or partly/unimmunised in areas of low uptake in South Devon. There were between six to eight participants in each group, recruited from the attendees at the local Child Health Clinics.</p> <p>The study was conducted in South and West Devon Health Authority, a district which includes the relatively affluent area of South Devon as well as Plymouth and surrounding areas. Plymouth is a designated Health Action Zone with some of the most socially deprived wards in the country. The mean Townsend Deprivation Score for Plymouth and surrounding areas is 0.62 compared to South Devon which is 2.65.</p>
Inclusion Criteria	<p>Parents of children who had a specified age range Age 1 to 2 years</p>
Exclusion criteria	<p>None reported</p>
Relevant themes	<p>3 Themes were identified from parents:</p> <ol style="list-style-type: none"> 1. Information about immunisation. Information about immunisation was obtained from Health Education Authority leaflets, friends and health professionals: "His great uncle was disabled as a child with polio and that's why I don't want my child to be immunised." 2. Concern about immunity. There was general concern about whether or not a baby's immature immune system could 'cope' with being given so many immunisations in infancy: There was general concern about whether or not a baby's immature immune system could 'cope' with being given so many immunisations in infancy. Parents of unimmunised children felt strongly that children were 'made stronger' by developing their own natural antibodies to disease. 3. Risks and benefits of immunisation compared to the disease: Parents of both immunised and unimmunised children thought that too much emphasis was put on the benefits of immunisation by health professionals with too little information about the risks so it was difficult to make a truly informed choice. <p>Reasons given by the health visitors about why they thought some parents were refusing immunisation included: adverse publicity about the MMR in the media; for some parents, refusing immunisation was about power and control rather than a</p>

decision based on informed choice; and problems with accessibility. According to one health visitor: 'a better uptake of immunisation occurs when the clinic is held on market day and there is a regular bus service into town.' [There is no further qualitative data provided from health visitors]

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Can't tell
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

2

Loewenthal, K. M. & Bradley, 1996

Bibliographic Reference Loewenthal, K. M. & Bradley C; Immunization uptake and doctors' perceptions of uptake in a minority group: Implications for interventions; Psychology, Health and Medicine; 1996; vol. 1; 223-230

3 Study Characteristics

Study design	Focus Groups Semi-structured interviews
Aim of study	To identify beliefs about immunization and reasons for uptake and non-uptake.

Behavioural model used	None stated
Study location	UK
Study setting	Community (orthodox Jews)
Study dates	Not provided
Sources of funding	Not mentioned
Study methods	Group discussions were held with practice personnel in the practice with orthodox-Jewish and other patients. Participants in these discussions were the GPs, Health Visitors and the practice manager. Semi-structured interviews were held with orthodox-Jewish mothers with children under 5 years of age. Discussions and interviews were held to collect beliefs about immunization and reasons for non-uptake. These discussions and interviews were held prior to collecting uptake figures.
Population and perspective	2 group discussions with practice personnel. 10 interviews with parents.
Inclusion Criteria	Parents of children who had a specified age range Age 0 to 5 years Parents who are part of a specific community Orthodox Jews
Exclusion criteria	None reported
Relevant themes	3 Themes were identified for healthcare professionals: 1. Mothers over-estimate risks of immunizations; one factor mentioned was the close-knit orthodox Jewish community, which it was felt perpetuates tales of bad reactions to immunizations. 2. Logistic difficulties of bringing children in for immunization. The difficulties are pronounced for mothers with large families and working mothers, with the religious calendar adding to these difficulties. It was hoped that the revised schedules, calling for earlier immunizations, would mean that working mothers could get immunizations done before returning to work. It was feared that sending the Health Visitor to homes where there had been serious difficulties in bringing children in for immunization would result in a flood of claims for similar treatment from others in the community. 3. Mothers had a high level of demand for information which medical personnel did not always have time to meet. In many cases they were said by practice personnel not to have read the available literature. 3 Themes were identified from mothers: 1. Fear of bad reaction to immunizations. The mothers we spoke to generally saw evidence for caution in their experience with their own children: for example, one mother said that she had been advised by her doctor not to have her second child immunized because the first had reacted badly; she expressed concern that the immunizations may have an albumen base and, as mothers are advised not to give children under four months eggs to eat, there were questions about the safety of the vaccine base, especially if there was a history of allergies in the family. 2. Logistic difficulties of bringing children in for immunization. These were related to family size, the rigorous Jewish calendar, and beliefs that unwell children should not be immunized; 3. Unsympathetic treatment by practice staff. For instance, two mothers had been 'told off for not having brought children in for immunization on schedule, making them

reluctant to return if they were again behind schedule. Another mother suggested some mistrust of health-care professionals who were seen as more concerned with uptake rates than with babies' welfare.

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Can't tell
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Can't tell
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Moderate <i>(There is no information with regards to how the data was collected and analysed.)</i>
	Relevance	Highly relevant

2

Maisa, 2018

Bibliographic Reference Maisa, Anna; Milligan, Sarah; Quinn, Alison; Boulter, Denise; Johnston, Jillian; Treanor, Charlene; Bradley, Declan T; Vaccination against pertussis and influenza in pregnancy: a qualitative study of barriers and facilitators.; Public health; 2018; vol. 162; 111-117

3 Study Characteristics

Study design	Focus Groups Semi-structured interviews
Aim of study	The aim of the study was to provide information that would help the researchers plan improvements to services that offer vaccinations to pregnant women.
Behavioural model used	None stated
Study location	UK
Study setting	Community
Study dates	2017
Sources of funding	Not disclosed
Study methods	<p>To ensure diversity, the market research company aimed to recruit participants of different ages, social grades and number of previous pregnancies for each group. Pregnant women were opportunistically approached on-street. Potential participants who met the inclusion criteria received an information leaflet and had a discussion with the recruiter. They had a 'cooling off' period before consent was taken and interviews were conducted. The number of potential participants who declined was not recorded. The market research company offered participants £35 for participation.</p> <p>Three focus groups and one in-depth interview were conducted. All participants gave written informed consent for participation and audio-recording. They originally planned two focus groups, each with only vaccinated (against influenza and/or pertussis) or only unvaccinated women. However, during the first focus group session with vaccinated participants, one participant admitted she was unvaccinated. To ensure the opportunity to hear views of vaccinated women without influence of the unvaccinated participant, another focus group was conducted with two additional participants. They aimed to recruit one vaccinated and one unvaccinated migrant woman for in-depth interviews. Recruitment was found to be challenging and only one person with a migrant background (who was vaccinated and spoke English) was successfully recruited for an in-depth interview. All sessions were semi-structured using a discussion guide, facilitated by an experienced female researcher (with a BSc Psychology) from the market research company, who explained and emphasised her neutral role in this project. Focus group sessions lasted approximately 90 minutes and the interview lasted 45 minutes. The sessions were audio recorded and transcribed verbatim by the market research company. The transcripts were provided in anonymised form and analysed independently by two researchers. Transcripts were not returned to participants.</p>
Population and perspective	16 pregnant women. No further details were provided
Inclusion Criteria	Women who are currently pregnant
Exclusion criteria	None reported
Relevant themes	Six themes were identified:

- 1) Information and knowledge
Participants received information on vaccinations in different ways, mostly from doctors and midwives, but also from friends and family. Generally, participants did not understand how vaccinations work.
“There’s no impartial advice about vaccinations there, either, if you go in the internet, its either very positive or very negative. There’s no, ok, this is exactly what could happen...”
- 2) Influence of others
A lack of vaccine endorsement by the healthcare professionals led some to believe vaccination was not important. Many unvaccinated participants claimed they would have the vaccines if they had been recommended by a healthcare professional.
“My midwives weren’t pushy or anything towards it. ‘You get vaccinated at this stage and you make your appointments.’ They were quite laid back about it all, and I think that’s what made me laid back about it all. ... No one was forcing me to make the appointments to have it ... So I didn’t think that it was very important...”
- 3) Acceptance and trust
Most participants, even if unvaccinated themselves, expressed acceptance of vaccination in pregnancy. These participants trusted healthcare professionals and were happy to follow their advice.
“Sure the baby gets vaccinated anyway. So if you are going to have your child vaccinated does it matter if it’s during pregnancy or not? If it is that big of a risk, then they wouldn’t offer it you.”
- 4) Fear and distrust
Vaccinated participants expressed fear of pain of vaccination and early side-effects. Some unvaccinated women were concerned about unknown longer-term consequences. Some suspected healthcare professionals did not know, or would not truthfully disclose, information about possible risks
“That’s why they aren’t giving you information out because they don’t have enough information themselves. Like even today when I just got the Whooping one... my arm’s getting sore now, like I wasn’t told that was the way it would go, that there are side effects or what to look out for or anything”
- 5) Responsibility for the baby
Many participants expressed responsibility for their baby and described being very protective once becoming pregnant, especially with a first child. Some unvaccinated participants wanted to protect the baby from a vaccine they considered to be potentially harmful.
“That’s why I went for it, because I had listened to so much information, and my gut was telling me so. Because of the baby inside me, I couldn’t take the risk of anything happening and then me blaming myself”
- 6) Accessing vaccination
Most vaccinated women had not experienced difficulties accessing vaccination. In the unvaccinated group, some said they simply did not get around to booking their appointments.
“Like people say that you need to put an appointment on, but they don’t push you, so if you don’t do it, then you don’t do it. Like, I never really got round to making it the first time, so what difference does it make this time?”

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes

Section	Question	Answer
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	No
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	High <i>(No information collected on the number of participants who declined to participate and/or their reasons for declining.)</i>
	Relevance	Highly relevant

1

McCoy, 2019

Bibliographic Reference McCoy, J.D.; Painter, J.E.; Jacobsen, K.H.; Perceptions of vaccination within a Christian homeschooling community in Pennsylvania; Vaccine; 2019; vol. 37 (no. 38); 5770-5776

2 Study Characteristics

Study design	Focus Groups
Aim of study	The goal of this study was to use qualitative methods to examine the vaccination perceptions and practices of Christian homeschooling families in Pennsylvania.
Behavioural model used	Health Belief Model

Study location	Pennsylvania, USA
Study setting	Community (Family homes)
Study dates	November and December 2017
Sources of funding	This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.
Study methods	<p>Purposive sampling was used to identify and recruit home schooling parents who identified as Christians. Evangelical Protestants are the largest subpopulation, accounting for 25.4% of all Americans. Participants were primarily recruited at home schooling group events where parents could participate in a discussion group while their children were engaged in a learning activity. One additional participant was recruited for an in-depth interview via a Facebook home schooling page.</p> <p>A semi-structured interview guide was used to elicit participant perspectives about the composition of their families, the ways their families have approached vaccination, the factors that have influenced their vaccination decisions, whether state vaccination requirements had any impact on their decision to home school, and what role they think is appropriate for the government to take in regard to vaccination. The same themes emerged from all of the conversations, which suggested that theoretical saturation had been achieved. Focus groups and interviews lasted an average of 38 min each (range: 30–40 min). All sessions were audio recorded and subsequently transcribed verbatim.</p> <p>Data were analysed using thematic coding. First, the transcripts were read line-by-line by two independent coders (jdm, khj) to create a list of preliminary themes. Updates were made to the code as new categories emerged during subsequent readings of the transcripts. The data analysis process used a grounded theory approach. The researchers did not decide a priori to use a particular health behaviour theory as a framework, but as both coders read the transcripts they independently observed that the themes from the focus groups strongly aligned with constructs from the Health Belief Model (HBM). The coding was revised to more completely delineate the distinct themes that aligned with each of the six constructs of the HBM, and both researchers independently re-coded all of the transcripts. Consensus was reached.</p>
Population and perspective	<p>14 homeschooling parents who identified as Christians. All fourteen participants (13 mothers and 1 father) were white and resided in south-central Pennsylvania. Families, on average, had 3 children (range: 1–6). The participant with the youngest child was a mother of two who was in her second year of homeschooling. The participant with the oldest child was a mother with six children between the ages of 6 and 25 years who had been homeschooling for 20 years. All of the participants had at least one child in elementary school (grades 1–6).</p> <p>All of the participants were actively involved in churches within the Evangelical Protestant tradition.</p>
Inclusion Criteria	Parents who homeschool Currently or previous home schooling of at least one child. One parent per family.
Exclusion criteria	None reported
Relevant themes	<ol style="list-style-type: none"> 1. Perceived susceptibility to vaccine preventable diseases: Home schooled children have a low risk of exposure, God provides natural tools for health. “I want to be the best steward of my body and my kid’s body and their health. And I think God put on this Earth the things that are necessary to keep us healthy.”

	<p>2. Perceived severity of vaccine preventable diseases: Diseases are natural and stimulate immune system development. Some vaccine-preventable diseases are severe. Most infectious diseases are not severe. “[Kids] should not go through life and never get sick. It’s not healthy to never get sick. You don’t build any natural immunities.”</p> <p>3. Perceived benefits of vaccinating: Community immunity is valuable, but the benefits of commercial vaccines are overstated. “It’s hard to make a decision, because both sides can be skewed and they both lend themselves to fear-mongering. That’s why the Holy Spirit is really helpful.”</p> <p>4. Perceived barriers to vaccinating: Fear of adverse reactions; newer vaccines have not been tested enough, conflicting information, vaccines need to be spaced out. “I started to do a little bit of research, and read some different things about vaccinations, and I felt that there was too much at one time. Especially comparing the schedule now to the schedule maybe in ‘70 s or ‘80s when I was little.”</p> <p>5. Cues to action: Physicians were identified as authority figures who influence parental decisions about vaccination.</p> <p>6. Self-efficacy: Participants consistently and strongly expressed that parents should have the autonomy to make their own decisions about childhood vaccination.</p>
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1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell (No information was provided)
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low

Section	Question	Answer
	Relevance	Highly relevant

1

McGeown, 2018

Bibliographic Reference McGeown H; Heffernan C; Gibson K; Perspectives from CQC 'outstanding' practices: How to have good uptake of vaccination services; Practice Nursing; 2018; vol. 29 (no. 3); 135-139

2 Study Characteristics

Study design	Unstructured interviews
Aim of study	The purpose of this study is to explore what learning could be extrapolated from the CQC-classified 'outstanding' practices in relation to their vaccination services.
Behavioural model used	Grounded theory
Study location	UK
Study setting	London GP practices
Study dates	Unclear, around Feb 2016.
Sources of funding	None stated
Study methods	<p>London GP practices classified as 'outstanding' by the CQC were identified from the CQC website and with phone support from the CQC. The information was triangulated with immunisation uptake rates for the practices from ImmForm. ImmForm is a website used by the Department of Health (DH), PHE and the NHS to collect data on vaccine uptake for immunisation programmes, collect data on incidence of influenza and influenza-like-illness (ILI) and provide vaccine ordering facilities for the NHS. Three of the practices were in the Tri-borough (Hammersmith and Fulham; Westminster; and Kensington and Chelsea), and are the lowest performing boroughs within London across the Section 7a immunisation programmes.</p> <p>The study used unstructured interviews with an interview guide of probes and prompts devised to explore the following domains: thoughts on what made them 'outstanding' practices for immunisation services; practices they used that helped them get good coverage of childhood immunisations and adult vaccinations (i.e. seasonal influenza, shingles, pneumococcal polysaccharide vaccine (PPV)); procedures used to ensure staff are kept up-to-date on the latest immunisations policies; advice they would give to other practices to ensure everyone who is eligible is offered a vaccination.</p> <p>Nine practices were contacted by phone with follow up emails to schedule interviews with the practice manager and/or other staff members involved in management of the practice. Informed consent was obtained from all interviewees for this process. Interviews were recorded and transcribed immediately afterwards. Principles of grounded theory were employed in a subsequent iterative thematic analysis. The transcripts were read alongside the field notes to aid familiarisation and were analysed manually using the thematic analysis, with themes emerging from the data.</p>

	Textual data were scrutinised for similarities and differences between themes. Issues that generated the most discussion were prioritised.
Population and perspective	Seven practices rated as 'outstanding' by the CQC with 12 participants (6 practices had 2 people interviewed separately). Participants included the senior practice managers for five practices, nurse practitioners in two practices, a GP partner in one practice and nurse partners in one practice. Other participants were senior administrative or managerial staff members. Ten participants in the interviews were female.
Inclusion Criteria	CQC 'outstanding' practice employee GP practice managers and/or other staff involved in management of the practice
Exclusion criteria	None reported
Relevant themes	<p>Five themes were identified:</p> <ol style="list-style-type: none"> 1. Patient- and family-centred care: Interviewees stated that they 'put patients first always' adapting a holistic approach where staff members were encouraged to care for patients as though they were members of their own families. They also worked with patient participant groups, so that they could go beyond disease management to emphasise global wellbeing. Interviewees noted that being flexible to the needs of their patients was essential. This included opportunistic vaccinations, increased availability of 'walk in' vaccination clinics, appointments out of hours, and longer appointments for people with more complex needs. 2. Trained 'up-to-date' staff: Interviewees stated they had designated staff tasked with dealing with immunisations. These included administrative staff as well as practice nurses. These individuals were accountable to practice managers for vaccination uptake. All practices had a strong emphasis on training and development for staff and this extended to immunisations. 3. Planning ahead: The importance of planning ahead was emphasised across all interviews. This included using IT systems to facilitate the identification of patients who will need vaccination within a given time window in the near future. Interviewees reported having a system of escalation whereby patients would receive e-mails, texts or letters initially. If they did not book an appointment, they would then be called by a member of the administrative staff. If this was unsuccessful, the practice nurse would call, and finally GPs would call where patients still did not book in for their vaccinations. Supporting their strategies was the awareness that patient records also needed to be up-to-date. This included ensuring the upload of immunisation records for all new patients registering to the practice and regularly identifying 'ghost patients' who no longer resided in the practice area and removing these from registers. As one interviewee stated 'This is a time consuming process but if we don't, vaccine coverage figures for the practice will be falsely low'. 4. Ethos of working together: Interviewees spoke of having a multidisciplinary approach to maintaining their immunisation uptake. This involved working with colleagues from other fields, such as health visitors who held baby clinics on site and met with the staff afterwards to discuss safeguarding concerns including vaccine refusal. The value of working with health visitors in improving immunisations uptake was highlighted. Linked to the theme of working together was an element of competition. Interviewees spoke of competing with neighbouring practices or between staff within practices. 5. Allowing time for discussion: Development of positive relationships with patients was considered vital. This was recognised as being challenging in a London context, with high patient turnover. In relation to children, one practice operated 15-minute appointments with a specialist nurse for child vaccination. This was felt to

allow time to establish a rapport with parents and address their concerns, increasing the chances that they would return for another appointment. The importance of allowing patients time to discuss vaccinations face-to-face was emphasised throughout as 'patients need that one- one conversation'.

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Can't tell
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

2

McMurray, 2004

Bibliographic Reference McMurray, Robert; Cheater, Francine M; Weighall, Anna; Nelson, Carolyn; Schweiger, Martin; Mukherjee, Suzanne; Managing controversy through consultation: a qualitative study of communication and trust around MMR vaccination decisions.; The British journal of general practice : the journal of the Royal College of General Practitioners; 2004; vol. 54 (no. 504); 520-5

3 Study Characteristics

Study design Semi-structured interviews

Aim of study	To explore parents' accounts of decision making relating to the MMR vaccine controversy, identifying uptake determinants and education needs.
Behavioural model used	None stated
Study location	UK
Study setting	Community
Study dates	2002
Sources of funding	Not reported
Study methods	<p>Leeds Research Ethics Committee approved the study, which took place in five general practices. Practices were purposely sampled to allow for diversity in the size, location and level of deprivation in the populations served.</p> <p>Practices sent letters to all parents of children born within 1 year, ending 31 March 1998, explaining the aims, uses and researchers associated with the study. The letters invited parents to contact the team by telephone or freepost should they wish to participate in the research, and were signed by the child's GP. Following receipt of an expression of interest, a time for interview at the parent's own home or place of work was arranged. Interviews were designed to explore parental experience and needs in relation to information and decision support at the point of lowest uptake, namely MMRvaccine second dose.</p> <p>All interviews were semi-structured to the extent that the ordering of questions could be changed to reflect the flow of conversation while allowing new issues to be introduced. To reduce the possibility of socially desirable response, interviews were conducted in parents' homes by three non-clinical team members. Pre-study piloting and continuous transcript comparison were used to ensure equivalence in subject topic coverage and questioning approach across the sample.</p> <p>Full transcripts of interviews were analysed using a variation of the well-established 'framework' approach. Subsamples of transcripts were reviewed by the authors to identify key themes for data coding. Codes were then defined and validated through discussion among the research team. These were then applied to the data using the visual qualitative data processing package NVivo.</p> <p>Overarching themes and 'one-off' or 'deviant' cases were identified in order to understand the research findings and report them in a meaningful, yet concise, way.</p>
Population and perspective	<p>Sixty-nine interviews were conducted with parents, 65 of whom were mothers. The average age of parents participating in the study was 34 years (range = 22–44 years). The mean school leaving age of participating parents was 17 years. Sixty-four per cent of those interviewed were in full- or part-time paid employment. Eighty-seven per cent were married or living with a partner, 6% were divorced or separated, and 7% were single. The number vaccinating at both doses was 75%, just above the average of 74% for England.</p> <p>Over half of all children discussed were male (57%). Half came from families with two children, 36% from families with three or more children, and 12% were an only child. All children in the non-immuniser category were boys.</p>
Inclusion Criteria	Parents of children who had a specified age range Aged 0 to 12 months
Exclusion criteria	None reported
Relevant themes	3 Themes were identified:

	<p>1. Decision determinants. The diseases were seen as relatively mild, treatable and natural - something that the child would survive and even benefit from: "I think there can be positive things about them catching measles, mumps, and rubella. They're not as serious as the government makes out ... If children get measles, mumps, and rubella it helps build up their natural immunity, and that's better than the immunity built up by vaccines."</p> <p>2. Practitioner influence and limits. GPs and health visitors provided medical input, and were most frequently cited as the best or most trusted source of information on MMR: "The GP was very good. Very good, very clear in her advice. But not dictatorial. She just sort of presented me with the facts and with the information ... I was able then to come away and think, "Yes". I felt at the time that it was the best advice."</p> <p>3. Immediate support needs. Reliance on everyday knowledge coupled with insufficient contact with primary care providers served to ensure that, for a majority of parents, the decision on whether to vaccinate did not reflect an informed choice: "I don't think they're [MMR leaflets] hard-hitting enough. I know it's not nice to see children on telly poorly and what have you, but it's like the ones for NSPCC, they make you want to cry, but they make you understand what's going on and I think that's what needs to be done about MMR. I think a lot more information of how many children have died in the past is what needs to be published, so that people can see that it is working. Otherwise there's going to be a lot of poorly children and a lot of dead, blind and deaf children about. You know, when I was at college we was handed some figures of — I think it might have been 1970 or something — of how many had died that year, how many were blind and how many was deaf, compared to 2000. And there was a dramatic difference and it was because of all the immunisation. So I think probably they could do with using that a bit more ... to prove to them [parents] that it [immunisation] is working."</p>
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1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes

Section	Question	Answer
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

McNaughton, 2016

2

Bibliographic Reference McNaughton RJ; Adams J; Shucksmith J; Acceptability of financial incentives or quasi-mandatory schemes to increase uptake of immunisations in preschool children in the United Kingdom: Qualitative study with parents and service delivery staff.; Vaccine; 2016; vol. 34 (no. 19)

3

4 Study Characteristics

Secondary publication of an included qualitative study - see the evidence table and risk of bias/relevance judgements under the main reference	Associated study (Adams 2015). Both studies are the same and findings will be referred to as McNaughton 2016 in the review
Study design	Focus Groups Unstructured interviews
Aim of study	To gather and synthesise data about the views, wants and needs of parents and health and other professionals in relation to preschool vaccinations, and also to examine reaction to the hypothetical introduction of financial incentive or quasi-mandatory schemes.
Behavioural model used	Framework analysis
Study location	UK
Study setting	Community

Study dates	2013 to 2015
Sources of funding	UK National Institute for Health Research (NIHR) Health Technology Assessment (HTA) Programme
Study methods	<p>They sought to include the views of two stakeholder groups: parents of preschool children and those who would either have a role in creating or commissioning policies or who would have to implement them e.g. those working in policy, health professionals, teachers, etc. They targeted Children's Centres serving highly deprived geographical locations and breast feeding support/toddler groups serving affluent geographical locations in a bid to include non or partially immunising parents. They included views of parents resident in geographical areas of North East England that had and had not experienced a measles outbreak in 2012/2013. They hoped to recruit both immunisers and partial or non-immunisers and parents from a range of socioeconomic groups, however, only one parent identified themselves as a partial immuniser.</p> <p>Eight locations for focus groups were identified to carry out the fieldwork. This included Children's Centres serving populations living in areas of deprivation (n = 4 groups in a 'measles outbreak' area, n = 4 groups in a 'no measles outbreak' area) and two were carried out in breastfeeding support/baby and toddler groups which served a more affluent population (n = 1 'measles outbreak' area, n = 1 'no measles outbreak' area).</p> <p>Health professionals were identified purposively, and through discussion with key stakeholders, taking into account job role and current responsibility for developing, commissioning and delivering vaccination services. This included both strategic level staff (commissioners; n = 6) and operational level staff (practice nurses, health visitors, general practitioners; n = 13), but they also extended the sample to other professional groups (community paediatricians, school nurses and primary school head teachers; n = 5) who might become involved in delivery if quasi-mandatory schemes were to be introduced.</p> <p>Parents (n = 91 in total in 10 focus groups) were recruited through Children's Centres and local breastfeeding support/baby and toddler groups.</p> <p>Parents were reimbursed for travel costs. Childcare was organised or reimbursed and a £20 shopping voucher was provided to thank participants for their time. Health and other professionals (n = 24 in total) were recruited through the professional networks of the wider research team, the steering group and the North of England Commissioning Support Unit. A snowball sampling strategy was also employed, whereby participants identified other professionals to be contacted. Participants received written information about the project and signed a consent form prior to participation.</p> <p>Work with all participants centred on 6 scenarios derived from real-world examples identified in the systematic review:</p> <ul style="list-style-type: none"> > A universal gift of money upon completion of a full course of vaccinations for all parents (financial incentive). > A targeted gift of money for non/partial immunising parents to bring their child's vaccinations up to date (financial incentive). > A cash penalty for those unable to demonstrate a full record of child vaccination (financial incentive). > Removal of childcare contributions from those unable to demonstrate a full record of child vaccination (financial incentive). <p>Entry into preschool, nursery or day-care settings restricted to those able to demonstrate a full record of child vaccination, or acceptable reason for exemption (e.g. on religious, moral or medical grounds; quasi-mandatory scheme). Entry into school restricted to those able to demonstrate a full record of child vaccination, or acceptable reason for exemption (e.g. on religious, moral or medical grounds; quasi-mandatory scheme). Vignettes were used in the parent focus groups as a method of generating discussion.</p>

	<p>Focus groups and interviews were digitally recorded with participant consent and transcribed verbatim. Focus group 10 was attended by more parents than expected (n = 23), accompanied by 26 babies and toddlers. This group was broken into smaller discussion groups but the tapes were too noisy to transcribe, so, as a result, although this focus group contributed to their understanding, no direct quotes were extracted. A full time research associate carried out the fieldwork with parents and carers. One other researcher was present during focus group discussions to take notes. Both researchers were female and had no prior relationships with any of the participants.</p> <p>The research protocol was approved by Teesside University's School of Health and Social Care Research Ethics and Governance Committee. The study was adopted to the NIHR portfolio to facilitate R&D approval.</p> <p>Framework analysis was used to analyse focus group and interview data. Investigators initially read a subset of transcripts to identify recurrent concepts. These were organised into higher-order categories to provide the thematic framework. The framework was applied to the full data set by an investigator. The framework was iteratively refined until a definitive framework was achieved.</p> <p>Frequent discussions took place between the investigators throughout the data analysis phase, to ensure that interpretations were credible, valid and shared. A Parent Advisory Group was established to give their views on the project's methods and findings. This group comprised of parents and carers in one children's centre site. The results of the Framework analysis were presented and discussed with these parents to check that themes had not been overstated and were representative of their experiences.</p>
Population and perspective	<p>They conducted 10 focus groups with parents (n = 91) which allowed them to reach thematic 'saturation'. In addition, they carried out 18 interviews with health and other professionals, and 6 interviews with policy makers and commissioners. The small number of interviews with the latter group did not allow them to achieve 'saturation'. These interviews were, however, designed mainly to give implementation context to the main focus on the work with parents and carers.</p>
Inclusion Criteria	<p>Practicing healthcare professionals</p> <p>Parents of children</p>
Exclusion criteria	<p>None reported</p>
Relevant themes	<p>5 themes were identified by the investigators:</p> <ol style="list-style-type: none"> 1. Acceptability of financial incentives. Introducing financial incentive to encourage uptake of vaccinations was met with overwhelmingly negative reactions from parents: "Some people literally can't be bothered, which is horrible but..." 2. Workability and governance of financial incentives schemes. There were concerns that, in a time of austerity, when many public budgets are being cut, public services are under threat, and budgets being closely and publicly scrutinised, the introduction of financial incentives would be an inappropriate use of resources: "Well no, they're [parents] being paid. The vaccinations cost a fortune in themselves. Every child that's immunised is getting that... in other countries, people would have to be finding the money to get their children immunised, wouldn't they, against illnesses?" 3. Acceptability of quasi-mandatory schemes. Unlike their reactions to the introduction of financial incentive, parents could see many advantages to the introduction of quasi-mandatory schemes, with those being preferable to financial incentive: "I prefer this idea [quasi-mandatory schemes] to the last one [financial incentive], I think it's more inclusive. And OK, yes fair enough it's implying that if you don't have the vaccinations your child can't go to the school, but I think it's probably fair from the school's point of

view that they should be able to exclude people who are at risk of transmitting these diseases through the school. So, in that respect, I think it is fairer than the other one."

4. Autonomy and democratic rights. It did not pass unnoticed in this discussion that a child's rights to socialise and be educated should also be respected: "Surely you'd want your child to have the best education. You don't want them to miss out on that year, just because you haven't had your vaccination."

5. Workability of quasi-mandatory schemes. Whilst it was believed that quasi-mandatory schemes might positively affect rates of immunisation, there were clearly concerns raised about both the ethics and the practicalities of such schemes in a UK setting: "If a parent wants a child [to get] into nursery, [and] their policy is your child must be up to date with vaccinations and you must have evidence of that [vaccination record]. What the evidence is, is another matter. You know, who can scrutinise a Red Book [child health record, held by parent]? Who can read a list of vaccinations? Does it need to be a health professional reading it? Can you train somebody in the nursery group to do that? So, there's those issues to consider as well."

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

2

Mehrotra, 2018

Bibliographic Reference Mehrotra, Arpita; Fisher, Allison Kennedy; Mullen, Jennifer; Rodriguez, Leslie; Jiles, Angela J; Albert, Alison P; Randall, Laura A; Frew, Paula M; Provider insight on surmounting specialty practice challenges to improve Tdap immunization rates among pregnant women.; Heliyon; 2018; vol. 4 (no. 5); e00636

1 **Study Characteristics**

Study design	Semi-structured interviews
Aim of study	To inform new strategies to increase uptake of the Tdap vaccine among pregnant women and, ultimately, reduce pertussis-related morbidity and mortality in infants.
Behavioural model used	Grounded theory
Study location	USA
Study dates	2014
Sources of funding	U.S. Centers for Diseases Control and Prevention
Study methods	A semi-structured interviewer’s guide was developed in collaboration with ob-gyn and infectious disease clinicians, health communication experts, and behavioural scientists. Particular care was taken in crafting a script that facilitated a conversation on provider perceptions on pertussis and Tdap vaccination, current practices, and preferred patient-provider communication materials and strategies. Twenty-four in-depth interviews, approximately sixty minutes each, were conducted by telephone. Audio recordings of the interviews were made and transcribed verbatim.
Population and perspective	The persons eligible for this study included obgyns that offered prenatal care as part of their routine practice. The researchers aimed to recruit a diverse sample of physicians from across the nation in terms of patient composition, Tdap recommendation practices, and Tdap vaccine stocking. Half of the interviews were conducted with ob-gyns whose patient population was at least 50 percent Hispanic, while the remainder of participating physicians saw fewer than 50 percent Hispanic patients. They also aimed to recruit a mix of obgyns who did and did not recommend Tdap vaccination to their pregnant patients at each pregnancy; however, nearly all recruited ob-gyns recommended the vaccine during the third trimester. They also sought a mixture of physicians who did and did not stock the Tdap vaccine in their offices. In their final sample, 58% of ob-gyns stocked the vaccine and 42% did not. Although not part of the sampling plan, the resulting sample was overwhelmingly male; it is important to note that this is not representative of the gender proportions among ob-gyns in the United States. All physicians were recruited through a commercial market research firm and were provided compensation for their time with a stipend considered non-coercive and reasonable for physician time away from clinical and administrative duties per national IRB standards.
Inclusion Criteria	Healthcare professionals who work with pregnant patients Obstetricians and gynaecologists
Exclusion criteria	None reported
Relevant themes	Four themes were discussed in the results:

<p>1) Recommendation vs. administration Nearly all of the ob-gyns recommended the Tdap vaccine to their patients during weeks 27-36 of pregnancy. Additionally, 58% of ob-gyns stocked the vaccine. “I wouldn’t discuss it with a new mom, you know, at a first OB visit, I mean there are a lot of other things to discuss, but at twenty seven weeks, I would tell her that the recommendation is to vaccinate all pregnant women for pertussis and for protection of the baby”</p> <p>2) Implementation challenges The four main barriers to vaccine administration cited by physicians were insurance reimbursement, logistics, patient refusal, and transportation barriers. “I think the biggest issue is really reimbursement, and just the hassles of trying to, you know, we physicians, we’re getting squeezed in every possible direction”</p> <p>3) Low clinical priority for ob-gyns None of the physicians had seen a case of pertussis in their practice and nine physicians explicitly stated that pertussis was not a prevalent enough concern within their communities to warrant attention in their practices. “I just don’t feel as adamant about it [vaccinating against pertussis] just because of the relative infrequency that we’ve seen the problem arise in the community.”</p> <p>4) Vaccine benefits recognized Physicians felt that Tdap vaccination during pregnancy was equally important for the protection of the mother and the baby. Physicians felt that overall the Tdap vaccine was effective, and they believed that the lower incidence of pertussis confirmed this fact. “I think it’s effective, and I don’t see a lot people with pertussis, so I assume it’s working.”</p>

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	No
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Yes

Section	Question	Answer
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research has some value
Overall risk of bias and relevance	Overall risk of bias	Moderate (<i>The methodology resulted in the participants being exclusively male.</i>)
	Relevance	Relevant (<i>In the UK, obstetricians and gynaecologists do not normally administer routine vaccinations.</i>)

1

Mijovic, 2020

2

Bibliographic Reference Mijovic, Hana; Greyson, Devon; Gemmell, Emily; Trottier, Marie-Eve; Vivion, Maryline; Graham, Janice E; Dube, Eve; Bettinger, Julie A; Perinatal health care providers' approaches to recommending and providing pertussis vaccination in pregnancy: a qualitative study.; CMAJ open; 2020; vol. 8 (no. 2); e377-e382

3

4 Study Characteristics

Study design	Semi-structured interviews
Aim of study	To examine health care providers' perceptions of what influences their ability to recommend and provide antenatal Tdap vaccine consistently to pregnant women in 5 Canadian provinces.
Study location	Canada
Study setting	Health care providers in 5 Canadian provinces (British Columbia, Manitoba, Ontario, Quebec, Nova Scotia)
Study dates	June 2018 – July 2019
Sources of funding	Canadian Immunization Research Network and council grant CIHR IMM-151 599 from the Canadian Institutes of Health Research
Study methods	<p>Participants were purposively recruited and invitations sent out with the aim of recruiting a diverse sample of clinical disciplines, practice settings (urban/suburban/rural), province and population served (including the general population, patients at high and low risk medically, Indigenous patients and patients of low socioeconomic status). Recruitment ended when new themes were no longer being identified in the interviews and we were no longer adding meaningful diversity to the study population.</p> <p>A semi-structured interview guide was used, developed based on a literature review, the researchers' previous vaccination research and the sensitizing concepts of the study. V.). The interview guide was pilot tested with 3 clinicians at BC Children's Hospital who were not study participants. The interviews lasted about 30 minutes and</p>

	were conducted by a female graduate or postgraduate qualitative health researcher. Interviews explored the health care provider's training and clinical practice setting, how they learned about and implemented clinical guidelines, experience with vaccines in pregnancy and approaches taken with vaccine-hesitant patients. Data collection and analysis were iterative, with coding of initial interviews beginning before all data were collected. This allowed for adjustment of questions and verification of findings emerging from early data collection in subsequent interviews.
Population and perspective	44 health care professionals (13 family physicians, 12 midwives, 9 nurses, 10 obstetricians)
Inclusion Criteria	People who were an obstetrician-gynaecologist, family physician, GP, registered nurse, nurse practitioner or registered midwife currently providing care to pregnant women in the 5 provinces
Exclusion criteria	None reported
Relevant themes	3 relevant themes were identified: <ol style="list-style-type: none"> 1. Trust – Patient's acceptance of the Tdap vaccination was influenced by trust in their health care provider and their recommendations "It comes down to having a good relationship with people, and having that trust over time and being in the community for [many] years now and knowing all these families for such a long time, following them through their pregnancies, seeing them with other kids" 2. Provider education – some providers, particularly in rural areas felt they were less able to discuss Tdap vaccination, as vaccine-related training is not prioritised in comparison to other training "We would like to have access to the latest, evidence-based information. We can't just say to women "This is the last recommendation," we need to be able to give them the evidence. ... Having actual numbers to quote would help" 3. Information for pregnant women – Providers thought there was a lack of resources available for pregnant women. More information was thought to be important to help women make decisions and support the provider's recommendations

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell

Section	Question	Answer
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research has some value
Overall risk of bias and relevance	Overall risk of bias	Low
Overall risk of bias and relevance	Relevance	Highly relevant

1

Mittring-Junghans, 2021

Bibliographic Reference Mittring-Junghans, N.; Holmberg, C.; Witt, C.M.; Teut, M.; Thoughts, beliefs and concepts concerning infectious childhood diseases of physicians practicing homeopathic, anthroposophic and conventional medicine - a qualitative study; BMC Complementary Medicine and Therapies; 2021; vol. 21 (no. 1); 46

2 Study Characteristics

Study design	Semi-structured interviews
Aim of study	To investigate the concepts, thoughts and beliefs of general practitioners and pediatricians in Germany practicing conventional, homeopathic or anthroposophic medicine concerning the classic childhood illnesses measles, mumps, rubella, chickenpox, pertussis and scarlet fever
Study location	Germany
Study setting	Physician practices
Study dates	Not reported
Sources of funding	Open Access funding enabled and organized by Projekt DEAL
Study methods	<p>Data collection and analyses were based on the methodological concept of grounded theory. Interview partners were sought until theoretical saturation was achieved among the three physician groups. The potential interview participants were contacted via email or telephone. If they agreed to participate, an interview appointment was scheduled. Interviews were conducted face-to-face in each physician's</p> <p>practice and were led by a trained qualitative researcher. All the participants provided informed consent. The interviews were digitally recorded, and the researcher wrote a short summary after each interview.</p> <p>Analyses followed a grounded theory approach assisted by Atlas/ti software. After the first interviews were transcribed and coded, the subsequent interviews were conducted such that questions developed</p>

	from the first round of results were included to gather new findings from the interviews. Data collection and theory generation were alternated; the analysis process occurred in a triadic and circular constant comparative manner. Regarding the theoretical framework of the grounded theory approach, theoretic saturation was reached with six interviews per group. Written memos during the coding and analysis process supported the analyses and results. The analyses and results were regularly discussed in the research team and in a qualitative research group to ensure intersubjectivity and grounding of results in the material.
Population and perspective	Eighteen physicians were interviewed from all over Germany (11 male, 7 female). Twelve worked in practices participating in the statutory health insurance system, and 6 had private practices.
Inclusion Criteria	Physicians practicing conventional medicine, homeopathic medicine or anthroposophic medicine Those practicing conventional medicine had no further training in complementary medicine, those practicing homeopathic medicine had to have a homeopathy diploma of the "DZVhÄ" (Deutscher Zentralverein homöopathischer Ärzte) and those practicing anthroposophic medicine needed an additional qualification in anthroposophic medicine of the "GAÄD" (Gesellschaft Anthroposophischer Ärzte in Deutschland)
Exclusion criteria	None reported
Relevant themes	Two main relevant themes were identified: 1. Infectious childhood disease as a risk: People practicing conventional medicine saw infectious childhood diseases as posing many risks, with complicated consequences. In contrast, homeopathic and anthroposophic physicians felt these diseases were an important part of life and helped the body and mind to develop "A human being can always get sick. Childhood diseases are only a part of it." 2. Importance of vaccination: Most people practicing conventional medicine supported all vaccinations and thought they were necessary to protect the child, family and community. Homeopathic and anthroposophic physicians tended to consider vaccinations on an individual basis, discussed the advantages and disadvantages with parents and often vaccinated children later than the German recommendations ""I think it is very important that they [the parents] know what they're getting involved with. In addition, I don't think that you can provide these diseases. However, rather the parents have to face up to them actively."

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes

Section	Question	Answer
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research has some value
Overall risk of bias and relevance	Overall risk of bias	Low
Overall risk of bias and relevance	Relevance	Highly relevant

1

Mixer, 2007

Bibliographic Reference Mixer, Ruth E; Jamrozik, Konrad; Newsom, David; Ethnicity as a correlate of the uptake of the first dose of mumps, measles and rubella vaccine.; Journal of epidemiology and community health; 2007; vol. 61 (no. 9); 797-801

2 Study Characteristics

Study design	Focus Groups Semi-structured interviews
Aim of study	To investigate whether ethnicity is associated with uptake of the first dose of MMR vaccination.
Behavioural model used	None stated
Study location	UK
Study setting	Community
Study dates	2003
Sources of funding	Not provided
Study methods	A total of six focus group interviews were held, two per ethnic group selected. For each focus group, between 15 and 20 mothers were invited to participate. Within the Asian category, one group spoke English and the other spoke Gujarati. Parents of young children from each of the three ethnic groups of interest were identified through pre-existing networks, such as mother and toddler groups. This convenience sampling generated groups consisting of 6–10 individuals (a typical group size for focus group research).

	<p>To ensure comparability across the groups, an interview guide was used. The discussions were audio taped and lasted approximately 30 min. The Asian Gujarati-speaking group discussion was carried out using a trained medical interpreter, who translated verbatim what was said. Participants completed a questionnaire after the interview, which covered aspects of socioeconomic status using questions derived from the Townsend Material Deprivation Score. As the interviews had potential to raise anxiety among parents, having an undesirable effect upon uptake of MMR vaccine—quite the opposite of what was intended—the immunisation coordinator for Brent gave a brief talk after each discussion.</p> <p>The interviews were downloaded and transcribed verbatim, and the transcripts were coded to categorise the data into different themes. They used the constant comparison method to identify the main themes arising in each group interview and reassessed these continually before conducting further interviews.</p> <p>To improve the validity of the analysis, an investigator independently coded the first two interview transcripts. The coding frame was then re-examined and adjustments were made before the remaining transcripts were coded. They were also able to compare data from the focus groups with data gathered about groups of the same ethnic origin from the immunisation records. Finally, individuals' responses to the questionnaire were compared with patterns emerging from focus group interviews.</p>
Population and perspective	37 mothers (6 or mothers per focus group)
Inclusion Criteria	Parents of children
Exclusion criteria	None reported
Relevant themes	<p>3 themes were found by the investigators:</p> <p>1. Both the Indian groups followed their cultural tradition of consulting their elders, especially the mother-in-law, for advice about immunisation: "Our elders have seen the diseases in their countries ... they push us more towards immunising our children."</p> <p>2. The Asian mothers were also most likely to consult their general practitioner for advice and, more importantly, were most trusting of such advice. This was strongly highlighted by one mother who said: "The health visitor or the doctor will always say something which is beneficial to us so we accept the advice."</p> <p>4. The Afro-Caribbean, and especially the White mothers were more likely to question the pro-MMR vaccination advice given by healthcare professionals, which is consistent with the lower uptake seen in these groups. This was exemplified by one White mother who said: "I don't really trust anyone anymore to be honest! Even the health professionals unless I know them personally."</p>

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes

Section	Question	Answer
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Moran, 2008

2

Bibliographic Reference Moran, N.; Shickle, D.; Richardson, E.; European citizens' opinions on immunisation; Vaccine; 2008; vol. 26 (no. 3); 411-418

3

4 **Study Characteristics**

Study design	Focus Groups
Aim of study	To answer questions about whether the decision to vaccinate their own child should be left to the parents? Or should vaccinations be enforced by the government in order to keep diseases (such as measles which can cause more death and damage to more children than the risks associated with the vaccine) out of society as a whole?"
Behavioural model used	None stated
Study location	Europe (However, we focus on UK findings)
Study setting	Community
Study dates	2003

Sources of funding	European Commission's Fifth Framework
Study methods	<p>In September and October 2003, 96 focus groups were held across 16 European countries. Immunisation was discussed in 66 groups: 3 of these were conducted in the UK (Glasgow and London).</p> <p>The topic guide was piloted in additional focus groups held in France and the UK. The focus group methodology enabled participants to discuss issues that they may not have previously considered and to form or challenge their opinions through discussions with other people.</p> <p>Focus groups contained an average of eight people per group. Participants were recruited by Market Research companies in each country via a range of techniques: telephone directories, a recruiter database of contacts, and door-to-door and on-street recruitment. In order to reduce the chance that focus group discussions would be biased by people with strong views for or against particular issues, a screening questionnaire was used. Potential recruits were excluded if they responded that they were very active in working for political issues; if they had absolutely no interest in current political and social issues; or if they worked for the government or in marketing or the health industry.</p> <p>The groups were segregated according to gender; age (20—30 or 45—60 years); marital status; parental status; educational status; and smoking status. The combination of variables in each group was varied in different countries to ensure that each permutation was included.</p> <p>The number of focus groups conducted was large by qualitative standards, but the number of groups in each specific national demographic was proportionally less. Care must be taken if looking for similarities and differences between countries and demographic groups. Historical and legislative differences, linguistic issues and the small sample size involved must all be considered.</p> <p>The focus groups each lasted approximately 2 hours. During the 2-hour sessions, a range of public health policies and potential interventions were discussed, including childhood immunisation, the fluoridation of public water supplies, smoking, the physical punishment of children, the legalisation of cannabis, Not In My Back Yard issues (NIMBY-ism) and preferences for a high tax/high State provision society or a low tax/low State provision society. Participants spent no longer than 20 min discussing immunisation. The question on immunisation asked: Should the decision as to whether to vaccinate their own child be left to the parents? Or should vaccinations be enforced by the government in order to keep diseases (such as measles which can cause more death and damage to more children than the risks associated with the vaccine) out of society as a whole?</p> <p>This question was intentionally loaded. Childhood immunisation, and in particular compulsory childhood immunisation, is a contentious issue and the question was designed to elicit strong emotions and a focused debate.</p> <p>Each focus group was led by a trained group leader working from a semi-structured topic guide and approved prompts.</p> <p>The prompts were also designed to be dichotomous and provocative, both in support of compulsory immunisation and in support of parental freedom to choose. Participants were presented with these two extreme positions and were not taken through the various types of State compulsion or the range of alternatives between compulsion and parental choice. Rather, it was left to participants to consider and debate possible (preferred) alternatives.</p> <p>The focus groups were transcribed into the local language and translated into English. As the focus group data was so rich and nuanced, an inductive analysis was employed. A coding frame evolved as the transcripts were systematically interrogated by the research team.</p> <p>The data was coded both vertically by issues arising from within topic-based discussions (e.g. debates around compulsory immunisation, concerns over vaccine safety, debates around the necessity and utility of immunisation per se), and horizontally as over-arching themes emerged (e.g. risk, immigration and trust). Transcripts were coded using Atlas.ti software and analysed using a general inductive approach which enabled the research team to explore the themes and issues that</p>

	were felt to be important by the focus group participants. Similarities and differences across sub-groups (e.g. focus groups in different countries, those with children and those without children) were also explored.
Population and perspective	3 UK focus groups with an average of 8 people in each one.
Inclusion Criteria	None reported
Exclusion criteria	People who had specified opinions Potential recruits were excluded if they responded that they were very active in working for political issues; if they had absolutely no interest in current political and social issues; or if they worked for the government or in marketing or the health industry.
Relevant themes	<p>4 Themes were identified:</p> <p>1. The concept of risk. A significant number of participants questioned the safety of immunisation and expressed concerns over the potential side-effects of vaccines: “- MMR wasn’t about when we was kids, we all had measles, we all had mumps and German measles.”</p> <p>2. Differences in countries where compulsory immunisation already exists. In countries where certain childhood immunisations are already compulsory (Belgium, Greece, Italy and Poland), focus group participants tended to support the status quo, at least for those diseases which were currently compulsory in their own countries: “... there is legislation on this - and it is good that it exists ... we have vaccinated our children through this system. The State has imposed this. So I can’t give any other answers. I say that we should do them.”</p> <p>3. The ‘foreign threat’. Immigration was raised in a number of the focus groups in relation to numerous issues: “- The State has to promote it, because our State is becoming a multi-ethnic state. A lot of diseases totally unidentified are coming here in Italy and they are serious. There are tuberculosis and malaria in Milan. There are diseases that are kept hidden. That’s why the State has to monitor, to make sure and, in these cases, to issue some regulations, issued by Regions. This is because unidentified diseases are arriving.”</p> <p>4. Trust. Whether directly or indirectly, issues of trust were raised in all countries. Focus group participants expressed their trust in the immunisation advice of family doctors, paediatricians, or State health agencies: “- It is outside of the decision-making competence of most parents. Sure, the situation is different if the parents are medical doctors, but this is probably a small percentage. This decision has to be taken away from parents, because they are simply not competent enough to decide.”</p>
Additional information	<p>We only used the UK parent data for this study. This is because we had sufficient UK data from parents to not require non-UK data.</p> <p>It is possible that the findings may have been influenced by the timing of the study. Focus groups were held during September and October 2003 when the global panic surrounding severe acute respiratory syndrome (SARS) was at a peak. This may have heightened public awareness over the dangers of communicable diseases and thus possibly increased support for immunisation per se and for State powers to impose vaccinations. However, this was also a time when fears over vaccine safety continued to be in the public consciousness in particular countries, for example, MMR in Ireland, Italy and the UK and the use of mercury as a binding agent in the USA. In some countries such concerns may have reduced support for immunisation and/or led to greater support</p>

for parental freedom to choose. It is certainly possible that attitudes may have changed, or indeed may have hardened, in the time since the focus groups were held.

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Can't tell
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Can't tell
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research has some value
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Relevant (Includes the opinions of UK parents and non-parents.)

2

Mupandawana, 2016

Bibliographic Reference Mupandawana, Edith T; Cross, Ruth; Attitudes towards human papillomavirus vaccination among African parents in a city in the north of England: a qualitative study.; Reproductive health; 2016; vol. 13 (no. 1); 97

3 Study Characteristics

Study design	Semi-structured interviews
Aim of study	The study had three objectives: 1. To explore whether African parents in the UK have an awareness of what HPV vaccine is, and how the virus is transmitted and also to identify their sources of

	<p>information. This was important so as to explore whether lack of knowledge and awareness impact on the decision making process; knowledge will likely influence uptake.</p> <p>2. To explore the attitudes towards and acceptability of HPV vaccination by UK based African parents, and the factors influencing their acceptance of the vaccine including whether cultural principles influenced decision making, taking into account that in the African context, culture plays an important role in health behaviour.</p> <p>3. To explore whether mothers and fathers have similar views about their daughters having HPV vaccination, and any inter-family tensions around consenting to HPV vaccination.</p>
Behavioural model used	<p>Health Belief Model</p> <p>Protection Motivation Theory</p> <p>Neutralization theory</p>
Study location	Leeds, UK.
Study setting	Community (an African social club in a city in the north of England)
Study dates	Not reported
Sources of funding	The study was a student dissertation project and did not receive any funding from any source.
Study methods	<p>Purposive snowball sampling was used to select the participants who were recruited via gatekeepers from an African social club in a city in the north of England. Face to face semi-structured interviews were conducted. The interview duration was approximately one hour long. The interview schedule was based on the study objectives, and covered topics such as how long they have lived in the UK, number of daughters, their understanding of cervical cancer, their understanding of HPV and the vaccine, what they think is the appropriate age for vaccination, and their spouse's perceptions about vaccination, and their ability to discuss vaccination with their spouse. Each participant was interviewed without their partner. After a total number of 5 mothers and 5 fathers were recruited and interviewed, a point of data saturation was reached. All interviews were recorded, transcribed, and analysed using thematic data analysis by hand. An inductive approach to the analysis was used. To enhance validity, participants were provided copies of their transcripts to check for accuracy.</p>
Population and perspective	UK based African parents of daughters aged between 8 years and 14 years. Five couples. No details provided about where the parents came from in Africa, but quotes attributed to parents from Zambia, Zimbabwe, Nigeria, South Africa and Kenya.
Inclusion Criteria	<p>Parents of adolescent girls Age 8-14</p> <p>Parents of a specific nationality African</p>
Exclusion criteria	<p>Single parents</p> <p>Families where only one parent was willing to participate</p>
Relevant themes	<p>Theme 1: Factors influencing vaccine acceptability</p> <p>a. Awareness: Vaccination uptake and completion of all doses are influenced to a greater extent by the HPV knowledge and awareness that parents and care givers</p>

have. “No one in my family has ever had that and I have never heard of anyone getting it”

b. Protection: Protection against HPV infection and/or CC offered by the vaccine influenced vaccine acceptability, even by those who did not consent to vaccination. “...she can be infected by the one boy she sleeps with or the man she marry. So because my daughters are precious gifts from God, I don’t want to take any chances”

Theme 2: factors influencing vaccine decline

a. Link to promiscuity: The majority of the parents interviewed expressed that only those who are promiscuous or intend to be would benefit from the vaccine. “If people want to be promiscuous, let them pay for their sins. Others have paid by dying from HIV, so what’s different here?”

b. Vaccination age: The majority of participants thought the vaccination age was too young, with most expressing older girls or young women who are sexually active should be vaccinated. “I think young women getting married are the ones who should be vaccinated”

c. New vaccine: A majority of the parents felt that the vaccine was still very new and that some of the side-effects of the vaccine were yet unknown; resulting in mistrust for the vaccine. “Let them vaccinate their own children first, then after 20 years if nothing happens, we will also vaccinate our own”

d. Conspiracy theories: Various conspiracy theories have impacted on health decision making for some Africans. For instance, the conspiracy theory that HIV was created in an American laboratory targeted at reducing the African population and was delivered to Africans through the polio vaccine affected uptake of polio and other vaccines, especially when they were donated from the west. “Remember this is a white man’s vaccine. The white man brought us AIDS to kill us off because we were too many; now, they might want to make our daughters sterile”

e. Religion: Religious values greatly influenced the decision-making process, with religion being cited by half the participants as reasons for declining vaccination. “...and all my children are growing up in the church; in the Christian way. The school said it’s [HPV] caused by sex, so my children won’t have sex until they’re married”

Theme 3: the decision-making process and power dynamics

It was evident from most of the participants that the fathers were the ultimate decision makers in most issues pertaining to the family and especially the children. “My husband is an African man, so he must be involved in any decision especially when it concerns his children. ...in my own culture, they are more his children than they are mine”

Theme 4: risk perceptions

Perceptions of personal risk are usually borne from local history, personal experience, social circumstances and lay knowledge within a given cultural context, and influence health decision-making. “It’s a new vaccine, nobody knows what the long term side effects are.”

	<p>a. Risk neutralization: In the instances where there was perceived risk of both cervical cancer and HPV infection, some of the parents seemed to neutralize these risks in a way that was rational for them. "...these days people don't have many children"</p> <p>b. Culture as cervical cancer risk: Some of the participants attributed cervical cancer risk to African cultural practices and not HPV. Cultural practices such as using traditional medicines in the vagina for various reasons like tightening the vagina to enhance sexual pleasure for their male partners, and preparing the birth passage were some of the cervical cancer risk factors cited by the participants. "Old women because it takes a long time for the poisons in the medicines to affect the womb, and they used a lot of those medicines in the old generation because they had more children"</p> <p>c. Culture as protection against HPV infection: Conversely culture was also cited as protection against HPV infection. A good upbringing was perceived as protection</p> <p>by both mothers and fathers, with HPV infection perceived as an infection for children who come from uncultured, non-African backgrounds. "He said the vaccine is for white people's children who have loose morals, He said black girls never get this promiscuity disease"</p>
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1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Mytton, 2020

Bibliographic Reference Mytton J; Bedford H; Condon L; Jackson C; ; Improving immunization uptake rates among Gypsies, Roma and Travellers: a qualitative study of the views of service providers.; Journal of public health (Oxford, England); 2020

2 Study Characteristics

Secondary publication of an included qualitative study - see the evidence table and risk of bias/relevance judgements under the main reference	Please refer to UNderstanding uptake of immunisations in travelling aNd gypsy communities (UNITING): a qualitative interview study by Jackson, C.; Dyson, L.; Bedford, H.; Cheater, F.M.; Condon, L.; Crocker, A.; Emslie, C.; Ireland, L.; Kemsley, P.; Kerr, S.; Lewis, H.J.; Mytton, J.; Overend, K.; Redsell, S.; Richardson, Z.; Shepherd, C.; Smith, L. in Health Technology Assessment; 2016; vol. 20 (no. 72).
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3

New, 1991

Bibliographic Reference New, S.J.; Senior, M.L.; I don't believe in needles: Qualitative aspects of a study into the uptake of infant immunisation in two English Health Authorities; Social Science and Medicine; 1991; vol. 33 (no. 4); 509-518

4 Study Characteristics

Study design	Semi-structured interviews
Aim of study	To explore reasons for vaccine hesitancy and parental knowledge of, and attitudes towards, immunisation and the type of advice that parents had received.
Behavioural model used	None stated
Study location	UK
Study setting	Community
Study dates	1988
Sources of funding	Economic and Social Research Council
Study methods	It was decided to examine the experiences of a sample of mothers representing these three groupings within two DHAs in the North West of England, Lancaster and Salford. Lancaster, with a mixture of rural and urban environments within its boundaries, had, at the time of the study (1988), an uptake rate for the primary course of immunisations higher than the national average (73.5% for DTP/Polio uptake against 72% nationally), whilst Salford-which is

	<p>part of a larger conurbation and has an inner city area-had an uptake rate substantially below the national average (56% for DTP/Polio uptake).</p> <p>With the cooperation of members of the respective DHAs, data from the computerised Child Health System was provided weekly, from June to December 1988, in two forms: (i) immunisation history cards, giving details of children who had recently completed their primary course ('full' and 'partial' immunisers); and (ii), a routinely produced list for Health Visitors of children who had not attended for two appointments in succession without a reason being given for their non-attendance ('incomplete' immunisers).</p> <p>Potential interviewees were chosen at random from these two sources, although the sampling fractions were weighted in favour of incomplete immunisers, as they formed the smallest of the three groups. The nature of the data with which they were provided determined the nature of their research design: a retrospective, unmatched case-control design.</p> <p>Both cross-sectional and cohort designs were ruled out, as very large samples would have been necessary to secure an adequate number of incomplete immunisers.</p> <p>The questionnaire contained a number of sections; the first section asked all the respondents to state all their reasons for non-attendance and explored the notion of specific practical difficulties and constraints. These questions were asked unprompted at the beginning of the interview in order to elicit an answer that would not be influenced by any of the issues discussed in the sections that followed. The middle sections invited precise, factual responses amenable to quantitative analysis, whilst the final two sections explored parental knowledge of, and attitudes towards, immunisation and the type of advice that parents had received. Some of the questions in these last two sections were quantifiable, whilst others were more open-ended. In the majority of cases, respondents also freely elaborated on the responses they offered to the more quantifiable questions and were indeed encouraged to do so. Thus, data of a more qualitative nature was contributed by all respondents.</p>
Population and perspective	<p>Overall, attempts were made to contact 634 mothers and interviews were actually secured with 253 women:123 full immunisers, 71 partial immunisers and 48 incomplete immunisers. A further 11 interviews were secured with incomplete immunisers, but proved to be unusable for the purposes of the statistical analysis. In 15 cases, both parents had taken the child to the appointment, whilst only two fathers had had sole responsibility.</p> <p>At 70 addresses in Salford no answer was obtained, even after at least one repeat visit at a different time of the day (and in many cases a third, evening, visit), whilst in 26 cases the address was incorrect. Again in Salford, 42 women declined to be interviewed, 31 of whom were incomplete immunisers. This was the group amongst whom interviews proved most difficult to secure, which raises the question of whether those who declined to be interviewed differed significantly in any characteristics to those incomplete immunisers who agreed to be interviewed; possibly the refusers formed the true 'hard core' of incomplete immunisers within Salford, a group which was therefore at best under-represented within the sample.</p>
Inclusion Criteria	Parents of children
Exclusion criteria	None reported
Relevant themes	<p>2 Themes were identified:</p> <p>1. Health experiences. Partial immunisers had tended to receive more negative advice from family and friends than both full and incomplete immunisers, but many partials said that it was the professionals' attempts to persuade them that the risks of</p>

vaccine-damage were minimal that had actually deterred them: "If he has whooping cough, he catches it and that's that - but if he had the injection, I'd feel responsible."

2. The impact of the 'gender role constraint'. Transport constraints were not seen to be affecting uptake to any significant extent, whilst illness and the presence of older children-both of which could be interpreted as time-space constraints-were seen to be of some significance.: "I have to take other children along with me and its very hard work."

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	No
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Can't tell
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low (Although the ages of the children are not clear, the children included in this study easily fit within our 0-5 years of age group because it is about infants and babies.)
	Relevance	Highly relevant

2

Newton, 2017

Bibliographic Reference Newton, P; Smith, D M; Factors influencing uptake of measles, mumps and rubella (MMR) immunization in site-dwelling Gypsy, Roma and Traveller (G&T) communities: a qualitative study of G&T parents' beliefs and experiences.; Child: care, health and development; 2017; vol. 43 (no. 4); 504-510

1 Study Characteristics

Study design	Focus Groups
Aim of study	The aims of the study were to explore: 1) Experiences and beliefs about childhood immunisation. 2) Beliefs about the risks of immunisation and non-immunisation. 3) Perceptions of obstacles to, and facilitators of, immunisation. 4) Views on increasing participation in immunisation programmes.
Behavioural model used	None stated
Study location	UK
Study setting	Community (sites across Kent in South-East England)
Study dates	2014
Sources of funding	Not stated
Study methods	A cross-sectional, qualitative study was conducted comprising of five focus groups with 16 site-dwelling Gypsy and traveller (G&T) women with pre-school aged children. Participants were purposively sampled from sites across Kent in South-East England. The county was selected as it has the highest population of G&T's in the UK and a low level of childhood immunisation amongst this G&T community. Sites were selected to capture those from English Gypsy and Irish Traveller communities, as well as the Roma community as these groups tend to live together in single sites. Sites were chosen which had recently experienced measles outbreaks. A focus group data collection approach was taken to capture the women's consensual views on immunisation, and because evidence has shown that focus groups are an effective means of capturing the views of marginalised groups. The topic guide for the focus group was developed following a pilot survey administered to 31 G&T women by a health outreach worker from within the local G&T community. Focus groups were held at the sites and were conducted by two female members of the G&T community. One of these was the aforementioned health worker and the other a local Gypsy woman who received training prior to conducting the focus groups. Focus groups lasted seventy minutes on average and following the advice of the two interviewers were not attended by the (male) authors as this would have been considered culturally inappropriate. Data was audio-recorded, transcribed verbatim and analysed for emerging themes afterwards - and before the subsequent focus group. Using this iterative process, the focus groups continued until a saturation point was reached - whereby the data collected becomes repetitive and when adding participants is unlikely to generate new ideas. A systematic review of focus group-based studies has found that this usually occurs at around the fifth focus group. To ensure rigour, transcripts were read in their entirety by the two authors and a framework of emerging themes were developed, by negotiating and agreeing on the content, as well as the development of new themes (or subthemes) where there was disagreement. Using this approach, quotes were assigned to themes; hence the illustrative quotes given below are examples representing a given theme. Ethical clearance was gained from the University of Greenwich Research Ethics

	Committee and procedures regarding signed informed consent, anonymity and confidentiality were adhered to throughout.
Population and perspective	16 women with children took part in 5 focus groups (FG). Eight (N=8) participants identified as English Gypsies/Travellers, Five (N=5) as Irish Travellers and three (N=3) as European Roma. The majority lived on authorised sites either privately owned or socially rented.
Inclusion Criteria	Parents of children who had a specified age range Age 0 to 5 years Parents who are part of a specific community Gypsy, Roma and traveller communities
Exclusion criteria	None reported
Relevant themes	<p>5 Themes were identified by the investigators:</p> <ol style="list-style-type: none"> 1. Travellers' lay understanding of causation and risk. Participants generally had a clear understanding of how childhood diseases are transmitted and gave multiple examples of measles, mumps and rubella being spread amongst children: "That was all around your Iris' funeral, that's where they picked it up - you know, my Johnny picked it up there [...] Everybody you spoke to had them. Everyone you spoke to then, someone had it. It was like wildfire wasn't it going through the travellers. It spread so fast." 2. Timing and Immunisation. This theme of timing had three sub-themes – a) The age of the child, b) Spacing each immunisation separately rather than receiving the combined MMR and c) Fitting immunisation in with other, competing, issues: "...[H]ygiene and clean water has got more to do with us being alive ..." 3. The impact of living with a high burden of disease. As noted, the G&T community experience high levels of illness. The impact of this is evident in the interviews - as the majority of participants discussed how frequent illness in the children shaped their decisions around immunisation: "I'm definitely going to get him [participant's son] done with the MMR, because he's been so sick since he's born anyway with viruses and ear infections and stuff." 4. Travellers' perceptions of children as vulnerable. Related to the frequency of childhood illness, participants understandably saw children as vulnerable and viewed the immunisation process itself as traumatic and causing unnecessary distress to the child: "It was horrible – really awful – she cried so much" 5. The fit between the nomadic way of life and healthcare provision. Many of the participants were previously nomadic and/or still spent part of the year travelling. Practical issues related to a nomadic lifestyle such as not knowing where local clinics are located or the procedure for having children immunised, were also important factors in reducing uptake of immunisation: "Also when you're travelling as well, you don't know where the clinics are, how are you supposed to?"

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes

Section	Question	Answer
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Noakes, 2006

Bibliographic Reference Noakes, Karen; Yarwood, Joanne; Salisbury, David; Parental response to the introduction of a vaccine against human papilloma virus.; Human vaccines; 2006; vol. 2 (no. 6); 243-8

2 Study Characteristics

Study design	Focus Groups
Aim of study	To observe parents' decision-making process as to the risks and benefits of HPV vaccination, as information was sequentially provided on cervical cancer, HPV and the HPV vaccine. To examine whether there were difference in views between mothers and fathers, and parents of boys and girls.
Study location	UK
Study setting	Community
Study dates	August 2005 - September 2005
Sources of funding	Department of Health
Study methods	The lowest age range of potential vaccination was chosen (8–10 year olds) to explore whether the vaccination programme would be acceptable to parents at an early age. Six small group discussions lasting around one and a half hours were held in London, Nottingham and Sheffield (two groups each). The sites in Nottingham and Sheffield were close to large rural areas. Single gender discussions were moderated

	by a researcher of the same gender to ensure that the discussions were as open as possible. Researchers used a discussion guide and respondents were given stimulus material at the start of the interview outlining facts about HPV, cervical cancer and the potential benefits of the HPV vaccine. No information was provided about the analysis methods.
Population and perspective	Parents of 8-10 year old children, including mothers and fathers and parents of boys and girls
Inclusion Criteria	Parents of 8-10 year olds <i>Mothers and fathers</i>
Exclusion criteria	People who rejected the vaccination programme
Relevant themes	<ol style="list-style-type: none"> 1. Attitudes to vaccination: Parents were mostly positive about childhood vaccinations but risks were seen to be greater than for adult vaccinations and parents wanted to weigh up the risks and benefits before they agreed to their child being vaccinated. This was particularly informed by the MMR vaccine debate. "I'm for it but I want everyone to be very straight—for all the information to be out about it" 2. Awareness of HPV and cervical cancer: There was very little awareness about HPV but more awareness of cervical cancer. Some people thought that people were unlikely to have serious consequences if they had cervical cancer. 3. Relationship between HPV and cervical cancer. People were shocked when they found out that a virus so common could have potentially serious consequences, and surprised that they had so little awareness of this. However, people thought that the use of condoms and regular screening would prevent that risk. 4. Response to a HPV programme: Parents were not convinced that the risks of HPV were enough to need the vaccination programme. They were concerned about the link between HPV and sexual activity for a vaccine that was being offered to children. "The idea of injecting my daughter so that she can have sex doesn't sit right with me." 5. Implementation of a HPV programme: Parents thought that it would be more appropriate to give the vaccine to secondary, rather than primary age, school children. Some parents thought that a school-based programme would ensure that all children had the opportunity to be vaccinated and also meant they would be given education about HPV. Others thought that young people would mistake messaging about the vaccination as a sign that they could now have sex. There were some concerns over whether school vaccinations would take away the parent's ability to consent. "And your worry would be that if you sent a load of kids in school that haven't got a good sex education programme, would they then think it's okay to go and have sex once they've had that injection?" 6. Age for vaccination: Parents thought the vaccination should either be given to very young children who wouldn't ask questions about HPV or to adolescents.

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes

Section	Question	Answer
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Can't tell (Not statement of ethics committee approval)
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Relevant (Hypothetical discussion of vaccinating 8-10 year olds, instead of 11-18.)

1

O'Shea, 2018

Bibliographic Reference O'Shea, A.; Cleary, B.; McEntee, E.; Barrett, T.; O'Carroll, A.; Drew, R.; O'Reilly, F.; To vaccinate or not to vaccinate? Women's perception of vaccination in pregnancy: A qualitative study; BJGP Open; 2018; vol. 2 (no. 2)

2 Study Characteristics

Study design	Semi-structured interviews
Aim of study	To explore women's perception of vaccination in pregnancy and thereby determine the reasons behind low vaccination rates.
Behavioural model used	None stated
Study location	Ireland
Study setting	Tertiary referral maternity hospital in Dublin
Study dates	2016

Sources of funding	Irish College of General Practitioners (ICGP)
Study methods	<p>After completing a questionnaire, participants were purposively selected to achieve maximum variation in terms of vaccination status, public or private patient status, and ethnicity. Women meeting the criteria were asked to take part in a telephone interview within 1 month of delivery. The women were consented for the qualitative arm, and their name and telephone number were passed on to the qualitative interviewer.</p> <p>Initially, 42 women consented to the interview. An attempt was made to contact all these women by telephone, some on multiple occasions. Though data saturation had been achieved, there were only two unvaccinated women among those interviewed. A further 18 women were consented, but only unvaccinated women were selected for interview.</p> <p>The telephone interview was chosen instead of face-to-face due to the limited time the women had available while on the post-delivery ward. The phone interview within 1 month of delivery would allow a more relaxed conversation with the recent mothers at times most suited to their schedule.</p> <p>This was achieved by arranging suitable call-back times. A total of 17 in-depth interviews were carried out by a single interviewer. A semi-structured questionnaire was used to guide the interview.</p> <p>The design of the interview was structured to allow multiple participants answer the same questions, thus facilitating saturation. The interview guide was created by firstly identifying the general domains the study wanted to explore; that is, the women's knowledge and awareness of vaccination guidelines, their understanding of influences, and their views of benefits and risks of vaccination during pregnancy. Open questions were then determined within these domains to allow for interpretations of their experiences that influenced their views. The interviewer added extra questions about unexpected but relevant responses that emerged.</p>
Population and perspective	<p>Seventeen post partem women were recruited. The majority of women were Irish (n = 12), although there was one Polish, one Nigerian, one Spanish, one Maltese, and one Pakistani participant, reflecting the varying ethnicities admitted to the maternity hospital. Five of the women were seen privately for their maternity care, four semi-privately, and eight under the general medical service scheme (which is the equivalent to the NHS). Thirteen of the 17 women received the influenza vaccine in pregnancy, while only nine received the pertussis vaccine.</p> <p>Mean age was 33 years (range 23 to 44)</p>
Inclusion Criteria	<p>Women who had recently given birth Live birth at >24 weeks. Aged >18 years</p> <p>Participants had to be fluent in English</p>
Exclusion criteria	None reported
Relevant themes	<p>Three themes were identified:</p> <p>1) Healthcare providers influence pregnant women's choice to vaccinate Recommendation to vaccinate from a healthcare provider emerged as a very important factor influencing the women's decisions to vaccinate. Some women felt it was important to follow the advice of their healthcare provider, whereas others commented that the vaccine was not stressed enough and that healthcare providers did not engage them in meaningful discussions "I think it's important to listen to the advice of your GP and your obstetrician because they're the ones that know best, you know, when it comes to anything in pregnancy. They've seen it all, I guess"</p>

	<p>2) The lack of understanding regarding vaccine safety Some participants admitted somewhat hesitantly that if the vaccine was recommended to them by their healthcare provider they did not investigate it further or consider the safety of the vaccine. Over half of the women were unsure whether there were any risks associated with the influenza vaccine. “I think the risks of vaccination in pregnancy are huge. I think if you interfere with pregnancy at all, you’re asking for trouble.”</p>
	<p>3) The lack of awareness and promotion of the pertussis vaccination Many participants explained that their healthcare provider was much less involved in giving information on this vaccine compared to the influenza vaccine, and these women sought other sources of information to inform their choice. “was reading on a website and I had to go and ask for it myself, that was it. So nobody mentioned anything, not even the midwives or anything, I was completely unaware of it and then I happened to read and I went to get it last minute, again at my GP, that one.”</p>

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes <i>(Recruitment of participants occurred 1 month or less after pregnancy. We have not downgraded: this is soon enough after pregnancy to enable participants to remember.)</i>
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	No
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable

Section	Question	Answer
Overall risk of bias and relevance	Overall risk of bias	Moderate <i>(The relationship between the investigators and the participants was not considered and it is possible that the investigators could have been involved in the participants' care)</i>
	Relevance	Highly relevant

1

Paterson, 2019

Bibliographic Reference Paterson, P.; Mounier-Jack, S.; Saliba, V.; Yarwood, J.; White, J.; Ramsay, M.; Chantler, T.; Strengthening HPV vaccination delivery: findings from a qualitative service evaluation of the adolescent girls' HPV vaccination programme in England; Journal of public health (Oxford, England); 2019

2 Study Characteristics

Study design	Semi-structured interviews Participant observation
Aim of study	This study aimed to explore the views and perspectives of service commissioners and providers to identify factors contributing to high- and under-performance of school-based HPV vaccination.
Behavioural model used	None stated
Study location	South West (Cornwall, North Somerset, Bristol), North Central Midlands (Lincolnshire, Leicester), and South Central Midlands (Luton)
Study setting	Education and healthcare
Study dates	May-August 2017
Sources of funding	This work was funded by the National Institute for Health Research Health Protection Research Unit (NIHR HPRU) in Immunisation at the London School of Hygiene & Tropical Medicine in partnership with Public Health England (PHE).
Study methods	<p>The researchers invited individuals working at commissioning and service delivery level to participate by emailing them a study information letter. Respondents who expressed interest in participating were contacted. Researchers visited study participants at their place of work, discussed what participation would involve and obtained written informed consent prior to conducting interviews and observations.</p> <p>Data collection involved individual and group interviews and an observation of a school immunization session. A semi structured interview (SSI) approach using a pre-tested topic guide was adopted to enable the interviewer to cover pre-defined topics and allow the exchange to be shaped by interviewees' roles, responsibilities and experiences. Interviews were mostly conducted face to face, or by telephone. Interviews were audio-recorded and transcribed verbatim. Transcripts were analysed using NVivo software and the coding framework was developed and refined by the researchers using thematic analysis involving a combination of deductive and inductive coding. The transcripts from service commissioners and providers were analysed together to explore the interactions between these actors, although where</p>

	participants recounted separate experiences this was noted. Some interviewees were contacted again to address gaps in information and provide clarifications.
Population and perspective	Immunization programme commissioners and service providers in six local authorities covered by three Screening and Immunization Teams (SIT) in England: South West (Cornwall, North Somerset, Bristol), North Central Midlands (Lincolnshire, Leicester), and South Central Midlands (Luton). Seven immunization programme commissioners and 32 service providers were recruited.
Inclusion Criteria	<p>Practicing healthcare professionals At the service delivery level: Service provider organization administrators; Service provider nursing leads; Nurses who provide the vaccines in schools; Service provider data administrators; Child Health Information Service Managers</p> <p>Immunization commissioners NHS England Public Health Commissioners; Screening and Immunization Leads; Immunization managers; Immunization coordinators with responsibility for school-aged immunizations</p>
Exclusion criteria	None reported
Relevant themes	<ol style="list-style-type: none"> 1. Staff skill mix, delivery teams and the role of commissioners: Key differences between local authorities were the mix of staff (e.g. number of administrators, school/ immunization nurses, immunization leads/managers) and whether vaccines were provided as part of a 'broader school nursing service' or by a 'stand-alone immunization team'. "At the moment, [the HPV vaccination programme] it's sitting within a wider programme 0-19 [years] and school nursing broadly... we've got immunisations to deliver, but at the same time, we've got emotional health and wellbeing work to do, we've got safeguarding work to do... which compete for the time." 2. Working with schools: facilitating programme delivery: Specific named contacts within schools and named counterparts in immunization teams helped establish good working relationships with schools. 'Some schools are very good and get a very good response... we tend to find it's the ones that have got a nominated person in the school.' 3. Information and consent logistics: According to interviewees, non-returned consent forms may either not have been given to parents, or were not completed by parents due to lack of time, misplacement, or hesitancy about HPV vaccination. "One of the biggest issues, is not getting the forms returned. So, it's not actually a positive refusal, but it's not a positive consent either." 4. Immunization session logistics: The observation revealed that sessions could be very busy, with students lining up outside rooms where nurses set up stations while trying to use screens to maintain individual's privacy. "If we have young people that... are prone to feeling faint, prone to feeling unwell... [we] say, 'Come and see us when... it's a bit quieter and then we can give you a bit more time... if the schools can identify them to us, maybe we could administer their vaccine in... the first aid room and do it with more privacy.'" 5. Addressing concerns and negative messages: Although not presented as a major challenge, interviewees highlighted the need for nurses to be prepared (receive regular training and have sufficient access to informational materials) to pre-empt, acknowledge and address parents' concerns whilst providing information about the benefits and risks of the vaccine. "I have had a few [parents] that have been thinking they're going to say no [to HPV vaccine], but then we've had a conversation and it's actually allayed their fears and... they actually go 'okay, yes, we'll have it.'" 6. Accurate cohort numbers: Interviewees stated that it was key to obtain accurate class lists in advance (ideally before the start of the new school year) of the vaccination programme starting, for the team to effectively plan vaccination activities. "To get your cohort numbers correct in the beginning, is the key to starting a good programme basically... you're not going to get

	<p>your coverage right, are you, unless you actually have got your denominator right in the beginning."</p> <p>7. Advantages of automated and real-time database systems: Inputting and cleaning data in database systems was highlighted as labour intensive, especially the parts of the data management system that are not automated. "There's a lot of matching going on and it's all a very manual process... 18 000 mismatches that needed to be sorted manually and some of them used to take 20 minutes each."</p> <p>8. An effective data management team: The effectiveness of the data management team was reported to be reliant on regular training, up-to-date system operating practices and effective support from the database system and the software teams. "Teams are scattered over four bases so it's not as easy to make very sudden quick changes to processes, and then ensure that that's communicated."</p>
Additional information	<p>This publication covers different aspects of the same study as Chantler 2019.</p> <p>The results for the participant observations were not extracted for analysis as this form of data collection does not meet the review protocol.</p> <p>Data relating to the identification and recording of eligibility and status was extracted and analysed as part of the separate review focusing on these topics specifically.</p>

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes (Although stated most clearly in the limitations section)
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Can't tell (No statement of ethics committee approval)
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable

Section	Question	Answer
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Pattin, 2018

Bibliographic Reference Pattin, A.J.; Sherman, L.; Experiences Among African American Community Members With Pharmacy-Based Immunization Services in Detroit, Michigan; Journal of Pharmacy Technology; 2018; vol. 34 (no. 6); 259-265

2 Study Characteristics

Study design	Focus Groups
Aim of study	To examine the experiences of African Americans with pharmacy-based services and identify how pharmacies and pharmacy organizations can better service patients in urban communities with similar dynamics.
Behavioural model used	Ecological health belief model The ecological model describes the impact of the interaction between the individual (intrapersonal and interpersonal factors) and the larger community structure (physical environment and policy) on public health. The "structuralist" approach taken by the authors contends that health behaviours, such as not receiving vaccines, are affected not only by individual factors, such as level of education, confidence, and complacency, but also by environmental factors, such as limited access to pharmacies that offer pharmacy-based immunization services within the community.
Study location	USA
Study setting	Community
Study dates	Not provided
Sources of funding	National Association of Chain Drug Stores (NACDS) Foundation
Study methods	<p>Their qualitative study utilized focus group discussions to gather information from community members. The Wayne State University Institutional Review Board approved the study methods and materials. Data that describe racial and ethnic disparities with regard to accessing pharmacy-based immunization services in Detroit, in combination with the ecological health belief model, were used to create study aims and the data collection script.</p> <p>Prior to study recruitment, the principal investigator utilized his pharmacy site, located in East Detroit, as a focal point to enlist community partners for the project. Investigators completed a Google search of community-based organizations (CBOs) within a 10-mile radius of the pharmacy. Investigators then called each organization to inform them about the study and ask for support in promoting the project and hosting focus group sessions. One individual from a not-for-profit CBO located in a public housing complex requested a meeting with the investigators to discuss the project. A meeting was scheduled, and details about the CBO were shared, including its mission to serve residents of the housing complex by working with residents, organizations, institutions, and businesses on Detroit's east side. Additionally, the CBO provided residents of the housing complex with information and action forums to address</p>

	<p>issues that adversely affect their lives.</p> <p>After discussion about the shared goal of helping the community, the executive director and community members agreed to collaborate with study investigators on the project, and the institutional review board–approved recruitment flyers were hung in communal areas to notify residents about the focus groups. All English-speaking adults aged 50 years and older who resided in metropolitan Detroit were eligible to participate in the study. This age group was selected because it was thought they would be more familiar with influenza and pneumococcal vaccine, and have greater experience dealing with vaccinations. Originally, the Advisory Committee on Immunization Practice recommended influenza vaccine for healthy adults aged 50 years and older and recommendations did not expand to all healthy adults until 2011.</p> <p>Recruitment flyers instructed interested individuals to call the principal investigator for further details. Within 3 weeks, 22 people called to express interest in participating in the study, and investigators scheduled focus group sessions in the community centre of the housing complex. The principal investigator called the prospective participants about the scheduled times for focus groups, and 15 individuals reported for the group meetings.</p> <p>Study investigators used an iterative process to develop a data collection script. When an initial draft of the data collection script was developed, it was sent to peers within the principal investigator’s department and research mentors at the University of Pittsburgh School of Pharmacy. After 2 rounds of revisions, the final draft included 3 main topics areas with 10 total questions. The topic areas were designed to (1) understand the participants’ knowledge base about influenza and pneumonia vaccines and describe their experiences receiving vaccines; (2) learn participants’ feelings about pharmacists administering vaccines to patients; and (3) identify potential pharmacy-based solutions to improve vaccination rates in the community.</p> <p>A medical anthropologist was hired to facilitate 2 focus group discussions using the data collection script. The principal investigator co-facilitated and took notes during focus group sessions. Each participant signed an informed consent document, and 6 to 9 individuals participated in each session. Focus groups were audio-recorded and lasted from 45 to 80 minutes. After each session, participants were offered lunch and a \$20 gift card to a local grocery store.</p> <p>Investigators hired Wordsworth Typing & Transcription, Inc, a professional transcription company, to transcribe audio recordings from each focus group session. Pharmacy companies and the names of study participants were not included in the written text. After receiving the transcripts from each focus group session, investigators coded the data. This involved 2 investigators independently reviewing written notes with transcribed text to create preliminary themes. These investigators then came together to compare notes and subsequently reconciled and refined the themes. At a later meeting, all study investigators convened to read transcripts line-by-line and identified major statements, phrases, and quotations related to the themes and study objectives. Investigators met a final time to discuss themes identified in the analysis process.</p>										
<p>Population and perspective</p>	<p>15 people in total:</p> <table border="1"> <thead> <tr> <th>Age (years),</th> <th>n (%)</th> </tr> </thead> <tbody> <tr> <td>50-54</td> <td>1 (6.6%)</td> </tr> <tr> <td>55-64</td> <td>6 (40%)</td> </tr> <tr> <td>65-70</td> <td>7 (46.6%)</td> </tr> <tr> <td>>70</td> <td>1 (6.6%)</td> </tr> </tbody> </table>	Age (years),	n (%)	50-54	1 (6.6%)	55-64	6 (40%)	65-70	7 (46.6%)	>70	1 (6.6%)
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<p>Inclusion Criteria</p>	<p>People aged 50 years or older</p> <p>People who share specific characteristic(s) African Americans and English-speaking</p>										

Exclusion criteria	None reported
Relevant themes	<p>3 themes were identified by the investigators:</p> <p>1. Pharmacy Location More Convenient and Accessible Than Doctors' Offices. Approximately 13 of the 15 focus group participants stated that they prefer to receive their vaccinations from a pharmacy, as opposed to their doctor's office, because it was easier to access the pharmacy of their choice from their residence: "Well, pharmacist by far is more accessible. They've got banners outside the pharmacies. We have the flu shot, we have the shingles shot. Yes, very well advertised."</p> <p>2. Clear Communication With My Pharmacist. An informative conversation regarding the relationships and previous conversations with pharmacists also emerged during the focus groups. The participants indicated strong and consistent interactions previously with their pharmacists: "I'm talking to the pharmacist. Sometimes the pharmacists are more clear than the doctor."</p> <p>3. Lower Immunization Fees at Pharmacies. Another theme that came from focus group discussions about preference was centred on cost to patients of receiving immunizations at the pharmacy compared with the doctor's office: "I go to the pharmacy because it was cheaper."</p>

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes

Section	Question	Answer
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Relevant (They included all people who were aged 50 years and over. This review is interested in people who are age 65 years and over.)

1

Payne, 2011

Bibliographic Reference Payne, Daniel C; Humiston, Sharon; Opel, Douglas; Kennedy, Allison; Wikswo, Mary; Downing, Kimberly; Klein, Eileen J; Kobayashi, Ana; Locke, David; Albertin, Christina; Chesley, Claudia; Staat, Mary A; A multi-center, qualitative assessment of pediatrician and maternal perspectives on rotavirus vaccines and the detection of Porcine circovirus.; BMC pediatrics; 2011; vol. 11; 83

2 Study Characteristics

Study design	Focus Groups
Aim of study	The aim was to understand paediatricians' and mothers' views about rotavirus vaccines containing DNA or DNA fragments from Porcine circovirus (PCV), a virus common among pigs but not believed to cause illness in humans.
Behavioural model used	None stated
Study location	USA
Study setting	Community
Study dates	2010
Sources of funding	Centers for Disease Control and Prevention
Study methods	They conducted three iterations of focus groups for paediatricians and mothers in Seattle, WA; Cincinnati, OH; and Rochester, NY (total of 9 physician and 9 parent focus groups). A standard protocol, moderator guides, and pre-/post- test comparisons of acceptability of the rotavirus vaccine were uniformly applied. The initial focus groups were held in July 2010, approximately 4 months following the first public announcement of PCV in a rotavirus vaccine, and approximately 2 months following the FDA recommendation to resume/continue rotavirus vaccinations. Two further focus group iterations occurred in August and September 2010. All focus group iterations included core discussions on rotavirus disease and rotavirus vaccines, followed by information on PCV. Co-investigators developed communication materials and messages prior to the focus group sessions and obtained parent and paediatrician feedback on these materials during the focus group

discussions. The moderator's guide and communication materials were then revised iteratively based upon comments and data obtained from the previous focus groups until conceptual insights were exhausted. The focus groups lasted approximately 90 minutes. Although each moderator was independent and experienced in leading focus groups, participant responses may be affected by the manner in which information is conveyed to the focus groups.

Each focus group consisted of up to 8 unique participants. The paediatricians typically administered >4 rotavirus vaccine doses per week. Recruitment of paediatricians occurred through community paediatrician list serves, at events (e.g., grand rounds), and other administrative meetings, and the study team followed up with interested participants for a determination of eligibility.

The sampling frame and solicitation methods for mothers differed by site: In Seattle, mothers were recruited from a university-based primary care clinic, but in Cincinnati and Rochester a marketing telephone list was used to contact households for eligibility.

Focus group questions were open-ended, non-sensitive, and designed to maintain participant privacy. They included the following domains: a) perceptions of rotavirus disease, b) perceptions of rotavirus vaccination, c) attitudes toward the detection of PCV material in rotavirus vaccines, and, d) attitudes toward communication materials on these topics.

After each round of focus groups at each site, the audiotaped discussions were transcribed verbatim and then analysed by use of an inductive coding technique for qualitative data. Each investigator independently read each focus group transcripts specific to their site(s) and abstracted key themes regarding rotavirus disease, rotavirus vaccine, attitudes regarding the PCV finding, and communications. Investigators then met to discuss their independent analyses and negotiate a final list of themes. Quotations used in this article were excerpted from transcripts and are representative of the category to which they have been assigned. Group dynamics inherently affect focus group results and this was taken into consideration during their analysis.

They asked attitudinal questions at the beginning and end of each focus group to compare whether or not the focus group discussion had influenced or changed subject perceptions of rotavirus vaccines. These questions included attitudes and opinions regarding rotavirus vaccination (i.e., their acceptability, understanding and barriers to rotavirus vaccination). Changes in pre- and post-focus group questionnaire responses were assessed using the Wilcoxon signed rank test for non-normal distributions. For these comparisons, the estimated aggregated study power was >90% for paediatricians and mothers.

Prior to focus group enrolment, the CDC Human Research Protection Office determined this evaluation to constitute a public health non-research project, and the institutional review boards at each participating institution (Seattle Children's Hospital, University of Rochester, New York, School of Medicine and Dentistry, Cincinnati Children's Hospital and Medical Center) declared the project to be exempt. Potential participants consented to participate at screening and if they decided not to participate, they were thanked for their time and not contacted further. Permission to audiotape was obtained during screening and again at the outset of the group.

The ineligibility of mothers with an infant <6 months of age was intended to avoid the focus group discussions from influencing a mother's decision to have a current infant vaccinated or not.

<p>Population and perspective</p>	<p>They conducted focus groups in three different regions of the United States (the West, Midwest, and Northeast). Paediatricians (n = 45) and mothers (n = 58) participating in focus groups. Paediatricians had an average 15.4 years of experience (median = 15, range = 1-39) following residency, and most (62%) belonged to a private practice group. About one-third of the children enrolled by their paediatric offices were publicly insured and eligible for the Vaccines for Children Program, a federally-funded entitlement program providing vaccines at no cost to socioeconomically disadvantaged children. Most paediatricians solely administered Rota-Teq™ (76%), compared with 4% who solely used Rotarix® and 20% who reported using both vaccines.</p> <p>More than 80% of paediatricians from all sites either strongly or somewhat agreed to the statement, “Before rotavirus vaccine was available, rotavirus was the most common cause of severe infectious diarrhoea in children <2 years old in the US.” About three-quarters (76%) strongly or somewhat agreed that rotavirus was responsible for more annual hospitalisations than influenza during the pre-vaccine era.</p> <p>The average age for participating mothers was 33.2 years (median = 33.5, range = 21-44), and 76% had achieved more than a high school education. Most mothers (61%) reported being privately insured, compared with 33% having public insurance/Medicaid. The average household had 2.3 children, and most mothers (79%) had heard of rotavirus before the focus group.</p>
<p>Inclusion Criteria</p>	<p>Practicing healthcare professionals Physician participation was restricted to actively practicing, board-certified/-eligible, non-military, primary care paediatricians. In each focus group, only one paediatrician participated from any given office.</p> <p>Parents of children who had a specified age range Mothers at least 18 years of age who reported having normally developing children between 6 months and 4 years of age</p> <p>People who agreed to routine vaccinations Agreed to routine vaccination for the index child</p>
<p>Exclusion criteria</p>	<p>Participants who were involved in other research Participants were excluded if they or his/her immediate family member worked in vaccine development, marketing, research, or regulation. Parents were also excluded if they worked in healthcare.</p> <p>Preferred language other than English</p>
<p>Relevant themes</p>	<p>3 Themes were identified:</p> <p>1. Maternal. While more than three-quarters of the participating mothers had at least some college education, many expressed a general lack of scientific and technical understanding of viruses, DNA, how vaccines are manufactured, and how vaccines work: “I guess what all of this brings up for me is that I don’t really understand what’s in vaccines... it makes me feel like I want to understand more what a vaccine actually is, that this is what’s happening... that there’s a virus that somehow got in there that people didn’t know about.”</p> <p>2. Overarching: Many mothers and paediatricians expressed alarm that those who abstain from pork consumption for religious or personal reasons may have unsubstantiated fears that PCV is pig material. Concern was most directed at whether parents of Jewish or Muslim faiths would reject the vaccines due to this misunderstanding.</p> <p>3. Communication recommendations. Focus group participants indicated that a general statement should not replace further discussion between paediatrician and mother regarding the PCV finding. Some mothers acknowledged that the vaccine information sheet was infrequently read at the health care visit, commonly stating, “By the time your kid actually gets the shot, you’ve waited in the waiting room, you’ve waited in the greeting room. You might have one, two, or three more older kids with you. They’re all melting down, and of course, when they get their shots, then that’s</p>

	just horrible for everybody. So, how much of this [information sheet] you might actually read right there, when you need to know it before you make a decision... not going to happen.”
Additional information	In 2010, researchers using novel laboratory techniques found that US-licensed rotavirus vaccines contain DNA or DNA fragments from Porcine circovirus (PCV), a virus common among pigs but not believed to cause illness in humans. This study also included data from parents. However, this data has not been used because we already had enough UK data from parents.

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

2

Pearce, 2008

3

Bibliographic Reference Pearce, Christine; Leask, Julie; Ritchie, Jan; Tapping midwives' views about the neonatal hepatitis B vaccine: how welcome is a move towards a health promoting orientation?.; Health promotion journal of Australia : official journal of Australian Association of Health Promotion Professionals; 2008; vol. 19 (no. 2); 161-3

1 Study Characteristics

Study design	Semi-structured interviews
Aim of study	To gain some understanding of attitudes and perceptions among midwives towards administering and promoting the neonatal dose of the hepatitis B vaccine.
Behavioural model used	None stated
Study location	Australia
Study setting	Maternity units
Study dates	2003
Sources of funding	Not provided
Study methods	<p>Semi-structured interviews were undertaken with midwives employed in the maternity units of two teaching hospitals in Metropolitan Sydney.</p> <p>Following ethics approval, a snowball sampling technique was used. A Nurse Unit Manager from each hospital was asked to identify midwives they considered senior, well-experienced and likely to exert influence in their profession. Once recruited, these midwives identified other similar colleagues who were approached to join the study.</p> <p>The interviews were guided by 6 open-ended questions which provided a flexible framework to explore any issues that arose. Questions stimulated discussions about the value of immunisation generally, stories about immunisation heard from other sources, the implementation of the universal neonatal hepatitis B vaccination policy, parents' willingness or otherwise to accept the vaccination, personal experiences of immunisation or vaccine-preventable diseases, and the influence of those experiences on discussions with parents.</p> <p>All interviews were audio taped and transcribed. Two authors independently examined all transcripts before discussing and agreeing on emerging themes. Transcripts were then analysed according to this agreed coding structure.</p>
Population and perspective	Six midwives were interviewed for this pilot exploration. Three were from a large inner urban teaching hospital and three were from a smaller suburban teaching hospital. One worked in a birth centre and the other 5 alternated between labour ward, antenatal and postnatal care.
Inclusion Criteria	Practicing healthcare professionals Senior, well-experienced midwives
Exclusion criteria	None reported
Relevant themes	<p>3 Themes were identified:</p> <p>1. Procedural necessity. The 'procedural necessity' theme incorporated the midwives' view that hepatitis B vaccine was an ordinary procedure embedded within their many other institutional requirements following a birth: "We have our protocol on labour ward...That's part of my normal spiel when I see a new-born."</p> <p>2. The personal choice imperative. The personal choice imperative dominated midwives' comments on parental decision making about hepatitis B vaccine. Immunisation-sceptical midwives, those ambivalent and those fully supportive of the vaccine all highlighted the importance of personal choice throughout their discussions: "I believe in choice, I believe in choice in all things as far as health goes,</p>

and I want to make sure that people know that they have got a choice and that they can make a choice and if they do choose immunisation then that's fine and if they chose not to then you know there are other sources."

3. Reservations about safety and necessity. Midwives expressed some reservations about the safety and necessity of the neonatal hepatitis B vaccine program in Australia, where they believe good sanitation and living conditions exist. Some reflected that infectious diseases used to be regarded as benign and ordinary occurrences of childhood.: "My personal view on immunisation is we live in a country where those illnesses are quite low risk. And when I've looked at the hepatitis B immunisation, I just think that for new-born babies it is very low risk. And I don't understand the rationale to give these immunisations as soon as they're born."

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Can't tell
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research has some value
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Relevant (This study involves midwives in maternity units and the neonatal period is generally under 28 days. In the UK this vaccine is given at 8-16 weeks old.)

1

Pedersen, 2018

Bibliographic Reference Pedersen, Kenneth B; Holck, Marie E; Jensen, Aksel K G; Suppli, Camilla H; Benn, Christine S; Krause, Tyra G; Sorup, Signe; How are children who are delayed in the Childhood Vaccination Programme vaccinated: A nationwide register-based cohort study of Danish children aged 15-24 months and semi-structured interviews with vaccination providers.; Scandinavian journal of public health; 2018; 1403494818786146

2 Study Characteristics

Study design	Semi-structured interviews and cohort study of vaccination uptake
Aim of study	To examine determinants of non-compliance with a focus on the vaccination providers.
Behavioural model used	None stated
Study location	Denmark
Study setting	Community
Study dates	2001 to 2013
Study methods	<p>For the qualitative work</p> <p>They identified all Danish GP practices that had at least 25 vaccination visits from children who were aged 6 to 15 months of age. From these, they identified practices for semi-structured telephone interviews to identify reasons for non-compliance with the vaccination guidelines for children delayed on DTaP-IPV-Hib-3. They aimed for 12 interviews with three practices, each following the four strategies: high proportion of MMR-1 alone, high proportion of DTaPIP-V-Hib-3 alone, high proportion of DTaP-IPV-Hib-3 and MMR-1 simultaneously, or roughly same proportion of MMR-1 alone and DTaP-IPV-Hib-3 alone. They included practices with only one GP to increase the likelihood that only one person in the practice was responsible for vaccinations. Between March and May 2016, CHS performed the semi structured telephone interviews, which contained both open and closed questions covering three main areas: performance of a regular vaccination visit; vaccination of children delayed on DTaP-IPV-Hib-3; and information on vaccination guidelines. The interview guide was piloted twice on nurses performing childhood vaccinations, resulting in some changes to the interview guide. The pilot interviews were not used in the analysis. Based on the notes from the interviews, an investigator condensed the information from the interviews and a different investigator checked the condensation. They regarded statements such as, 'I would always do ..., because ...' and 'my main concern is ...' as indicating issues important to the interviewee.</p>
Population and perspective	Twelve GPs were interviewed.
Inclusion Criteria	Practicing healthcare professionals GPs from practices that had at least 25 vaccination visits from children aged 6 months to 15 months
Exclusion criteria	None reported

Relevant themes	1 theme was identified (the qualitative work was not presented in any detail): 1. Arguments for providing vaccines: The main argument for providing vaccines simultaneously was to achieve full protection. The main reason for choosing DTaPIPv- Hib-3 alone was to follow the normal vaccination sequence, whereas the most important reasons for choosing MMR-1 were reluctance towards administering more than two vaccines at the same visit and that the child was already partially immune towards diphtheria, tetanus, pertussis, polio and Haemophilus influenzae type b after two DTaP-IPV Hib vaccines.
Additional information	The authors also looked at compliance with Danish vaccination guidelines using a nationwide register-based cohort study of children born in Denmark between January 2000 and June 2013, who were lacking MMR-1 and DTaP-IPV-Hib-3 at age 15 months and were followed to 24 months. This data was not extracted as it did not fit the review protocol.

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

2

Perez, 2015

3

Bibliographic Reference Perez, Samara; Shapiro, Gilla K; Brown, Christopher A; Dube, Eve; Ogilvie, Gina; Rosberger, Zeev; 'I didn't even know boys could get the vaccine': Parents' reasons for human papillomavirus (HPV) vaccination decision making for their sons.; *Psycho-Oncology*; 2015; vol. 24 (no. 10); 1316-1323

1 Study Characteristics

Study design	Open ended question from a survey or questionnaire
Aim of study	The study's objective was to examine parents' reasons for their decision to vaccinate their 9–16-year-old sons with the human papillomavirus (HPV) vaccine.
Behavioural model used	Precaution adoption process model
Study location	Canada
Study setting	Community
Study dates	February 2014
Sources of funding	This study was supported by a grant from the Canadian Institutes of Health Research (CIHR) and the Vanier CIHR Canada Graduate Scholarships (Vanier CGS).
Study methods	<p>Data were collected through a web-based survey assessing HPV vaccination attitudes, beliefs, and behaviour in a national sample of English-speaking and French-speaking Canadian parents of 9–16-year-old boys as part of a larger study. The Institutional Review Board at the Jewish General Hospital in Montreal, Canada, approved the study. Data collection was facilitated by Leger, a polling and market research firm that maintains a national panel of 400,000 Canadians across the 10 provinces. Email invitations were sent to panellists who met the study's target demographic criteria. Participants were compensated \$3.00 for their participation.</p> <p>Parents completed demographic variables and were classified according to six stages of the PAPM by asking: 'Before today, which of the following best describes your thoughts about the HPV vaccine for your son?' The researchers also asked parents an open-ended question: 'What would influence your decision to have your son vaccinated or not against HPV?' (alternatively, 'what influenced' for stages 4–6). There was no limit to the length of participants' responses. Responses were coded using thematic content. Parents' open-ended responses surrounding HPV vaccination for their sons were captured, in keeping with factors previously identified in the researcher's past studies, the literature and the factors delineated by the precaution adoption process model. Responses were reviewed, and categories were created for any themes that were stated by more than 1% of participants. The individual responses and emergent categories were then systematically reviewed by two of the authors. The initial categories were combined and winnowed into overarching categories by consensus with the qualitative data expert and the co-authors.</p>
Population and perspective	<p>2,874 parents who had at least one 9–16-year-old son living in the household. Parents who had more than one son within the age range were requested to respond to the survey based on the son who had had the most recent birthday.</p> <p>At the time of the data collection, only Prince Edward Island (population of 145,000) had a free, school-based program, which was only available to a single cohort of grade 6 boys. The remaining nine provinces did not have school-based programs, and parents would need to pay 'out of pocket' if they wanted to vaccinate their son.</p>

Inclusion Criteria	Parents of children who had a specified age range 9-16 year old boys
Exclusion criteria	None reported
Relevant themes	<p>Themes relating to cost were not extracted as the vaccine is free in the UK.</p> <ol style="list-style-type: none"> 1. General information: Wanting more information about HPV, the HPV vaccine, the facts, and knowledge. "This is the first time I have heard about this vaccination for boys... I didn't know males could get it. Now I need to look into it." 2. Risks of vaccination: Wanting more information about side effects and/or long-term effects; having heard about risks (in the media); and believing that the vaccine is not safe. "The vaccine has been proven to have harmed healthy young girls. Other countries have removed it from their health system. It is not something I wish to "try out" on any of my children just to make the pharmaceutical business rich. I don't have enough children to lose one or two as a guinea pig." 3. Research/evidence: Wanting more stats, data, and clinical results to be conducted; believing that there is not presently enough research. "The vaccine is not researched long enough to make statements of future effects on people's health." 4. Doctor recommendation: Knowing the opinion of their doctor; and wanting their doctors to recommend the HPV vaccine or give them more information. "Would want to speak to multiple doctors before proceeding." 5. Not sexually active/no need: Stating that their sons are not sexually active and does not need the vaccine; that their child is too young; and refusing based on religious/moral principles. "Sends a contrary message to our values of abstinence prior to marriage." 6. No confidence in vaccines: Being against vaccines in general; and anti-vaccine attitudes "I do not believe in vaccines and they are nothing more than a means to increase profits for the pharmaceutical companies." 7. His health/prevention: Wanting to vaccinate for their sons' current and future health; wanting to protect their sons and their sons' future partners; and wanting to protect against cancer and disease. "For him to be as protected as soon as possible, for when he is sexually active, for both his own health and his future partners too." 8. Efficacy/benefits of vaccination: Wanting to know how effective the vaccine is (in preventing HPV); stating that the vaccine is effective; and worrying that it is not effective. "Knowing that it was effective, some information I have received states that it does not make enough of a difference in the numbers being affected."

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	No <i>(The study examined responses to an open ended question and as a result was only able</i>

Section	Question	Answer
		<i>to provide a superficial analysis of the issues around vaccinating boys for HPV.)</i>
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Moderate <i>(Due to the study design which prevented a rich, detailed consideration of the issue.)</i>
	Relevance	Highly relevant

1

Petts, 2004

Bibliographic Reference

Petts, Judith; Niemeyer, Simon; Health risk communication and amplification: learning from the MMR vaccination controversy; Health, Risk & Society; 2004; vol. 6 (no. 1); 7-23

2 Study Characteristics

Study design	Unstructured interviews
Aim of study	To explore how parents use information to make sense of health risk issues, particularly MMR vaccination.
Behavioural model used	None stated
Study location	UK
Study setting	Community
Study dates	2002

Sources of funding	Department of Health
Study methods	<p>The method utilised two-phase interactive discussion groups amidst intense media debate about MMR. The research was based in the West Midlands area, centred on Birmingham and Nuneaton, which was experiencing take-up rates consistent with the national average.</p> <p>Recruitment was conducted ‘on street’, with strategies defined by ethnicity, family size and age, and socio-economic criteria—with focus on parents, and particularly mothers (89% of the total) as key decision makers about children’s health. Particular effort was made to recruit from the Asian Muslim community (30% of those recruited), being a significant minority population in the area.</p> <p>The major stratification criterion used was MMR status. Groups 1 – 4 comprised those intending to take, or who had already taken, their child for MMR (55% of all participants) and with children up to 5 years of age. Groups 5, 6 and 8 comprised those still to take the decision (primarily as their child was younger than 13 months). Group 7 (fathers) was recruited without specification as to decisions about MMR. The intention was not to recruit a representative sample of participants but to proactively engage with a diversity of MMR experience; of access to information (e.g. higher socioeconomic groups potentially having greater access to a larger range of information sources); of knowledge and educational backgrounds; and of parental experience (e.g. young first-time mothers compared to older women with several children). Unfortunately, on-street recruitment of a group of parents who had already refused MMR proved difficult and was abandoned. Therefore, it is not possible to draw specific conclusions about the impact of information on decisions not to vaccinate.</p> <p>During the first meeting (lasting approximately one hour) each group explored general risk issues of concern, coming to focus on preferred sources of health information. At the end of the meeting, each participant took copies of the MMR leaflet, some also taking either or both of the videos. During the intervening two-week period before the second meeting, participants were encouraged to assimilate information, access the Internet site (www.immunisation.org.uk) and discuss the information with families and friends. At the second meeting (1.5 – 2 hr) groups explored perceptions of the information and had the opportunity to question an immunisation specialist from the Department of Health.</p> <p>The discussions were taped and fully transcribed and the resulting textual data analysed using a standard method for qualitative data, namely analytic deduction. At the end of the first meeting participants completed a questionnaire relating to their children’s immunisation history. A questionnaire was administered at the second meeting pertaining to MMR information requirements, preferred modes of provision and trusted sources.</p>
Population and perspective	<p>Eight groups (64 participants) were convened. A professional agency used random on-street recruitment methods. Groups 1 and 2: Asian mothers with children 2 – 5 years (socio-economic groups ABC1 and C2-E respectively); Groups 3 and 4 White British mothers with children 2 – 5 years (socio-economic groups ABC1 and C2-E respectively); Groups 5 and 6 mothers who were expecting or just had their first child (Asian and White British respectively—all mid-range socio-economic groups C1– C2); Group 7: fathers with children 2 – 5 years, mid-range socio-economic groups C1– C2; and Group 8: mothers with a child 9 – 13 months who would have to make a decision about MMR soon—mid range socio-economic groups—C1 – C2.</p>
Inclusion Criteria	<p>Parents of children who had a specified age range Age 0 to 5 years</p>
Exclusion criteria	None reported

Relevant themes	<p>4 Themes were identified:</p> <p>1. Understanding knowledge and concerns. Not all participants fully understood the purpose of MMR—for example, in the two lower socio-economic Groups (2 and 4) two mothers asked what the initials meant, although both had already had one child vaccinated: "the MMR really worried me. He [GP] spent an hour and a quarter with me going through the statistics and just generally putting my mind at rest."</p> <p>2. The media, personal salience and parental instinct. A feeling of responsibility linked to the uncertainty that had been created by the MMR media reporting heightened maternal responses. Many participants noted the decision pressures created by the tensions between 'nothing being safe' and 'there always being a risk': "There's only a very, very, very minor chance and then there's the fact that I go abroad quite often and I think what if she catches something there, then what would I do?"</p> <p>3. Trust. Trust in political leadership was an important issue. All the Groups expressed concern that the Prime Minister refused to say whether his son had had MMR—the fact that he had not raised suspicion that there is something wrong. As the leader of the Government requiring MMR many held strongly that "He is supposed to inspire. . . [if] it's good enough for Leo Blair, it's good enough for our kids. . ."</p> <p>4. Information processing. The most commonly cited pieces of 'new' learning were in relation to the side effects of the three diseases. Information about the full implications of the effects of measles, mumps and rubella was generally considered compelling: "I think that really needs to be rammed home a little bit, because it sort of puts everything into perspective"</p>
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1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	No
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Can't tell
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable

Section	Question	Answer
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Plumridge, 2008

Bibliographic Reference Plumridge, E.; Goodyear-Smith, F.A.; Ross, J.; Parents and nurses during the immunization of children - Where is the power? A conversation analysis; Family Practice; 2008; vol. 25 (no. 1); 14-19

2 Study Characteristics

Study design	Observed interaction
Aim of study	To examine situations during immunization appointments where discordance between health providers and caregivers occur and evaluate strategies to empower parents while obtaining the desired clinical outcome.
Behavioural model used	Conversation analysis
Study location	New Zealand
Study setting	Community
Study dates	2005
Sources of funding	New Zealand Ministry of Health; Health Research Council; Auckland UniServices Project
Study methods	<p>Six practices were purposively recruited to study the interaction between nurses and caregivers of the child receiving an immunization, as well as interactions between the adults and the child. These included one Maori health provider and one practice with a high number of Pacific patients. Eight practice nurses consented to video recording of their administration of vaccinations. Caregivers were approached prior to their child's immunization procedure to give consent for participation in the study. Ethics approval was obtained from the Auckland Regional Ethics Committee.</p> <p>Conversation analysis (CA) was conducted on all videotaped data. A simplified version of standard CA transcription was used as a practical compromise between precision and readability.</p> <p>CA differs from thematic analysis in that it has a different rationale for building a corpus of evidence and a different object and mode of analysis. In CA the aim is to examine both the organization of talk and the social actions it achieves. The 'sampling strategy' is first to accumulate a typical or normative pattern of interactions in a corpus and then to examine when, how and to what end 'deviant cases' take place. The distribution of either the 'typical' pattern or the deviant case is of little relevance to CA because all the 'environments of possible relevant occurrence' cannot be known. A primary tool of CA is concentration on single cases and small numbers of deviant cases. As the discipline has grown, more analyses are based on large databases and interventions based on CA results are proving robust when analysed statistically. In the context of this paper, the typical or dominant pattern was of concordance between parent and nurse.</p> <p>The deviant cases constituted the focus of the analysis: when, how and why do</p>

	parents contradict or rebuke nurses? CA was carried out with particular attention to instances of interactions where some 'competence struggle' could be observed in which a parent was seen to contest or in some sense reject the right of the nurse to 'know' or exercise power over the baby or child. Instances were collected of what we have termed 'tamariki-talk' (to distinguish from 'baby talk' or 'motherese' as used in the literature). Tamariki is the Maori word for children heard commonly in both educational settings and public life. Tamariki-talk was talk addressed to children by either the provider or caregiver. The tamariki-talk enunciated to the baby or infant was collected in context.
Population and perspective	The data consisted of 168 minutes of video-recorded conversation from 10 immunization sessions between immunization providers and caregivers.
Inclusion Criteria	Parents of children
Exclusion criteria	None reported
Relevant themes	2 themes were identified: 1. Parents treated the nurses as 'experts' most of the time: They accepted an asymmetry of knowledge between them over medical matters. They commonly asked questions and deferred to the knowledgeable answers provided. 2. Deference to the power of the nurse as an expert was curtailed at the point it presumed knowledge about their child: Parents were to differing degrees vigilant about their own 'power' in this regard. Disagreements were always, and only ever, when the parent rebuffed the nurse's behaviour as 'presuming' the role of mother.

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Can't tell
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell

Section	Question	Answer
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research has some value
Overall risk of bias and relevance	Overall risk of bias	Low <i>(Children's ages are not made clear, but the results talk about vaccinating babies and pre-school children)</i>
	Relevance	Relevant <i>(This study included a high proportion of Maori people. It is difficult to gauge how similar their views are to people living in the UK)</i>

1

Poltorak, 2005

Bibliographic Reference Poltorak, Mike; Leach, Melissa; Fairhead, James; Cassell, Jackie; 'MMR talk' and vaccination choices: an ethnographic study in Brighton.; *Social science & medicine* (1982); 2005; vol. 61 (no. 3); 709-19

2 Study Characteristics

Study design	Unstructured interviews
Aim of study	To explore what parents in Brighton think about MMR vaccination.
Behavioural model used	None stated
Study location	UK
Study setting	Community
Study dates	2003
Sources of funding	Economic and Social Research Council
Study methods	The city of Brighton and Hove, on England's south coast, was chosen for the study due to its particularly sharp decline in MMR coverage, its locality to the researchers and the interest shown by local public health professionals. This university town in the UK's relatively affluent south east has become increasingly popular as both a tourist destination and by commuters moving from London. The last census (2001) reveals a relatively youthful and mobile population. Of the total population of 247,817, 42% are aged 20–44 (compared to the England and Wales average of 35%) and 18% are defined as migrants. The 60% of adults defined as employed work predominantly in

	<p>public services (26.5%), financial and business services (23%) and retail (14.4%). The local unemployment rate, 3.6%, is a fraction higher than the national average of 3.4%. The average household size, 2.09, is the smallest in the South East and the fifth smallest in England and Wales.</p> <p>Two areas of the city, Whitehawk and Fiveways/Preston Park, were deliberately identified as apparently conforming to the stereotypes of ‘deprived’ and ‘middle class’ areas highlighted by some public debate over MMR. The ‘Overall index of Multiple Deprivation for 2000’ ranks the 1998 administrative wards of Marine (covering Whitehawk) and Preston (covering Fiveways/Preston Park) at 439 and 5164, respectively (of 8414 wards in England; 1 being the most deprived). ‘Deprived’ Whitehawk covers some rather better off pockets, however, while ‘middle class’ Fiveways/Preston Park is not without poverty. Many Whitehawk residents feel their area is unjustifiably stigmatised, expressing satisfaction in living there because of its sense of community. Some parents there are old-time Whitehawks, others have moved due to affordability, while others have been housed there from estates elsewhere. Brighton’s Fiveways and Preston Park neighbourhoods are characterised by commuters, families who have moved in for their good schools, and Sussex-based professionals including university academics.</p> <p>In collaboration with local public health specialists the investigators identified a focal GP practice in each study area that served a significant proportion of residents, had more than one GP and welcomed the research. Neither practice either self-identifies or is known in local health care circles as having any particular ‘take’ on MMR. The investigators interviewed health professionals together and made initial contacts with five different carer and toddler groups. These groups ranged from those organised by health professionals and community workers, to informal drop-in sessions coordinated by the National Childbirth Trust and a social services supported community centre, to an organised physical activity/music class. Three were used as the base for group discussions convened amongst four to seven mothers who happened to be present on a particular day; no advance attempt was made to unite those sharing any particular view. Group discussions and in-depth interviews were transcribed in full.</p> <p>Many short, informal discussions and much participant observation of ‘MMR talk’ amongst parents also took place during our visits to these groups, and during the anthropologists’ presence in the study areas. Of the research team, three are parents of young children who have made decisions over MMR, and regularly participate in the social dimensions of the issue. The only selection criterion was having a child under three and willingness to be interviewed, either at the time or by later arrangement at home or another mutually agreed location. Mothers were contacted at the five different carer/toddler groups or introduced by one of six different health professionals.</p> <p>They spoke to only two mothers recommended to them on the basis of their vaccination decision (one by a doctor as an interesting case of non-vaccination; the other by a mother as someone who vaccinated despite having an autistic child). The mothers interviewed had a variety of social, demographic, educational and occupational backgrounds, and had made a variety of vaccination decisions for their children.</p>
<p>Population and perspective</p>	<p>In each practice, they interviewed all GPs (8 in total) and practice nurses (3 in total). In parallel, they contacted the health visitors’ base serving each study area and interviewed 6 health visitors, going on to carry out follow-up interviews and work-shadowing with 3. There were 5 different carer and toddler groups. 48 of these conversations were recorded and transcribed in full, and 23—evenly distributed between the two study areas—developed into in-depth, narrative interviews of 1–2 h in length. This sample was opportunistic and was not intended to be statistically representative.</p>
<p>Inclusion Criteria</p>	<p>Practicing healthcare professionals GPs, practice nurses and health visitors</p>

	<p>Parents of children who had a specified age range Age 0 to 3 years</p>
Exclusion criteria	<p>None reported</p>
Relevant themes	<p>6 Themes were identified:</p> <ol style="list-style-type: none"> 1. Personal histories. In getting to grips with MMR, many described drawing on the history of vaccination decisions and disease experiences in their own and other families: "My mum thinks that in the past when there was no midwives and health visitors they just got on with it. Mum thought she didn't think it would work for us, she thought if we were ill we would be ill." 2. Birth events. Birth is a key point when parents balance choice and trust in a medical institutional setting, experiences of their own autonomy in relation to medical authority, and wider social desires: "Didn't have the choice of breastfeeding, she was so early she had to be droplet fed. Eye dropper thing because she didn't suck the bottle properly. So that choice was taken from her basically, didn't really want a caesarean, wanted to just have gas and air, didn't want an epidural, heard horror stories, didn't really have the choice for that, that kind of choice was taken away from me. So in a way it made it easier?" 3. Becoming a mother with other mothers. It is the rare mother who has not been drawn into a particular way of discussing MMR along with other issues of concern (sleeping, feeding, behaviour) in the many groups most mothers participate in with their children, from organised carer/toddler sessions to informal gatherings at home or in the park.: "My friend asked me what she should do and I say whatever is right for you. I don't say, oh 'don't do that', I'd tell them how I feel but 'you may have other reasons to feel how you feel' and she did have the MMR done. I didn't say 'oh you stupid' whatever, it was like 'Ok is the baby fine? Good'. You can't put your highly opinions on them, otherwise if they did what you did and they did catch something they could blame you, couldn't they?" 4. Engaging with health professionals and government. Many mothers confirmed that they did not raise their questions with GPs, seeing them as time-constrained and probably partial in their advice (not least because of their financial gain from meeting vaccination targets) and because of a sense of unequal power relations, invoking worry about appearing ignorant: "I think your role is much more, damage limitation, sometimes they have so many illnesses and so many risk factors, that you take the worst one and try to deal with that." 5. Understandings of vaccination and contra-indications: The narratives reveal various ways that mothers conceptualise vaccine contraindications and risks that are logical to them within the framings of their personal histories and experiences. Most of those concerned about the MMR suggested that three vaccines were too many for the immune system to cope with and could 'knock back' a child. 6. Confidence in decision. Many of the parents they talked to participated in the agonising of other parents, heard stories of 'vaccine damaged' children, talked conspiracy, and expressed belief in many of the DH's list of 'MMR myths', yet still went on to vaccinate: "I'd have to be a lot more knowledgeable not to have it."

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Can't tell
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

2

Racktoo, 2009

Bibliographic Reference

Racktoo, Sophie; Coverdale, Gill; 'HPV? Never heard of it' Students and the HPV vaccine; British Journal of School Nursing; 2009; vol. 4 (no. 7); 328-334

3 Study Characteristics

Study design	Focus Groups
Aim of study	The aim of this research was to explore the knowledge and attitudes of 12–13-year-old females regarding HPV and the HPV vaccine. In particular: 1. To generate ideas about the most beneficial and effective methods of education and circulation of good information 2. To make recommendations based on findings regarding the best ways to educate and inform 12–13-year-old females about HPV and the HPV vaccine.
Behavioural model used	None stated

Study location	UK (Leeds)
Study setting	Education - a city high school
Study dates	Not specified
Sources of funding	None stated
Study methods	<p>After initial discussions with the head teacher of the school the nature of the research was explained to all 78 year 8 female students during registration time. Information sheets, student consent forms and parental consent forms were distributed. Although students were competent to consent themselves, parental consent was advisable because of the sensitive nature of the study and because the focus groups would take place during lesson time. A total of 21 girls consented to participate returning student and parental consent forms. The participants were divided into four focus groups of five or six students.</p> <p>The study used four focus groups to explore the knowledge and attitudes of the participants. The nature of discussion was likely to cover sensitive areas and raise some difficult issues such as sexual activity. For this reason, focus groups were considered appropriate as they would provide a safe haven for sensitive discussion. There was a possibility that girls might be inhibited to discuss sensitive issues related to HPV and the vaccine if the group was too large, therefore groups of 5–6 participants were planned.</p> <p>The question guide was developed before the sessions and the focus groups limited in time (1 hour) within the school day and were facilitated by the researcher. For quality purposes they were observed by a note-taker. The facilitator's role was to encourage participation by all group members, involving quieter participants and discouraging domination of the discussion by influential members. The facilitator attended to participants' non-verbal communication during discussion. This technique enables support for quiet participants.</p> <p>The 'framework analysis approach' was used for data analysis. The advantage of this approach is that it provides a clear series of steps, helpful for first-time researchers in the management of large amounts of complex qualitative data.</p>
Population and perspective	Twenty one year 8 female students from a Leeds high school where the HPV vaccination programme was delivered via school health teams, after the girls had received their injections. The school has 1068 pupils of mixed gender aged 11–18 years including 78 females aged between 12–13 years.
Inclusion Criteria	Adolescent girls Year 8 - age 12-13
Exclusion criteria	None reported
Relevant themes	<ol style="list-style-type: none"> 1. Knowledge about HPV: Most of the participants had limited knowledge about HPV. There was confusion in all groups about the transmission of HPV. "A3: 'What is HPV? Never heard of it' C3: 'Is it the actual jab we had?' B3: 'The V bit stands for vaccine.' D3: 'Is it something ... protection vaccine?' E3: 'Does V stand for virus?'" 2. Concerns about the HPV vaccine: The main concern among the four groups was the pain experienced with the vaccine and that it had to be given three times for effectiveness. "It really hurts. I hate needles and the thought of having it three times made it much worse. I can remember being stood in the

	<p>queue the second time and crying because I already knew how much it would hurt me."</p> <p>3. Acceptability of the vaccination programme: Despite real concerns about the side effects of the vaccine and distress caused by the pain of it, the majority of participants were positive about their acceptance of the programme. "B1: 'I think it's a good idea, it's not that bad, it's kind of scary the first time but then the others are ok.' D1: 'But it's like it is worth it in the end if it prevents cancer.'"</p> <p>4. Media coverage affecting attitudes towards cervical cancer and the HPV vaccine: Participants reported substantial exposure to media coverage about cervical cancer. Much of this media coverage, mentioned by all groups, related to reality television star Jade Goody who had recently died of cervical cancer. "E2: 'The stuff about Jade Goody scared me.' C2: 'Because cancer has affected my family badly, I really felt for her. She raised awareness but I think she should have done more.'"</p> <p>5. Information about HPV and the HPV vaccine: Participants in all groups were well informed that the programme requires three vaccines to be effective and that this would not protect against all types of cervical cancer. The participants were poorly informed about the cervical screening programme. "A4: My sister is in year 6 and I think she should be told about the vaccine now. If we had been more prepared for it then I reckon all of us wouldn't have been that scared. We should have been told about it in year 6 and then again in year 7 and again in year 8. Then we would be experts!"</p>
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1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low

Section	Question	Answer
	Relevance	Highly relevant

1

Raithatha, 2003

Bibliographic Reference Raithatha, Nick; Holland, Richard; Gerrard, Simon; Harvey, Ian; A qualitative investigation of vaccine risk perception amongst parents who immunize their children: a matter of public health concern.; Journal of public health medicine; 2003; vol. 25 (no. 2); 161-4

2 Study Characteristics

Study design	Unstructured interviews
Aim of study	To assess parents' vaccine risk perception and thereby to identify strategies to prevent further deterioration in uptake.
Behavioural model used	Interpretive phenomenological analysis
Study location	UK
Study setting	Community
Study dates	Not provided
Sources of funding	Not mentioned
Study methods	A pilot study on three individuals was used to test the interview process. Study subjects were then recruited from two nurseries, one urban and one rural, using a 'convenience sample'. All parents of children attending these nurseries were invited to participate. As expected, this yielded a sample of parents who immunized their children (vaccination uptake in the study area was over 90 per cent). Subjects were unknown to the researcher before the interview. Transcribed texts were analysed using the approach termed interpretive phenomenological analysis. This aims to explore a participant's views by attempting to achieve an understanding of their personal world, and trying to make sense of their thoughts through interpretation by the researcher. The qualitative data handling program Atlas was used to assist analysis. Some themes were governed by the semi-structured questions such as 'risk of vaccine'. These are termed 'coding down' themes. Others emerged directly from the data, termed 'coding up' themes. The analysis took on a cyclical approach with a reanalysis of all interviews using all the themes identified. Finally, themes were analysed for connections to form overarching frameworks.
Population and perspective	Eight out of 35 parents from the Norwich nursery (23 per cent), and seven out of 20 parents from the village nursery (35 per cent) agreed to take part. Respondents were all mothers except for one father, and were of mean age 34 years (SD 3.9 years). Parents had a mean of two children (range 1–3), of mean age 3 years (range 6 months–9 years). The median socio-economic class of parents was IIINM (skilled non-manual) and ranged from I (professional) to IV (semi-skilled). All parents interviewed had chosen to fully immunize their children according to the current recommendations.

Inclusion Criteria	Parents of children Who attended a nursery
Exclusion criteria	None reported
Relevant themes	<p>4 Themes were identified:</p> <p>1. Vaccine risk perception: Although parents recognized serious side effects to be rare, these usually provoked feelings of 'dread'. In particular, the suggested association of MMR with long-term disability directed at their 'vulnerable' young children was mentioned in almost all interviews. Subjects' doubts in the scientific knowledge around vaccine risks added to their concerns: "MMR then there are great concerns because it is not just the case of being ill afterwards you could sort of end up with problems for life, and that is a terrifying concern."</p> <p>2. Attitude to immunization process: Subjects in the study recognized the benefits of modern medicine and the immunization programme as a part of this, leading to improved health for themselves and the population: "I also think that the way in which you are asked to participate is not as pleasant as it could be, ... I should have just turned in and waltzed in and not ask any questions, got it done and bingo and got ready for the next one."</p> <p>3. Lack of trust: Many subjects expressed serious distrust of government agencies. This distrust appeared to have its recent origins in the BSE crisis. A distrust of the medical profession related to financial incentives for general practitioners (GPs), adverse publicity around rogue doctors, and scandals such as those in Alder Hey and Bristol. Parents also expressed doubts regarding the knowledge base and accuracy of doctors: "That we have had with BSE and everything else, I think the trust factor has gone. And I just don't think that people believe what they are told anymore."</p> <p>4. Consequences of decision: Parents felt very responsible for the potential consequences of their decision: "Because I have actually chosen positively to go down that course of action, and that results in an injury to them. It is just unthinkable."</p>

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell

Section	Question	Answer
Ethical Issues	Have ethical issues been taken into consideration?	Can't tell
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Redsell, 2010

Bibliographic Reference Redsell, Sarah A; Bedford, Helen; Siriwardena, A. Niroshan; Collier, Jacqueline; Atkinson, Philippa; Health visitors' perception of their role in the universal childhood immunisation programme and their communication strategies with parents.; Primary Health Care Research and Development; 2010; vol. 11 (no. 1); 51-60

2 Study Characteristics

Study design	Semi-structured interviews
Aim of study	This study explored health visitors' perception of their role in the universal childhood immunisation programme with particular emphasis on influencing factors and communication strategies.
Behavioural model used	None stated
Study location	UK
Study setting	Community
Study dates	Not provided
Sources of funding	School of Nursing, University of Nottingham
Study methods	<p>Health visitor managers working in a UK county and a UK city PCT were contacted and informed about the study. Information packs were distributed to health visitors during 8 locality meetings within the two trusts. The information packs asked interested health visitors to return a reply slip detailing their name and telephone contact details together with information about their working environment. This information was intended to be used as a guide to ensure a purposive sample of health visitors working in different locations and in different ways and was included in the study.</p> <p>Data collected from health visitors reply slips included details of their working environment (rural, affluent, deprived, high/low minority ethnic populations/Children's Centres, or GP attached). It was intended to draw a purposive sample from the health</p>

	<p>visitors who returned their reply slip using this data. However, in practice, all those who returned their reply slip within the data collection phase were invited to be interviewed. All interviews were conducted by the same interviewer, face to face at a health centre local to each health visitor. The semi-structured interviews used a topic guide based on findings from a literature review and discussions within the research team. Topics for inclusion covered issues such as health visitors' responsibilities within the immunisation programme, the process of discussing immunisations, communicating with families who were unsure about or refused immunisation, immunisation training and the MMR vaccine. The guide was used flexibly during the interviews to allow health visitors to describe their experiences, and it was revised and refined throughout the data collection phase to reflect themes emerging from the data analysis. The length of time for the interviews varied among participants, but all lasted less than an hour.</p> <p>Interviews were audio recorded and transcribed verbatim. Data analysis was undertaken in parallel with the interviews, enabling the topic guide to be modified in light of the emerging themes. A preliminary analysis was conducted by an investigator on five transcripts that were examined independently by other investigators and the key themes agreed. Thematic analysis continued on the accumulating data. The themes were then coded and categorized, using NVivo; checked against the original dataset and adjusted where necessary. The investigators agreed the final coding frame and the reassignment of the data to the themes.</p> <p>Local Research Ethics and Research Governance approvals were obtained.</p>
Population and perspective	<p>24 health visitors responded to the study invitation. Of these, 22 were interviewed. The remaining two were not available for interview during the data collection phase. Health visitors described their working environments in a number of ways including rural (n54), inner city (n510), and city suburbs (n56); affluent (n56) and deprived (n511); mixed (n55); and high rates of minority ethnic groups (n58). Townsend scores for the localities where the health visitors worked ranged from 23.7 to 110.17 (positive scores equal greater levels of deprivation). Ways of working were described as GP attached (n510), geographical (n57), and linked to Children's centres (n54) or the homeless team (n51). Health visitors followed the national immunisation policy as outlined in the 'Green Book' (Department of Health, 2008).</p>
Inclusion Criteria	<p>Practicing healthcare professionals Health visitors involved with children's routine immunisation schedule</p>
Exclusion criteria	<p>None reported</p>
Relevant themes	<p>5 Themes were identified:</p> <ol style="list-style-type: none"> 1. Health visitors' professional role; identity, and barriers. This involved educating parents by raising awareness about public health issues that included immunisation: "In the ideal world perhaps a vaccine would be a separate visit, because we give them such a lot of information on that first visit. They probably feel – sometimes I feel overloaded, so I'm sure sometimes they do." 2. Health visitors' professional role – communication strategies. Health visitors presented themselves as experts in communicating with parents about immunisations. They referred to 'knowing the right time to talk to parents about immunisation' that involved being sensitive to their needs and priorities: "You have to say, look you know there is an infinitesimal risk with immunisations because we don't know how your child is going to react and you know that's an awful thing you know to come to terms with but we do know that is you don't protect your child they are very, very much at risk of developing that disease." 3. Parents' right to choose. Health visitors said that some parents responded to them as a trusted health professional, but others perceived them to be a government agent

	<p>who could not be trusted to provide unbiased information. Parents' information needs could be high, particularly in affluent areas: "Ultimately it's their choice we can't force them to have it but you just give them the sort of you know the information they need to make an informed choice and then you know if they decide not to come or they decide not to have it then we write it in the notes."</p> <p>4. Confidence in MMR vaccination. They reported that the middle-class families needed more information about MMR in order to provide informed consent. Most health visitors referred to the original Lancet research as discredited and reported that parental confidence in MMR was improving: "I rarely get anybody who says but I've heard of something, which is not good for you whereas I used to get that because of the MMR being top of the headlines. I don't really get that in the last sort of eighteen months I haven't had much of oh well we've heard the bad news."</p> <p>5. Communicating with migrant families about immunisation. Many health visitors reported having asylum seekers and economic migrants on their caseload. Most reported differences in the immunisation schedules between the United Kingdom and their home country: "In terms of transfer-ins we have a responsibility with them in checking the immunisations that they've had. So again that means liaising with the public health department 'cos sometimes the family will come and say well we just followed the programme in Malaysia I don't know what the programme in Malaysia is. So it's again finding out well what have they had here what does that mean."</p>
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1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low

Section	Question	Answer
	Relevance	Highly relevant

1

Ridda, 2009

Bibliographic Reference Ridda, I; Macintyre, C R; Lindley, R I; A qualitative study to assess the perceived benefits and barriers to the pneumococcal vaccine in hospitalised older people.; Vaccine; 2009; vol. 27 (no. 28); 3775-9

2 Study Characteristics

Study design	Semi-structured interviews
Aim of study	The purpose of this study was to explore some of the influences experienced by the elderly in deciding whether to accept or refuse the pneumococcal vaccine.
Behavioural model used	None stated
Study location	Australia
Study setting	In-patients aged ≥60 years receiving care in the Geriatric, Cardiology and Orthopaedic Departments of a large 800-bed tertiary referral hospital in Sydney, Australia. The hospital is located in the west of Sydney, serves as a tertiary referral base for the western metropolitan area and also acts as the district hospital for the immediately surrounding community.
Study dates	2007
Sources of funding	Not stated
Study methods	<p>The sampling frame was chosen from responders to a previous survey of patient's knowledge, attitudes and beliefs about pneumococcal vaccine. Inpatients were screened on a daily basis from the above-mentioned wards; each patient's current immunisation status was confirmed at the time of recruitment and validated with their General Practitioner. Those who were not vaccinated were offered the pneumococcal vaccine in an ongoing randomised controlled trial.</p> <p>Semi-structured, open-ended interviews using a topic guide were conducted with the emphasis being on encouraging the interviewee to talk and give their views and opinions. Uninterrupted, the interviews lasted between 10 and 20 min.</p> <p>A structured, open-ended interview was used (one-on-one) guided by key predetermined questions. The interviewer helped the respondent if they did not understand the question.</p>
Population and perspective	<p>They selected 24 patients in order to have 12 who had an English-speaking background and 12 from a non-English speaking background (6 who had been offered immunisation but refused (refusers), 6 participants who had been offered immunisation and accepted (acceptors). Six participants from an English-speaking background had been offered immunisation but refused (refusers), and 6 participants had been offered immunisation and accepted (acceptors).</p> <p>Mean 68.4 years (range 60 to 85)</p>

Inclusion Criteria	People aged 60 years or older
Exclusion criteria	<p>People with mental health problems Severe ones, for example: dementia, schizophrenia, severe depression</p> <p>People who had poor physical health Such as severe deafness and dysphasia, severe stroke</p> <p>People who were cognitively impaired Mini-Mental score less than 19</p> <p>People who had specific condition(s) Aphasia</p>
Relevant themes	<p>Three themes were identified:</p> <p>1) Trust and mistrust in modern medicine Faith and trust in modern medicine influenced the agreement to accept the offered immunisation. Those refusing the vaccine were generally more sceptical about medical advice and the benefits of having the vaccine. “My GP offered me the flu vaccine but she said it only protects me from 4 strains and there are about 100 strains so I did not want it, what use will it make?”</p> <p>2) Prior experience of vaccination Decisions about acceptance or refusal of both vaccines drew upon the accumulated experience at different points over the life course. “I was vaccinated once long time a go and became ill, I refused further vaccinations ever since.”</p> <p>3) Lack of readily available information on vaccines Many of the responders simply were not aware of the presence and availability of the vaccines “This questionnaire shows how ignorant I was in relation to this subject. I need more awareness programs for people my age in relation to these issues.”</p>

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes

Section	Question	Answer
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research has some value
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Rockliffe, 2018

Bibliographic Reference Rockliffe, Lauren; McBride, Emily; Heffernan, Catherine; Forster, Alice S; Factors Affecting Delivery of the HPV Vaccination: A Focus Group Study With NHS School-Aged Vaccination Teams in London.; The Journal of school nursing : the official publication of the National Association of School Nurses; 2018; 1059840518792078

2 Study Characteristics

Study design	Focus Groups
Aim of study	The purpose of this study is to explore the barriers and facilitators to delivering the HPV vaccination within the school environment reported by immunization nurses.
Behavioural model used	Competing demands model
Study location	UK (London)
Study setting	School
Study dates	Between February and September 2017
Sources of funding	NIHR, the Department of Health and Social Care and Cancer Research UK.
Study methods	<p>Four focus groups were conducted with vaccination team members at their place of work. It was not feasible to conduct more than four focus groups given the workload and time restraints imposed upon teams. However, this number of focus groups was deemed sufficient, as it has been suggested that 90% of qualitative themes are likely to be discoverable within three to six focus groups. Each focus group comprised participants from the same team, who were therefore familiar with one another. Focus groups were facilitated by two researchers (L.R. and a public health registrar) and took place in the participants' workplace. All participants provided written consent, and all sessions were audio-recorded and transcribed verbatim. Focus groups lasted an average of 1 hr. Participants were also asked to complete a short questionnaire that gathered information about participants' sex, job title, length of time in current role, and date of qualifying as a nurse/immunization nurse, if applicable.</p> <p>A topic guide was used to direct the discussions and focused on the perceived</p>

	<p>barriers and facilitators to the delivery of the HPV vaccination in schools (delivery of both dose one and two). The researchers used the competing demands model to help develop the topic guide and included prompts relating to competing factors identified in the model, where relevant. For example, prompts covered topics such as workload (related to both the health professional and service environment), and knowledge and attitudes (related to both the health professional and the patient). The researchers took detailed notes following the completion of each focus group and discussed the outcome of each session to identify ways in which the facilitation of the sessions could be improved (e.g., by improving interactions with participants).</p> <p>Data were analysed thematically by two researchers one of whom had conducted the focus groups. Initially, these two researchers each generated codes for half of the data to develop a basic coding frame. L.R. and A.F. next discussed and refined this coding frame before using it to recode all the data using the qualitative data analysis software NVivo 11. Interpretations were made by both researchers, and any discrepancies were resolved through discussion.</p>
Population and perspective	28 members of four school-aged vaccination teams: Participant job roles included nurse (17) and administrative and managerial staff, some of whom were trained as nurses; project officer (2); team assistant (2); administrator (2); clinical lead (1); operations manager (1); project manager (1); clinical director (1); and team lead (1).
Inclusion Criteria	Practicing healthcare professionals
Exclusion criteria	None reported
Relevant themes	<ol style="list-style-type: none"> 1. School Engagement and Support: Participants discussed the challenges of engaging schools that are unsupportive and less willing to facilitate the vaccination program, particularly larger schools, those in more deprived areas, and schools where the head teacher does not support the vaccine. "What I'm finding is not all of the areas are, school-wise, supporting us. [. . .] umm, I find that without the support of the schools, that makes it a hard job." 2. School and Team Resources: Allocation of school staff to assist with the vaccination was discussed by several participants who felt that this responsibility is sometimes given to staff members who are too busy to undertake such tasks such as heads of year. "There's one school that we go into where the receptionist is the person that's getting the children to come down for the vaccination session [. . .] and they won't release other members of staff to be with us during the vaccination session, so we have to allow more members of staff in that school and rely on a person who's already very busy and stressed during that time." 3. Education and Understanding: Poor education about the vaccine was cited by a number of participants as a barrier to vaccination. "And often they [parents] will say, you know, it's good to talk rather than read the leaflet 'cause the questions aren't often on the leaflet that they want to discuss properly" 4. Fear of Vaccination: Participants reported that some girls' fears affected their willingness to have the vaccine. "Some children will give us all sorts of stories that they've been told or they've heard, erm, some children will just refuse outright because they don't want to have it done" 5. Poor Consent Form Return: Participants explained that parents, girls, and schools can all contribute to low rates of consent form return, which can have a direct impact on vaccination uptake. "They won't even reach home, 'cause they [the girls] don't wanna have it and they don't want their parent . . . and if there's no email that goes home, or anything that makes the parent aware that that's gonna take place, then they might not even see the consent form." 6. Explaining Why Some Girls Don't Finish the Vaccination Series: A number of suggestions were made to explain why some girls receive the first dose of the

	<p>vaccine but not the second. These reasons included girls being absent on the day of vaccination, having a negative reaction after the first dose, or having a particularly negative experience. "I think it has to be accounted for a little bit that if the girls leave, because although we try and find out obviously where they've gone to, it's sometimes out of our hands to be able to catch up with that child that's left."</p> <p>7. Individualizing the Approach: Owing to differences in the ways schools work and in the varying maturity levels of girls, participants emphasized the need for individualized approaches. ". . . it's to have a nice, quiet area with, and also an area, when you've got the really nervous ones, where you can take them over as well, because those, y'know, don't forget, these kids haven't had a vaccine without their mum for years, y'know. A lot of them, y'know, they're mature, but some of them are very immature.</p>
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1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

2

Rubens-Augustson, 2019

Bibliographic Reference Rubens-Augustson, T.; Wilson, L.A.; Murphy, M.S.Q.; Jardine, C.; Pottie, K.; Hui, C.; Stafstrom, M.; Wilson, K.; Healthcare provider perspectives on the uptake of the

human papillomavirus vaccine among newcomers to Canada: a qualitative study; Human Vaccines and Immunotherapeutics; 2019; vol. 15 (no. 78); 1697-1707

1 **Study Characteristics**

Study design	Semi-structured interviews
Aim of study	This study sought to explore the experiences and perceptions of healthcare providers who administer the HPV vaccine to newcomers in Ottawa, Ontario.
Behavioural model used	Sabatier's Advocacy Coalition Framework This model consists of three interrelated domains that describe contextual influences on policy development.
Study location	Ottawa, Ontario.
Study setting	Education and Healthcare
Study dates	Between March and April 2018
Sources of funding	This work was supported by the Canadian Institute of Health Research.
Study methods	<p>Semi-structured, one-on-one interviews were conducted either in person or over the phone, according to the participant's preference. In total, seven interviews were conducted in-person at various locations around Ottawa, including at public health unit offices and at community health centres, while three interviews were conducted over the phone. All interviews were audio recorded and lasted between 26 and 68 minutes. Prior to the commencement of this study, the research team carried out a systematic review examining barriers to immunization among newcomers. An interview guide was developed based on dominant themes related to HPV vaccination that emerged from this review. Providers were asked to focus on their personal experiences of interacting with newcomers, as well as to reflect on strategies to improve HPV vaccine uptake in this population. Due to the iterative nature of qualitative research, questions that did not elicit rich responses or address the research question were removed and new questions were added based on new insights. At the conclusion of the interview, the researcher collected basic demographic information. Interviews were conducted until saturation was achieved.</p> <p>Data were analysed using a Qualitative Content Analysis approach focusing on manifest content, which "describes the visible, obvious components of a text" in order to stay as close as possible to the participants' original accounts. Interviews were audio-recorded and transcribed verbatim. Codes were developed inductively as themes and concepts were identified, and then sorted into sub-categories and categories based on their similarities and differences. This process was facilitated using the computer software NVivo. To determine how perspectives on HPV vaccine uptake varied between newcomers and healthcare providers working with newcomers, the researchers compared the findings from this study to those from their previously published systematic review of barriers to vaccine uptake in newcomers. Specifically, they considered which themes were unique to newcomers or providers and which themes were relevant across groups.</p> <p>In order to translate the findings of this research into action, the researchers considered the results in relation to a policy- and decision-making framework, an adapted form of Sabatier's Advocacy Coalition Framework.</p>
Population and perspective	A total of 10 healthcare providers were interviewed. Five worked within the public health system, four in primary care settings (two family physicians and two nurse practitioners at community health centres), and one was a gynaecologist working in the hospital setting. Providers working within the school-based program held bi-annual vaccine clinics in schools across Ottawa and interacted mostly with

	students. They also worked in catch-up clinics for children and adults who were missing publicly-funded vaccines and conducted surveillance to ensure students were up-to-date with vaccines required to attend school.
Inclusion Criteria	Practicing healthcare professionals
Exclusion criteria	None reported
Relevant themes	<p>1. Barriers to HPV vaccine uptake</p> <p>a. Access barriers: Healthcare providers working in primary care also highlighted how difficulties accessing primary care and navigating a new health system in general could be a barrier to HPV vaccination among newcomers. “Another thing is, refugees and newcomers often have the interim federal health, and that makes it – that’s just a barrier in accessing healthcare, like primary healthcare. So like I say, the CHCs [community health centres] can see those people, but if somebody doesn’t know about a CHC or isn’t connected, then they are probably not accessing the same level of primary care.”</p> <p>b. Communication barriers: Communication barriers related to language were frequently cited by providers. “The consent forms are convoluted, they’re difficult to understand, you wouldn’t really know, even just as a layperson looking at it, just being ok, where do I sign? And, it’s not in the languages.”</p> <p>c. Knowledge barriers: All providers indicated that newcomer patients typically had very little, if any, previous knowledge about HPV, how it is transmitted, or the fact that there was a vaccine to protect against it. “I have some families that have very limited past education. They might have spent most of their life in a refugee camp. One of my examples is sometimes when I’m doing past family history, I’ll say “do you have any family history of cancer?” And even the interpreter will tell me “they wouldn’t know if – they wouldn’t know cancer” right. So then you have to re-kind of think how you’re going to present the education piece, right.”</p> <p>d. Cultural barriers: Providers discussed challenges with initiating discussions related to sexuality and sexual health, noting that this is often a taboo subject among certain cultures in the newcomer community. “But people have, you know, explicitly said like, this vaccine promotes sex, and this is not something that we believe. Like that happens all the time.”</p> <p>e. Provider-level barriers: Many of the barriers providers described stemmed from providers themselves lacking the time or opportunity to engage with newcomer patients around the HPV vaccine. “So there’s a couple of things, I think always time is a factor, so there are so many millions of things that a primary care provider is trying to cover. So I think not having time to discuss is number one.”</p> <p>2. Facilitators to HPV vaccine uptake</p> <p>a. Targeted health promotion: Providers pointed out that in cases where they were able to overcome communication barriers and educate newcomers about HPV, patients were very accepting of the vaccine. “Depending on how much they understand, we might be able to. . .and I do feel like a lot of times, if it’s properly explained or if the parent does understand, they’re all for it.”</p> <p>b. Understanding the relevance of HPV vaccination: Changes to the school-based program were also perceived to be a step in the right direction to improve uptake. “For</p>

many other provinces, at grades four to grade six, would make the parent think of it in the context of a vaccine for health for their child, just like other vaccines are.”

c. Trusting the healthcare system: many newcomers have seen the health implications that can arise when people are not vaccinated in their country of origin, but also because in their experience, newcomers were very trusting of the healthcare system and providers generally. “I think newcomers in general are open to vaccination. I don’t, I haven’t met an anti-vaxxer in the newcomer [population], because I mean they lived in situations where it was important to be vaccinated, because they lived in very close – not all, but people that came from camps did, right.”

d. Cultural sensitivity: Providers discussed the importance of being culturally sensitive when providing care for newcomers. They emphasized the importance of culturally sensitive risk communication and emphasizing cancer prevention to take the focus away from the vaccine’s association with sexuality. “We did have for a brief period, we had one public health nurse who was Arabic speaking, and so when the Syrian refugees came in and we had to immunize them with, just their basic, so their measles, mumps, rubella and those vaccines – like it was great right, ‘cause once you cross that language barrier, you’re good. Like they can understand, they can consent, they can follow through.”

3. Recommendations to improve uptake

a. Publicly fund the HPV vaccine: Providers emphasized the need to publicly fund the HPV vaccine for everyone for whom it is recommended. This was especially pertinent to newcomers, as cervical cancer screening and vaccination against HPV often does not exist in their country of origin, thus putting them at an increased risk for HPV-related diseases. “If it was covered, I would bring it up in every [women’s health check-up]. Every [women’s health check-up], HPV. . . I mean we’re doing pap tests, we should be doing HPV vaccine. Like, it doesn’t even make sense that we’re not doing it.”

b. Enhance language and culturally appropriate health promotion activities: Healthcare providers highlighted a need to create informational resources and opportunities tailored to the language and cultural needs of newcomers. “What if we had big banners or, nowadays everybody gets advertisements through their cell phones. If we had these culturally appropriate and in different languages, had these ads to bring it to. . . to reach those who we can’t reach. The ones who are parked in front of their TV watching TV programs in their own language, right?”

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes

Section	Question	Answer
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Ruijs, 2012a

Bibliographic Reference Ruijs WL; Hautvast JL; van Ijzendoorn G; van Ansem WJ; van der Velden K; Hulscher ME; How orthodox protestant parents decide on the vaccination of their children: a qualitative study.; BMC public health; 2012; vol. 12

2 Study Characteristics

Study design	Semi-structured interviews
Aim of study	The aim of the present study is to gain insight into how orthodox protestant parents — without the immediate threat of an epidemic — decide to vaccinate or not vaccinate their children. The research questions were: – Do orthodox protestant parents make a deliberated decision with regard to the vaccination of their children? – What arguments do orthodox protestant parents use to justify their vaccination decisions? – What consequences of their decisions to vaccinate or not vaccinate do orthodox protestant parents face?
Behavioural model used	Grounded theory This model was chosen because the study was explorative.
Study location	The Netherlands
Study setting	Religious communities
Study dates	2009
Sources of funding	This study was financially supported by an Academic Collaborative Centres program, the Netherlands Organization for Health Research and Development.

Study methods	<p>The researchers conducted an in-depth interview study of both vaccinating and nonvaccinating orthodox protestant parents selected via purposeful sampling. Participants were recruited via child health clinics in villages with low vaccination coverage due to religious objections. The researchers selected villages with low vaccination coverage and high numbers of orthodox protestants of a certain denomination, in order to include all denominations. They approached the local child health clinic professionals and asked them to select orthodox protestant parents who were willing to be interviewed. A snowball approach was also applied.</p> <p>The interviews were conducted in 2009 by trained interviewers (GvIJ and WLMR) with a medical background and no membership in one the orthodox protestant minority groups. Most interviews were conducted in home of the parents after obtaining informed consent. The interviewers used a list of topics that was based on information of key-informants such as orthodox protestant medical professionals. The interviews were of an exploratory nature and the interviewers did not express their opinions on vaccination or religion. The average duration of the interviews was 60 minutes.</p> <p>The interviews were recorded and transcribed verbatim, then thematically coded by two analysts using the software program Atlas.ti. There were no predefined coding themes, the coding system was entirely based on the content of the data. The initial coding results were reviewed, discussed, and refined by the analysts until consensus was reached. The concepts emerging from the coding – such as the existence of four different subgroups of parents- were assessed using the constant comparative method from grounded theory.</p> <p>The study was approved by the research ethics committee of the Radboud University Nijmegen Medical Centre, Nijmegen, The Netherlands.</p>
Population and perspective	<p>Vaccination coverage in the general population is about 95%. Among the orthodox protestant minority, three subgroups can be distinguished on largely the basis of religious denomination: high coverage (>85%) for the Reformed Bond within the Protestant Church in the Netherlands and the Christian Reformed Churches; intermediate coverage (50–75%) for the Restored Reformed Church and the Reformed Congregations; and low coverage (<25%) for the Old Reformed Congregations and the Reformed Congregations in the Netherlands.</p> <p>The study population consisted of orthodox protestant parents who recently had to decide whether to vaccinate their young children or not.</p> <p>From 27 families, the researchers interviewed one or both parents: 21 mothers, 3 fathers, and 3 couples. The families belonged to various denominations and 13 families started vaccinating their children.</p>
Inclusion Criteria	<p>Parents</p> <p>Church members</p> <p>Orthodox protestant parents</p>
Exclusion criteria	<p>None reported</p>
Relevant themes	<ol style="list-style-type: none"> 1. The decision-making process: tradition versus deliberate choice: The parents who followed tradition did not go through an explicit decision-making process. They hardly discussed the topic of vaccination and simply did the same as their parents. "We were both a member of the same type of congregation; that makes difference. You have been given the same values. It was no longer a point of discussion." 2. Traditionally non-vaccinating parents: They referred to religious doctrine to explain their refusal of vaccination. Man should not interfere with divine providence and man cannot interfere with divine providence because God is almighty. "Whether I have my children vaccinated or not does

	<p>not matter to me because I don't believe in it. I believe that if God wants to spare my children from an accident, then He will spare them from it."</p> <p>3. Deliberately non-vaccinating parents: Deliberately nonvaccinating parents stress the significance of the disease rather than deny the medical effectiveness of vaccination. "I know for sure that God cares for me. And that the things He sends me, that may also be disease, that He will help me to cope with it."</p> <p>4. Deliberately vaccinating parents: Although they cite the medical benefits of vaccination, they used predominantly religious arguments to justify their decision to vaccinate. They consider vaccination a gift from God to be used in gratitude. "Yes, you may use the means that are there and I am convinced that it says in the bible that the Lord Jesus himself also says at a given point that . . . you have flat roofs in Israel, and then he says that fences should be put around them because otherwise they fall off."</p> <p>5. Traditionally vaccinating parents: They did not relate the issue of vaccination to their belief in God. Medical arguments were used to justify their decision. If they had any doubts about vaccination, these concerned the possible adverse effects of the immunization itself. "I cannot say that I know someone who does not do it. I have the idea that by us in the church, certainly here, that it's simply accepted. . .I also cannot think up any arguments for why it should not be allowed."</p> <p>6. Psychosocial consequences: Many orthodox protestant parents feared to regret their decision on vaccination in future. "[In case of a polio epidemic] I would really find it horrible if one of my children or my husband would get it, I really would. I cannot bear to think of it. And I count on being spared of this. I would try to explain later to my child why I didn't do it, purely on the basis of faith."</p>
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1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes <i>(The interviews were of an exploratory nature and the interviewers did not express their opinions on vaccination or religion.)</i>
Ethical Issues	Have ethical issues been taken into consideration?	Yes

Section	Question	Answer
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Ruijs, 2012b

Bibliographic Reference Ruijs, Wilhelmina L M; Hautvast, Jeannine L A; van IJzendoorn, Giovanna; van Ansem, Wilke J C; Elwyn, Glyn; van der Velden, Koos; Hulscher, Marlies E J L; How healthcare professionals respond to parents with religious objections to vaccination: a qualitative study.; BMC health services research; 2012; vol. 12; 231

2 Study Characteristics

Study design	Semi-structured interviews
Aim of study	The aim of this study is to gain insight into how healthcare professionals respond to parents with religious objections to the vaccination of their children.
Behavioural model used	Grounded theory
Study location	The Netherlands
Study setting	Healthcare
Study dates	January 2009 to June 2010
Sources of funding	This study was financially supported by an Academic Collaborative Centres program, the Netherlands Organization for Health Research and Development.
Study methods	A qualitative interview study was conducted with health care professionals (HCPs) in the Netherlands who had ample experience with religious objections to vaccination. Purposeful sampling was applied in order to include HCPs with different professional and religious backgrounds.
	Two interviewers (GvIJ and WLMR) visited the HCPs at their practices to interview them. The topic list was constructed on the basis of an exploratory meeting with key persons from the orthodox Protestant community, the National Immunization Program and child healthcare centres who were represented in the advisory committee of the project. The interviews lasted an average of 30 minutes.
	Data saturation was reached after 22 interviews. The interviews were recorded and transcribed verbatim. The interviews were thematically analysed. Two analysts coded, reviewed, discussed, and refined the coding of the transcripts until consensus was

	reached. Emerging concepts were assessed using the constant comparative method from grounded theory.
Population and perspective	22 Healthcare professionals with different professional backgrounds (7 child healthcare clinic doctors, 5 child healthcare clinic nurses and 10 GPs) and different religious backgrounds. Six of them were members of orthodox Protestant churches, 9 were not Protestant or had no religion. Years of experience ranged from 1-32 years.
Inclusion Criteria	Practicing healthcare professionals Nurses and doctors who work in child healthcare clinics General practitioners
Exclusion criteria	Healthcare professionals who had no experience with the target patient group HCPs who had little or no experience with orthodox Protestants were excluded.
Relevant themes	<ol style="list-style-type: none"> 1. Provision of medical information: All HCPs reported to respond to religious objections to vaccination predominantly with medical information. "You may give them a lot of information, tell them that it is better to vaccinate, but they do not change their point of view." 2. Discussion of the decision-making process: HCPs verified just how the decision not to vaccinate was made and whether or not the possible consequences of non-vaccination were realized. "I try to find out how they feel about vaccination and why they came to me to talk about it. Apparently they're not sure what to do. They like to hear the arguments for and against, and I know the medical arguments. But I also know the religious arguments and these arguments are discussed as well. In fact, it's more pastoral than medical." 3. Authoritarian stance: The third manner of responding to religious objections to vaccination, described by the HCPs, was to adopt an authoritarian stance and tell the parents what they must do in their child's best interest. "I sometimes say: "If you get any problems, just tell them that the doctor said that you had to take it.""

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell (No information is provided)
Ethical Issues	Have ethical issues been taken into consideration?	Can't tell (No information is provided)

Section	Question	Answer
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Salad, 2015

Bibliographic Reference Salad, J.; Verdonk, P.; De Boer, F.; Abma, T.A.; "A Somali girl is Muslim and does not have premarital sex. Is vaccination really necessary?" A qualitative study into the perceptions of Somali women in the Netherlands about the prevention of cervical cancer; International Journal for Equity in Health; 2015; vol. 14 (no. 1); 68

2 Study Characteristics

Study design	Focus Groups Semi-structured interviews
Aim of study	This study aims to explore the perceptions of Somali women living in the Netherlands regarding measures to prevent cervical cancer.
Behavioural model used	Health Belief Model Intersectionality
Study location	The Netherlands
Study setting	Community
Study dates	Between March and June 2013.
Sources of funding	Not specified
Study methods	Participants were recruited from a wide range of settings, including community gatherings, CHSs, the university, and Facebook. The recruitment was mostly done by JS and via members of the Somali organizations and community health service professionals. Convenience sampling was used at community gatherings of the Somali women. Purposive sampling was used to collect information from participants with a varied background. Snowball sampling was also applied. Semi-structured interviews and natural group discussions were held. An interview guide was developed that covered topics based upon intersectionality and earlier studies that explored factors significant for the decision to participate in the prevention of cervical cancer. The Health behaviour model, particularly, guided the construction of probing questions. Nearly all the individual interviews were recorded and transcribed verbatim. However, five interviews with mothers were not recorded

	<p>because those mothers were suspicious of recording. Short notes were taken during those interviews and immediately written out afterwards in field reports.</p> <p>The natural group discussions were conducted in Somali, lasted approximately 20 to 40 min, and took place in community centres in two different cities. A group interview protocol was developed by JS, who moderated the focused discussions. “Natural groups” refer to groups consisting of people who know each other already from other situations, such as sports teams, work, or women’s support groups. Researching with these groups maximizes the interaction between participants, and between participants and the facilitator. The information in the natural group discussions was collected only after JS was introduced by the moderators and she had become acquainted with the mothers who participated in the weekly group gatherings. Information on (the prevention of) HPV and cervical cancer was presented by JS to the participants at different moments. Facilitating a discussion with mothers who only recently moved to the Netherlands would have been difficult without the provision of any information on HPV and cervical cancer. The group discussions and the member check (checking back on findings with participants) were recorded and transcribed verbatim.</p> <p>The data was analysed thematically for content and the following steps were taken: familiarizing with the data, coding the interview texts, searching for themes, reviewing and refining the themes, comparing the established themes with the entire data set, and writing the report. The framework of intersectionality enabled a comprehensive analysis of the themes by exploring the interactions between social factors in the women’s talk. JS coded and analysed the transcripts: key words were assigned to pieces of text, and multiple concepts and relationships were identified. Researcher triangulation was applied by discussions in the research team on the analysis of the data.</p> <p>Ethical approval is not required for this type of study in the Netherlands], as only particular types of behavioural research fall under the Medical Research Involving Human Subjects Act.</p>
Population and perspective	Somali women aged 18–21 years (n=14) and Somali mothers aged 30–46 year (n=6) for the interviews and 26 mothers for the focus groups. Twenty-two out of the 26 mothers, aged 23–66 years, who participated in the natural group discussions came to the Netherlands during the second migration wave (2006).
Inclusion Criteria	<p>Mothers Over 30 years old</p> <p>Born in Somalia Having a migration date from the first (1990) or second wave (2006) of migration.</p> <p>Women Young women aged 18-12 years old</p>
Exclusion criteria	<p>Daughters whose mothers have participated in the study</p> <p>Mothers whose daughters have participated in the study</p>
Relevant themes	<p>1) Somali women and preventive healthcare; Participants’ perceived barriers to participation include a lack of information and knowledge about the purpose of the HPV vaccination and Pap smears, about the vaccination’s possible side effects, and about how HPV is transmitted. "This [HPV vaccination] is a study. They [the government] want to know who will be the victims in the future. [N2 (Somali mother)]"</p> <p>(2) Language, knowledge, and negotiating decisions; The Somali mothers from the second migration wave are often not fluent in Dutch, while Somali girls have access to Dutch language and culture through school. Hence, some young Somali women have to translate information about the HPV vaccination to their mothers, which daughters then sometimes perceive as a barrier. "We do not understand the situation of this</p>

	<p>country. We do not understand what is written in Dutch in the letter. So you ask other people: 'Did you get the letter on the vaccination of your child?' (...) How you will understand the information depends on the person who explains it. [A mother in group discussion]"</p> <p>(3) Sexual standards, culture, and religion. Susceptibility to HPV is perceived to be low for Somali girls because they are expected to not engage in premarital sex. The sexual behaviour of Somali women is seen as different from European, Dutch women. Dutch culture is criticized because both girls and boys are free to have sex, whereas in Somali culture only boys are allowed to have premarital sex. With the cultural double sexual standard on the virginity of girls, the HPV vaccination is not considered necessary. When informed by JS that cervical cancer is a common cancer in women in Somalia, the perceived severity of HPV infection and cervical cancer seemed to increase.</p>
Additional information	Findings from mothers were extracted separately from young women outside the desired age range for individual vaccination (12-18) where possible.

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low

Section	Question	Answer
	Relevance	Relevant (The study included young women aged 18–21 years old, which is out of the target age range for this review, as well as mothers.)

1

Scrutton, 2014

Bibliographic Reference Scrutton, Jonathan; Sinclair, David; Walker, Trinley; Improving access to adult vaccination: a tool for healthy ageing; Working With Older People; 2014; vol. 18 (no. 2); 58-66

2 Study Characteristics

Study design	Focus Groups
Aim of study	To demonstrate how access to vaccination for older people in the UK can be both improved and used as a tool for healthy ageing.
Behavioural model used	None stated
Study location	UK
Study dates	2013
Sources of funding	Pfizer
Study methods	This was a focus group. No further qualitative methodology was explained. The focus group consisted of people with various backgrounds, which are described in the 'Population' section here.
Population and perspective	Members of a think tank called The International Longevity Centre - UK N=17 The focus group included: A person representing Chalmers Communications, Head of Health Policy Research at Swiss Re, London Minority Ethnic Elders project at Age UK, Immunisation Co-ordinator for Lewisham Healthcare NHS Trust and NHS Lewisham, Public Health Adviser at RCN, Policy Adviser, health services at Age UK, Policy and Public Affairs Assistant at ILC-UK, Vaccines customer manager at Pfizer, ILC-UK trustee and Former President of British Geriatric Society, Senior Product Manager National Tenders and Pipeline at GSK, Scientific Affairs Manager at Sanofi Pasteur MSD, Government Affairs at Pfizer, Strategic Public Health Advisor at Westminster Council, Assistant Director at ILC-UK, Head of Care Quality at Anchor, A professor at Public Health & Policy at UCL School of Pharmacy, Research Officer at ILC-UK
Inclusion Criteria	None reported
Exclusion criteria	None reported
Relevant themes	Four themes from the focus groups were relevant:

	<p>1) Incentivising the provision of vaccination Financial incentives to encourage GPs to administer vaccines are currently used by several other European countries. “Perhaps an incentive of £20 pounds to the GP for vaccinating would be successful, but would it be in the public interest and would the public trust this type of approach?”</p>
	<p>2) Greater uptake of vaccination by health and social care professionals and in care homes Some members of our focus group felt strongly that the NHS should provide free appropriate vaccinations to social care workers, “When I was doing the rounds as a nurse, teams used to come around and offer vaccination to myself and other healthcare workers. But some members of staff still refused”</p>
	<p>3) Using the “Nudge” In order to ensure the healthy ageing of the UK’s older population research needs to be commissioned to explore what messages are most likely to result in greater uptake of adult vaccinations. “The most useful and cheapest bit of advertising we did at the Department of Health was to send posters to Holby City and Casualty. That was 15 years ago and they are still using them!”</p>
	<p>4) A poorly informed/engaged consumer Older people are likely to need more information and support to help them remain healthy and active for longer but this information is often not readily available or easily accessible. “It can be difficult for consumers to find out what the UK immunisation guidelines are. Not many people are going to delve into the Green book. There should be a simplified checklist for those aged over 18”</p>

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	No
Research Design	Was the research design appropriate to address the aims of the research?	No
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Can't tell
Data collection	Was the data collected in a way that addressed the research issue?	Can't tell
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Yes

Section	Question	Answer
Data analysis	Was the data analysis sufficiently rigorous?	Can't tell
Findings	Is there a clear statement of findings?	Can't tell
Research value	How valuable is the research?	The research has some value
Overall risk of bias and relevance	Overall risk of bias	High <i>(No qualitative methodology has been provided. For example, there is no methodology with regards to recruitment, data collection, or data analysis.)</i>
	Relevance	Relevant <i>(Some of the opinions were from pharmaceutical company employees. It is not possible to distinguish these from people working in the NHS.)</i>

1

Seale, 2012

Bibliographic Reference Seale, Holly; Trung, Linda; Mackie, Fiona E; Kennedy, Sean E; Boros, Christina; Marshall, Helen; Tidswell, Jane; Shaw, Peter J; Montgomery, Kay; MacIntyre, C Raina; A qualitative study investigating knowledge and attitudes regarding human papillomavirus (HPV) and the HPV vaccine among parents of immunosuppressed children.; Vaccine; 2012; vol. 30 (no. 49); 7027-31

2 Study Characteristics

Study design	Semi-structured interviews
Aim of study	This study aimed to document the knowledge and attitudes of parents/guardians of immunosuppressed children and adolescents towards HPV infection and the vaccine.
Behavioural model used	None stated
Study location	Adelaide, Australia
Study setting	Hospital (2 tertiary referral children's hospitals)
Study dates	Between May 2010 and August 2011.
Sources of funding	Not specified
Study methods	Potential participants were approached at the hospital. Interested parties were asked to return the consent form immediately or via the post. Non-responders were contacted by telephone after 3 weeks and consent forms resent to those still interested in participating. Interviews were scheduled to coincide with the child's next routine visit for the clinical trial. If the visit was cancelled or was delayed, the opportunity to conduct a face-to-face interview was lost. In these instances, the interview was then rescheduled and conducted via telephone. A separate follow up

	<p>system had to be developed for the children who had completed the clinical trial follow up appointments. The interviews aimed to build a rich picture around the knowledge and attitudes towards HPV vaccination amongst a sample of caregivers whose children had received the vaccine. The study researchers worked collaboratively to develop an interview guide and interviews were conducted by three investigators (HS, LT and JT) due to the geographical location of the three sites. Questions were designed to cover the key areas of interest that included: the general perception of immunizations; knowledge of HPV/HPV related diseases (i.e. how HPV is transmitted, what diseases are linked to HPV), and attitudes towards HPV and the vaccine (i.e. level of concern of the child becoming infected with HPV, perceived severity of the disease, perceived benefits of the vaccine, concerns about the vaccine). Interviews were digitally recorded and transcribed. A survey which included four 'yes or no' questions regarding the participants' experiences with HPV-related illnesses (i.e. either personal or a family members experience with cervical cancer, genital warts or an HPV associated illness) and their demographic information was also collected.</p> <p>The interviews were recorded, transcribed verbatim and analysed thematically. An agreed framework was then applied to another subsample of transcripts and modified further. Using this final framework, all of the transcripts were analysed and coded without the use of any software, given the small number of interviews conducted. Descriptive analysis was conducted on the information collected in the survey using Microsoft Excel.</p>
<p>Population and perspective</p>	<p>Twenty seven parents or guardians whose children were participating in a large clinical study investigating the immunogenicity, safety and persistence of immunity following HPV vaccination in immunosuppressed children.</p>
<p>Inclusion Criteria</p>	<p>Parents Parents or guardians whose children were participating in a large clinical study investigating the immunogenicity, safety and persistence of immunity following HPV vaccination in immunosuppressed children.</p> <p>People who had a specified age range The children were 5-17 years old</p> <p>Immunosuppressed people The children were recipients of allogenic bone marrow or liver transplants, patients with inflammatory bowel disease on long-term immunosuppressive therapy, chronic renal disease patients and kidney transplant recipients, and patients with rheumatic disease such as juvenile idiopathic arthritis and systemic lupus erythematosus.</p>
<p>Exclusion criteria</p>	<p>None reported</p>
<p>Relevant themes</p>	<ol style="list-style-type: none"> 1. Knowledge about HPV infection: While participants acknowledged that they had heard of 'HPV', only a couple had a strong sense of what it was. "...I always thought of it in terms of girls but my doctor very politely pointed out that it was the boys that were spreading it around" 2. Risk of acquiring HPV infection: The level of concern held by the participants about their child acquiring an HPV infection (prior to vaccination) ranged from 'not at all' to 'extremely.' The child's underlying illness was the main reason given for feeling concerned. 3. Perceived importance of HPV immunization: Apart from wanting to protect the child or prevent them and people around them from HPV infection, other benefits mentioned included preventing the spread of disease through the community, disease eradication and fulfilling preschool/travel requirements. "...he's been a very sick child and he's already had a bone marrow transplant so the last thing we would want him to do is to get another form of cancer or something like that" 4. Risks and concerns associated with the HPV vaccine: The majority had little concern over the use or the safety of the HPV vaccine but considered the issue of potential adverse effects exaggerated in immunosuppressed patients. "Obviously any immune-suppressed person, you need to be careful about what you're introducing into their system. Whether her system could

cope, firstly; whether it would affect her current medications and whether it might trigger some reaction from her disease that she had anyway. As long as I could be reassured that none of those things would occur, I thought whatever other risk was involved was worth taking"

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Relevant

2

Seok, 2018

Bibliographic Reference Seok J; Heffernan C; Mounier-Jack S; Chantler T; Perspectives of vaccinators on the factors affecting uptake of meningococcal ACWY vaccine amongst school leavers in London.; Public health; 2018; vol. 164

3 Study Characteristics

Study design	Semi-structured interviews
Aim of study	To explore general practice nurses' perspectives on offering Men ACWY vaccine to the London school leaver population

Study location	UK
Study setting	GP surgeries
Study dates	June 2017 - August 2017
Sources of funding	National Institute for Health Research Health Protection Research Unit (NIHR HPRU) in Immunisation at London School of Hygiene and Tropical Medicine in partnership with Public Health England (PHE)
Study methods	<p>Purposive sampling was used to recruit practice nurses who were working in GP practices. The three CCGs (Barnet, Camden and Newham) with the largest numbers of 18- to 20-year old registered patients (school leavers in 2015, 2016 and 2017) were selected to take part as these would have the practices that are the most likely to offer the Men ACWY vaccination. Vaccinators were recruited by contacting practice managers by email and telephone follow-up. When a practice refused to take part, the next practice with the highest number of 18- to 20-year-old patients was contacted.</p> <p>An interview topic guide was used to guide the discussion. The guide was developed from a review of the literature on vaccine delivery and vaccine hesitancy. The authors consulted on the topic guide and on the emerging themes with the regional NHSE/Public Health England academic group of advisors. Interviews were audio recorded, transcribed by a third party and anonymised. Field notes were also made during the interview. Thematic content analysis with some elements of grounded theory was used to analyse the data. A coding list was developed from the first three interviews and was used to recode these interviews and systematically code the remaining transcripts on NVivo 11. The codes were initially grouped by first order categories based on the original topics, enriched by emerging themes before finalised into second order themes.</p>
Population and perspective	10 practice nurses from 11 GP practices, all female
Exclusion criteria	None reported
Relevant themes	<p>1. Lack of support for nurses: Many nurses felt the vaccine programme was not a priority for other members of GP staff and so they felt unsupported having been given responsibility for the programme. Some nurses also felt that as it affected a small number of people it could not take priority over work they needed to do. "It's not a targeted vaccine, so they don't have to meet a certain percentage to receive the funding...So, there's no real incentive to bring in those patients"</p> <p>2. Getting eligible young people to attend: Nurses reported that most young people accepted the vaccination if they were offered it at the practice, but that few ever attended the practice and so missed out on the opportunity for vaccination. They did not think that the systems in place to make people aware of the opportunity for vaccination were enough to get the message across "I think, you know, because it hasn't been publicised as much as you would expect for such a horrible disease. I think it's just slipped in, and it's not really there."</p> <p>3. Unclear messages: Nurses thought that the campaign was too focused on people who were starting university and that young people and their parents were unaware of the difference between the Men C and the Men ACWY vaccine</p> <p>4. Consent: Nurses discussed how school leavers are at the age where they can consent for their own vaccinations, but that many young people still want to defer the decision to their parents, or discuss it with them first. This led to young people leaving the practice without being vaccinated and not returning "So, for a few people, there's a little bit of a quandary in terms of they want to go and check with their family first. Because, when you start university, you're quite inexperienced, you're quite young...And so, we encourage them to think that they're actually young adults now,</p>

	and it's for them to make that decision but, obviously, they want to discuss it with their parents."
	5. Perception of adolescent complacency: Nurses reported how the vaccine coincides with a lot of life events for a young person, such as leaving home and starting university. Although young people are aware of the vaccination it is easy for them to overlook it at a time when there are a lot of changes in their life "I suppose lots of them see things written down and think, well I'll do that. But it's such a big time in their life, leaving home, coming to university. They've so many things to contend with, and probably having an injection is the last thing that they think is more important... When I talk to the young people they say, yes there was one young person died because they didn't have... They know it, but it's somewhere in the recesses of their memory and it's when you bring it up to the fore then, they say 'oh yes I'll have it'."
Additional information	This study focused on the introduction of a catch-up campaign in response to a rise in the rates of meningococcal disease among young people. Although this is not the age group for the vaccination, the catch-up campaign has become a routine way of vaccinating young people who previously missed out on vaccination at the time recommended in the routine vaccination schedule.

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research has some value
Overall risk of bias and relevance	Overall risk of bias	Low
Overall risk of bias and relevance	Relevance	Highly relevant

2

Skirrow, 2021a

Bibliographic Reference Skirrow, H.; Holder, B.; Meinel, A.; Narh, E.; Donaldson, B.; Bosanquet, A.; Barnett, S.; Kampmann, B.; Evaluation of a midwife-led, hospital based vaccination service for pregnant women; *Human Vaccines and Immunotherapeutics*; 2021; vol. 17 (no. 1); 237-246

1 Study Characteristics

Study design	Semi-structured interviews
Aim of study	To explore the decision-making process of women who used a midwife-led vaccination clinic
Study location	UK
Study setting	Midwife-led vaccination clinic at Imperial College Healthcare NHS Trust
Study dates	April 2017 – March 2018
Sources of funding	NIHR Imperial Biomedical Research Centre, Imprint Network UKRI funded IMPRINT network
Study methods	<p>Participants were recruited using a convenience sample, with women approached by one of the vaccine midwives in the antenatal clinic waiting area and given an invitation letter and the participant information sheet.</p> <p>An Interpretative Phenomenological Analysis (IPA) approach was used to enable participants to offer a rich, detailed, first person account of their experiences and to understand how they approached vaccine decisions in pregnancy. Research questions focused upon people’s understanding of their experiences and were framed broadly and openly. Interview data was derived from either recorded telephone interviews with one researcher (a midwife) or a face-to-face discussion that was recorded between two women and the same midwife researcher. The interview process consisted of open-ended questions which were developed drawing on previous research. All main points raised by each participant were summarised at the end of the discussion by the researcher, giving women the opportunity to add or amend as required.</p>
Population and perspective	10 women aged 29 to 44 years, from diverse ethnic backgrounds. Three had declined and seven had received the pertussis vaccination during pregnancy
Inclusion Criteria	Women aged over 18 years who were receiving (or had recently received) antenatal care at the hospital and had been seen by the vaccine midwives
Exclusion criteria	None reported
Relevant themes	<p>3 relevant themes were identified:</p> <ol style="list-style-type: none"> 1. Interactions with midwives and health care workers – Some participants reported that the midwife was knowledgeable and provided a lot of information and advice which helped them to feel reassured about vaccination. Others had previously had bad experiences with doctors providing limited discussion about vaccination and were less likely to have a vaccination “I could tell that the midwife had a lot of information and if there was anything that she didn’t know, she didn’t mind finding out and that gave me a great deal of reassurance. I had trust in the advice they gave me, reinforced by their competence” 2. Disease and vaccination risk – some participants thought that the vaccination was important to protect their unborn child. Others did not think that the risks outweighed the benefits “I knew that if I didn’t have the vaccine my baby would be at more risk, so, I felt the risk of the baby actually getting the whooping cough and the impact of that far outweighed any risk from the vaccine”. “vaccines undermine parts of our immune system, so, if you don’t

	<p>have them you are at less risk of catching infections as the immune system works better”</p> <p>3. Previous experiences – some participants had previous experience of a disease, and this informed their decision to be vaccinated “I remember my mum had whooping cough years ago, it was awful and I know that it can be deadly for little ones, so, I just wouldn’t want to put my baby through that or myself ... you know It’s like self-preservation and baby preservation ... it just makes sense to me to have the vaccine”</p>
Additional information	<p>Based on an antenatal clinic midwife-led vaccination programme: The clinic was midwife-led by two part-time dedicated ‘vaccine midwives’ who received training on maternal vaccine delivery and counselling. The vaccine midwives were senior, experienced midwives who had received specific training in the administration of vaccines and previously worked in both hospital obstetric and community midwifery roles. Their role was as solely dedicated vaccine midwives during the period of the service evaluation, though if staffing levels were low they would occasionally also see women for routine hospital appointments in the antenatal clinic. The clinic was promoted locally, and women could be referred by other midwives and doctors whilst attending routine antenatal appointments, self-refer, or be opportunistically approached by the vaccine midwives in the antenatal waiting rooms.</p>

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
Overall risk of bias and relevance	Relevance	Highly relevant

2

Skirrow, 2021b

1

Bibliographic Reference Skirrow H; Flynn C; Heller A; Heffernan C; Mounier-Jack S; Chantler T; Delivering routine immunisations in London during the Covid-19 pandemic: lessons for future vaccine delivery.; BJGP open; 2021

2

3 Study Characteristics

Study design	Semi-structured interviews Open ended question from a survey or questionnaire
Aim of study	To understand how General Practices in London adapted their delivery of routine childhood immunisations to maintain population protection against vaccine preventable diseases during the COVID-19 pandemic and to examine how practice adaptations and innovative delivery models could support future routine immunisation services, including COVID-19 vaccination programmes
Study location	UK
Study setting	London-based GPs
Study dates	August 2020 - November 2020
Sources of funding	National Institute for Health Research Health Protection Research Unit (NIHR HPRU) in Immunisation at the London School of Hygiene and Tropical Medicine (LSHTM) in partnership with Public Health England
Study methods	<p>All London based General Practices were invited to complete an online survey to provide a descriptive analysis of immunisation delivery in London during the pandemic. The survey findings identified different models of innovative practice, which were explored in more depth through qualitative semi-structured interviews. An online questionnaire was developed and emailed to all 1215 London practices via a Public Health England Select Survey link. The questionnaire consisted of six questions and asked practices whether they had delivered childhood (0-5 years) immunisations in the last 7 days, the adaptations they had made to their delivery of childhood immunisations and what support they needed to continue to be able to vaccinate their eligible 0-5 years population.</p> <p>The purpose of the interviews was to examine the adaptations and new immunisation delivery models developed by practices. Purposive sampling was used to recruit practices from different locations in London, with 34 practices invited to take part. Three additional interviews were conducted; two with CCG representatives as a result of snowball sampling during two interviews, and one with a practice that was participating in non-health infrastructure mass flu immunisation events and was identified via a professional network. The interviews aimed to gain insights into pre-defined topics such as example immunisation adaptations following the Covid-19 pandemic, interviewees' perspectives on advantages and challenges of new adaptations and models, and views on their ongoing role in the routine immunisation programme and for the delivery of Covid-19 vaccines, whilst remaining attuned to other relevant content interviewees wanted to share.</p> <p>The interviews were audio-recorded and transcribed verbatim by an external company. Transcripts were downloaded into a qualitative data analysis management</p>

	programme (NVivo v12) and thematic analysis used that combined a semi-deductive coding of data to pre-identified topic areas and inductive interpretation to define overarching themes. All five interviewers pre-coded their interviews to develop a coding framework that was applied to the whole data set. The whole team reviewed the data set, verified the coding and engaged in interpreting meanings and grouping codes under the overarching themes.
Population and perspective	Representatives from 12 GP practices and 2 CCGs took part in the interviews
Inclusion Criteria	GP practices in London
Exclusion criteria	None reported
Relevant themes	<p>3 relevant themes were identified:</p> <ol style="list-style-type: none"> 1. Nurses had to phone parents during the pandemic to encourage them to attend vaccination sessions as many were worried about attending practices during the lockdown. Some nurses reported that this was time consuming but beneficial because they could discuss other concerns that parents had about immunisations. 2. Providers adapted their models to fit with the safety requirements for the pandemic. Some, such as outdoor or drive-through immunisation services, were generally well received by people attending vaccination appointments “they’ve actually loved it. It’s surprising because initially we weren’t sure whether it would work ... but because now that they’ve been quite used to the idea ... with the pandemic everything has changed. So, this is the norm now”. 3. Participants identified local issues that affected access to vaccinations, including language barriers and transient populations “English isn’t the first language of the majority of our patients. So, they’re not really aware of the immunisation schedule” , “We’ve got a very transient population and in the local area of the Primary Care Network one of the practices is just for homeless people...(and) One of the practices... (has high numbers of) university (students)...we have to take that into consideration” 4. Participants suggested that some of the new delivery models could be used for larger scale vaccination programmes. Some areas used adapted versions of the new models to deliver the flu vaccine “The reason it worked quite easily is because we had done that in COVID. We’d been a green practice and they’d been a red practice. So, their GPs were used to working in our building. So, we just thought... Everything’s set up to do that again and have our flu clinics there so that we can have the whole building to do...socially-distanced flu clinics”. However, some participants thought that vaccinations at mass clinics could affect uptake because people have more trust in their local GP. They also thought it might restrict access for some people if the clinics are further from their homes than their local GP practice “...it may be better as a mass flu clinic...but you might lose some of the trust a GP surgery would have”

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes

Section	Question	Answer
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
Overall risk of bias and relevance	Relevance	Highly relevant

1

Smailbegovic, 2003

Bibliographic Reference Smailbegovic, M S; Laing, G J; Bedford, H; Why do parents decide against immunization? The effect of health beliefs and health professionals.; Child: care, health and development; 2003; vol. 29 (no. 4); 303-11

2 **Study Characteristics**

Study design	Unstructured interviews
Aim of study	To explore the knowledge, attitudes and concerns with respect to immunization and vaccine-preventable infections in a group of parents resident in Hackney whose children have not completed the recommended course of immunization.
Behavioural model used	None stated
Study location	UK
Study setting	Community
Study dates	1999
Sources of funding	Not mentioned

<p>Study methods</p>	<p>The study was conducted in The London Borough of Hackney. Children who had defaulted for one or more primary immunization at 18 months of age were identified from the population database (Regional Interactive Child Health System) in which immunization data are routinely entered. Cases were defined as those who had not completed the recommended course of immunization, which in Hackney includes universal BCG. For children in the sample, information from the database was validated against health visitors' and parental records by telephone or through direct contact. Children reported to be immunized were excluded from further analysis.</p> <p>Ethics approval for the study was obtained from the East London and City Health Authority.</p> <p>An anonymized questionnaire and explanatory letter were sent to the parents of children identified. Use of an identification number allowed non-respondents to be identified, and a second letter and questionnaire were sent to non-respondents 3 weeks after the first mailing. At the end of the questionnaire, parents were asked to complete contact details if they would be willing to be interviewed in order to discuss issues raised in the questionnaire in greater depth.</p>
<p>Population and perspective</p>	<p>Contact details were provided by 10 mothers who were subsequently visited for interview.</p>
<p>Inclusion Criteria</p>	<p>People who share specific characteristic(s) The children had not received their routine vaccinations by 18 months of age.</p> <p>Parents of children who had a specified age range Age 18 months</p>
<p>Exclusion criteria</p>	<p>None reported</p>
<p>Relevant themes</p>	<p>6 Themes were identified by the investigators (There is no further qualitative data in this study)</p> <ol style="list-style-type: none"> 1. All mothers had major concerns relating to the MMR vaccine, although not to immunization in general, and all children in this group had received the triple vaccine. 2. Half the families had personal contact with the parents of children who were autistic and suspected a link between MMR and autism. 3. Parents expressed scepticism about the government's policy on separate vaccines, claiming that it was based on financial reasoning, and felt that a separate injection should be a matter of parental choice. Four mothers had arranged for separate vaccines at private clinics. 4. Parents rated the information offered by health professionals as poor. This was because of inadequate information about vaccine testing and, in particular, research relating to the MMR vaccine. 5. Health professionals' neutrality was seen as unhelpful, whereas others were reported to have supported parents in their decision to give separate MMR vaccines. 6. The participants also reported that they would have liked an opportunity to discuss their concerns with health professionals in more detail.
<p>Additional information</p>	<p>We have only used the interview results and not the open-ended questionnaire quotes because they are a less rich source of data in general and we have a lot of studies looking at parents' opinions using focus groups and interviews.</p>

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Can't tell
Research Design	Was the research design appropriate to address the aims of the research?	Can't tell
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Can't tell
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research has some value
Overall risk of bias and relevance	Overall risk of bias	Moderate <i>(No details provided regarding how the interviews were conducted or how the data was analysed.)</i>
	Relevance	Highly relevant

1

Smith, 2017

Bibliographic Reference Smith, D.; Newton, P.; Structural barriers to measles, mumps and rubella (MMR) immunisation uptake in Gypsy, Roma and Traveller communities in the United Kingdom; *Critical Public Health*; 2017; vol. 27 (no. 2); 238-247

2 Study Characteristics

Study design	Focus Groups
Aim of study	To investigate why vaccination rates are relatively low among Gypsy, Roma and traveller communities in the UK.
Behavioural model used	None stated

Study location	UK
Study setting	Community (Gypsy, Roma and traveller)
Study dates	2014
Sources of funding	RAE Competitive Investment Round Research and Enterprise Investment Programme
Study methods	<p>Participants were purposely selected from Gypsy, Roma and traveller sites across Kent in South East England.</p> <p>The focus group guide was developed following a brief open-ended pilot survey about immunisation. The interviews were conducted by a trained interviewer from the travelling community.</p> <p>Focus group discussions lasted approximately 70 minutes. Data was audio-recorded, transcribed and analysed. Transcripts were read by the 2 authors and a framework of emerging themes was developed by negotiating and agreeing on the content as well as the development of new themes and subthemes. Focus groups were conducted until saturation of themes was reached. Ethical clearance was gained.</p>
Population and perspective	<p>16 women with 35 children between them, of whom 22 were fully or partially immunised with MMR compared to 13 who were not.</p> <p>7 identified as Romany Gypsies, 4 as Irish Travellers, 3 as Roma migrants and 2 as New Travellers.</p>
Inclusion Criteria	<p>Parents of children</p> <p>Parents who are part of a specific community Gypsy, Roma and traveller communities</p>
Exclusion criteria	None reported
Relevant themes	<p>4 Themes were identified:</p> <ol style="list-style-type: none"> 1. Way of life and health service access. A core theme was the incompatibility of living arrangements and their attendant way of life with the provision of immunisation services. Although the participants were resident on permanent sites, supply side factors such as the location of clinics and health centres meant that attendance was often problematic, due to the isolated location of many sites far from public transport routes: "Most camps are miles away from the shops even now aren't they? It's very rare you'll get one close to shops. Far from doctors, far away from health care, no bus route ... it's easy access definitely because like I said we don't always live on a bus route." 2. Engaging and interacting with health care staff. Maintaining personal control over their child's health and resisting external pressures to vaccinate was an important strand in some participants' decisions over vaccination: "I refused to give him even though they were all over the place and arguing with me that I'm doing something wrong." 3. Evaluating and minimising risk. Due to the high incidence of measles in these communities, most participants had personal experience of the disease, either in their own or other families, and had a clear understanding of how such diseases are transmitted: "The kids were in hospital with measles, remember? That was around

	<p>your Mol's funeral, that's where they picked it up you know my Bobby picked it up at Mol's funeral."</p> <p>4. Timing and risk. Timing of the injections played a pivotal role in influencing decision-making and immunisation behaviour in two ways: first in terms of the age it is administered and secondly in a general opposition to the combined vaccination: "My GP has sent me letter about MMR but I will when he is old enough."</p>
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1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Can't tell
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

2

Sporton, 2001

Bibliographic Reference Sporton, R.K.; Francis, S.-A.; Choosing not to immunize: Are parents making informed decisions?; Family Practice; 2001; vol. 18 (no. 2); 181-188

3 Study Characteristics

Study design	Semi-structured interviews
Aim of study	To explore the decision-making process of parents who have chosen not to have their children immunized

Behavioural model used	None stated
Study location	UK
Study setting	Community
Study dates	Not provided
Sources of funding	There was no funding - it was part of a student's MSc
Study methods	<p>The study site had a lower than the national average immunisation coverage (i.e. <93% uptake at 12 months of age) and wards with high and low deprivation scores according to the Jarman index. Within the area, there was no separate register for children not immunized; therefore, a purposive sample of parents who had chosen not to immunize their children was identified through four stages:</p> <p><i>Stage 1.</i> The district immunization co-ordinator identified and contacted seven sets of parents from clinic records who had chosen not to immunize their children, five of whom gave written agreement to discuss the study with the researcher.</p> <p><i>Stage 2.</i> Health visitors identified and contacted 22 sets of parents who were willing to be contacted by the researcher to discuss the study.</p> <p><i>Stage 3.</i> The 27 sets of parents identified through stages 1 and 2 completed a telephone, screening questionnaire that asked about the main reason for not immunizing. The characteristics were identified from the current immunization literature and had been associated with decisions concerning immunization.</p> <p><i>Stage 4.</i> Responses to the screening questionnaire were used purposively to select parents from a range of backgrounds and experiences. Inclusion of participants who had a range of these characteristics was necessary to gain an in-depth understanding of the decision-making process of parents who had chosen not to have their children immunized. However, it was not an objective of the study to compare parents' reasons according to these characteristics. Fourteen parents were identified through this process who had different combinations of the characteristics listed. The remaining 13 parents were excluded on the basis that they had the same combination of characteristics of parents who had already consented to participate.</p> <p>Stages 3 and 4 of sample selection occurred simultaneously with data collection and analysis. Data were collected using an audio-taped, semi-structured interview on a series of open questions guided by topic areas, either at the participant's house or at their workplace. In homes where there was more than one parent, the interview was conducted with the parent who felt most strongly about immunization, as identified by the parents themselves. A decision was made at the outset not to interview both parents within one family unit: not all families would necessarily have two parents and the data generated from multiple sources concerning the decision taken with one child may require a different analytical process compared with the data from a single source.</p> <p>Lewisham Hospital NHS Trust Research Ethics Committee approved the study.</p> <p>An investigator conducted and transcribed all interviews. The transcripts were analysed using consistent and systematic review. The analytical process required the development of an initial coding frame following the examination of two transcripts.</p>

	<p>The coding frame was revised following the examination of further transcripts, after which initial transcripts were re-analysed. A sample of data was analysed by a second researcher (SAF), and categories and coding were discussed and reviewed. This process was facilitated by the computer software package QSR-NUD*IST.</p>
Population and perspective	<p>Of the 14 parents who had been identified during the recruitment process, 13 interviews were completed successfully; one set of parents withdrew from the study prior to the interview.</p>
Inclusion Criteria	<p>Parents of children</p>
Exclusion criteria	<p>None reported</p>
Relevant themes	<p>18 themes were identified by the investigators:</p> <ol style="list-style-type: none"> 1. Parents' perceptions of childhood diseases and immunization: Parents discussed the childhood diseases covered by immunization and categorized the diseases into 'serious' (diphtheria, tetanus and polio) and 'mild' (mumps, measles and rubella). The perceived risk of catching 'serious' diseases, in the UK, was considered to be small, whereas the risk of catching 'mild' diseases was described as greater. 2. Parents' reasons for choosing not to immunize their children: Parents often cited more than one reason for choosing not to immunize their children, with the risk of adverse effects as a consequence of immunization mentioned by every parent. 3. Risk of side effects. The risk of side effects was discussed in terms of long-term effects, short-term effects and 'vulnerable' children for whom there was an increased risk. Parents were of the view that there was a significant lack of research concerning the long-term effects of vaccinations: "My main objection is that there's been no proper research done, there's been a few tests on animals which I don't believe are relevant to the effect on humans. I just believe it's a very hit and miss affair, nobody's actually done any research on the long-term effects of vaccinations. I mean there's well publicized very rare side effects of brain damage and cot deaths and things, but I believe that in the long term there are . . . many more side effects than people realize and, when you get older, things like ME, MS, autism, dyslexia, hyperactivity, just antisocial behaviour, asthma, eczema. I think even AIDS, leukaemia have been linked to vaccines. Meningitis has been linked to the measles vaccine, as has Crohn's disease." 4. Increased susceptibility to disease following immunization. Several parents discussed children whom they knew had been immunized and had then appeared to have an increased susceptibility to infections. Immunization was therefore seen as a contributory factor to disease: "I mean looking at [first child] who has had his vaccines and looking at [second child], I would say that [first child] was a much healthier baby. [Second child] has been sick every two to three weeks, throughout the winter months, he's been a really sickly child. So I can't really say oh he hasn't been vaccinated and he's a model child, he's had no eczema, he's had no sickness, no I can't, because [first child] was and he'd had all his vaccines." 5. Moral reasons: One parent had discovered from a newspaper article that the rubella vaccine had been developed originally from an aborted foetus and therefore the use of this vaccine conflicted with her moral principles. 6. Alternative protection. Parents discussed alternative methods of protection against childhood diseases, such as homeopathy, diet and a belief in God: "I think if he gets

the disease I think we have to trust in God to protect him you know and that's how I feel.”

7. Practical reasons. A small number of parents mentioned practical issues, for example the lack of time available to attend clinic appointments after returning to work full-time: “I suppose because I was at home with him, for the first, his first year of life, I knew that he wouldn't be exposed to anything, he wasn't going to a nursery or a child minder, . . . I knew that to some extent I had some degree of control over the people he was exposed to and the germs he was exposed to.”

8. Personal experience: One parent discussed her own childhood experiences of not being immunized as a result of the family having a negative experience with immunization, and that this had not led to any adverse consequences for her own health.

9. Making the decision not to immunize: the process: Some parents described the decision to immunize a first child as a routine action to which they had given little thought.

10. The trigger. Each parent in this study identified at least one occasion where an event had triggered the question of immunization. The triggers included the issue being raised by the homeopathist, reading an article in the newspaper or being told by a friend that immunization involved choice: “Well, to be honest with you, had I not been, dare I use the word, alerted by friends, who said have you thought about your views on immunization? I thought it was compulsory until people told me it wasn't. I didn't actually realize I had a choice. Once I did realize I had a choice, I became extremely anxious because I then realized that it was yet another decision.”

11. The routine response: The routine decision made by some parents to immunize their first child was described by parents as uninformed, based on the advice of health care professionals and wanting to do things ‘right’.

12. The emotional response: Parents also described an emotional ‘instinct’ that was often used as the basis for the decision to immunize or not.

13. The questioning stage. For other parents, a risk–benefit analysis was undertaken. The questioning stage was a natural starting point for making an informed decision, and parents suddenly found that they had many unanswered questions: “And then I had a question mark over all the other vaccinations, I thought well you know if that comes from an aborted foetus where do the others come from you know, so I started to ask different questions.”

14. The thinking stage and information hunt. The thinking stage was interwoven with the information hunt. Once parents started questioning, they then started a cyclical process of seeking and evaluating information, which often led to the search for further information and so on: “. . . [the health professionals] gave me a lot of stuff which basically I couldn't understand most of it, it was all really medical obviously and a lot of it went over my head. Whereas I suppose when I read stuff from the Informed Parent you know it's much more understandable.”

15. The dilemma. The thinking stage and information hunt could last for several months. However, parents eventually reached a point at which they felt they could assess the risks and the benefits from the available information: “Polio was obviously something, if you know you prevent a real paralysis which is a lifelong problem, it's not something that is easy to get rid of, but it's so unlikely to happen and the side effects are so risky I mean that I think it's just not worth doing I don't think.”

16. The decision. Parents who had used the systematic pathway, described their decisions as ‘informed decisions or choices’: “Now having said that [second child] is

	<p>going to have some of his immunizations but because I've read around and I am, I am informed now I've chosen the vaccines he's going to have, which are the ones which you know any doctor who was having their child immunized would choose to have themselves because they are the better ones.”</p> <p>17. Reflection: After a decision had been made, some parents reflected on their decisions: “I'm not fully happy with not immunizing, because I would hate my children to get an awful disease, on the other hand, I think for me, it's the lesser of two evils.”</p> <p>18. Making the decision to not immunize: the players. Parents perceived themselves in a number of roles: decision maker, protector and being responsible for the consequences of their decisions. Two aspects of responsibility were discussed: responsibility for any side effects if immunization was chosen, but equally responsibility for the childhood disease if immunization was rejected: “So it's not as if I'm dead against it I just don't feel I want to be the one to say yes OK do it and then if they do suffer any side effects, I mean I know there's very minor side effects but if they do suffer serious side effects, I don't want . . . to be the one to give the permission for that.”</p>
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1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Can't tell
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable

Section	Question	Answer
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant (Although 6 out of 13 children are over the age of 6, we did not downgrade for relevance because the quotes were relevant to the vaccines of interest)

1

Stein Zamir, 2017

Bibliographic Reference Stein Zamir, Chen; Israeli, Avi; Knowledge, Attitudes and Perceptions About Routine Childhood Vaccinations Among Jewish Ultra-Orthodox Mothers Residing in Communities with Low Vaccination Coverage in the Jerusalem District.; Maternal and child health journal; 2017; vol. 21 (no. 5); 1010-1017

2 Study Characteristics

Study design	Focus Groups Semi-structured interviews
Aim of study	To explore the perceptions, knowledge and attitudes about childhood vaccinations acceptance and timeliness among mothers in communities with low immunization coverage in the Jerusalem district of Israel.
Behavioural model used	Grounded theory
Study location	Israel (Jewish ultra-orthodox)
Study setting	Community
Study dates	2015
Sources of funding	Not stated. The investigators were employed by universities or the Ministry of Health.
Study methods	The study target population included women at childbearing age residing in the selected communities in the Jerusalem district who had at least one child aged under 6 years at the time of the study. Before the focus group discussion as well as before the interviews, the participants received oral and written information about the study objectives, the maintenance of anonymity and the confidentiality of information. The mothers received explanation that participation would not affect their status in the MCH clinic and their right to withdraw from the study. Consent was obtained from all participants. First, five focus groups, each with 7–10 participants (n = 45) were conducted in the communities with low immunization coverage. The mothers were approached telephonically and all the focus groups were hosted by an experienced, professional group instructor (female) and took place in private homes in the community. Each focus group meeting started with an introduction of the group's participants and subsequently the main discussion topics included child health issues and mother's knowledge, attitudes, perceptions and practices regarding childhood immunizations.

	<p>Second, face-to-face individual interviews (questionnaire-based) were performed by three experienced paediatricians with mothers attending MCH clinics in the five communities (n = 42). The semi-structured questionnaires included demographic variables, questions on child health issues, about the MCH clinics services and questions on knowledge about specific vaccines and schedule, attitudes, perceptions, experiences and practices about routine childhood immunizations. The questionnaires include a modified attitude towards vaccination scale consisting of six statements on childhood vaccines to which participants were requested to indicate response to each statement on a four points Likert scale 'highly agree', 'somewhat agree', 'somewhat disagree', 'highly disagree' with an option of 'do not know'. Both during the focus groups discussions and in the individual interviews the mothers were encouraged to suggest possible improvement of the MCH clinics services according to their wills and needs.</p> <p>The focus groups discussions were audio recorded and transcribed verbatim and then entered into text files; the completed questionnaires of the individual interviews were entered into spreadsheets with the free textual comments entered as precise quotes. Descriptive statistics of general characteristics of the mothers was performed with SPSS. The qualitative analysis was performed with the qualitative research data-analysis software for textual analysis and organization, Narralyzer. The data analysis process was performed by the research team, physicians with a long-term experience and acquaintance of the Jerusalem district ultra-orthodox communities, and the group instructor (social sciences professional, religious female). Content analysis was performed; the texts (transcriptions) were segmented into meaning units with specific quotes highlighted. The responses to the present key study queries were cross-tabulated and agreements and differences were highlighted across the study participants. Thereafter categories were defined and then main themes were developed.</p> <p>The study was approved by the Israel Ministry of Health Institutional Review Board and subsequently conducted according to the relevant ministry of health instructions.</p>
Population and perspective	<p>There were 87 participants from 5 communities in Jerusalem that had a low immunization coverage. The population in the five communities was homogenous, Jewish ultra-orthodox. The coverage rates of MMR1\MMRV1 and DTaP4 vaccines in these communities were lower than the district's coverage rate (at age 2 years, 2013). The rate difference was higher for the DTaP4 vaccine (district: 89% and communities: 77–82%) than for the MMR1\ MMRV1 vaccine (district: 96% and communities: 91–94%).</p>
Inclusion Criteria	<p>Parents of children who had a specified age range Age 0 to 6 years</p> <p>Parents who are part of a specific community Jewish ultra-orthodox</p>
Exclusion criteria	<p>None reported</p>
Relevant themes	<ol style="list-style-type: none"> 1. General perception on MCH clinics and on routine childhood vaccinations. Childhood vaccinations were associated with considerable discomfort and pain.: “You enter the room with three smiling children and exit with all of them crying”. 2. Knowledge on childhood vaccination. Knowledge on childhood vaccines was appraised by familiarity with the names of vaccines (disease). The participants' vaccine knowledge was found to be insufficient. However, the clinic provided advice: “When I arrive to the clinic they (the nurses) tell me what vaccines are needed today”. 3. Attitudes regarding childhood vaccines Regarding religious beliefs on immunizations, most mothers said that the concept of adopting behaviours aimed to

	<p>diminish health risks is part of Jewish law (Halakha) stating: “Take therefore good heed onto yourselves”.</p> <p>4. Delay of childhood vaccines. The main theme on delayed vaccines was that delay was not significant or affecting children health: “It is not so important to arrive precisely on the exact age”.</p> <p>5. Childhood vaccines decline: About a fifth of the mothers reported declining childhood vaccines. The most frequent was influenza vaccine (recommended for children but not provided in the MCH clinics). The main causes were ‘not in the program’(influenza vaccine), ‘new vaccines’ (pneumococcal vaccine and rotavirus vaccine, introduced July 2009 and December 2010, respectively), ‘missing the right age’ (rotavirus vaccine), ‘too many vaccines’ and ‘some vaccines are more dangerous’ (nine mothers said ‘vaccines at age 1 year’, three pentavalent vaccine and two measles vaccine).</p> <p>6. Attitudes regarding unvaccinated children. The majority said they would not attempt discussing vaccinations with parents of unvaccinated children. The main theme was lack of ability and/or authority.: “I am not a professor or a doctor or a rabbi, why should they listen to me?”</p> <p>7. Incentives and Sanctions: The attitudes regarding use of child’s vaccination status to introduce reduction of child endowment allowances (until vaccination status is up-to-date) were ambivalent.</p>
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1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable

Section	Question	Answer
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Stretch, 2009

Bibliographic Reference Stretch, R.; McCann, R.; Roberts, S.A.; Elton, P.; Baxter, D.; Brabin, L.; A qualitative study to assess school nurses' views on vaccinating 12-13 year old school girls against human papillomavirus without parental consent; BMC Public Health; 2009; vol. 9; 254

2 Study Characteristics

Study design	Semi-structured interviews
Aim of study	To ascertain the views of school nurses on assessing Gillick competence and vaccination of girls whose parents had not given consent.
Behavioural model used	Ajzen's Theory of Planned Behaviour This framework postulates that actions are motivated by a) attitudes and beliefs – in this case the school nurses' beliefs about the benefits of HPV vaccination; b) subjective norms – perceptions that colleagues and parents would approve of them vaccinating without parental consent; c) perceived control of the action – time constraints and the impact of HPV vaccination policies on their work in schools.
Study location	UK (Greater Manchester)
Study setting	Education
Study dates	Between October 2007 and September 2008
Sources of funding	GlaxoSmithKline
Study methods	HPV vaccination was offered to all 12 year old girls attending schools in two Primary Care Trusts in Greater Manchester. At the end of the study semi-structured, tape-recorded interviews were conducted with school nurses who had delivered the vaccine (Cervarix™). The interview template was based on concepts derived from the Theory of Planned Behaviour (TPB). Transcripts were analysed thematically in order to understand school nurses' intentions to implement vaccination based on an assessment of Gillick competency. The interviewer (RS) functioned as the transcriber, verifier and analyst which allowed for the inclusion of notes on relevant non-verbal actions and clarification of mispronunciation or confusing verbal responses. The data were coded to identify distinctive and repetitive themes that were highlighted and categorized according to key concepts loosely corresponding to the TPB.
Population and perspective	Registered nurses working within the NHS school nursing services
Inclusion Criteria	Registered nurses School nurses

Exclusion criteria	None reported
Relevant themes	<ol style="list-style-type: none"> 1. School nurses' willingness to assess Gillick competence: Although they knew what to do, nurses were hesitant to implement vaccination based on this assessment.. ""We've introduced Gillick competence for year 10s [TdIPV] for the first time ever and school nurses are really uncomfortable about it." (SN15)" 2. Factors affecting willingness to assess Gillick competency Age: Ignoring the characteristics of individual children, 12–13 year olds were described as very young, immature and easily influenced. "Some of them are still little children and haven't started to develop and yet some of them have gone through puberty and look like women." 3. Belief in vaccination programmes: Childhood vaccination was deemed an important, effective, and worthwhile intervention, and described as "wonderful," (SN2) "brilliant," (SN8) "fantastic" (SN9) and "vital to the health of young people." (SN4) 4. Attitudes to HPV vaccination: In practice there was some conflict between their professional and personal beliefs which were less accepting of HPV vaccination. "I do think you wear very different hats when you're a professional and when you're in a personal situation." 5. Views on the rights of parents: Although school nurses acknowledged a child's right to be vaccinated and their own duty to protect children from infectious diseases, they still concurred with the view that parents had a right to refuse the vaccination. "I value the parent's opinion first." 6. Practical barriers to assessing Gillick Competency: Barriers such as the difficulty of assessing competency due to time constraints and limited space for private discussion at a vaccination session were mentioned.

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes

Section	Question	Answer
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Thomas, 2018

Bibliographic Reference Thomas, S.; Cashman, P.; Islam, F.; Baker, L.; Clark, K.; Leask, J.; Butler, R.; Durrheim, D.N.; Tailoring immunisation service delivery in a disadvantaged community in Australia; views of health providers and parents; Vaccine; 2018; vol. 36 (no. 19); 2596-2603

2 Study Characteristics

Study design	Focus Groups Semi-structured interviews
Aim of study	To gain a deeper understanding of the factors influencing immunisation in order to develop tailored strategies for increasing immunisation coverage.
Behavioural model used	None stated
Study location	Australia
Study setting	Community
Study dates	2016 to 2017
Sources of funding	Not provided. However, the investigators were employees of universities, Population Health or the WHO.
Study methods	<p>Researchers first met with stakeholder groups in Maitland to discuss the planned study and develop a trusting relationship. Stakeholders included 2 community health staff (one manager and one nurse immuniser), the manager of community child health, the manager of the Primary Health Network (PHN) and 3 team members (representing GPs in Maitland), 1 representative of the Maitland City Council (which offers immunisation clinics), 4 public health staff, and the director of the local neighbourhood centre. Purposive sampling was used to recruit stakeholders uniquely positioned to contribute meaningful insights to the research aim.</p> <p>Semi-structured interviews and focus groups were conducted with health service providers invited by email or telephone. A Participant Information Statement was provided and informed consent was obtained in writing prior to the interview. Parents were invited and interviewed individually either by telephone or in person at the neighbourhood centre where services are provided for those experiencing disadvantage. A comprehensive description of the project with assurances of confidentiality and privacy was provided. Consent was obtained verbally and confirmed by participation.</p>

	<p>Service providers were invited to participate in focus groups to generate narrative data and share experiences in a safe environment. Service managers were interviewed individually to capture their views and information regarding immunisation policy and strategic plans. Health service providers were asked about the defining characteristics of children not fully immunised in Maitland, about perceived barriers to achieving full immunisation and what might be done to help parents ensure their children are up to-date. Parents were asked about their experience with immunisation services, what made it difficult to keep up to date with immunisation and what would make it easier. Interviews were recorded with notes taken by a co-facilitator. Their line of inquiry was dynamic, responding to emerging concepts and themes.</p> <p>Further sampling continued until no new insights emerged. Recordings were transcribed verbatim and analysed manually by an investigator and members of the research team. Key concepts were identified and grouped according to the research questions. Ongoing analysis led to the development of themes. These were validated by the research team. Preliminary results were shared with participants to confirm their interpretation and provide opportunity for additional contributions.</p> <p>Ethics approval was obtained from the Hunter New England Human Research Ethics Committee.</p>
Population and perspective	<p>They conducted 34 interviews and 6 focus groups with a total of 59 participants. One service provider and one grandparent declined to participate for reasons not stated. The 59 participants were: 18 parents, 19 community health workers, 13 general practice workers (GPs and nurses), 6 population health, 3 Maitland City Council.</p>
Inclusion Criteria	<p>Practicing healthcare professionals And council staff</p> <p>Parents of children</p>
Exclusion criteria	<p>None reported</p>
Relevant themes	<p>3 Themes were identified:</p> <ol style="list-style-type: none"> 1. Limited engagement with health services unless the need is urgent. Participants identified children who had fallen behind in immunisation for a variety of reasons, including parents who simply forgot, had several children all requiring immunisation, were waiting for a Medicare card or had recently moved to Maitland and were busy establishing themselves: "Maitland is growing very quickly and for new arrivals, it takes a while to get a GP, getting a job, a house, a school, immunisation falls behind while you're just doing those everyday things. Those people will probably quickly catch up." 2. Parents experience multi-dimension access barriers to immunisation services in Maitland. Many participants agreed that access to services was often difficult for those who were falling behind. Some services were not seen to accommodate the needs of parents who struggled with costs, transportation, location, language barriers or hours of operation: "The council clinics are not central to them [Aboriginal people]; it's too far. . .they don't have transport to get there." 3. A flexible, supportive family centred, primary health care approach, utilising strong partnerships, is most likely to be effective in increasing childhood immunisation rates in Maitland. Some felt that existing immunisation services provided by GPs and the Maitland City Council were working well but that to reach those who were falling through the gap, a more targeted approach was needed: "The only way you'll get that cohort you're focusing on is to have opportunistic immunisation. There's no problem with home visits, having vaccines in the car and saying the child is overdue and asking if they'd like me to do it now. No-one ever says no. It's not a barrier if you can get the vaccine to them."

Additional information	This study also included data from parents. However, this data has not been used because we already had enough UK data from parents.
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1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Can't tell
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

2

Tickner, 2010

Bibliographic Reference	Tickner, Sarah; Leman, P J; Woodcock, A; Parents' views about pre-school immunization: an interview study in southern England.; Child: care, health and development; 2010; vol. 36 (no. 2); 190-7
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3 Study Characteristics

Study design	Semi-structured interviews
Aim of study	To identify possible reasons for lower uptake of pre-school immunizations, compared with the primary course.
Behavioural model used	Grounded theory

Study location	UK
Study setting	Community
Study dates	2006
Sources of funding	Department of Psychology, Royal Holloway, University of London
Study methods	<p>The Southampton and Southwest Hampshire National Health Service (NHS) Research Ethics Committee and Royal Holloway, University of London Research Ethics Committee gave approval for the study.</p> <p>Parents of 2–5-year-olds were recruited from nine playgroups and pre-schools in southern England in three locations (Southampton; Romsey; Windsor). The childcare settings were identified from Childcare Link (http://www.childcarelink.gov.uk/) and were chosen to include a wide diversity of parents. Some Southampton groups were part of the Sure Start Scheme (http://www.surestart.gov.uk/), set up by the Government to help families living in disadvantaged areas. Others were in more advantaged localities. The researchers sent a letter about the study to each playgroup/pre-school manager, followed by telephone contact one week later. Following management approval, parent information packs (covering letter, information sheet and reply slip) were delivered, with a sealed response box. The staff distributed the packs. Interested parents placed their completed reply slip in the response box. The manager sent these to an investigator, who telephoned those parents and arranged an interview.</p> <p>All interviews took place in the parents' homes and were tape recorded. Written consent ensured that parents agreed to anonymous inclusion of their views. They completed a demographic questionnaire before the interview. Open-ended questions in the interview schedule covered: knowledge of MMR and dTaP/IPV; risks and benefits; information sources; factors facilitating or hindering attendance. Later interviews included questions to clarify themes emerging from earlier interviews. Interviews were transcribed verbatim.</p> <p>Data collection and analysis were guided by Grounded Theory. Data collection and analysis were performed side by side. Line-by-line coding was used to identify as many codes as possible, so that the analysis was 'grounded' in the data. This became more selective as emerging codes and categories were identified. Codes were presented in vivo, using the parents' own language. A form of axial coding was used to develop subcategories and show links between them; theoretical coding was used to specify relationships between categories. Memo-writing was used throughout. Interviewing continued until new categories ceased to emerge and a clear picture of parents' experiences was established. Data were organized using Microsoft Word. The main analysis was conducted by an investigator. Then other investigators independently reviewed a random subset of transcripts and categories were finalized through discussion.</p>
Population and perspective	<p>Nineteen mothers provided their views for analysis. Two fathers contributed to their partner's interview. Eighteen mothers described themselves as White British and one Black British. They were aged 23–40 years (mean 32.6). Four were educated to 16 years, one left education after completing A levels, five had a National Vocational Qualification/other diploma and nine had a degree/other advanced qualification. Twelve were married, one remarried, two separated and four single. The children discussed were 2–5 years (mean 2.9); 10 boys and 10 girls (one mother had two pre-school-aged children); four were only children, nine had one sibling and seven had two or more. All mothers indicated that their pre-schooler had completed the primary immunization course. Eighteen said that their other children were up-to-date with vaccinations (the nineteenth quoted lack of time). Two had already taken</p>

	their pre-schooler for MMR and dTaP/IPV. All but one of the remainder indicated that they intended to do so.
Inclusion Criteria	Parents of children who had a specified age range Age 2 to 5 years
Exclusion criteria	None reported
Relevant themes	<p>1. Perceived importance of immunizing. Although parents had taken their children for primary immunizations, they had varied levels of knowledge of the relevant diseases.: "...it's very important that they have it because at school they're socialising with other children and there could be more risk of like catching it..."</p> <p>2. Understanding of immunization. Parents who viewed immunization as a social responsibility typically mentioned that a significant proportion of the population needs to be immunized in order to prevent the spread of disease: "I can't really see why they'd need them. Once they've had the first ones then surely the stuff's in your body forever."</p> <p>3. Combination issues. Most believed that MMR and dTaP/IPV worked in the same way as vaccines offering protection against only one disease: "...if you're holding a child, especially a 3-year old . . . trying to get one or two needles in is going to be a damn sight easier than six..."</p> <p>4. Trust in vaccine safety. Of 21 parents, 13 believed that dTaP/IPV was 'safe'. Although parents discussed the MMR controversy, 14 believed that the second dose was 'safe'. While some based this on their understanding of how immunization works, most referred to 'trust' in professional advice.: ". . . if they've developed these and they feel it's safe, I see sense in trusting what people are telling you."</p> <p>5. The importance of experience. Concerning vaccine safety, five reported feeling more positive about immunization because it didn't do them any harm: ". . . he didn't have any reaction whatsoever, so I'm more than happy to give him the booster one."</p> <p>6. Apprehension and feelings of guilt. Sixteen parents said that it was harder to take a pre-schooler for vaccinations than a young infant.: ". . . when they're older it can actually be more distressing than when they are younger because they . . . you know, they can tell you, they can say that it hurts, they can express their feelings more than a little baby can."</p> <p>7. Social norms. Eleven mothers said they were responsible for decision-making. Only five would discuss pre-school immunization with other family members, although 14 had talked with friends, work colleagues or other parents.: ". . . there are some that won't even give them and I think well then that's your choice, you're exposing your child to potentially dangerous diseases and then obviously we get epidemics . . ."</p> <p>8. 'Compliance' vs. control. As with primary immunization, 15 parents would follow the advice of the medical profession: ". . . I don't know enough about the science of it to say so and so I will trust the judgement of whoever in the health service makes these decisions . . ."</p> <p>9. Service issues and practicalities. Although healthcare professionals were trusted information sources, 15 parents were dissatisfied about the lack of contact, particularly with the health visitor. This contrasted with the early contact with babies and led some to question the importance of pre-school immunization.: "They only seem to talk about it when they're a little baby . . . after a year it doesn't seem important to have those done."</p>

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

Tickner, 2007

Bibliographic Reference Tickner, Sarah; Leman, Patrick J; Woodcock, Alison; 'It's just the normal thing to do': exploring parental decision-making about the 'five-in-one' vaccine.; *Vaccine*; 2007; vol. 25 (no. 42); 7399-409

2 Study Characteristics

Study design	Semi-structured interviews
Aim of study	To explore parents' attitudes towards the five-in-one vaccine, including how they make vaccine decisions for young babies.
Behavioural model used	Grounded theory
Study location	UK
Study setting	Community

Study dates	2005 to 2006
Sources of funding	There was a grant from the University of London, Central Research Fund to cover some travel expenses
Study methods	<p>Purposive sampling was used to include parents from a range of socioeconomic backgrounds and those with different views towards immunisation. The nurse or health visitor gave interested parents an information sheet and covering letter from their General Practitioner. This explained the study and invited them for an interview either at their practice or at home if they preferred. The female interviewer telephone number was provided. Parents had the opportunity to return a card in a prepaid envelope if they did not wish to be contacted further.</p> <p>Parents who agreed to participate in the study were then contacted by the interviewer via telephone and an interview was arranged. Consenting parents were interviewed approximately 2 weeks later, before the first five-in-one vaccination (normally at 8 weeks).</p> <p>All face-to-face interviews took place at the interviewee's home, at a time convenient to them. Parents were informed that they had the right to withdraw at anytime. Interviews were tape-recorded and written consent was taken before and after the interview to ensure that parents agreed to anonymous inclusion of their interview transcript in the analysis. Interviews opened with general questions to encourage parents to talk freely, and to establish rapport between parent and researcher. The researcher stated they that were not an 'expert' on immunisation and if parents had any questions or concerns, they were encouraged to speak to healthcare professionals at their practice. Probing questions were used to clarify understanding and follow-up responses. Basic demographic data were collected in a short questionnaire prior to the interview, including a question about whether or not they intended to take their baby for the five-in-one.</p> <p>The flexible interview schedule comprised questions covering knowledge of the five-in-one and the diseases it protects against; understanding of how immunisation works; possible risks and benefits; sources of information; views towards the immunisation programme, including preschool doses; and factors that helped or hindered them to attend for their child's immunisation appointment. Questioning was guided by parents' responses.</p>
Population and perspective	<p>Parents of babies aged 4 to 13 weeks old N=22</p> <p>24 of the 26 parents approached agreed to participate, but of these an interview could not be arranged with two parents. Altogether, 22 parents (21 mothers; 1 father) were interviewed (84.6% of those approached). One mother was interviewed with her partner. Interviews lasted between 10 and 65 minutes (mean 37.1). Parents were White British; aged 18–42 years (mean 31.3 years); 3 were educated only to school-leaving age (16 years), 8 had a National Vocational Qualification or other diploma after school and 11 had a degree or other qualification; 11 were married, 2 remarried, 1 divorced and 8 were single. The children discussed were aged between 4 and 13 weeks old (mean 7.0 weeks). Ten were boys and 11 were girls; 13 were an only child, 5 had one sibling and 3 had 2 or more. Whilst 19 parents indicated at the start of the interview that they intended to take their child for all three doses of the five-in-one, three were still undecided.</p>
Inclusion Criteria	<p>Parents of children who had a specified age range Aged 4 to 13 weeks</p>
Exclusion criteria	<p>Child was born preterm</p> <p>Child had a significant health problem</p> <p>Parent(s) had mental health problems</p> <p>Post-natal depression</p>

	<p>Participants who were involved in other research</p>
<p>Relevant themes</p>	<p>9 Themes were identified:</p> <ol style="list-style-type: none"> 1. Parental knowledge and perceived importance of immunisation. An important category of responses related to parents' knowledge of the five-in-one and the diseases it protects against. Although parents could identify some of the diseases, only four could list diphtheria, tetanus, pertussis, polio and Hib. Three parents were confused between MMR and the five-in-one, and listed measles, mumps or rubella.: [Meningitis] They're making it more aware to you through the news and everything, 'cos it is a very deadly illness or serious illness if they get it, you know. 2. Perceived risks and benefits of combining antigens. Of the parents interviewed, 17 identified less trauma for the baby as a main benefit of the five-in-one: "Well it's obviously beneficial for the child in that they only have to go through one jab as it were, so it would be less painful, more humane really." 3. Making sense of how immunisation works. Related to parents' views about combining antigens was their understanding of immunisation. For example, 19 parents believed that a vaccine contained a little bit of the disease it was protecting the child against: "They actually give them a bit of the disease don't they and that's what goes up their immune system against the disease. So, you know, in actual fact they are given a bit of it, erm so you know they're gonna be poorly, you know." 4. Trust in vaccine safety. Despite some concerns over the safety of combining antigens, 16 parents believed that the five-in-one vaccine was safe. While just over half based this view on trust in the NHS and beliefs about vaccine development, 13 parents referred to lack of adverse publicity in the media compared with MMR: "I've never heard anything adverse about the five-in-one on the tele or. . . you know, not like MMR is constantly in the press. I never really hear about the five-in-one being bad, so erm I don't have an issue." 5. Perceived vulnerability, parental guilt and feelings of responsibility. Parents were generally worried and anxious about taking their baby for the five-in-one. Although some parents wanted their baby immunised as soon as possible, others referred to the vulnerability of a young child: "It's just seeing her little tiny legs and putting a great big needle in it." 6. Parental control and trust in the advice of others. The mother's mother often played an influential role in their vaccine decisions: "It does influence your decision I must admit, particularly when it's your mum who's saying it. Erm. . . she was very. . . particularly with MMR. . . she was very nervous about it and offered to pay for X [three year old daughter] to have it done." 7. Making a decision or following the recommended programme. Twelve parents, particularly first-time mothers, reported that they would take their baby for their immunisations because it was the normal thing to do: "It's not something that we've talked to friends and family about really. And again I think that comes from the general feeling of well this is just going through the motions erm that you do when you have a baby." 8. Perceived importance of preschool immunisation. Twelve parents questioned whether it was necessary to have additional vaccinations at preschool age: "The thing about boosters is I don't know if there's a way that his immunity could be checked prior to having a booster. Because if he was immune anyway, I don't see the point in him having a booster and bombarding his immunity again with something he doesn't need."

9. Practicalities. Eight parents reported uncertainty about the organisation of immunisation appointments: "I'm not sure whether or not I'm supposed to phone the doctor's to get the appointments or whether or not they phone me."

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

2

Tomlinson, 2013

Bibliographic Reference Tomlinson N RS; Health beliefs about preschool immunisations: an exploration of the views of Somali women resident in the UK; Diversity and Equality in Health and Care; 2013; vol. 10; 101-113

3 Study Characteristics

Study design	Semi-structured interviews
Aim of study	To explore these views as a basis for ensuring a culturally appropriate service.
Behavioural model used	Idiographic approach

Study location	Birmingham, UK
Study setting	Community
Study dates	2012
Sources of funding	University of Birmingham
Study methods	<p>Data were collected using semi-structured interviews that facilitated the exploration of the participants' health beliefs. A topic guide was developed from the results of previous research as well as lessons learned from a pilot interview. The guide allowed for further questions to emerge from the dialogue to enable clarification and exploration of particular views or opinions. Women were invited to take part if they were over 18 years old, born in Somalia, the mother of at least one child under 5 years old (no minimum age) and resident in Birmingham. These criteria were used to guide purposive sampling of participants. This refers to systematic, non-random sampling whereby 'informants are identified because they will enable exploration of a particular aspect of behaviour'. Snowball sampling was also employed; this method is often used in research being undertaken among a population that is normally hard to reach. Purposive sampling is usually based on the judgement of the researcher and the given resources in terms of cases available for sampling.</p> <p>In this study, a sample size of 20–25 participants was estimated to be sufficient to reach data saturation, that is, the point at which additional data are unlikely to yield new information or require revisions to be made to findings that have already been developed. However, they also used snowball sampling by inviting the women to identify suitable potential participants from their social networks.</p> <p>Centres were accessed via telephone numbers provided by Birmingham City Council (2012). Contact was made with those in leadership roles in the centres who then provided access to the Somali women.</p> <p>Potential participants were approached at the centres and verbally informed of the purpose of the study, as well as being given an information sheet in both English and Somali. The women then had time to consider whether to participate, and an interview was scheduled at a later date with those who agreed to take part. Participants were not asked to sign a written consent form, as such formalisation of the consent process could be perceived as alienating, as well as undermining the rapport that had been developed with participants. Instead, participants were provided with written information as well as being given the opportunity to ask questions or withdraw from the study. Verbal consent was audio-recorded.</p> <p>Interviews lasted around 20–30 minutes and took place at the centres that had facilitated the recruitment of participants. Lay interpreters were made available for participants whose English-language skills were insufficient. Participants were also asked to consent to the interview being recorded on a digital audio recorder. The participants' travel expenses were reimbursed and they received a shopping voucher in appreciation of their participation.</p> <p>Interviews were recorded and transcribed verbatim. Data collection and data analysis were carried out concurrently in order to inform sampling as well as to indicate when data saturation had been reached. Data were examined using inductive thematic analysis, with the development of the themes being driven by a concern for identifying participants' experiences, perspectives and beliefs that had the potential to influence decisions to vaccinate their children. Initially, a subset of interviews was read independently by both researchers to search for meanings and salient issues in and across the data. Subsequently, initial codes were identified, such as 'immunisation as protection from potential disease', 'risks associated with non-vaccination', 'risks associated with vaccination', 'fears about</p>

	autism' and 'personal experiences of vaccination practices in Somalia.' All of the transcripts were then coded by the first author and a subset was checked for consistency by the second author. In joint discussions, codes were grouped into themes and checked for similarities and differences, emerging patterns and variability. Through a process of reading and rereading, the themes were refined. This approach to analysis allowed the Somali women's unique perspective to be explored and themes to be grounded in the data.
Population and perspective	23 parents
Inclusion Criteria	<p>People who had a specified age range Parents were age 18 years and over</p> <p>People who share specific characteristic(s) Resident in Birmingham</p> <p>Parents of children who had a specified age range Age 0 to 5 years</p> <p>Born in Somalia</p>
Exclusion criteria	None reported
Relevant themes	<p>3 themes were identified by the investigators:</p> <p>1. Perceptions about preschool immunisations. Understanding mothers' perceptions of preschool immunisations is crucial to appreciating the reasons that drive vaccination practice: "Some ladies they say injection [MMR] that one is like a Polio and something like that. The children are sometimes coming disabled ... they don't give some ladies they say no that's the worst thing injection for the children ..."</p> <p>2. Personal beliefs and practices. This theme addresses the personal beliefs and practices of the Somali mothers, and the way in which they mediated beliefs about health and illness: "religion doesn't really play a role in my decision."</p> <p>3. Knowledge and understanding of preschool immunisations. The mothers' confidence in the immunisation programme was based on their knowledge and understanding of the immunisations and the benefit of these to their children's health: "when I finished secondary school, the war started, I didn't go to college and most of the Somali woman they didn't go to school ... they don't have a knowledge."</p>

1 Risk of bias

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes

Section	Question	Answer
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research has some value
Overall risk of bias and relevance	Overall risk of bias	Low
Overall risk of bias and relevance	Relevance	Highly relevant

1

2

Webb, 2014

Bibliographic Reference Webb, Heather; Street, Jackie; Marshall, Helen; Incorporating immunizations into routine obstetric care to facilitate Health Care Practitioners in implementing maternal immunization recommendations.; Human vaccines & immunotherapeutics; 2014; vol. 10 (no. 4); 1114-21

3 Study Characteristics

Study design	Semi-structured interviews
Aim of study	To explore the current practice of healthcare professionals regarding maternal vaccine uptake and the interaction of knowledge, attitudes, beliefs and practice.
Behavioural model used	None stated
Study location	Australia
Study setting	A tertiary teaching hospital in Adelaide was chosen as the study setting as South Australia's largest provider of maternity and obstetric services (24.6% births in 2008–9). The study setting provided 4 models of private and public care similar in scope to the other 2 large public hospitals, a mix of clientele by socio-economic status and access to a range of HCPs involved in perinatal care.
Study dates	2013
Sources of funding	Immunization Branch, SA Health

Study methods	<p>Potential participants were identified from respondents to a general email and announcements at 2 midwifery education seminars (antenatal and postnatal) and through targeted recruiting.</p> <p>Data collection aimed to capture “programmatically variations and significant common patterns within that variation.” To achieve this participants were purposively recruited, stratified by occupation (midwives, GPs, and obstetricians) and across models of care to provide a sample with maximum variability.</p> <p>The semi-structured interviews utilized open-ended questioning to explore participants’ vaccine management practice, professional vaccine information sources safety concerns and attitudes and beliefs about vaccinations as well as barriers and facilitators to incorporating vaccine management into perinatal care. Data collection ceased when no new themes emerged from 3 sequential interviews. Words in square brackets in quoted excerpts have been inserted by the researchers for clarity and to ensure confidentiality is maintained and meaning retained.</p>
Population and perspective	<p>Participants (n = 15) were GPs (3), obstetricians (6), and midwives (6).</p>
Inclusion Criteria	<p>Practicing healthcare professionals</p>
Exclusion criteria	<p>None reported</p>
Relevant themes	<p>Three themes were identified with 3 sub-themes:</p> <p>1) Barriers to implementing vaccine recommendations</p> <p>a) Poor definition of responsibility for VPD management</p> <p>All participants accepted responsibility for vaccine management but understood it to be a team effort, each group having a different role with final responsibility for team care being at an organizational level.</p> <p>“The doctors are very busy and so for example in the private clinic we run at capacity so we’re turning women away, so we basically have to apply um err almost triage principles to how we run our consultations but we do have a um midwife there with us who is our personal sort of assistant if you like. So things like breastfeeding and err analgesia in labour and vaccinations although I don’t know if they mention vaccinations I’ll be honest. We tend to delegate to them. The longer we make the consultations basically the less patients we can see”</p> <p>b) Lack of documentation</p> <p>Participants commented that maternal vaccines were not included as a discussion point in the South Australian Pregnancy Record. As a consequence, maternal influenza and pertussis vaccines are offered largely in response to requests by women.</p> <p>“I think generally current practice is that it’s reactive to questions rather than proactive and out there and in some ways that’s sad, that’s disappointing but I think that’s the reality of it, is that it’s reactive not, not. But they’ll be asking the questions”</p> <p>c) Inconsistent education provision for women</p> <p>Immunization brochures were not included in resources given to women. The first visit was not viewed as the ideal time to introduce vaccination information because of the overwhelming amount of information provided to the women at that time.</p> <p>“There are a couple of information pamphlets. One is talking about general vaccines and one more the influenza vaccine. But there’s no requirement to give them to all women.”</p> <p>2) Barriers to accessing immunizations</p> <p>Participants indicated that in the study setting, pertussis and influenza vaccines were not offered to women before, during, or after pregnancy.</p> <p>““So even if they’re having all their care done in the hospital they are being told to go</p>

to their GP to get flu, flu immunization done...the same with pertussis; that's 'oh go back to your GP and get that sorted out"

3) Being part of a structured or systematic process
All the components required to ensure delivery of MMR vaccine were embedded in routine pregnancy care. In comparison many components were absent for influenza and pertussis booster vaccines.
"Yes, I would say it is nearly never forgotten because it's part of what we do. It's like gettin' up in the morning and brushing your teeth"

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	No
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Moderate <i>(The investigators could have worked at the same location as study participants.)</i>
	Relevance	Highly relevant

2

Wiley, 2015

Bibliographic Reference Wiley, Kerrie E; Cooper, Spring C; Wood, Nicholas; Leask, Julie; Understanding pregnant women's attitudes and behaviour toward influenza and pertussis vaccination.; Qualitative health research; 2015; vol. 25 (no. 3); 360-70

1 Study Characteristics

Study design	Semi-structured interviews
Aim of study	To gain an understanding of risk perception of influenza and pertussis and vaccination against these diseases. To understand how women constructed notions of risk to themselves and their foetus or infant.
Behavioural model used	Grounded theory
Study location	Australia
Study setting	Antenatal clinics of 3 hospitals in New South Wales, Australia.
Study dates	Not provided. They say that pertussis was routine
Sources of funding	Financial Markets Foundation for Children. NHMRC Career Development Fellowship.
Study methods	<p>A total of 815 women took part in an anonymous quantitative survey about pregnant women's attitudes and awareness toward influenza and pertussis vaccinations. They also invited each woman to participate in a qualitative interview, and 132 provided contact details.</p> <p>They recruited women from the antenatal clinics of 3 hospitals in New South Wales, Australia. They sought these hospitals because of the demographic diversity among their combined obstetric population, which enabled them to purposively seek pregnant women with a broad range of perspectives regarding vaccination. They sampled all days of clinic operation and invited all women attending the clinic on those days to take part in the study.</p> <p>Using grounded theory methodology, their study involved a cycle of data collection (interviews) and analysis followed by subsequent interview and analysis cycles. The first author conducted 20 in-depth interviews - 9 face-to-face and 11 by telephone, between July and November 2011 using a semi-structured interview schedule which evolved with each iteration of the grounded theory data collection or analysis cycle.</p> <p>They asked the women about their perception of disease risk for influenza and pertussis, their information needs and sources, and their feelings about receiving the influenza vaccine while pregnant and the pertussis vaccine postpartum, in line with the Australian recommendations at the time.</p>
Population and perspective	20 pregnant women
Inclusion Criteria	Women who are currently pregnant
Exclusion criteria	None reported
Relevant themes	Four themes were discussed:

	<p>1) Factors Influencing Pregnant Women’s Views on Vaccination Women reported a significant level of trust in the system. Women made sense of influenza and pertussis vaccination and disease through the lens of their own experience. A direct experience with either disease created a greater sense of importance and motivation for protection against it. Information sources were important, as were the types of information women sought and how they accessed it. “I’ve got a good [general practitioner], so I would also talk to her if I were unsure”</p>
	<p>2) Reproductive Citizenship The women interviewed were aware that there were things that they “should” and “should not” do during pregnancy and therefore adhered in some way to the ideal of reproductive citizenship. “If the doctor said yes to take it [the influenza vaccine] then I would have taken it.”</p>
	<p>3) Vaccination in Relation to the Competing Priorities of Pregnancy There was a view that pregnancy is a time of competing priorities related to self-monitoring and health-seeking activities during pregnancy. Some women relied on their health care provider to prioritize this for them by bringing what was required to their attention. “Because you’ve got so many other things going on that it’s not something that you’re thinking about, you know? They’re saying take this, take that, and make sure you do this, don’t do that, don’t eat this, don’t eat that, so there’s so many things that you’ve got to remember while you’re pregnant. That’s just another thing that is put to the side and not even thought of because you’re just so busy thinking about everything else.”</p>
	<p>4) Disease Risk Perception Generally, women were more passive in their information-seeking and vaccination behaviour regarding influenza and more active in their information-seeking and vaccination behaviour regarding pertussis. Influenza during pregnancy was perceived as a disease of the mother rather than one which directly afflicts the foetus and, therefore, of comparatively lower consequence. “My perception is that there is no negative effect on the baby if I got the flu. It’s more just the trauma on your own body, I guess, plus having it. Whereas I think, my perception of whooping cough is more that there can be a serious consequence for the baby.”</p>

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes

Section	Question	Answer
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	No
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Moderate <i>(The relationship between the investigators and the participants was not considered)</i>
	Relevance	Relevant <i>(Australian study. In Australia they have a more extensive private practice system that involves health insurance compared to the UK.)</i>

1

Wilson, 2019

Bibliographic Reference Wilson, R; Paterson, P; Larson, H J; Strategies to improve maternal vaccination acceptance.; BMC public health; 2019; vol. 19 (no. 1); 342

2 Study Characteristics

Study design	Unstructured interviews For all participants
Aim of study	The aim of the study was to gain a contextualised understanding of access to, and attitudes towards maternal vaccination among pregnant and recently pregnant women and healthcare professionals in Hackney, London.
Behavioural model used	None stated
Study location	UK
Study setting	Twelve parent-toddler groups; 11 community centres and migrant support groups; and four general practitioner (GP) practices were selected as individual participant recruitment sites.
Study dates	2015 to 2016
Sources of funding	National Institute for Health Research

<p>Study methods</p>	<p>An official invitation letter explaining the study was sent by email to all potential recruitment sites. Recipients were asked to respond by email or letter if they were happy to be involved in the study. If there was no response after two weeks, the investigators telephoned the practice/organisation and asked to speak with the manager to explain the study and invite them to participate. The investigators also offered to meet them in person to discuss the study in more detail if they wished. Maximum variation sampling was used to recruit individual participants. For the recruitment of healthcare professionals and patients from GP practices and antenatal clinics included in the study, two different versions of information sheets (which requested potential participants to contact the investigators if they were interested in participating in the study), were sent to the practice managers. They were asked to send the relevant one to all their healthcare professionals (doctors, nurses and midwives), as well as all their currently pregnant patients, and all patients who had given birth within the past year. Women who both had and had not been vaccinated according to GP databases, were included. For the recruitment of participants from other study sites, the investigators sat in on sessions for parents held at parent-toddler groups and community centres and spoke to women individually, explaining the study and inviting them to participate. Posters were also put up and leaflets provided.</p> <p>71 pregnant and recently pregnant women showed interest in the study. However, 31 consequently did not respond to follow-up texts or declined to take part. After interviewing the remaining 40 women, saturation was reached recruitment ended.</p> <p>The methods used-in-depth interviews and a video-recording of a consultation-encouraged participants to speak widely and openly about maternal vaccination.</p> <p>Interviews with pregnant/recently pregnant women took place at her home or a local café. A topic guide was used to elicit details of participants' experiences of maternity care within the NHS; their views towards, and their relationships with healthcare professionals; sources of maternal vaccination information; their views towards maternal vaccination; and influences on their vaccination decisions. Interviews with healthcare professionals aimed to elicit details of their views towards maternal vaccination; how they approached the topic of maternal vaccination with their patients; whether they encouraged maternal vaccination; and what they did if a patient was hesitant, or did not want to vaccinate. Each interview was digitally recorded and transcribed in its entirety.</p>
<p>Population and perspective</p>	<p>Pregnant and recently pregnant women (N = 47). Participants were between age 18 and 41, and were from a wide variety of backgrounds.</p> <p>Ten healthcare professionals responded to the invitation letters sent through the three GP practices and two antenatal clinics and were included in the study. All healthcare professionals were female, between ages of 23 and 62, and had been in their current role for between six months and 35 years. Six participants were GPs, two were midwives and two were practice nurses, and were from a variety of ethnic backgrounds.</p>
<p>Inclusion Criteria</p>	<p>Women who are currently pregnant</p> <p>Women who had recently given birth Within the past year</p> <p>Healthcare professionals who work with pregnant patients</p>
<p>Exclusion criteria</p>	<p>None reported</p>
<p>Relevant themes</p>	<p>5 Themes were identified by the investigators:</p> <p>1. Access. Middle-class women who were citizens of the UK tended to believe that they had all the vaccination information that they needed; indeed some even felt overwhelmed by such information from leaflets and online research. However, some</p>

	<p>women who were more marginalised, especially those whose first language was not English (such as Japanese mother Tami; Turkish mother Sabah; and Orthodox Jewish mothers Talia and Meira), found it difficult to understand verbal vaccination information, especially if their healthcare professional had a strong accent or used medical 'jargon'.</p> <p>2. Healthcare rhetoric. Five Black British Caribbean participants were hesitant to vaccinate. These women had fears that the vaccines were “something that the government are putting in people”, and worried that vaccines can affect various populations differently.</p> <p>3. Community and family influences on vaccination decisions. When asked who made decisions about their health, all 40 women interviewed immediately and usually proudly, responded “me”. However, later in the interview, when asked specifically if there was anyone or anywhere they would typically go to for advice regarding their health or vaccination, all participants mentioned friends or family members, (usually female family members such as sisters who already had children, mothers-in-law, mothers and aunts), as well as, or rather than their GP.</p> <p>4. Healthcare professionals' views towards maternal vaccination Healthcare professionals were generally pro-vaccine, however, some held concerns or misconceptions about the vaccines. For example, both a GP and a midwife were concerned that the influenza vaccine could cause influenza and worsen symptoms.</p> <p>5. Patient-healthcare professional relationships. A number of pregnant/recently pregnant participants reported grievances that related to pressures and time constraints facing healthcare professionals, including not receiving appointment letters, long waiting-times, feeling rushed and being in a chaotic care environment.</p>
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1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes

Section	Question	Answer
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Low
	Relevance	Highly relevant

1

2

Wilson, 2021

Bibliographic Reference Wilson LA; Quan AML; Bota AB; Mithani SS; Paradis M; Jardine C; Hui C; Pottie K; Crowcroft N; Wilson K; Newcomer knowledge, attitudes, and beliefs about human papillomavirus (HPV) vaccination.; BMC family practice; 2021; vol. 22 (no. 1)

3 Study Characteristics

Study design	Semi-structured interviews Also used surveys but only the data from semi-structured interviews was used in this review
Aim of study	To better understand the knowledge, attitudes and beliefs of newcomers (people born outside Canada) surrounding HPV and the HPV vaccine
Study location	Canada
Study setting	Community
Study dates	June 2018 - August 2018
Sources of funding	Canadian Institute of Health Research
Study methods	Participants were recruited from two local community health centres (CHCs) in Ottawa that offer a variety of primary healthcare services to patients, including vaccination, and have considerable contact with Ottawa's newcomer population. Identifying appropriate participants was facilitated by gatekeepers at each of the clinics. 50 people were asked to take part in the survey and of those, 7 people were asked to take part in semi-structured interviews. Interviews were conducted either in person or over the phone. All interviews were audio-recorded, transcribed verbatim and analysed for emergent themes using a thematic analysis approach. The interviewees were asked questions about their knowledge, uptake and beliefs around HPV and HPV vaccination.
Population and perspective	7 newcomers (5 female, 2 male) with children under 18 years of age (between 1 - 11 children).
Inclusion Criteria	Young Adults: Between the ages of 16 and 27, any gender, did not have children, and were either newcomers or the children of newcomers. Caregivers: Over the age of 18, any gender, born outside of Canada, and had one or more children under the age of 18.
Exclusion criteria	None reported

Relevant themes	<p>1. Discussions about vaccinations: Some parents reported that they felt uncomfortable when discussing sexual health with their children “I believe this is a bit difficult to speak about Africans don’t talk a lot about sex with their children. If it’s with girls, no it is difficult, with boys I can see us talking a little bit, but not in depth. With girls it is very difficult.”</p> <p>2. Information needs: Many of the participants were unaware of the vaccine. It was suggested that information should be culturally- and language-appropriate</p>
Additional information	9 of the 50 participants were in the 16-27 age category and were not parents. These are not in the age group for routine vaccinations for the HPV vaccination so information from this group has not been included where possible.

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Can't tell <i>(Very few (7/50) of the people who completed the survey also agreed to take part in the interviews)</i>
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Can't tell <i>(Limited information about interview question design and analysis methods)</i>
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Moderate <i>(Limited information about interview question design and analysis methods. Very few of the survey respondents also took part in the interviews)</i>

Section	Question	Answer
Overall risk of bias and relevance	Relevance	Highly relevant

1

Winslade, 2017

Bibliographic Reference Winslade, C G; Heffernan, C M; Atchison, C J; Experiences and perspectives of mothers of the pertussis vaccination programme in London.; Public health; 2017; vol. 146; 10-14

2 Study Characteristics

Study design	Semi-structured interviews
Aim of study	The purpose of this qualitative study is to explore the perspectives and experiences of London mothers on being offered the pertussis vaccine during pregnancy. The intention is to discover which factors need to be addressed within the delivery of the pertussis vaccination programme to enable future cohorts of pregnant women to make informed decisions around the vaccine and ultimately improve uptake.
Behavioural model used	None stated
Study location	UK
Study setting	Four London boroughs in different geographical locations with varying levels of deprivation and levels of uptake of pertussis vaccination - namely, Richmond, Greenwich, Enfield and City & Hackney.
Study dates	2015
Sources of funding	There was no funding.
Study methods	Participants were approached whilst they waited for their baby check at baby clinics run by health visiting services. Those who agreed to take part entered a separate room or area after their baby check. The same researcher conducted all interviews. An observer took handwritten notes. Interviews were recorded with the permission of the interviewees.
Population and perspective	Parents with babies who may or may not have received the pertussis vaccine while pregnant N=42 Thirty-five of the 42 women had received pertussis vaccination. Two had actively chosen not to have the vaccine (one had doubts about the vaccination and one was needle phobic), four reported that they did not recall being offered vaccination and one had been told by a midwife that she did not need it.
Inclusion Criteria	Parents Or rather a baby and who were attending a baby clinic
Exclusion criteria	None reported
Relevant themes	Five themes were discussed:

<p>1) Lack of discussion about pertussis All interviewees would have liked their health professionals, particularly the midwife, to have discussed the vaccine with them. Some had no recollection of being given information about whooping cough or were given it only after they had specifically asked about it. “She was like ‘oh you don’t need it, it’s fine don’t worry, it’s you know, it’s over, over’, so I went ‘oh, ok’ then when I had my next one I went, ‘about the whooping cough’ she went ‘oh, you’re actually too late, you should have had it before’”</p> <p>2) Desire to protect the baby Many were aware there is a risk to the baby from pertussis infection and the desire to protect the baby was a significant factor explaining the reasons why women chose to be vaccinated “I guess my baby’s health was you know important, you know I guess being pregnant I was more aware of the need to kind of protect my baby”</p> <p>3) Trust in the health professional knowing what’s best for the baby Interviewees stated that they believed that the health professionals looking after them and their babies knew what they were doing. “I kind of trust what my GP or what health advisers say so um I would say yes, to this, I say yes to everything like that, I tend not to question it”</p> <p>4) Convenience of vaccination Interviewees found arranging the vaccination through the GP convenient, particularly if it was given at the same time as the ‘flu vaccine’. “it’s left down to you to make the arrangements for that vaccination, with your GP. Some women might not necessarily go ahead and make that vaccination, they might forget, all sorts of things”</p> <p>5) Help navigating ‘Busyness of Pregnancy’ All interviewees expressed that since pregnancy was a busy time, they needed constant reminding especially as there were a considerable number of antenatal appointments in this time period. “No-one said to me to expect to come in quite a lot. I know that sounds ridiculous, but it is this sort of thing of ‘Wow! I’ve never been in hospital at all or gone to see the doctor that much”</p>
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1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Can't tell (<i>Mothers were approached at a baby clinic but it is unclear how old the babies were or how long ago the women gave birth.</i>)

Section	Question	Answer
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Yes
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Moderate <i>(We have downgraded once because of the uncertainty regarding recruitment.)</i>
	Relevance	Highly relevant

1

Wiot, 2019

Bibliographic Reference Wiot, F.; Shirley, J.; Prugnola, A.; Di Pasquale, A.; Philip, R.; Challenges facing vaccinators in the 21st century: results from a focus group qualitative study; Human Vaccines and Immunotherapeutics; 2019; vol. 15 (no. 12); 2806-2815

2 Study Characteristics

Study design	Focus Groups
Aim of study	The researchers conducted a qualitative study to investigate perceived gaps between the expectations of healthcare professionals in their role as vaccinators and the reality of the world they operate in.
Behavioural model used	Phenomenological method No further details provided
Study location	United States (US), United Kingdom (UK), Germany and India.
Study setting	Healthcare
Study dates	October and November 2018
Sources of funding	GlaxoSmithKline Biologicals SA

Study methods	<p>The four study countries (US, UK, Germany and India), were selected to provide views from Healthcare professionals (HCPs) working in very different vaccine administration environments. The research was conducted by an independent market research company (Cello Health Insight). Potential participants were contacted by telephone or email from databases of HCPs held by the company and their locally-based suppliers. HCPs were screened to ensure the vaccinators selected from each country were representative of that role in the region, thus able to reflect frontline concerns and challenges.</p> <p>Two hour one-to-one and group discussions were undertaken to gain insights into the understanding HCPs have of their role as vaccinators and to identify the challenges they face in this role. All sessions were facilitated by an experienced researcher from the market research company. All participants provided written consent to participate and the study sponsor was not disclosed to participants.</p> <p>Individual and focus group responses were analysed following narrative analysis principles (including word and phrase repetitions). The researchers conducted a detailed local language analysis of the recordings followed by a thematic analysis performed by experienced specialist healthcare researcher through a phenomenological lens. Key themes were identified and discussed to ensure consistency. Data were analysed according to profession-specific and country specific information disclosed through the survey.</p> <p>This was a market research activity and no ethics approval was sought.</p>
Population and perspective	<p>75 nurse and physician vaccinators</p> <p>In the US, 10 paediatricians, 10 general practitioners/ family physicians (GPs) and 8 nurses were divided across six groups, in the UK, 10 GPs and 10 nurses were divided into four groups, in Germany, 9 paediatricians and 8 GPs were divided into four groups, and, in India 10 paediatricians were divided into two groups.</p>
Inclusion Criteria	<p>Practicing healthcare professionals HCPs had to spend 70% or more of their time in direct patient care; have been in practice between 3 and 30 years; have administered and/or recommended/personally discussed measles-mumps-rubella/varicella and diphtheria-tetanus-pertussis-containing paediatric vaccines with patients in the last 3 months and and been involved in the administration/prescribing of vaccines or responsible for discussing vaccine options and making recommendations to adults/adolescents/children. GPs and nurses were additionally required to have recommended/personally discussed at least two adult and/or travel vaccines with patients in the last 3 months.</p>
Exclusion criteria	<p>Participants who were involved in other research Participants could not have participated in vaccination related market research in the last month.</p> <p>Affiliation with any pharmaceutical company, healthcare manufacturer or market research company</p> <p>US specific exclusion criteria HCPs could not participate if they were a government employee or if they were licensed to prescribe medications or practice/work in a medical capacity in Vermont or Minnesota. All US participants had to be board certified or board eligible in their specialty.</p>
Relevant themes	<ol style="list-style-type: none"> 1. The role of HCPs as vaccinators: expectations versus reality: While vaccinators were expected to have meaningful encounters with patients, underwritten by continuity of care and a solid conviction by patients in the benefits of vaccination, the reality was characterized by large administrative loads, constricting influences of regulations, rigid vaccination plans, and extensive time spent educating and convincing parents to accept vaccination associated with a sense of loss of trust. 2. Country-specific findings on the role of HCPs: In the UK, pressure to meet performance targets was highlighted as a key challenge. 3. Challenges faced as a vaccinator by all countries: “vaccination targets and pressure to achieve them”, “devolve vaccination responsibilities from physicians and

	nurses to pharmacists or non-medically qualified persons”., “little knowledge or misinformation about vaccines by parents/patients”, an expectation that “sufficient time will be available to discuss parent/patient questions and concerns about vaccinations”.
	4. Challenges in the UK: “uncertainty surrounding current immunization guidelines”, as well as “frequent, often short notice, changes to the immunization schedule”., “Recurring vaccine stock shortages”, “devolvement/ shared vaccination role with other HCPs”., “rapid provision of up-to-date vaccine information (e.g., new recommendations, schedules, side-effects) to HCPs.”
Additional information	This study was used to provide additional evidence on the views of healthcare professionals in the UK, but the data on the USA and Germany were not required and was therefore not extracted. India is not in the OECD and any data referring to India was not extracted.

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Can't tell <i>(Potential participants were contacted by telephone or email from databases of HCPs held by the company and their locally-based suppliers. It is unclear how these lists were compiled.)</i>
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell <i>(Unclear as it was done by an external company and not mentioned in the paper.)</i>
Ethical Issues	Have ethical issues been taken into consideration?	Yes <i>(No independent ethics committee approval was required as this counted as market research, but the purpose of the research, and how the participant's contribution will be used was explained.)</i>
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes

Section	Question	Answer
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Moderate <i>(Due to a lack of information about the sources of participants and lack of information about researcher reflexivity.)</i>
	Relevance	Highly relevant <i>(Only UK themes were extracted)</i>

1

Wood, 2011

Bibliographic Reference Wood, Fiona; Morris, Lucy; Davies, Myfanwy; Elwyn, Glyn; What constitutes consent when parents and daughters have different views about having the HPV vaccine: qualitative interviews with stakeholders.; Journal of medical ethics; 2011; vol. 37 (no. 8); 466-71

2 Study Characteristics

Study design	Semi-structured interviews
Aim of study	To examine whether the vaccine should be given when there is a difference of opinion between daughters and parents or guardians.
Behavioural model used	None stated
Study location	Wales
Study setting	Healthcare
Study dates	Not specified
Sources of funding	Research costs were met by the Department of Primary Care and Public Health, Cardiff University
Study methods	<p>The main stakeholders in the area of HPV vaccine policy were identified through discussions with colleagues working in the field of HPV. Searches were made on a number of websites, for example the National Public Health Service for Wales website. The sample was supplemented by snowball sampling: during interviews respondents were asked if they knew of any other professional who may be relevant to the study. The snowball sampling process continued until respondents were not able to suggest any stakeholders who had not already been interviewed. All stakeholders who were approached agreed to be interviewed. The method used to identify respondents in the second phase of 'implementer' interviews was similar to that used to the first phase. This method identified a number of school nurses and GPs who had a particular interest in teenage health and sexual health. The researchers stopped data collection when respondents were not providing any further fresh insights: a point of theoretical saturation.</p> <p>All interviews were conducted by LM, an academic GP. The semi-structured interviews were based on an interview guide consisting of six broad topic sections: the nature of their involvement with the HPV vaccination programme, views on potential problems with implementing the programme, the process of consent within</p>

	<p>the programme, issues of conflicting consent between parents and child, who can decide competence, and support available for professionals when dealing with the process of consent. Each section contained more detailed questions and the interviewer pursued emerging issues as well. Interviews were audio-recorded and transcribed. Data were analysed using thematic content analysis. The thematic framework was applied to the data using the coding software package NVivo8. Interpretations were discussed between all authors.</p> <p>Ethical review was sought and granted.</p>
Population and perspective	<p>Fourteen professionals involved in the development of HPV vaccination programme in Wales. Typically, respondents held senior positions in their individual profession or organisation and were from a range of backgrounds including medicine, education, children's advocacy, public health, nursing and academic researchers.</p> <p>Eleven implementers (school nurses of varying seniority and general practitioners).</p>
Inclusion Criteria	<p>Practicing healthcare professionals</p> <p>Registered nurses</p> <p>Professionals involved in the development of HPV vaccination programme</p> <p>General practitioners</p>
Exclusion criteria	<p>None reported</p>
Relevant themes	<p>(1) Dealing with a lack of parental consent (daughter consents/ parents refuse); respondents reflected that these problems made it more difficult to assess whether there was genuine parental objection to the vaccine or merely a lack of parental engagement with the process. "R14: I think you'd probably need to make some contact with the parents, just to make sure because I can understand that they would be perhaps rightfully a little bit irritated that they had never been told. Yeah, although the girl can consent on the day, I think the parents do need to be involved."</p> <p>(2) Problems in establishing Gillick competency (daughter consents/parents refuse); Although all respondents recognised that the Gillick guidelines were relevant, they still felt that in a school-based vaccination programme there were significant problems in establishing whether girls could be assessed as Gillick competent. "R17: If everybody is given 30 seconds to get in and out, you can't reasonably expect a nurse to make a decision in that time. Yes or no? They would have to make some sort of later appointment to speak to the young person and have a serious chat, which in itself then would single them out from, you know if there was a mass queue."</p> <p>(3) Situations when a vaccine would be withheld (daughter consents/parents refuse); Four school nurses explained that they would not give the vaccine if parental consent had not been given. "R18: Well, if the consent form has not come back and it hasn't been signed, then they don't have it. They don't have it. We have had children come in with consent forms that they have given to their parents but the parents have not signed them, "Yes, my mother wants me to have this", and it would be easy for us to say ok, sign it, but from a legal stand point I don't think it would be a good idea to do that. [Interviewer: So would you take the parents' verbal consent over the phone?] No."</p> <p>(4) Dealing with instances where girls withhold consent (daughter refuses/parents consent). None of the respondents suggested that a girl should be vaccinated against her consent. Forcing the HPV vaccine onto a girl was generally considered to be assault and an unimaginable situation. "R5: Well if we decide that they can make that decision to have it, then you have to partly accept the decision that they do not. I think</p>

you have just got to put it on hold and say, well perhaps we can revisit this again at another time. I don't think you can actually physically force the girl to have it."

1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	No (Too many different professions involved who aren't directly involved in assessing Gillick competence.)
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	Can't tell
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research is valuable
Overall risk of bias and relevance	Overall risk of bias	Moderate
	Relevance	Highly relevant

2

Zaouk, 2019

Bibliographic Reference Zaouk, H.; Green, J.J.; Leask, J.; Immunisation status screening in the emergency department: Why are we forgetting the elderly?; Australasian emergency care; 2019

3 Study Characteristics

Study design Semi-structured interviews

Aim of study	The aim of this study was to understand what nurses know about vaccination in the elderly and to examine the practices and attitudes surrounding immunisation status screening.
Behavioural model used	Capability, opportunity, motivation and behaviour (COM-B)
Study location	Australia
Study setting	Those eligible for participation included registered nurses working in the emergency department of a large suburban Local Health District in the greater Sydney area.
Study dates	Not provided. Study was received for publication in 2019.
Sources of funding	There was no funding
Study methods	<p>This paper focuses on the qualitative component of a larger mixed methods study aimed at uncovering the knowledge, behaviours and attitudes of emergency nurses towards pneumococcal vaccination screening in patients over 65 years of age. This component aimed to extract some of the key concepts around the knowledge, attitudes and behaviour of emergency nurses towards vaccination screening in the elderly, in order to inform the development of a survey targeted at a larger group of emergency nurses. Semi-structured interviews were conducted that sought to determine what emergency nurses know about vaccination, their overall attitudes towards immunisation status screening in the elderly, and how their work practices/environment support immunisation status screening. The interview questions were framed in the COM-B Model which is a component of the Behaviour Change Wheel. The COM-B model has been used to design interventions to change the practice of health care professionals. The model proposes that in order for someone to adopt a behaviour (in this case, immunisation status screening) then they must have the 'capability' (the psychological and psychological ability), the 'opportunity' (the social and physical opportunity) and the 'motivation' (reflective and automatic drive). The COM-B model was also applied in order to increase the face validity of the questions being asked. The questions encouraged emergency nurses to draw on their experience, attitudes and knowledge in context of their role and work environments. The questions focused on the nurse's general knowledge around vaccination, their role and work environment, as well as paediatric and adult immunisation status screening.</p> <p>Face to face interviews were conducted at various locations in each ED. The interviews lasted between 8 and 12 min. Transcripts were typed by the lead author and reviewed numerous times in order to identify the emergence of key concepts and themes. Thematic analysis was used.</p>
Population and perspective	<p>Any permanent or casual nursing staff that worked in the emergency department were included. Participants were recruited using flyers, sent both by email and paper based.</p> <p>Nine emergency nurses (n = 9) participated in the interviews. All had worked in the emergency department on a permanent or casual basis.</p>
Inclusion Criteria	Registered nurses Working in the Emergency Department
Exclusion criteria	None reported
Relevant themes	Three themes were identified:

<p>1) The importance of routinisation Immunisation status screening as a part of routine emergency nurse work was highlighted in the interview responses. Routine immunisation status screening for children and checking an adult’s medical history for evidence of Acellular Diphtheria Toxoid (ADTTM) vaccination specifically at triage was a prevalent aspect of this theme. “I guess if I had to and if it was part of the [triage] questions I was meant to ask, I would ask it”</p> <p>2) Low knowledge levels Some interviewees also expressed uncertainty concerning what immunisation status screening was, although they demonstrated they understood the importance of the concept. The nurses expressed that there was a requirement for more education concerning pneumococcal vaccination, and that they would be happy in relaying this information onto patients. “We assume that they [the elderly] are responsible for their own vaccination and they have completed whatever schedule they’re supposed to”</p> <p>3) The ‘vaccination is for children’ heuristic The analysis also revealed that emergency nurses were well conditioned to associate vaccines with children. Participants did agree that both the elderly and children are vulnerable cohorts, but that their reasoning around why for each differed. “if an older person comes in with a cough, I’m not thinking whooping cough, I’m thinking they’ve got a chest infection”</p>
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1 Assessment of risk of bias and relevance

Section	Question	Answer
Aims of the research	Was there a clear statement of the aims of the research?	Yes
Appropriateness of methodology	Is a qualitative methodology appropriate?	Yes
Research Design	Was the research design appropriate to address the aims of the research?	Yes
Recruitment Strategy	Was the recruitment strategy appropriate to the aims of the research?	Yes
Data collection	Was the data collected in a way that addressed the research issue?	Yes
Researcher and participant relationship	Has the relationship between researcher and participants been adequately considered?	No
Ethical Issues	Have ethical issues been taken into consideration?	Yes
Data analysis	Was the data analysis sufficiently rigorous?	Yes
Findings	Is there a clear statement of findings?	Yes
Research value	How valuable is the research?	The research has some value
Overall risk of bias and relevance	Overall risk of bias	Low

Section	Question	Answer
	Relevance	Highly relevant

1

2

- 1 **Appendix E – Forest plots**
- 2 Not relevant for qualitative reviews.

1 Appendix F – GRADE-CERQual tables

F.1 Babies and children aged 0-5 years old

3 Where findings relate to people who are immigrants, the country which people had migrated from, and the length of time that they had been living
4 in a new country, will be stated at the end of the finding (where this information is available).

5 **Table 12 Barriers to and facilitators for the vaccination of babies and children aged 0-5 years old**

Studies	Study design	Finding	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
Access							
8 (Lewendon 2002, New 1991, Thomas 2018, Tickner 2010, Harmsen 2015*, Loewenthal 1996, Newton 2017, Smith 2017)	Semi-structured interviews, focus groups	Some parents (including parents who are immigrants*, orthodox Jewish, travellers and gypsies) experienced difficulty in getting to the clinic to have their child vaccinated. Parents and health service providers said that if the child welfare centre or GP's surgery is a long distance away, they are less likely to travel there for vaccination, especially if they do not have access to a car. Parents viewed public transport as infrequent, unreliable, crowded, difficult to use with a pram and expensive. Walking was slow and time-consuming. This issue also applies to women living on caravan sites (such as travellers and gypsies). They may not have access to vehicles during the day and caravan sites are usually at remote locations with no public transport or other services. * Immigrants were people who had lived in the Netherlands for at least 1 year – mostly people from Morocco, and Turkey, as well as some from Afghanistan, Somalia, Poland and Belgium)	Not serious	High	High	High	High

Studies	Study design	Finding	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
3 (New 1991, Stein 2017, Sporton 2001)	Semi-structured interviews, focus groups	Inflexible and inconvenient clinic hours make it harder for parents, including Jewish ultra-orthodox parents) to bring children to be vaccinated. For women working in full time employment, attendance usually involved taking formal leave. Even women working part-time did not always find it easy to attend appointments. This may also be more of a problem for parents from lower socioeconomic groups who are less able to afford to take time off work or work unpredictable hours.	Not serious	High	High	Moderate ¹	Moderate
3 (Newton 2017, Smith 2017, Thomas 2018)	Semi-structured interviews, focus groups	Many parents, including those from gypsy, Roma and traveller communities), and health service providers said that home immunisation could increase vaccine uptake for people who have access issues.	Not serious	High	High	Moderate ¹	Moderate
Acceptability							
7 (Evans 2001, Austin 2008, Guillaume 2004, Tickner 2007, Brown 2012, Harmsen 2012, Newton 2017)	Semi-structured interviews, focus groups	Opinion is divided between parents (including parents with anthroposophical beliefs) whether single or combination vaccines are best in terms of convenience and safety. There is a perception that single and combination vaccines can have differing contraindications and/or side effect characteristics. Some parents prefer combination vaccines because they are convenient (including fewer needles) but for others this is not an issue.	Not serious	High	High	High	High
Trust							
23 (Jackson 2017b, Brown 2012, Gardner 2010, Guillaume 2004, Smailbegovic	Semi-structured interviews, focus groups,	Parents (including immigrants* and people with anthroposophical beliefs) have mixed views about trusting the government and pharmaceutical companies. Some parents and GPs do not trust the government due to perceived lack of integrity. For example,	Not serious	High	High	High	High

Studies	Study design	Finding	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
2003, Brownlie 2005, Bystrom 2014, Austin 2008, Casiday 2006, Casiday 2007, Evans 2001, Hill 2013, Hilton 2007b, Johnson 2014, Kowal 2015*, Moran 2008, Petts 2004, Poltorack 2005, McMurray 2004, Harmsen 2012*, Condon 2002, Sporton 2001, Cotter 2003)	unstructured interviews	<p>mishandling of vaccine scares, such as the Wakefield incident, and other health issues (such as BSE). They agreed that the government should use experts guide their decisions and explain the reasons in a transparent way. In addition, some parents think the government colludes with pharmaceutical companies in order to increase their profits and do not trust the research on vaccine effectiveness and safety. In contrast, other parents, (including those who are immigrants* or refugees), remain positive about vaccination and accept of the vaccination schedule because they trust that it is informed by sound research and therefore safe.</p> <p>* Immigrants include people who had lived in the Netherlands for at least 1 year (mostly people from Morocco, and Turkey, as well as some from Afghanistan, Somalia, Poland and Belgium) and people born in India, China or Bhutan, who had moved to Canada in the previous 8 years.</p>					
25 (Brown 2012, Brownlie 2006, Casiday 2006, Gardner 2010, Guillaume 2004, Hilton 2007b, Hill 2013, Jama 2018*, Johnson 2014, McMurray 2004, New 1991, Petts 2004, Poltorack 2005, Raithatha 2003,	Semi-structured interviews, focus groups, unstructured interviews	Parents (including parents with anthroposophical beliefs, and immigrant* parents) trust healthcare professionals because of their training, codes of practice, experience, and history of providing impartial advice to the parents. Building up trust generally involved discussions between the healthcare professional and parents and trust was increased if the parent thought the benefits of vaccination were considered for each child individually rather than at a population level. Health visitors said they aim to build trust by conducting home visits and providing written and verbal advice.	Not serious	High	High	High	High

Studies	Study design	Finding	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
Smailbegovic 2003, McMurray 2004, Tickner 2007, Brownlie 2005, Mixer 2007, Harmsen 2015*, Loewenthal 1996, Austin 2008, Bystrom 2014, Harmsen 2012, Fredrickson 2004)		* Immigrants include people who had lived in the Netherlands for at least 1 year (mostly people from Morocco, and Turkey, as well as some from Afghanistan, Somalia, Poland and Belgium) and Somali immigrants living in Sweden.					
10 (Casiday 2007, McMurray 2004, Tickner 2007, Brownlie 2006, Hilton 2007b, Johnson 2014, Redsell 2010, Brownlie 2005, Mixer 2007, Henderson 2008)	Semi-structured interviews, focus groups	Some parents (including Jewish parents) trust health visitors with regards to vaccines, but others (including Jewish parents) view them as part of the mistrusted government machine. Parents said they trust health visitors and place a high value on being respected by them. This is especially the case if health visitors are parents themselves. However, other parents do not trust health visitors if they are perceived as enforcing distrusted government policy rather than having their best interests at heart.	Not serious	High	High	High	High
Vaccine safety, effectiveness and assessment of risk							
1 (Tickner 2007)	Semi-structured interviews	Parents were comfortable having their children vaccinated because they were vaccinated as children themselves and did not experience any side effects.	Not serious	High	High	Low ³	Low
3 (Tickner 2010, Brownlie 2005, Newton 2017)	Semi-structured interviews,	Parents (including parents who are travellers, gypsies or Roma) had mixed views about vaccinations based on their previous experience of vaccinating their children. Some parents were	Not serious	High	High	Moderate ¹	Moderate

Studies	Study design	Finding	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
	focus groups	comfortable having their children vaccinated because their children's previous experiences of vaccination were good. However, parents whose children had bad experiences of vaccination in the past were more likely to reject subsequent vaccines.					
11 (Jackson 2017b, New 1991, Tickner 2007, Tickner 2010, Austin 2001, Harmsen 2015*, Kowal 2015*, Stein 2017, Newton 2017, Smith 2017, Godoy-Ramirez 2019*)	Semi-structured interviews, focus groups	<p>Parents (including immigrants*, travellers, Roma, gypsies and Jewish parents) demonstrated a spectrum of opinion with regards to concerns about short-term or mild side effects of vaccination. Some parents said that a short-term fever caused by vaccination would not affect their decision to have their child vaccinated. This is because a fever is less severe than the disease the vaccine aims to prevent. However, other parents were worried that their child might develop a fever because their children were infants, so they would not be able to give much paracetamol. Additionally, some parents were worried about the discomfort the needles might cause or about unexpected side effects, such as hair loss.</p> <p>* Immigrants include people who had lived in the Netherlands for at least 1 year (mostly people from Morocco, and Turkey, as well as some from Afghanistan, Somalia, Poland and Belgium), people born in India, China or Bhutan, who moved to Canada in the previous 8 years, and undocumented parents living in Sweden for less than 3 years (from Africa, South America, Asia, and the Middle East)</p>	Not serious	High	High	High	High
36 (Austin 2008, Brown 2012, Brownlie 2008,	Semi-structured interviews,	Parents (including those with anthroposophical beliefs, immigrants*, travellers, Roma, gypsies and Jewish parents) and GPs were worried that	Not serious	High	High	High	High

Studies	Study design	Finding	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
Casiday 2006, Casiday 2007, Evans 2001, Gardner 2010, Guillaume 2004, Hill 2013, Hilton 2006, Hilton 2007b, Hilton 2007c, Jackson 2017b, Johnson 2014, Kowal 2015*, Lewendon 2002, Moran 2008, New 1991, Pedersen 2018, Petts 2004, Poltorak 2005, Raithatha 2003, Smailbegovic 2003, Tickner 2007, Austin 2001, Brownlie 2005, Kennedy 2014, Bystrom 2014, Harmsen 2012, Jama 2018*, Henderson 2008, Stein 2017, Loewenthal 1996, Tomlinson 2013, Newton 2017, Smith	focus groups, unstructured interviews	<p>vaccines could cause long-term or serious adverse events and that they would feel guilty for consenting to something that had harmed their child. Some parents and GPs thought that vaccines contained substances that could aggravate allergies or sensitivities such as mercury, thimerosal and aluminium. Others were concerned that vaccines could permanently alter their child's personality, temperament and intelligence, or cause them to develop chronic conditions such as multiple sclerosis, autism or Parkinson's disease. Parents were also worried that their child's immune system might not be able to cope with vaccination, particularly if they had a medical condition, illness or were born prematurely. They believed that older children would be better able to cope, so they would prefer to postpone vaccination.</p> <p>* Immigrants include people born in India, China or Bhutan who moved to Canada in the previous 8 years and Somali immigrants living in Sweden.</p>					

Studies	Study design	Finding	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
2017 Sporton 2001)							
4 (Evans 2001, Hilton 2007a, New 1991, Brown 2012)	Semi-structured interviews, focus groups	Some parents had concerns about the effectiveness of vaccines. They said that the need for vaccine boosters raises doubts about long-term effectiveness and that they knew of children who were vaccinated against a disease and yet later caught it. Some also believed that new disease strains could appear and then the vaccine would be ineffective.	Not serious	High	High	Moderate ¹	Moderate
14 (Evans 2001, McMurray 2004, Poltorak 2005, Tickner 2007, Moran 2008, New 1991, Pearce 2008, Tickner 2010, Brown 2012, Bystrom 2014, Harmsen 2012, Henderson 2008, Newton 2017, Sporton 2001)	Semi-structured interviews, focus groups, unstructured interviews	Some parents (including Jewish parents and those with anthroposophical beliefs) and midwives think that vaccines are unnecessary. The parents thought that breast feeding confers natural immunity or that maintaining general health would be sufficient protection. They were unafraid of the diseases, unaware of their severity and risks, and considered them to be easily treatable. They often felt that diseases were natural, and (along with midwives) felt that exposing children strengthens their immune system. They recalled having measles or mumps when they were young and being unharmed. Some midwives believed that improved living conditions and sanitation made vaccination less important.	Not serious	High	High	High	High
24 (Austin 2008, Berman 2017, Brownlie 2006, Bystrom 2014, Casiday 2006, Casiday 2007, Gardner 2010, Harmsen 2012*, Hill 2013, Hilton	Semi-structured interviews, focus groups, unstructured interviews	Parents (including parents who have anthroposophical beliefs, are Jewish, travellers, gypsies, Roma or immigrants) GPs, and health visitors believe that vaccination is the right thing to do if there is a greater risk of harm from the disease compared to the risk of side effects from vaccines. Their decision-making included consideration of disease severity, the chance of catching the disease and occurrences that	Not serious	High	High	High	High

Studies	Study design	Finding	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
2007a, New 1991, Petts 2004, Poltorak 2005, Tickner 2007, Tickner 2010, Austin 2001, Brownlie 2005, Harmsen 2015, Henderson 2008, Tomlinson 2013, Newton 2017, Smith 2017, Sporton 2001)		would increase this, such as a local outbreak or socialising with unimmunised children. Parents were particularly concerned about disease severity if they had a child with a medical condition that might make them more vulnerable. In addition, parents said that if their child became ill, they would feel guilty if they had not agreed to the vaccination.					
12 (McMurray 2004, Tickner 2007, Tickner 2010, Hill 2013, Hilton 2007a, New 1991, Harmsen 2012, Tomlinson 2013, Newton 2017, Smith 2017, Mixer 2007, Sporton 2001)	Semi-structured interviews, focus groups	Assessment of disease impact and risk is affected by experience and may make some parents (including parents with anthroposophical beliefs and parents who are immigrants, travellers, gypsies or Roma) more accepting of vaccines or more likely to reject them. Experience of mild disease may make some parents more likely to reject vaccines. In contrast, immigrants who have first-hand experience of disease are more likely to accept vaccines because they know how serious the diseases can be.	Not serious	High	High	High	High
Discussions with healthcare professionals and gaining consent							
10 (Austin 2008, Brown 2012, Hilton 2007a, Hilton 2007b, Evans 2001, Harmsen 2012, Bystrom 2014,	Semi-structured interviews, focus groups, unstructured interviews	Parents (including immigrants) said pressure to vaccinate made them feel negatively about vaccinations. Some parents did not like having to justify why they declined a vaccination as it felt intrusive. They felt this made their relationship with their GP feel adversarial.	Not serious	High	High	High	High

Studies	Study design	Finding	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
Jama 2018*, Lowenthal 1996, Smith 2017)		* Immigrants include people who had lived in the Netherlands for at least 1 year (mostly people from Morocco, and Turkey, as well as some from Afghanistan, Somalia, Poland and Belgium), and Somali immigrants living in Sweden					
2 (Thomas 2018, Hill 2013)	Semi-structured interviews, focus groups, conversation analysis	Health service providers and parents agree that practice nurses can play an important role in promoting vaccination. Parents said that the practice nurse is important for discussing vaccines and administering them, but deference to the practice nurse ends if the nurse has incorrect knowledge of the child. Some health service providers said that it is important to have nurses who are committed to immunisation because they will go the extra mile to chase families.	Not serious	High	High	Low ³	Low
13 (McMurray 2004, Petts 2004, Poltorak 2005, Tickner 2007, Jama 2018*, Loewenthal 1996, Harmsen 2015*, Brownlie 2006, Casiday 2007, McMurray 2004, Johnson 2014, Hill 2013, Cotter 2003)	Semi-structured interviews, focus groups, unstructured interviews	Parents (including parents who are immigrants* and orthodox Jews) and GPs view GPs as experts, and they agree that there is not enough time allowed in consultations to discuss vaccination satisfactorily. Parents and GPs felt reluctant to initiate discussion about vaccines during consultations because of the rushed nature of general practice, but parents liked being able to ask questions about vaccines. Some parents preferred to seek information at children's centres, where they can discuss vaccines with other parents. * Immigrants include people who had lived in the Netherlands for at least 1 year (mostly people from Morocco, and Turkey, as well as some from Afghanistan, Somalia, Poland and	Not serious	High	High	High	High

Studies	Study design	Finding	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		Belgium), and Somali immigrants living in Sweden					
2 (Evans 2001, Jackson 2017b)	Semi-structured interviews, focus groups	Parents would like to receive information before their immunisation appointment, and they would appreciate designated times for discussions about vaccination with healthcare professionals.	Not serious	High	High	Moderate ¹	Moderate
1 (Hill 2021)	Semi-structured interviews	Practice nurses were aware of factors that can influence parents' decisions to vaccinate their children and they were keen to ensure that parents were aware of any information that highlights the importance of vaccination. They thought it was important to highlight the benefits to the individual as well as to the wider community.	Not serious	High	High	Low ³	Low
Incentives aimed at parents or staff							
2 (McNaughton 2016, Stein 2017)	Semi-structured interviews, focus groups	Parents (including orthodox Jews) and commissioners have varying opinions with regards to the acceptability of quasi-mandatory vaccinations. All parents thought that this was preferable to financial incentives and some parents and commissioners agreed that these schemes seem fair and that children who are at risk of transmitting disease should be excluded from school or childcare. However, other parents and commissioners believed that this would not allow free will, would be unfair on the child and could cause greater problems, such as the prosecution of parents. Parents also discussed whether this would cause a divide between parents who could and could not choose to home school their children, as those that could home school would still be able to make a choice about vaccinations.	Not serious	High	High	Moderate ⁶	Moderate

Studies	Study design	Finding	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
1 (McNaughton 2016)	Semi-structured interviews, focus groups	Many parents thought that quasi-mandatory vaccination would be useful in day care settings, where children of different ages will be mixing but some of the younger children will not have had all of their vaccinations yet. However, this would not apply to parents of all children because some families do not use day care and so a mandate may not increase vaccination in these children.	Not serious	High	High	Moderate ⁵	Moderate
2 (McNaughton 2016, Stein 2017)	Semi-structured interviews, focus groups	Parents (including ultra-Orthodox Jewish parents) do not like the idea of financial incentives being provided to them in order to encourage vaccination. Almost all parents disagreed with the idea of financial incentives being used to encourage vaccination. Some parents believed that this could cause a divide between rich and poor because richer parents would have more autonomy as they could afford to disregard a financial incentive. However, this incentive could facilitate increased vaccine uptake by parents from lower socioeconomic groups. There were some concerns that schemes that provided incentives for parents whose child had yet to be vaccinated was rewarding bad behaviour and could encourage parents to delay their child's vaccinations so that they could receive the incentive. In addition, some parents believed that an incentive scheme would be too costly to administer if it was universal and would be hard to enforce.	Not serious	High	High	Moderate ⁵	Moderate
6 (Evans 2001, Lewendon 2002, McMurray 2004, Brownlie 2005,	Semi-structured interviews, focus groups	Healthcare professionals think that vaccination targets are unhelpful in certain circumstances and parents (including immigrant parents) do not like them. Some parents felt that advice about vaccines is motivated by money and access to	Not serious	High	High	High	High

Studies	Study design	Finding	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
Condon 2002, Sporton 2001)		funding instead the child's best interests. They would like payments for meeting vaccination targets to be removed. Health visitors said that targets put them under additional pressure, and they are concerned that children who should be exempted are included in the target population. However, in general they find targets helpful because they are a surrogate for 'health'. GPs said that they are punished by target-setting if they have parents who will not accept vaccines					
Process and implementation issues							
1 (Brownlie 2006)	Semi-structured interviews, focus groups	GPs and health visitors felt pressured to administer combination doses of vaccine. They felt their clinical autonomy was being eroded when they were told they were "not covered" to give single doses.	Not serious	High	High	Low ³	Low
3 (Redsell 2010, Thomas 2018, Brownlie 2005)	Semi-structured interviews, focus groups	Health visitors have divided opinions about whether they should be administering vaccinations. Some health visitors have the skills to administer a vaccine, but others do not.	Not serious	High	High	Low ³	Low
5 (Evans 2001, Jackson 2017b, Johnson 2014, Tickner 2007, Redsell 2010)	Semi-structured interviews, focus groups	Health visitors and parents agree that discussing vaccinations soon after birth is problematic as parents have other priorities at that point. Health visitors said that they are required to discuss vaccinations when the child is 14-28 days old. They would like to have additional visits to discuss vaccines. Parents of new babies would like vaccination appointments rearranged to a later date because they are overwhelmed at that stage and unable to think about vaccinations.	Not serious	High	High	High	High
4 (Jackson 2017b, Johnson)	Semi-structured	Parents and health visitors felt that parents are overwhelmed by the complex vaccination	Not serious	High	High	High	High

Studies	Study design	Finding	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
2014, Tickner 2007, Redsell 2010)	interviews, focus groups	schedule and would prefer to have more time to consider vaccination with reminders to prompt them.					
1 (Tickner 2010)	Semi-structured interviews	Low levels of contact with health visitors during the preschool years (once the child is no-longer a baby) can negatively affect vaccination levels. Parents said that health visitors have a good level of early contact, but this is not the case so once the child is no longer a baby. The lack of contact during the pre-school period leads some parents to question the importance of pre-school vaccines.	Not serious	High	High	Low ⁵	Low
1 (Bolsewicz 2020)	Semi-structured interviews, focus groups	Collaborative working between different vaccine providers can be a good way to improve access and achieve high vaccination rates.	Not serious	High	High	Low ³	Low
1 (Hill 2021)	Semi-structured interviews	Practices nurses felt that there was often not enough time for discussions with parents about vaccinations, particularly in relation to the MMR vaccine. They tried to make additional appointments and referrals to overcome this.	Not serious	High	High	Low ³	Low
Sources of information and influence: family, other parents and the media							
31 (Brown 2012, Brownlie 2006, Evans 2001, Gardner 2010, Guillaume 2004, Hill 2013, Hilton 2007b, Johnson 2014, Lewendon 2002, McMurray 2004, Petts 2004, Tickner	Semi-structured interviews, focus groups, unstructured interviews	Parents (including Jewish people, travellers, migrants and anthroposophic followers) use multiple sources of information in their decision making and can be influenced by family members, other parents, NHS websites and leaflets, online forums, healthcare professionals perceived social pressure and the media. .Some parents believe that the media is a valuable information provider. However, others believe that the media is irresponsible and	Not serious	High	High	High	High

Studies	Study design	Finding	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
2007, Henderson 2008, Hill 2013, New 1991, 2010a, Poltorak 2005, Brownlie 2005, Jama 2018, Loewenthal 1996, Tomlinson 2013, Newton 2017, Smith 2017, Austin 2001, Bystrom 2014, Harmsen 2012, Harmsen 2015, Newton 2017, Casiday 2007, Sporton 2001, Cotter 2003)		<p>unbalanced. Some GPs said that adverse publicity was a key factor in poor vaccine uptake (for example, decreased MMR uptake following the Wakefield incident). (The studies did not mention social media, possibly due to their age.)</p> <p>Other parents were also seen as a good source of advice because the parents developed relationships with each other at children's centres, and they viewed each other as impartial and trustworthy. Some parents said that their relatives had influenced their decision to vaccinate. In addition, parents said getting vaccinated was the perceived social norm and thought that there was social pressure to accept vaccination. They were concerned about being judged by others if they rejected vaccines such as the MMR. However, in some communities the social circle can influence people to decide against vaccinations. Nurses highlighted how, in the Somali community in Sweden, the opinions of friends and family result in a low uptake of the MMR vaccine because of their beliefs in its link with autism.</p>					
Information needs							
29 (Evans 2001, Guillaume 2004, McMurray 2004, Thomas 2018, Brown 2012, Casiday 2007, Evans 2001, Gardner 2010, Guillaume 2004, Hilton 2007a,	Semi-structured interviews, focus groups, unstructured interviews	<p>Parents (including those with anthroposophical beliefs, immigrants* and Jewish parents) and GPs said they would like balanced information about vaccines that address parental concerns about safety as well as effectiveness.</p> <p>Parents said that they felt well informed, but the information did not address their concerns fully because they lacked information about potential adverse events, the rationale for combination vaccines, how the vaccines were tested, where</p>	Not serious	High	High	High	High

Studies	Study design	Finding	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
Jackson 2017b, McMurray 2004, Petts 2004, Poltorak 2005, Smailbegovic 2003, Tickner 2007, Tickner 2010, Berman 2017, Brownlie 2006, Austin 2001, Bystrom 2014, Harmsen 2012, Harmsen 2015*, Stein 2017, Loewenthal 1996, Tomlinson 2013, Smith 2017, Fredrickson 2004, Cotter 2003)		<p>else they had been used, and the vaccine ingredients. They thought that the information they received was written to purposefully avoid these issues and did not present a balanced picture.</p> <p>GPs agree that the information they provide to parents downplays the potential side effects to such a degree that they vaccines are presented as being 100% safe and that this can dissuade parents from having their children vaccinated. However, doctors and public health nurses said that most parents with concerns agree to vaccination after they have discussed the evidence with them.</p> <p>* Immigrants include people who had lived in the Netherlands for at least 1 year (mostly people from Morocco, and Turkey, as well as some from Afghanistan, Somalia, Poland and Belgium)</p>					
5 (Tickner 2007, Guillaume 2004, Hilton 2007b, Jackson 2017b, Harmsen 2015*)	Semi-structured interviews, focus groups	<p>Parents (including immigrant parents*) were concerned about the introduction of new vaccines, such as MMR or MenB, but were reassured if they were informed about vaccine safety and benefits and persuaded that it was aimed at protecting their child's health rather than cutting costs. They were also more trusting if they could be persuaded that enough research had been done to evaluate safety.</p> <p>* Immigrants include people who had lived in the Netherlands for at least 1 year (mostly people</p>	Not serious	High	High	High	High

Studies	Study design	Finding	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		from Morocco, and Turkey, as well as some from Afghanistan, Somalia, Poland and Belgium)					
1 (Hill 2021)		Practice nurses were aware that it is easy for a parent to forget about immunisations and thought it was important for the practice to send reminder letters about appointments	Not serious	High	High	Low ³	Low
Themes that are specific people with anthroposophical beliefs							
2 (Harmsen 2012, Bystrom 2014)	Semi-structured interviews, focus groups	Parents with anthroposophical beliefs liked anthroposophic child welfare clinics because they felt that these clinics dedicate more time to informing parents about vaccinations, they could phone them at any time with questions and they perceived the advice they were given as being balanced. [However, it is unclear whether these clinics are facilitators to increase vaccine uptake or whether the lack of pressure to vaccinate has a negative effect on uptake.]	Not serious	High	High	Moderate ⁶	Moderate
Themes that are specific to immigrants							
5 (Harmsen 2015*, Skirrow 2021b*, Tomlinson 2013*, Thomas 2018*, Kowal 2015*)	Semi-structured interviews, focus groups	Immigrants* said that language barriers meant they were not able to read literature on vaccines or understand an English-speaking healthcare professional. They said that it would be helpful if information was provided in their own language. * Immigrants were people who had lived in the Netherlands for at least 1 year (mostly people from Morocco, and Turkey, as well as some from Afghanistan, Somalia, Poland and Belgium), people born in China or South Asia who had moved to Canada in the previous 8 years, immigrant populations in London (from local GP's perspectives) or immigrants living in Australia.	Not serious	High	High	High ⁵	High

Studies	Study design	Finding	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
2 (Condon 2002*, Kowal 2015*)	Semi-structured interviews, focus groups	Immigrant parents* from Pakistan, Somalia, China and South Asia had a trusting attitude towards healthcare professionals and were more passive in gathering information. They had universally favourable opinions of healthcare professionals and received information almost exclusively from healthcare professionals during visits to clinics. These parents said that healthcare professionals had the best interests of their children at heart and that medical advice was based on research, which they generally perceived as impartial and valid. * Moved to Canada in the previous 8 years or living in the UK for an average of 11 years.	Not serious	High	High	Moderate ⁶	Moderate
2 (Kowal 2015*, Condon 2002*)	Semi-structured interviews, focus groups	In immigrant families* the decision to vaccinate is sometimes made by the mother alone or by both parents/ the family as a whole. In Bhutanese, South Asian, Chinese, Somali and Afro-Caribbean families, the mother decides whether the child is to be vaccinated. However, Pakistani women described the decision to vaccinate as one made by the whole family or by the husband and wife. * Moved to Canada in the previous 8 years or living in the UK for an average of 11 years.	Not serious	High	High	Moderate ⁶	Moderate
1 (Godoy-Ramirez 2019*)	Semi-structured interviews	Undocumented migrants* can be afraid of visiting healthcare facilities where they do not feel safe and trust the staff. This lack of trust is based on previous experiences such as being incorrectly turned away from clinics because the accompanying parent did not have ID cards, despite these not being required. Nurses agreed	Serious ²	High	High	Moderate ⁶	Low

Studies	Study design	Finding	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		<p>that it was difficult to persuade undocumented migrants to attend child health centres, but they noted that these parents often completed the immunisation schedule if they felt safe and able to attend them.</p> <p>* Undocumented parents living in Sweden for less than 3 years (from Africa, South America, Asia, and the Middle East)</p>					
1 (Godoy-Ramirez 2019*)	Semi-structured interviews	<p>Nurses said that undocumented migrant families* moved frequently because of their illegal status acting as a barrier to vaccination. However, despite their lack of knowledge they tried to follow the schedule where possible.</p> <p>* Perspectives about undocumented parents living in Sweden for less than 3 years (from Africa, South America, Asia, and the Middle East)</p>	Serious ²	High	High	Moderate ⁶	Low
1 (Harmsen 2015*)	Focus groups	<p>Immigrant parents* that were referred to child welfare centres when they arrived (in the Netherlands) reported that it was easy to obtain vaccinations for their children and that vaccinations were easy to reschedule if missed.</p> <p>* People who had lived in the Netherlands for at least 1 year (mostly people from Morocco, and Turkey, as well as some from Afghanistan, Somalia, Poland and Belgium)</p>	Not serious	High	High	Moderate ⁶	Moderate
1 (Condon 2002*)	Semi-structured interviews, focus groups	<p>Afro-Caribbean and Somali parents* tolerated repeated opportunistic invitations to vaccinate or reminder cards for missed vaccinations because they realised that it was in the best interests of their child.</p>	Not serious	High	High	Moderate ⁶	Moderate

Studies	Study design	Finding	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		* People who had lived in the UK for an average of 11 years.					
1 (Tomlinson 2013)	Semi-structured interviews	Somali parents thought that it was more important to be vaccinated in the UK compared to Somalia. They said that the population density of the UK is greater than that of Somalia, so there is a greater risk of disease transmission. They also believed that people in the UK are more susceptible to disease due to the colder weather and less healthy diet.	Not serious	High	High	Moderate ⁶	Moderate
1 (Tomlinson 2013)	Semi-structured interviews	Somali parents believed that if their child was not up to date with their vaccinations, the school would prevent them from attending. They were also worried that not being vaccinated would prevent their child from attending university later in life.	Not serious	High	High	Moderate ⁶	Moderate
1 (Condon 2020*)	Focus groups	Some parents* perceived vaccination reminders as pressure to comply and thought they had no choice in vaccination * Parents from Pakistan or Somalia who had lived in the UK for an average of 11 years	Not serious	High	High	Low ³	Low
1 (Condon 2020*)	Focus groups	Difficulties registering a child with a GP was raised by some parents* as an issue which could delay vaccinations * Parents from Pakistan or Somalia who had lived in the UK for an average of 11 years	Not serious	High	High	Low ³	Low

Themes that are specific to immigrants: religious considerations

Studies	Study design	Finding	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
3 (Harmsen 2015*, Tomlinson 2013*, Jama 2018*)	Semi-structured interviews, focus groups, unstructured interviews	<p>Muslim immigrant parents* had different opinions on whether vaccinations were acceptable in Islam. Somali immigrant parents who vaccinated on time had confidence because they trusted God and believed that anything that happened to their child was according to the will of God including vaccination. Some Turkish immigrant parents said that according to Islam, vaccination was considered beneficial because they must protect their health. However, others believed Allah determined whether their child became sick, so vaccines did not prevent disease. In addition, some Somali migrants who were Muslim were anxious that the MMR vaccine contained gelatine, a pig-based product forbidden in Islam. However, others held the view that it was only an injection and not food eaten every day.</p> <p>* People who had lived in the Netherlands for at least 1 year (mostly people from Morocco, and Turkey, as well as some from Afghanistan, Somalia, Poland and Belgium), people living in the UK who were born in Somalia and Somali immigrants living in Sweden.</p>	Not serious	High	High	High ⁵	High
Themes that are specific to Jewish people							
1 (Henderson 2008)	Semi-structured interviews	Some Jewish parents said that they did not vaccinate their children because of lengthy waiting times and because of their belief in complementary medicine.	Not serious	High	High	Moderate ⁶	Moderate
1 (Henderson 2008)	Semi-structured interviews	Some Jewish people believed that Judaism supported their decision not to vaccinate; they said God decides whether a child will get an illness.	Not serious	High	High	Moderate ⁶	Moderate

Studies	Study design	Finding	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
1 (Loewenthal 1996)	Semi-structured interviews, focus groups	Practice staff say that Jewish parents often do not read the available literature on vaccines. This may be because they are busy coping with their many children.	Serious ²	High	High	Moderate ⁶	Low
1 (Stein 2017)	Semi-structured interviews, focus groups	Orthodox Jewish parents said they would not discuss vaccines with other parents, because they said that other parents are not professors, doctors or rabbis.	Not serious	High	High	Moderate ⁶	Moderate
Themes that are specific to travellers, gypsies and Roma							
2 (Newton 2017, Smith 2017)	Focus groups	Parents who live on caravan sites believe that vaccinations are useful, but some do not see them as a priority. Travellers said that diseases are common and spread easily on caravan sites because there is a high population density, visits from family and friends are frequent and hygiene may be poor due to lack of clean water. However, for some people who live on caravan sites, good hygiene and clean water are a greater priority for staying healthy than vaccinations.	Not serious	High	High	Moderate ⁶	Moderate
1 (Smith 2017)	Focus groups	Parents who live on caravan sites and travel frequently have difficulty obtaining vaccination appointments. People on caravan sites said that appointment cards and information on vaccines does not reach them. This is a particular problem for people living on illegal camping sites who must change location every few weeks. Some have also been told by the surgery that they need a fixed address to secure an appointment.	Not serious	High	High	Moderate ⁶	Moderate
2 (Newton 2017, Smith 2017)	Focus groups	Parents who live on caravan sites and travel frequently do not have the opportunity to	Not serious	High	High	Moderate ⁶	Moderate

Studies	Study design	Finding	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		develop a trusting relationship with healthcare professionals and seek advice from other travellers instead. They said it would be useful if healthcare professionals visited to give vaccinations or advice and that would help increase trust in healthcare professionals. The parents ask other people on caravan sites for advice about vaccination or may place more trust in mother-nature because they “know her personally”.					
1 (Newton 2017)	Focus groups	Some parents living on caravan sites have difficulty reading leaflets and letters that encourage vaccine uptake. They also found it difficult to remember when and where they should be vaccinated.	Not serious	High	High	Moderate ⁶	Moderate
1 (Smith 2017)	Focus groups	Parents living on caravan sites noted that their children were less likely to be vaccinated because the children did not spend as much time in schools [and nurseries etc] and frequently moved schools.	Not serious	High	High	Moderate ⁶	Moderate
1 (Ellis 2020)	Semi-structure interviews, focus groups	Mothers felt that they had a good understanding of their bodies and their children and valued this above the knowledge and experience of healthcare professionals. However, mothers did ensure their children had vaccinations as this was associated with staying healthy. However, many followed advice from friends and family to delay the MMR vaccine until their child was older.	Not serious	High	High	Low ³	Low
Themes that are specific to vaccinations during the COVID-19 pandemic							
1 (Skirrow 2021b)	Semi-structured interviews	Nurses had to phone parents during the pandemic to encourage them to attend vaccination sessions as many were worried about attending practices during the lockdown.	Not serious	High	High	Low ³	Low

Studies	Study design	Finding	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		Some nurses reported that this was time consuming. However, they also thought it was beneficial because they could discuss other concerns that parents had about immunisations					
1 (Skirrow 2021b)	Semi-structured interviews	Providers adapted their models to fit with the safety requirements for the pandemic. Some, used innovative methods such as outdoor or drive-through immunisation services, and these were reported to be generally well received by people attending vaccination appointments	Not serious	High	High	Low ³	Low
1 (Skirrow 2021b)	Semi-structured interviews	Participants identified a local transient population as a barrier to some people accessing vaccinations	Not serious	High	High	Low ³	Low
1 (Skirrow 2021b)	Semi-structured interviews	Participants suggested that some of the new delivery models could be used for larger scale vaccination programmes. Some areas used adapted versions of the new models to deliver the flu vaccine. However, some people thought that vaccinations at mass clinics could affect uptake because people have more trust in their local GP. They also thought it might restrict access for some people if the clinics are further from their homes than their local GP practice	Not serious	High	High	Low ³	Low
1 (Bell 2020c)	Semi structured interviews with thematic analysis	During the COVID-19 pandemic, parents found it difficult to register their child at a GP practice and would have preferred to be able to do this remotely. Others had difficulties booking vaccination appointments, with some reporting that GP receptionists were unsure of whether childhood vaccinations were still taking place during the lockdown. Most reported they were only aware of ongoing vaccinations because of	Serious ²	High	High	Moderate ⁶	Low

Studies	Study design	Finding	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		information from family, friends and social media.					
1 (Bell 2020c)	Semi structured interviews with thematic analysis	Some parents discussed how the risk of their child getting an infectious disease was low during the lockdown and they therefore delayed vaccinations because they had greater concerns about the risk of contracting COVID-19 while visiting their GP. However, those that did attend a vaccination appointment reported positive experiences and said this led them to encourage other parents to do the same.	Serious ²	High	High	Moderate ⁶	Low
1 (Bell 2020c)	Semi structured interviews with thematic analysis	Parents whose children were eligible for vaccinations during the COVID-19 pandemic reported that a lack of information about the new safety measures in place at their GP surgery made them more hesitant about booking vaccination appointments. Others wanted more information about the side effects of vaccination and how they could be distinguished from those of COVID-19	Serious ²	High	High	Moderate ⁶	Low

1. Finding was downgraded once for adequacy because it was reported in a small number of studies (3-4 studies) that were not particularly detailed or rich in the results that fed into this finding.
2. Finding was downgraded once because it was only identified in studies at moderate or high risk of bias
3. Finding was downgraded twice for adequacy because it was supported by very few studies (1-2 studies) that were not particularly detailed or rich in the results that fed into this finding
4. Finding was downgraded once for relevance because it was only identified in relevant and partially relevant studies.
5. Finding was not downgraded for adequacy even though it was supported by a small number of studies (3-4 studies) because it contained at least one highly detailed study that provided rich data for the issue identified or population of interest.
6. Finding was downgraded once for adequacy because it was supported by very few studies (1-2 studies) but it was not downgraded further because it contained at least one highly detailed study that provided rich data for the issue identified or population of interest.

F.2 Young people aged 11-18 years old

2 Note: the majority of studies in this section that looked at the views of young people recruited adolescent girls because they were interested in
3 HPV vaccination, which was only available for girls at the time the study was carried out. Where the findings refer to young people the supporting
4 studies included adolescent boys or reflect providers' views that could be applicable to both girls and boys. When findings specifically refer to the
5 views of adolescent girls, or providers' experiences of vaccination programmes which only included girls, they will be referred to as adolescent
6 girls. However, some of these findings may be generalisable to adolescent boys. In addition, although most studies focused on HPV the findings
7 may be generalisable to other vaccinations if the finding is not related to a specific characteristic of the HPV vaccination. Where findings relate to
8 people who are immigrants, the country which people had migrated from, and the length of time that they had been living in a new country, will be
9 stated at the end of the finding (where this information is available).

10 **Table 13 Barriers to and facilitators for the vaccination of young people aged 11-18 years old**

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
General beliefs about vaccines							
10 (Burns 2021, Cooper Robbins 2010a, Cooper Robbins 2010b, Doroshenko 2012, Gordon 2011, Hilton 2011a, Hilton 2013, Racktoo 2009, Rockcliffe 2018, Stretch 2009)	Focus groups, interviews, and semi-structured interviews	Parents (including Jewish parents), adolescent girls (including homeless young people) and nurses conveyed generally positive views on vaccination. They considered the protection offered by vaccinations to be a benefit to both individuals and society. Some participants felt that accepting vaccinations was the default choice and reported having accepted all vaccines they had been offered. This default acceptance was linked to a tendency to defer responsibility to trusted sources like healthcare workers and the government vaccination schedule.	Not serious	High	High	High	High
10 (Batista Ferrer 2015, Cooper Robins 2010b, Doroshenko 2011,	Focus groups, interviews, semi-structured interviews,	Negative views on vaccination were also expressed by some parents, adolescent girls (including homeless young people and immigrants). Some parents strongly rejected all vaccinations. They often did not fully understand how vaccinations work	Not serious	High	High	High	High

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
Dube 2019, Forster 2017, Grandahl 2014, Hilton 2011a, Hilton 2011b, Kennedy 2014, Stretch 2009)	and participant observation ¹	<p>and did not trust vaccine providers (pharmaceutical manufacturers and/or the government). Other parents believed that vaccines were unnatural and that their child's immune system would be strengthened by having the disease.</p> <p>Nurses and school staff described encountering these views as a barrier to their work because they couldn't enter into a dialogue with parents who were resistant. However, some school nurses had reservations about vaccinating their own children.</p>					
4 (Batista Ferrer 2015, Brabin 2011, Forster 2017*, Hilton 2011a)	Interviews, semi-structured interviews and participant observation ¹	<p>Nurses described some parents (including immigrant parents*) as being indifferent or uninterested in vaccination. Some nurses described parents who did not, in their opinion, appreciate the importance of the HPV vaccine and were not motivated to seek more information. They found these parents difficult to engage with, particularly when consent forms were not returned.</p> <p>* Immigrants included people living in the UK who were born in Bangladesh, Africa, Caribbean, Somalia, India or Pakistan</p>	Not serious	High	High	Moderate ³	Moderate
2 (Batista Ferrer 2015, 2012, Forster 2017)	Interviews, semi-structured interviews, and participant observation ¹	Parents recalled previous experiences of vaccination and this influenced their decision to be vaccinated. Parents with negative experiences were often hesitant to accept further vaccinations, whereas those with positive experiences were more relaxed about the prospect.	Not serious	High	High	Low ⁴	Low

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
8 (Cooper Robbins 2010c, Grandahl 2014, Hilton 2011a, Hilton 2011b, Hilton 2013, Kennedy 2014, Racktoo 2009, Rockliffe 2018)	Focus groups and semi-structured interviews	<p>Many adolescent girls (including homeless young people) and their parents described the young person's fear of the vaccination experience as a barrier to vaccination. The adolescent girls were particularly afraid of needles and of the vaccination being painful or embarrassing. Nurses attempted to overcome these problems with reassurances. A few adolescent girls described their concerns that the vaccination environment was inadequate, unclean and lacking in privacy. They felt a different set up would make them more comfortable having the vaccination. Teachers could help by having the adolescent girls wear suitable clothes on the day.</p> <p>Some parents reported that they had decided against vaccinating their daughter because it would not be possible without sedation or force due to needle phobia. They suggested that more individual treatment in a calm environment with a parent present might be more effective at overcoming this fear.</p>	Not serious	High	High	High	High
Views on the HPV vaccine-safety, effectiveness and usefulness							
18 (Albert 2019, Batista Ferrer 2015, Cooper Robbins 2010b, Creed 2021, Dube 2019,	Focus groups, interviews, semi-structured interviews, and	Many parents (including immigrant parents* and Jewish parents) and adolescent girls (including homeless young people) expressed concerns about the safety of the HPV vaccine or vaccines in general, however others were unconcerned and trusted their school, health care providers and the government.	Not serious	High	High	High	High

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
Forster 2017*, Gordon 2011, Grandahl 2012, Hilton 2011a, Hilton 2011b, Hilton 2013, Kennedy 2014, Mupandawana 2016*, Racktoo 2009, Rockliffe 2018, Salad 2015*, Seale 2012, Stretch 2009)	participant observation ¹	<p>The most common concerns were that there may be unknown side effects of HPV vaccination in the short term, and that we do not yet know its effects on a young, growing body or if the vaccine will cause health problems later in life such as reduced fertility. They felt that they needed to weigh these risks against the benefits of the vaccination.</p> <p>Several of the studies were conducted when the HPV vaccine was relatively new, so some parents were concerned that it may not have been fully tested at that point. Several of these said that they did not want their children to be used as 'guinea pigs' in the first few vaccination cohorts. Nurses and managers were aware of parents' views concerning this issue.</p> <p>In contrast, other parents (including some school nurses) had little concern about side effects and agreed that the vaccine would not be available if there were serious concerns about its safety.</p> <p>* Immigrants included people living in the UK who were born in Bangladesh, Africa, Caribbean, Somalia, India or Pakistan and mothers from Somalia who had a migration date from 1990 or 2006 migration waves.</p>					
2 (Grandahl 2014, Seale 2012)	Semi-structured interviews	Parents of immunosuppressed children were concerned about potential adverse effects being exaggerated in immunosuppressed patients, while other parents whose children had medical issues	Not serious	Not serious	High	Moderate ²	Moderate

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		such as diabetes, asthma and allergies or had previously been exposed to numerous medical procedures were concerned that the vaccination would worsen these conditions.					
7 (Albert 2019, Cooper Robbins 2010b, Forster 2017, Gordon 2011, Grandahl 2014, Hilton 2011b, Mupandawana 2016)	Focus groups, interviews, and semi-structured interviews	Some parents (including Jewish and African parents and those from other ethnic minorities) questioned whether the vaccine was necessary. Some parents felt that because HPV is transmitted through sexual activity it could be prevented through abstinence, contraception or by only having one partner. Others believed that good general health and alternative medicine provided sufficient protection. In addition, some parents noted that they had not been vaccinated when they were younger and had come to no harm. Other parents thought that vaccination was unnecessary because cervical cancer could be detected using normal screening methods and treated.	Not serious	High	High	High	High
6 (Forster 2017*, Gordon 2011, Grandahl 2014, Henderson 2011, Hilton 2011a, Hilton 2011b)	Focus groups, interviews, and semi-structured interviews	Parents (including immigrants* and Jewish parents) and adolescent girls (including homeless young people) often felt that the vaccine was not effective enough to be worth risking any side effects. The HPV vaccine does not prevent all forms of HPV and does not provide completely protection against cervical cancer; some parents and adolescent girls felt this was not sufficient protection. Others questioned how long the vaccine would remain effective.	Not serious	High	High	High	High

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		* Immigrants included people living in the UK who were born in Bangladesh, Africa, Caribbean, Somalia, India or Pakistan					
Cervical cancer and HPV							
13 (Albert 2019, Batista Ferrer 2015, Cooper Robbins 2010b, Creed 2021, Gordon 2011, Henderson 2011, Hilton 2011a, Hilton 2013, Mupandawana 2016*, Racktoo 2009, Rockcliffe 2018, Seale 2012, Stretch 2009)	Focus groups, interviews, semi-structured interviews, and participant observation ¹	Parents (including Jewish and immigrant parents* and parents of immunosuppressed children), adolescent girls (including homeless young people) and nurses were all worried about cervical cancer. Most participants described their fear of cervical cancer and related this to their own or their loved ones' experiences of cancer or their awareness of the death of Jade Goody from this form of cancer. They often expressed these views in conjunction with willingness and enthusiasm for the HPV vaccine. School nurses took pride in the programme as a way of providing long lasting protection against cervical cancer. However, other parents were less concerned because they believed that cervical cancer is slow growing and treatable. * UK-based African parents from Zambia, Zimbabwe, Nigeria, South Africa and Kenya	Not serious	High	High	High	High
6 (Cooper Robbins 2010a, Gordon 2011, Hilton 2011b, Hilton 2013, Racktoo 2009, Seale 2012)	Focus groups, interviews, and semi-structured interviews	Many adolescent girls and parents (including Jewish parents and parents of immunosuppressed children) did not fully understand the link between HPV and cervical cancer. Some participants expressed confusion when they were presented with information about HPV. Many did not know whether the vaccination	Not serious	High	High	High	High

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		was against HPV or cervical cancer. There was also a lack of understanding about how HPV is transmitted and causes cervical cancer and how the vaccine protects people against this. Some parents attributed HPV infection to having a high number of sexual partners. Some parents explained their lack of knowledge by the tendency to defer responsibility to trusted sources.					
6 (Albert 2019, Batista Ferrer 2015, Hilton 2011b, Hilton 2013, Mupandawana 2016, Seale 2012)	Focus groups, semi-structured interviews, and participant observation ¹	Parents' (including African immigrant parents and parents of immunosuppressed children) and adolescent girls' perception of the risk of cervical cancer was mixed. Some parents believed the risk of cervical cancer was too low to be worth the risks of vaccination. Others felt that their child's specific risk was lower than most because they did not have a family history of this cancer or it was a disease seen in old women in their country of origin. Very few adolescent girls were aware that HPV was highly prevalent in the UK and they thought the threat was historical and/or low in the UK compared to developing countries. Some parents and adolescent girls however felt that any reduction in the risk of developing cancer was desirable.	Not serious	High	High	High	High
12 (Cooper Robbins 2010a, Dube 2019, Forster 2017*, Gordon 2011, Henderson 2011)	Focus groups, interviews, and semi-structured interviews	Many parents (including immigrant* and Jewish parents and parents of immunosuppressed children) and adolescent girls lacked knowledge about how HPV vaccination protects against cervical cancer. They incorrectly believed that the vaccine was fully effective and did	Not serious	High	High	High	High

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
Hilton 2011a, Hilton 2011b, Mupandawana 2016*, Racktoo 2009, Rockliffe 2018, Salad 2015*, Seale 2012)		<p>not realise that cervical smears are still required. In contrast, other parents (including some Jewish parents) and adolescent girls demonstrated knowledge and understanding of these issues.</p> <p>* Immigrants included people living in the UK who were born in Bangladesh, Africa, Caribbean, Somalia, India or Pakistan</p>					
Sexual health and HPV							
12 (Batista Ferrer 2015, Burns 2021, Cooper Robbins 2010a, Cooper Robbins 2010b, Creed 2021, Dube 2019, Forster 2017*, Grandahl 2014, Gordon 2011, Hilton 2011a, Mupandawana 2016*, Racktoo 2009, Wilson 2020)	Focus groups, interviews, semi-structured interviews, and participant observation ¹	<p>Parents (including immigrant* and Jewish parents) often felt uncomfortable discussing sexuality with their child and questioned the age chosen for the HPV vaccine, although they disagreed about what would be a more appropriate age. They also underestimated the prevalence of HPV infection.</p> <p>Some parents felt that their children were too young and not sexually active, and that the vaccination should be given at an older age when parents could more easily discuss sexual health risks with their children. Others felt that it should be given at a younger age, so they could avoid any discussion of sex or because they were aware of younger girls having sex. Few understood the reason for the vaccination being given to the specific age group on the routine schedule. In addition, some parents thought the vaccine was for older girls, who had already had sex, while other parents thought girls could not get the vaccine after becoming sexually active.</p>	Not serious	High	High	High	High

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		<p>School nurses thought that targeting girls as young as 12 was appropriate as some became sexually active at this age, but they were in favour of extending the upper age to the early twenties for young women who had not been vaccinated.</p> <p>* Immigrants included people living in the UK who were born in Bangladesh, Africa, Caribbean, Somalia, India or Pakistan</p>					
10 (Albert 2019, Batista Ferrer 2015, Burns 2021, Cooper Robbins 2010b, Forster 2017*, Gordon 2011, Grandahl 2014, Hilton 2011a, Mupandawana 2016*, Rockcliffe 2018)	Focus groups, interviews, semi-structured interviews, and participant observation ¹	<p>Parents (including Jewish and immigrant* parents) linked HPV vaccination to sexual activity and this negatively affected their decision to vaccinate their child. Many parents predicted that adolescent girls would have more sex and take more sexual risks if they believed they were protected against HPV. They feared that vaccination would encourage unsafe sexual practices or a false sense of security about other sexually transmitted infections. School nurses were aware of these parental concerns. Many immigrant parents believed that their child would have few sexual partners or would not be sexually active until they were older, therefore reducing the need to vaccinate. However, other parents did not think about HPV vaccination in relation to their daughter's morals but recognised that they could be infected with HPV by their partner and consented to vaccination to protect their daughter from male promiscuity.</p>	Not serious	High	High	High	High

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		* Immigrants included people living in the UK who were born in Bangladesh, Africa, Caribbean, Somalia, India or Pakistan					
Information and influences							
7 (Batista Ferrer 2015, Doroshenko 2012, Forster 2017*, Hilton 2011a, Mupandawana, 2016, Paterson 2019, Rockliffe 2018)	Focus groups, interviews, semi-structured interviews, and participant observation ¹	<p>Healthcare professionals are willing to provide information and advice about vaccinations and this is taken up by some parents (including immigrant parents) and adolescent girls (including homeless young people) where it is available. However, some homeless young people stated that their healthcare providers did not talk to them about vaccinations and this was a key reason for them not being vaccinated.</p> <p>School nurses noted that when they offered to discuss vaccinations few parents contacted them. They also thought that parent information sessions in schools would be ineffective because these would be attended by those least in need of information while the hard to reach parents would not attend.</p> <p>* Immigrants included people living in the UK who were born in Bangladesh, Africa, Caribbean, Somalia, India or Pakistan</p>	Not serious	High	High	High	High
1 (Creed 2021)	Semi-structured interviews	Parents reported that GPs are the strongest positive influence on their decision to vaccinate. Many said they would prefer advice from their GP than other healthcare professionals	Serious ⁵	High	High	Low ⁴	Very low

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
2 (Doroshenko 2012, Gradahl 2014,)	Semi-structured interviews and focus groups	Some parents did not trust or feel supported by the school nurse and wanted more information than they felt the nurse was competent to provide. In contrast, homeless young people based their decision to be vaccinated on recommendation from trusted healthcare professionals.	Not serious	High	High	Low ⁴	Low
5 (Albert 2019, Batista Ferrer 2015, Dube 2019, Kennedy 2014, Racktoo 2009)	Focus groups, semi-structured interviews, and participant observation ¹	<p>Adolescent girls and their parents want and expect that information about HPV vaccination will be covered in school lessons. School staff and nurses described how they present information about HPV and the vaccine to adolescent girls through school assemblies and in health and sex education lessons. However, some teachers were not comfortable talking about the vaccine, promoting its use or able to answer students' questions.</p> <p>Some adolescent girls reported receiving information about HPV vaccination at school and finding it useful, but others did not feel that school lessons had been sufficiently informative, and the amount of information provided appears to be highly variable between schools.</p>	Not serious	High	High	High	High
10 (Batista Ferrer 2015, Burns 2021, Gordon 2011, Grandahl 2014, Henderson 2011,	Focus groups, interviews, semi-structured interviews, and	Written information about HPV vaccination is often perceived to be inadequate by parents and adolescent girls (including immigrant* and Jewish parents). Some people found the written information provided for by schools and the NHS website useful, but many parents and adolescent girls criticised it for being	Not serious	High	High	High	High

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
Hilton 2011b, Kennedy 2014, Mupandawana 2016*, Racktoo 2009, Rockliffe 2018)	participant observation ¹	<p>uninformative, unengaging, or pro-vaccine biased and some thought it left them with more questions than answers. It was suggested that information should be provided in different formats, such as videos, podcasts and via social media.</p> <p>Some parents looked for more information elsewhere. Parents also complained that the information provided by the school was mainly concerned with logistics of the vaccination process rather than about the vaccine and why it was needed.</p> <p>* Immigrants included people living in the UK who were born in Zambia, Zimbabwe, Nigeria, South Africa and Kenya</p>					
13 (Batista Ferrer 2015, Cooper Robbins 2010b, Creed 2021, Dube 2019, Forster 2017*, Gordon 2011, Hilton 2011b, Hilton 2013, Kennedy 2014, Mupandawana 2016*, Paterson 2019, Racktoo 2009, Rockliffe 2018)	Focus groups, interviews, semi-structured interviews, and participant observation ¹	<p>Family, friends and the media can influence parents' decisions to vaccinate their children. Some parents (including immigrants* and Jewish parents) discussed the decision to vaccinate with the child's other parent, or their own parents and other family members or sought the opinions of other parents they knew, or friends in their community to guide them. Young people reported that familial indifference was a barrier to vaccination. They also reported feeling social pressure to be vaccinated.</p> <p>The media was also influential, as there had been a lot of media coverage when the vaccine was introduced. School nurses, parents (including immigrant and Jewish parents) and adolescent girls made</p>	Not serious	High	High	High	High

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		<p>references to Jade Goody, a celebrity who died of cervical cancer in 2009. Parents also cited the death of a schoolgirl following HPV vaccination as influential in their decision making (her death was later shown to be unrelated to the vaccination). However, other parents recalled positive messages they had heard in the media. Some thought that although media coverage is often negative, it is now starting to become more positive.</p> <p>* Immigrants included people living in the UK who were born in Bangladesh, Africa, Caribbean, Somalia, India or Pakistan</p>					
Consent							
10 (Albert 2019, Batista Ferrer 2015, Chantler 2019a, Gordon 2011, Grandahl 2014, Hilton 2013, Kennedy 2014, Racktoo 2009, Rockliffe 2018, Stretch 2009)	Focus groups, interviews, semi-structured interviews, and participant observation ¹	The young person's consent is considered important but may not be possible to obtain fully in practice. Many parents (including Jewish parents), adolescent girls and nurses felt that the young person's views should be part of the decision to vaccinate. Many advocated giving the young person the choice and some parents made a conscious effort to help their daughters make an informed choice by discussing the issues with them. However, some parents felt their daughter may not have the maturity to understand their choice, and other parents talked about the importance of gaining consent but made the decision themselves in the end. Some parents wanted to give their daughter the choice but postponed the decision (and vaccination) because they thought she was	Not serious	High	High	High	High

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		<p>too young and would decide for herself later on.</p> <p>Gillick and Fraser competency was discussed by nurses and vaccine providers, who felt that it was difficult to judge clearly whether a young person met the criteria to consent for themselves.</p>					
8 (Batista Ferrer 2015, Cooper Robbins 2010b, Gordon 2011, Hilton 2011a, Hilton 2011b, Hilton 2013, Kennedy 2014, Stretch 2009)	Focus groups, interviews, semi-structured interviews, and participant observation ¹	<p>The parent's consent is considered crucial. Many parents (including Jewish parents) and healthcare professionals felt that the parent's views are the most important factor. Some parents consider it to be solely their decision and did not discuss it with the young person. Others viewed it as a collaborative decision in discussion with their daughters. However, when disagreements arose, they were most often resolved by the parent's decision.</p> <p>Gillick and Fraser competency were discussed by healthcare professionals. Most felt these would not be sufficient for a vaccination to go ahead against the parent's wishes.</p>	Not serious	High	High	High	High
6 (Batista Ferrer 2015, Cooper Robbins 2010c, Dube 2019, Grandahl 2014, Paterson 2019, Rockliffe 2018)	Focus groups, semi-structured interviews, and participant observation ¹	Obtaining written consent for vaccination from parents can be difficult. Nurses and healthcare professionals often described difficulties in obtaining written consent from parents as a barrier to vaccination. In these cases it is not clear whether a parent refuses to give consent or has not had the option to consent because there are many opportunities for the consent form to be misplaced in transit between the school,	Not serious	High	High	High	High

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		<p>the young person and the parent or there may be a lack of communication if parents are working long hours.</p> <p>If the parent does not consent this may be due to a lack of understanding of the information provided; short decision times (linked to parent feeling rushed and unable to seek out more information); low levels of literacy and language issues. In other cases, incorrectly completed consent forms can cause delays in vaccination.</p> <p>In contrast, some parents give consent passively and this response may be due to competing demands on their time.</p>					
Implementation of the vaccination programme							
5 (Brabin 2011, Dube 2019, Hilton 2011a, Paterson 2019, Stretch 2009)	Interviews, semi-structured interviews, and participant observation ¹	Nurses struggle with competing time commitments that reduce their ability to promote and provide vaccinations. Nurses frequently described lacking time to engage fully with the vaccination programme including delivering educational/information sessions and chasing up consent forms. Some nurses provided many different services within schools and felt they lacked the capacity to provide vaccinations as well. Others felt their primary nursing duties suffered when they were dedicating a large portion of their time to delivering vaccines.	Not serious	High	High	High	High
5 (Batista Ferrer 2015, Boyce 2012, Brabin 2011,	Focus groups, interviews, semi-	Nurses actively tried to ensure that adolescent girls did not miss their opportunity to be vaccinated. These actions included following up families that	Not serious	High	High	High	High

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
Paterson 2019, Rockliffe 2018)	structured interviews, and participant observation ¹	did not return consent forms and signposting adolescent girls who missed their vaccination to other services that could provide it. Nurses felt these actions improved uptake, but they did not always have time to do it. In some cases, the nurses also reported holding additional clinics for girls who were not in school or poor attenders off the school premises or outside of school hours.					
3 (Brabin 2011, Hilton 2011a, Rockliffe 2018)	Focus groups and semi-structured interviews	Teamwork and good working relationships were important for successful vaccination programmes. Teamwork was frequently alluded to by nurses as having a large influence on their ability to deliver the vaccination programme effectively. Those who had a good relationship with schools and their staff felt they were more effective than those who experienced barriers in coordinating with colleagues. However, some nurses reported that some schools could be uncooperative and unsupportive of the vaccination programme.	Not serious	High	High	Moderate ³	Moderate
1 (Paterson 2019)	Participant observation ¹ and semi-structured interviews	Having dedicated administrative staff within teams was also viewed as key to effective HPV programme delivery, as were good working relationships within the CHIS team, and between the CHIS and the immunization team.	Not serious	High	High	Moderate ²	Moderate
1 (Rockliffe 2018)	Focus groups	Some girls do not receive both doses of the HPV vaccination. School nurses thought this could be for a number of reasons including girls being absent on the day of vaccination; having a negative reaction after the first dose (e.g., feeling	Not serious	High	High	Low ⁴	Low

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		unwell or developing a rash); having a particularly negative experience (e.g., experiencing a lot of pain) or moving schools or areas between doses. They also thought that some parents may change their mind between doses as they do more research into the topic.					
1 (Cooper Robbins 2010c)	Semi-structured interviews	Levels of anxiety can be reduced by identifying and vaccinating anxious adolescent girls early, by reducing the numbers waiting and having supportive teachers and nurses. Some schools identified anxious girls based on their previous experiences or parent's report and vaccinated them early in the day. This prevented them making their peers anxious too. In addition, having fewer girls waiting reduced noise and anxiety and meant they waited for less time. This was achieved by having someone (a teacher or student) let the next class know when it was time to arrive. Finally, nonchalant attitudes to the vaccination process can also increase anxiety and this is reduced if teachers and nurses appear more caring and supportive.	Not serious	High	High	Low ⁴	Low
Roles in the vaccination programme							
2 (Hilton 2011a, Rockcliffe 2018)	Semi-structured interviews and participant observation ¹	Nurses expect support and transparent decisions from the NHS and the government about vaccinations. They expressed frustration when they perceived decisions to be unclear or inappropriate and wanted support from the local authority.	Not serious	High	High	Low ⁴	Low

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
3 (Boyce 2012, Brabin 2011, Hilton 2011a)	Semi-structured interviews	Nurses and school staff felt that nurses were best placed to implement vaccination programmes because they have built a relationship with the school and students. They thought that having a dedicated school nurse improved the vaccination programme and increased uptake.	Not serious	High	High	Moderate ³	Moderate
6 (Batista Ferrer 2015, Brabin, 2011, Cooper Robbins 2010c, Dube 2019, Paterson 2019 Rockliffe 2018)	Focus groups, semi-structured interviews	<p>Some nurses felt that schools should take an active role in implementing the vaccination programme by providing staff to attend the vaccination sessions. Having a nominated person was highlighted as important in promoting and facilitating the vaccination sessions and it was helpful to have school staff to collect and supervise the children while they wait for their vaccinations</p> <p>The nurses felt that vaccination was a shared responsibility between themselves and the school staff. They reported that some schools were unsupportive and less willing to facilitate the vaccination programme. In addition, they mentioned that they sometimes encountered difficulties in securing appropriate facilities to run immunisation clinics.</p> <p>However, school staff reported difficulties in scheduling time for multiple vaccination clinics in the school calendar and with the minimum disruption to lessons. There were also competing demands on suitable rooms to hold the vaccinations (due to exams for example).</p>	Not serious	High	High	High	High

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
1 (Copper Robbins 2010c)	Semi-structured interviews	Teachers and schools can play an important role in communicating information about vaccinations to girls and parents, helping ensure consent forms are completed and that the girls wear suitable clothes to make vaccination easy on the day.	Not serious	High	High	Low ⁴	Low
2 (Cooper Robbins 2010b, Cooper Robbins 2010c)	Semi-structured interviews	Parents appreciated the convenience of having their children vaccinated at school and were influenced positively if the school was committed to the vaccination programme.	Not serious	High	High	Low ⁴	Low
Religious and cultural differences							
7 (Batista Ferrer 2013, Burns 2021, Forster 2017*, Gordon 2011, Mupandawana 2016*, Rubens-Augustson 2019, Salad 2015*)	Focus groups, interviews, semi-structured interviews, and participant observation ¹	Some parents (including immigrant* and Jewish parents) felt that people from their culture are at a lower risk from HPV. Some parents cited cultural practices or traditions as protective against HPV, or simply felt that the prevalence was lower in their ethnic group. In particular, several of these parents believed that their daughters or sons would be less likely to engage in risky or pre-marital sexual activity due to their culture being more sexually conservative than western culture. * Immigrants included people living in the UK who were born in Bangladesh, Africa, Caribbean, Somalia, India or Pakistan and mothers from Somalia who had a migration date from 1990 or 2006 migration waves.	Not serious	High	High	High	High
2 (Mupanawana 2016*, Salad 2015*)	Focus groups, interviews, and semi-	African immigrant parents* reported that decisions to vaccinate are frequently made solely by one parent, usually the father. In some cultures, the decision to vaccinate	Not serious	High	High	Moderate ²	Moderate

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
	structured interviews.	<p>may not be discussed within the family or with others outside the community. The young person's consent was considered less important in these instances.</p> <p>* Immigrants included African parents living in the UK and mothers from Somalia who had a migration date from 1990 or 2006 migration waves.</p>					
4 (Batista Ferrer 2015, Mupandawana 2016*, Rubens-Augustson 2019, Salad 2015*)	Focus groups, interviews, semi-structured interviews, and participant observation ¹	<p>Immigrant parents* often compared the UK to their country of origin when forming opinions. Some parents were mistrustful and believed conspiracy theories about vaccines making people sterile and AIDS being imported to Africa from white countries. However, healthcare providers noted that newly arrived in particular were more open to vaccination perhaps due to their more recent experience of infectious diseases.</p> <p>* Immigrants included African parents living in the UK and mothers from Somalia who had a migration date from 1990 or 2006 migration waves.</p>	Not serious	High	High	Moderate ²	Moderate
5 (Forster 2017*, Gordon 2011, Mupandawana 2016*, Rockcliffe 2018, Salad 2015*)	Focus groups, interviews, and semi-structured interviews	<p>Parents (including Jewish and immigrant* parents) use their religious beliefs as part of the decision-making process. Some parents' religious beliefs influenced them to accept the vaccination, citing reverence for life as a key belief. Others felt that vaccinations conflicted with their religion because health and illness are determined by God, or that their religion made the HPV</p>	Not serious	High	High	High	High

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		<p>vaccination unnecessary because it prohibits pre-marital sex.</p> <p>* Immigrants included people living in the UK who were born in Bangladesh, Africa, Caribbean, Somalia, India or Pakistan and mothers from Somalia who had a migration date from 1990 or 2006 migration waves.</p>					
5 (Boyce 2012, Gordon 2011, Mupandawana 2016*, Rockliffe 2018, Rubens-Augustson 2019)	Interviews and semi-structured interviews	<p>A tailored approach to vaccination would benefit parents including Jewish and immigrant* parents. Some parents from religious or cultural backgrounds would prefer to receive information tailored to their community. They felt that guidance from people within their community would be better suited to address their specific concerns.</p> <p>* Immigrants included African parents living in the UK</p>	Not serious	High	High	High	High
6 (Batista Ferrer 2015, Cooper Robbins 2010b, Dube 2019, Rockliffe 2018, Rubens-Augustson 2019, Salad 2015*. Wilson 2020)	Focus groups, semi-structured interviews, and participant observation ¹	<p>Language and literacy can be a barrier to accessing written information and gaining informed consent. Immigrant parents* who spoke English as a second language stated that they were unable to understand the written information they were given about the vaccine. Some relied on their child to explain it while others sought information in their own language. Parents may also be unaware of the availability of information in languages other than English if this not publicised.</p>	Not serious	High	High	High	High

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		* Immigrants were mothers from Somalia who had a migration date from 1990 or 2006 migration waves.					
Barriers arising from complex circumstances							
2 (Boyce 2012, Doroshenko 2012)	Focus groups and semi-structured interviews	Homeless young people face specific barriers to vaccination. Homeless young people often missed school-based vaccinations as many were unable to attend school regularly or at all. Nurses considered them to be hard to reach.	Not serious	High	High	Moderate ²	Moderate
1 (Doroshenko 2012)	Focus groups	Vaccination is a low priority for homeless young people. Young people who missed their routine vaccination said they would be willing to accept a vaccination but not actively seek an opportunity to have it. They considered it to be a very low priority compared to their immediate needs	High	Low ⁴	High	Moderate ²	Very low
1 (Rubens-Augustson 2019)	Semi-structured interviews	Nurses recognise that newly arrived migrant parents and young people in Canada face numerous barriers to vaccination. They often do not have records of their medical history and lack knowledge of what healthcare is available and how to access it. Language difficulties also exist, and some nurses had difficulty communicating information about vaccinations and therefore obtaining informed consent. The nurses felt they did not have time to dedicate to this issue amongst other priorities.	Not serious	High	High	Moderate ²	Moderate
1 (Boyce 2012)	Semi-structured interviews	Young people in complex circumstances can be difficult to reach for vaccination and extra effort is required from nurses. Nurses felt that young people with learning difficulties, looked after children, and the	Not serious	High	High	Moderate ²	Moderate

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		children of travellers and gypsies are particularly difficult to reach and so often miss out on vaccinations. Nurses noted that additional efforts were needed to build trusting relationships with parents and young people and encourage them to accept the vaccination. This required persistence, flexibility, and co-ordination with social services colleagues.					
Vaccinating boys for HPV							
1 (Grandahl 2019)	Semi-structured interviews	Boys believed that girls were prioritised for vaccination due to the risk of cervical cancer but thought that boys should also be offered the vaccine if it could benefit them too. Some also thought that there was a responsibility for them to protect their partner against STIs.	Not serious	High	High	Moderate ²	Moderate
1 (Grandahl 2019)	Semi-structured interviews	Boys had limited knowledge of HPV and the vaccine and stated that they wanted more information. They wanted the information to be from someone they trust, such as the school nurse and school health services. There were mixed views on the best way to present this information, whether it was face-to-face, in individual sessions or in writing. They thought that education about HPV should begin from an early age, starting in primary school.	Not serious	High	High	Moderate ²	Moderate
1 (Grandahl 2019)	Semi-structured interviews	There were mixed views about the HPV vaccine. Some boys were happy to have the vaccine while others were concerned about side effects	Not serious	High	High	Moderate ²	Moderate

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
2 (Perez 2015 Gottvall 2017)	Semi-structured interviews and an open-ended questionnaire question	Many parents were unaware that HPV vaccination could be given to boys. Similar to parents considering vaccination for girls, some were distrustful of pharmaceutical companies and wanted more information about the side effects and/or long-term effects having heard negative stories in the media.	Serious ¹	High	High	Moderate ²	Low
2 (Gottvall 2017, Perez 2015)	Semi-structured interviews, an open-ended questionnaire question	Some parents thought that vaccinating boys for HPV was unnecessary as they cannot have cervical cancer. Very few seemed aware that HPV could cause cancer in boys too and that they could transmit the virus to their sexual partners. However, some parents felt that vaccinating all young people would offer greater protection against cervical cancer in the population were aware that vaccinating both sexes would reduce HPV related disease such as throat and oral cancers, in boys.	Serious ¹	High	High	Moderate ²	Low
2 (Dube 2019, Gottvall 2017)	Semi-structured interviews	Many of the parents were in favour of a gender-neutral vaccination programme for HPV. Some parents thought that a female only programme pushed the responsibility for sexual and reproductive health onto girls. Parents who had declined to vaccinate their daughters said they might be persuaded to vaccinate girls (and boys) if offered to both. Healthcare staff reported that making the HPV programme gender neutral facilitated vaccination of girls because there was less stigma attached to a programme targeting both sexes, but that they had to more	Not serious	High	High	Moderate ²	Moderate

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		parents to talk now and had to spend time justifying why boys were included.					
Catch-up campaigns							
1 (Seok 2018)	Semi-structured interviews	Practice nurses felt unsupported after being delegated responsibility for the Men ACWY catch-up campaign. Other staff either were not aware of the campaign or did not give it priority because it is not a targeted vaccine.	Not serious	High	High	Moderate ⁴	Low
1 (Seok 2018)	Semi-structured interviews	One of the main issues identified with the campaign was getting young people into the practice as many people were unaware of the opportunity for vaccination, particularly as the campaigns often highlighted it as a vaccine for people starting university. Some also thought that the vaccine catch-up can easily be overlooked because it is offered at a time when a young person can be going through a lot of life changes. Some nurses had concerns about the use of opportunistic vaccination as this gave limited time for discussion with the young person.	Not serious	High	High	Moderate ⁴	Low
1 (Seok 2018)	Semi-structured interviews	Practice nurses reported that school leavers tended to accept the Men ACWY vaccine when they were offered it in the GP practice. However, they stated that some young people still preferred to discuss the vaccination with their parents or carers, and this could lead to them leaving the practice and not returning to be vaccinated.	Not serious	High	High	Moderate ⁴	Low
1. Data was not extracted for the participant observation component of the study.							

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
2.							Finding was downgraded once for adequacy because it was supported by very few studies (1-2 studies) but it was not downgraded further because it contained at least one highly detailed study that provided rich data for the issue identified or population of interest.
3.							Finding was downgraded once for adequacy because it was reported in a small number of studies (3-4 studies) that were not particularly detailed or rich in the results that fed into this finding.
4.							Finding was downgraded twice for adequacy because it was supported by very few studies (1-2 studies) that were not particularly detailed or rich in the results that fed into this finding.
5.							Finding was downgraded once for being at moderate risk of bias.

F.3 Pregnancy

2 Note: in this review the term pregnant woman is used to include women who are pregnant as well as transgender or non-binary people who are
3 pregnant. This terminology is used to maintain consistency with NHS websites.

4 **Table 14 Barriers to and facilitators for the vaccination of pregnant women**

Studies	Study design	Finding	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
Access							
4 (Gauld 2016, Gauld 2020, Maisa 2018, Winslade 2017)	Semi-structured and structured interviews	Some pregnant women say that getting vaccinated at their GP's surgery is convenient because they attend for other reasons too. Other pregnant women say that having the vaccinations at antenatal appointments or at a community pharmacy would be more convenient than attending a GP surgery, but not all women believe that vaccines can be delivered at community pharmacies.	Not serious	High	High	Moderate ²	Moderate
1 (Gauld 2020)	Semi-structured and structured interviews	GPs and midwives not informing pregnant women about all the available locations to access maternal vaccinations (such as at a pharmacy) could reduce access to vaccinations	Not serious	High	High	Low ⁴	Low
Acceptability							
1 (Gauld 2016)	Structured interviews	Pregnant women say that telephone reminders from midwives are influential in convincing them to accept vaccines.	Serious ¹	High	High	Low ⁴	Very low
1 (Kaufman 2019)	Semi-structured interviews	Midwives say that most pregnant women automatically accept the vaccines that they discuss and/or offer.	Serious ¹	High	High	Low ⁴	Very low
1 (Gauld 2016)	Structured interviews	A pregnant women's occupations can influence vaccine acceptability (for example, a teacher could be exposed to pertussis by	Serious ¹	High	High	Low ⁴	Very low

Studies	Study design	Finding	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		pupils, which might make her more likely to accept vaccination, and hospital employees can discuss vaccines with colleagues).					
2 (Maisa 2018, Winslade 2017)	Semi-structured interviews, focus group	Having more than 1 vaccination at once during pregnancy is more convenient and could increase uptake.	Not serious	High	High	Low ⁴	Low
1 (Frawley 2020)	Semi-structured interviews	Midwives say that nothing will persuade some pregnant women to accept vaccinations if they have already made up their mind. This is the case even when there is continuity of care and advice is given by a midwife who the pregnant woman is used to seeing.	Not serious	High	High	Low ⁴	Low
Trust							
10 (Frawley 2020, Gauld 2020, Maisa 2018, Mijovic 2021, O'Shea 2018, Skirrow 2021, Webb 2014, Wilson 2019, Wiley 2015, Winslade 2017)	Semi and unstructured interviews, focus groups	Pregnant women say that they trust their GP, midwives and pharmacists. Midwives and pregnant women say that continuity of care is beneficial in building trust which helps with discussing vaccines and having them administered. Midwives say this is the most persuasive method they are aware of. A lack of continuity of care can waste time by repeating discussions or reducing time for discussions and this can make midwives feel rushed.	Not serious	High	High	High	High

Studies	Study design	Finding	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
Vaccine safety, effectiveness and assessment of risk							
6 (Gauld 2016, Maisa 2018, O'Shea 2018, Winslade 2017, Donaldson 2015, Wilson 2019)	Structured, semi-structured and unstructured interviews, focus groups, analysis of open-ended survey questions	Some pregnant women believe that vaccines could harm their unborn child. In addition, some staff had reservations about the safety of the dTaP/IPV vaccine. However, other women, maternity assistants, midwives, and neonatal care nurses trust that vaccines would not be offered to pregnant women unless they were safe.	Not serious	High	High	High	High
7 (Maisa 2018, Wiley 2015, Winslade 2017, O'Shea 2018, Wilson 2019, Donaldson 2015, Skirrow 2021)	Focus groups, semi-structured interviews, unstructured interviews, analysis of open-ended survey questions	Some pregnant women, maternity assistants, midwives, paediatric nurses, obstetricians and gynaecologists think vaccines are effective and were concerned that if pregnant women did not get vaccinated, their unborn child might come to harm. Midwives, obstetricians and gynaecologists agree that vaccines are effective. Some pregnant women think that there is insufficient evidence for vaccine effectiveness. In addition, some pregnant women think that vaccines affect different populations of people differently.	Not serious	High	High	High	High
3 (Mehrotra 2017, Gauld 2016, Donaldson 2015)	Structured and semi-structured interviews, focus groups, analysis of open-ended	Parents, obstetricians, gynaecologists, maternity assistants, midwives, and neonatal care nurses agree that pertussis infection is potentially lethal, but some physicians thought that the prevalence of pertussis was low within their communities and therefore did not warrant the same degree of attention as other vaccinations.	Serious ¹	High	High	Moderate ²	Low

Studies	Study design	Finding	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
	survey questions						
1 (Skirrow 2021)	Semi-structured interviews	Some pharmacists and midwives were in favour of wider access to vaccinations but were unsure of the safety of providing vaccines in other settings, such as pharmacies	Not serious	High	High	Low ⁴	Low
1 (Gauld 2020)	Semi-structured interviews	Some participants had previous experience of a disease and this informed their decision to be vaccinated	Not serious	High	High	Low ⁴	Low
Gaining consent and vaccination delivery							
4 (Frawley 2020, Wilson 2019, Kaufman 2019, Winslade 2017)	Semi-structured and unstructured interviews	Midwives and pregnant women agree that time pressures make it harder to discuss, gain consent for and carry out vaccinations. Some midwives say they lack dedicated time for obtaining consent.	Not serious	High	High	Moderate ²	Moderate
2 (Mehrotra 2017, Kaufman 2019)	Semi-structured interviews	Midwives are not equipped to routinely vaccinate pregnant women and obstetricians and gynaecologists do not stock and administer vaccines. The obstetricians and gynaecologists refer pregnant women to GPs to get vaccinated	Serious ¹	High	High	Low ⁴	Very low
1 (Wilson 2019)	Unstructured interviews	In some cases, midwives and GPs wrongly assume that another healthcare professional has administered the vaccine.	Not serious	High	High	Low ⁴	Low
Training needs							
3 (Frawley 2020, Kaufman 2019,	Semi-structured interviews	Midwives believe that discussing vaccines with pregnant women requires good knowledge and communication skills. They feel that they are not adequately trained with regards to the benefits and potential harms of vaccines and	Not serious	High	High	Low ⁴	Low

Studies	Study design	Finding	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
Mijovic 2020)		that communication skills training would be useful in helping them effectively communicate this information.					
1 (Wilson 2019)	Unstructured interviews	Midwives say that they are not trained to administer vaccines.	Not serious	High	High	Low ⁴	Low
Lack of information, timing and information overload							
3 (Wiley 2015 and O'Shea 2018, Donaldson 2015)	Semi-structured interviews, analysis of open-ended survey questions	Some pregnant women are not aware that vaccines are part of routine healthcare during pregnancy.	Not serious	High	High	Moderate ²	Moderate
5 (Wilson 2019, Kaufman 2019, Winslade 2017, Donaldson 2015, Mijovic 2020)	Semi-structured, unstructured interviews, focus groups, analysis of open-ended survey questions	Some maternity assistants, midwives, and paediatric nurses say they lack knowledge about maternal vaccines including the diseases they prevent and side effects, and do not have access to easily understandable information to give to pregnant women. Some pregnant women also think that midwives do not know enough about vaccines in order to adequately discuss them or answer questions.	Not serious	High	High	High	High
2 (Maisa 2018, Mehrotra 2017)	Focus groups and semi-structured interviews	Some obstetricians and gynaecologists, maternity assistants, midwives and paediatric nurses believe that there is not enough evidence to recommend vaccines to pregnant women and some pregnant women believe that the reason healthcare professionals do not give information about vaccines is because there is not much information on vaccines to be had.	Not serious	High	High	Low ⁴	Low

Studies	Study design	Finding	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
1 (Winslade 2017)	Semi-structured interviews	Pregnant women say that they liked to idea of being given a pregnancy checklist to help them keep track of things they need to do, such as having vaccinations.	Serious ¹	High	High	Low ⁴	Very low
1 (Kaufman 2019)	Semi-structured interviews	Some midwives say that pregnant women want to know whether they should have vaccines, when they should have them and who will be giving them.	Serious ¹	High	High	Low ⁴	Very low
3 (Kaufman 2019, Winslade 2017, Donaldson 2015)	Semi-structured interviews, analysis of open-ended survey questions	Some pregnant women say that information on vaccines should be given to them throughout pregnancy so they have time to read them and organise vaccinations, while others say that they are so busy that they often do not have time to look at information on vaccines that is given to them. Some midwives say that pregnant women are given a lot of information during pregnancy.	Serious ¹	High	High	Moderate ²	Low
Sources of information: official sources							
3 (Kaufman 2019, Wiley 2015, Frawley 2020)	Semi-structured interviews	Midwives say that they direct pregnant women to evidence-based information on vaccines and that they would like an official website to be created that has appropriate information on vaccines for pregnant women. Some pregnant women say they trust official sources of information more than others.	Not serious	High	High	Moderate ²	Moderate
Sources of information: the media and online, including social media and apps							
4 (Gauld 2016, Wilson 2019, Kaufman 2019, O'Shea 2018)	Structured, semi-structured and unstructured interviews.	Midwives and pregnant women agree that the TV and news reports can be a source of positive messages to encourage vaccination. However, some pregnant women say that other media stories suggest vaccines do harm and discourage vaccination.	Not serious	High	High	Moderate ²	Moderate

Studies	Study design	Finding	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
2 (Wiley 2015, Maisa 2018)	Semi-structured interviews and focus groups	Pregnant women say that they use Google to search for information about vaccines, but they do not trust advice on the internet that appears to be biased too heavily either in favour or against vaccines. They would prefer a balanced account.	Not serious	High	High	Low ⁴	Low
1 (Kaufman 2019)	Semi-structured interviews	Some midwives say that there is a lot of mis-information on vaccines that saturates social media, while others are unaware of this problem.	Serious ¹	High	High	Low ⁴	Very low
Sources of information: printed materials, such as leaflets							
4 (Frawley 2020, Wilson 2019, Webb 2014, Kaufman 2019)	Semi-structured and unstructured interviews	Midwives say that being able to give leaflets about vaccines to pregnant women is useful and that they have they have leaflets and other materials. However, some midwives do not give these leaflets out because pregnant woman are given many other leaflets.	Not serious	High	High	Moderate ²	Moderate
2 (Maisa 2018, Winslade 2017)	Focus groups, semi-structured interviews	Not all pregnant women say that they read the leaflets they have been given and some would prefer the opportunity to discuss vaccines with healthcare professionals rather than being given information.	Not serious	High	High	Low ⁴	Low
Sources of information and influence: discussing vaccination with healthcare providers							
3 (Kaufman 2019, Webb 2014, Winslade 2017)	Semi-structured interviews	Some midwives agree that discussing maternal vaccines are an important part of their role and are willing to spend time doing this, while others think this is a topic for doctors to deal with or that discussing vaccines with pregnant women made them appear less trustworthy. Pregnant women say that they would like the opportunity to discuss vaccines with a midwife.	Not serious	High	High	Moderate ²	Moderate

Studies	Study design	Finding	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
2 (Mehrotra 2017, Webb 2014)	Semi-structured interviews	Some obstetricians and gynaecologists do not routinely discuss vaccinations with pregnant women and say that vaccines are not on their list of top priorities or that they do not feel responsible for vaccinating pregnant women.	Not serious	High	High	Low ⁴	Low
1 (O'Shea 2018)	Semi-structured interviews	Pregnant women say that midwives and obstetricians do not discuss vaccines enough in hospitals.	Not serious	High	High	Low ⁴	Low
6 (Maisa 2018, Wilson 2019, Gauld 2016, O'Shea 2018, Winslade 2017, Donaldson 2015)	Semi-structured, structured, unstructured interviews, focus groups, analysis of open-ended survey questions	Pregnant women say that healthcare professionals do not initiate conversations about vaccines or discuss vaccines, including the pertussis vaccine, with them very much or at all.	Not serious	High	High	High	High
2 (Wilson 2019, O'Shea 2018)	Semi-structured interviews, unstructured interviews	Healthcare professionals mention vaccines to pregnant women rather than discuss them but pregnant women who did not discuss vaccines with a healthcare professional were unlikely to be vaccinated.	Not serious	High	High	Low ⁴	Low
1 (Kaufman 2019)	Semi-structured interviews	Midwives say that they discuss vaccines many times throughout each woman's pregnancy and they also discuss childhood vaccines. However, they discuss vaccines for childhood less frequently because they feel that mothers will have further opportunities to discuss childhood vaccines.	Serious ¹	High	High	Low ⁴	Very low
4 (Wilson 2019,	Unstructured and semi-	GPs, midwives, and practice nurses said that they are generally pro-vaccine. Obstetricians	Not serious	High	High	Moderate ²	Moderate

Studies	Study design	Finding	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
Frawley 2020, Winslade 2017, Kaufman 2019)	structured interviews	and gynaecologists recommend vaccines to pregnant women. However, some midwives believe that other midwives are against vaccines. Pregnant women agree that midwives encourage them to be vaccinated.					
1 (Frawley 2020)	Semi-structured interviews	Midwives say that they support the decisions that pregnant woman make – even if they do not want to be vaccinated.	Not serious	High	High	Low ⁴	Low
2, (Maisa 2018, Winslade 2017)	Semi-structured interviews, focus groups	Pregnant women say that midwives can discourage them from being vaccinated by being too relaxed about the importance of being vaccinated.	Not serious	High	High	Low ⁴	Low
1 (Wilson 2019)	Unstructured interviews	Pregnant women who are young, single and/or unemployed sometimes report feeling judged by healthcare professionals or feel that their concerns are dismissed. Others say they feel pressurised to accept the vaccines because midwives sometimes mention social workers. However, other pregnant women who are in precarious or marginalised situations want healthcare professionals to make decisions on their behalf because they feel unable to do so themselves.	Not serious	High	High	Low ⁴	Low
Sources of information and influence: friends and relatives							
4 (Wilson 2019, Winslade 2017, Gauld 2016, Maisa 2018)	Structured, unstructured and semi-structured interviews, focus groups	Pregnant women say that friends and relatives sometimes recommend vaccination, but in other cases they can influence them not to vaccinate. The reasons for this include the belief that pertussis is a harmless disease, the vaccines are untested or poorly tested and may do harm, or cultural reasons.	Not serious	High	High	Moderate ²	Moderate

Studies	Study design	Finding	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
1 (Wilson 2019)	Unstructured interviews	Pregnant women sometimes say that they are unlikely to discuss vaccines with their male partner and that he is too busy to discuss vaccines with them.	Not serious	High	High	Low ⁴	Low
<ol style="list-style-type: none"> 1. Finding was downgraded once because it was only identified in studies at moderate or high risk of bias. 2. Finding was downgraded once for adequacy because it was reported in a small number of studies (3-4 studies) that were not particularly detailed or rich in the results that fed into this finding. 3. Finding was downgraded once for relevance because it was identified only in relevant and partially relevant studies 4. Finding was downgraded twice for adequacy because it was supported by very few studies (1-2 studies) that were not particularly detailed or rich in the results that fed into this finding. 							

1

F.4 People aged 65 years and over

2 Note- Themes marked with an asterisk include the opinions of people younger than 65 years of age. Details of the ages of these participants is
3 provided in the footnotes.

4 **Table 15 Barriers to and facilitators for the vaccination of people aged 65 years and over**

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
Access							
3 (Daniels 2004, 2019, Scrutton 2014, Pattin 2018)	Focus groups, semi-structured interviews	People aged 65 years and over and pharmacists say that community pharmacies would be convenient places for people aged 65 years and over to get vaccinated. This is because they are sometimes nearer to home and open at convenient times. Pharmacists believe that giving people aged 65 years and over the choice between their community pharmacy and their GP to receive their vaccine should increase vaccine uptake.*	Not serious	High	High	Moderate ²	Moderate
1 (Daniels 2004)	Focus groups	People aged 65 years and over who go to church say that being vaccinated after the Sunday service would be very convenient. However, vaccinations after the Sunday service would require coordination between the church and the health service.	Not serious	High	High	Low ⁵	Low
Acceptability							
2 (Eilers 2015b, Badertscher 2012)	Semi-structured interviews	GPs say that it would be very convenient, save time and increase uptake if they could give multiple vaccines within a single injection. This would be made easier if these vaccines all had the same criteria for prescribing. However, other GPs say that if people aged 65 years or over only wanted	Not serious	High	High	Low ⁵	Low

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		certain vaccines but not others, this might make combination doses difficult to implement and could lead to reduced uptake.					
Vaccine safety							
1 (Kaljee 2017)	Focus groups	People aged 65 years and over trust that vaccines they are offered are safe.	Not serious	High	High	Low ⁵	Low
1 (Eilers 2015a)	Focus groups	People aged 65 years and over believe that naturally occurring things are better for them. They do not trust manufactured drugs and think their body cannot cope with a vaccine in addition to all the medications they are taking. *	Not serious	Moderate ⁴	High	Low ⁵	Very low
1 (Badertscher 2012)	Semi-structured interviews	GPs say that they have not experienced any patients having adverse events caused by a pneumococcal vaccine.	Not serious	High	High	Low ⁵	Low
Assessment of risk and the benefits of vaccination							
3 (Daniels 2004, Ridda 2009, Eilers 2015a)	Focus groups, semi-structured interviews	People aged 65 years and over are in favour of getting vaccinated and receiving advice about them. However, there are differing opinions as to how beneficial they are. *	Not serious	High	High	Moderate ²	Moderate
2 (Eilers 2015a, 2019, Kaljee 2017)	Focus groups, semi-structured interviews	The more severe a disease is, the more likely people aged 65 years and over are to accept a vaccine – even if it is not completely effective. They are also more likely to accept a vaccine if they have seen the disease first-hand before or if there is an epidemic. This is because they are more aware of how severe it can be. *	Not serious	High	High	Low ⁵	Low

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
3 (Eilers 2015a, Kaljee 2017, Harris 2006)	Focus groups, semi-structured interviews	People aged 65 years and over are more likely to accept a vaccine if they feel elderly, chronically ill, or unhealthy because they are concerned that they are less able to recover from disease. However, they also believe that when a person is in the last weeks or days of life, there is no point in having a vaccine because there is no more life to prolong. *	Not serious	High	High	Moderate ²	Moderate
1 (Eilers 2015a)	Focus groups	Some people aged 60 years and over take a more fatalistic view and think that they might as well die of the diseases that the vaccines are trying to prevent.*	Not serious	Moderate ⁴	High	Low ⁵	Very low
2 (Daniels 2004, Kaljee 2017)	Focus groups	People aged 65 years and over realise that many people die from pneumonia every year and know from experience how painful shingles can be. However, they believe that pneumonia is something that is likely to happen to other people but not them. *	Not serious	High	High	Low ⁵	Low
4 (Daniels 2004, Harris 2006, Kaljee 2017, Ridda 2009)	Focus groups, semi-structured interviews	People aged 65 years and over believe that vaccines may cause serious side effects, which outweigh potential benefits. *	Not serious	High	High	Moderate ²	Moderate
2 (Daniels 2004, Eilers 2015b)	Focus groups	Some people who are 65 years and older think that vaccines will cure existing infections rather than prevent them. Others believe that vaccines could make them less ill or reduce the amount of time they would be sick.*	Not serious	High	High	Low ⁵	Low
1 (Kaljee 2017)	Focus groups	Some people believe that pneumonia is another word for flu. Therefore, a vaccine against one protects against the other.	Not serious	High	High	Low ⁵	Low

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
1 (Briggs 2019)	Semi-structured interviews	People aged 65 years and over with anti-vaccine beliefs do not support vaccination despite knowledge of disease and its consequences.	Not serious	High	High	Low ⁵	Low
1 (Harris 2006)	Semi-structured interviews	People aged 65 years and over sometimes have memories of painful vaccinations done during childhood. This can put them off from having a vaccination.	Not serious	High	High	Low ⁵	Low
1 (Daniels 2004)	Focus groups	People aged 65 years and over who are in countries illegally believe that the vaccination documentation could be used to trace them, and they could be deported as a result. *	Not serious	High	High	Low ⁵	Low
2 (Badertscher 2012, Eilers 2015b)	Semi-structured interviews	GPs agree that the effects of pneumonia are severe enough that appropriate people should be vaccinated against it. However, GPs say that vaccines for pneumococcal disease do not seem very effective from their personal experience, although they are willing to change this view if shown evidence to the contrary. In addition, they do not see many patients with proven pneumococcal disease in their own practices. This is because the tests required to confirm this are difficult to do and highly inaccurate.	Not serious	High	High	Low ⁵	Low
1 (Eilers 2015b)	Semi-structured interviews	Some GPs say that shingles is so chronically painful that it is worth vaccinating appropriate people against it. However, other say that because shingles is not life-threatening, they do not agree with prescribing a shingles vaccine to people aged 65 years and over. This is because they believe that vaccines should only be given for 'serious' illnesses.	Not serious	Moderate ⁴	High	Low ⁵	Very low

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
1 (Zaouk 2019)	Semi-structured interviews	Emergency department nurses say that people aged 65 years and over would benefit from being vaccinated.	Not serious	High	High	Low ⁵	Low
1 (Briggs 2019, Harris 2006)	Semi-structured interviews	People aged 65 years and over are aware of 'herd immunity'.	Not serious	High	High	Low ⁵	Low
3 (Daniels 2004, Eilers 2015a, Harris 2006)	Focus groups, semi-structured interviews	People aged 65 years and over want to stay as healthy as possible in order to be able to do the things they want to do, They also believe they have a responsibility to stay healthy so they do not take up resources in hospital, for example. Therefore, they are willing to accept a vaccine. *	Not serious	High	High	Moderate ²	Moderate
Vaccines are for other people							
3 (Briggs 2019, Harris 2006, Eilers 2015a)	Semi-structured interviews, focus groups	People aged 65 years and over say that vaccines are not for them, they are either for children or for people older than they are. Also, if they agree to a vaccine, that is an admission of illness or old age. Therefore, they reject vaccines. *	Not serious	High	High	Moderate ²	Moderate
3 (Briggs 2019, Daniels 2004, Eilers 2015b)	Semi-structured interviews, focus groups	People aged 65 years and over say that GP's can be openly against vaccines and that GPs never mention the pneumonia vaccine to them. They also report that nurses express their anti-vaccination beliefs to them. The GPs say they do not agree with vaccinating people who are aged 65 years and over because they do not have immune systems that will be able to cope with vaccines.*	Not serious	High	High	Moderate ²	Moderate
1 (Badertscher 2012)	Semi-structured interviews	GPs say that people who are aged 65 years and over do not request pneumococcal vaccines.	Not serious	High	High	Low ⁵	Low

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
1 (Zaouk 2019)	Semi-structured interviews	Emergency department nurses say that they associate vaccines with children rather than with older people. Although it is routine to check whether children have had vaccines, it is not routine to check adults.	Not serious	High	High	Low ⁵	Low
Lack of information							
4 (Briggs 2019, Daniels 2004, Ridda 2009, Badertscher 2012)	Focus groups, semi-structured interviews	People aged 65 years and over may not necessarily know what a vaccine is or do not realise that vaccines are available to them until someone discusses the topic with them. They say that there are no posters in GP waiting rooms that say they should ask for vaccines for people in their age group. GPs agree that people aged 65 years and over are not aware that vaccines are available for them and say that more information would be useful. *	Not serious	High	High	Moderate ²	Moderate
1 (Zaouk 2019)	Semi-structured interviews	Emergency department nurses say that their usual training does not include vaccines for people aged 65 years and over and they do not know enough about vaccines for people aged 65 years and over in order to advise them and administer vaccines. They also say that they do not have information to hand about the relevant vaccines for people aged 65 year and over.	Not serious	High	High	Low ⁵	Low
Sources of information: official sources, posters and the media							
2 (Badertscher 2012, Scrutton 2014)	Semi-structured interviews, focus groups	GPs and people aged 65 years and over believe that campaigns to increase the vaccination rates of people aged 65 years and over are best conducted by official government organisations that have credibility. These sources of information should be easier to read than the Green Book.	Not serious	High	High	Low ⁵	Low

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
4 (Daniels 2004, Ridda 2009, Badertscher 2012, Briggs 2019)	Focus groups, semi-structured interviews	GPs and people aged 65 years and over believe that multi-media campaigns increase vaccine uptake by raising awareness. However, the media do not provide enough coverage of the consequences of diseases that vaccines aim to prevent.*	Not serious	High	High	Moderate ²	Moderate
1 (Scrutton 2014)	Focus groups	In vaccine advertising campaigns, people are more receptive to positive messages compared to negative messages.	Very serious ¹	Moderate ⁴	High	Low ⁵	Very low
1 (Ridda 2009)	Semi-structured interviews	People aged 65 years and over say that placing literature such as posters in GP's waiting rooms should make people more aware that there are vaccines available.*	Not serious	High	High	Low ⁵	Low
1 (Badertscher 2012)	Semi-structured interviews	GPs say that they are more influenced by the opinions of colleagues than by evidence-based sources.	Not serious	High	High	Low ⁵	Low
Sources of information and influence: discussing vaccination with healthcare providers							
4 (Kaljee 2017, Briggs 2019, Harris 2006, Eilers 2015b)	Focus groups, semi-structured interviews	GPs and people aged 65 years and over say that people aged 65 years and over trust their GP because they have developed a relationship with them.	Not serious	High	High	Moderate ²	Moderate
2 (Briggs 2019, Ridda 2009)	Semi-structured interviews	Some people aged 65 years and over will not be put off by a healthcare professional who has a negative opinion about them receiving a vaccine. However, others say that they will follow their GP's advice – even if they incorrectly advise against a vaccine – until a different healthcare professional discusses it with them later on. *	Not serious	High	High	Low ⁵	Low
1 (Badertscher 2012)	Semi-structured interviews	GPs say that when they discuss pneumococcal vaccination with people who are aged 65 years and over, they usually agree to having the vaccine.	Not serious	High	High	Low ⁵	Low

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
1 (Eilers 2015b)	Semi-structured interviews	GPs agree that preventing disease is part of their job and they are keen to provide advice – particularly if the guidelines say they should do this.	Not serious	Moderate ⁴	High	Low ⁵	Very low
1 (Zaouk 2019)	Semi-structured interviews	Emergency department nurses say that they are usually too busy with emergency work to discuss vaccines with people aged 65 years and over and they assume that these people will take responsibility for themselves and seek vaccination. However, emergency department nurses say that people aged 65 years and over would be vaccinated by them if that was on their routine.	Not serious	High	High	Low ⁵	Low
2 (Badertscher 2012, Eilers 2015b)	Semi-structured interviews	GPs say that they are very busy. This is why vaccines for people aged 65 years and over are not often administered.	Not serious	High	High	Low ⁵	Low
1 (Pattin 2018)	Focus groups	Some people aged 65 years and over say that they have a better relationship with their pharmacist compared to their GP because they see them more regularly.	Not serious	Moderate ⁴	High	Low ⁵	Very low
Sources of information and influence: friends and relatives							
2 (Harris 2006, Briggs 2019)	Semi-structured interviews	People aged 65 years and over say they are encouraged to be vaccinated by friends and relatives. If friends or relatives advise them to not accept a vaccine, they do not necessarily take their advice. In addition, they say they talk to their friends and relatives to persuade them to be vaccinated.	Not serious	High	High	Low ⁵	Low
<ol style="list-style-type: none"> 1. Finding was downgraded twice because it was only identified in studies at high risk of bias 2. Finding was downgraded once for adequacy because it was reported in a small number of studies (3-4 studies) that were not particularly detailed or rich in the results that fed into this finding. 3. Finding was downgraded once because it was only identified in studies at moderate or high risk of bias 4. Finding was downgraded once for relevance because it was only identified in relevant and partially relevant studies 							

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
5. Finding was downgraded twice for adequacy because it was supported by very few studies (1-2 studies) that were not particularly detailed or rich in the results that fed into this finding.							
Asterisk (*) Eilers 2015a included participants who were aged 50 years and over, Ridda 2009 included participants who were aged 60 years and over, Daniels 2004 included participants who had a mean age of 62 years.							

1

F.5 Studies spanning multiple age/ life stage categories

2 Note: In the following table, the terms ‘Polish and Romanian immigrants’ and ‘Polish and Romanian community members’ are used
3 interchangeably in the findings. The studies that contributed to these findings recruited people who had been living in the UK from a few months to
4 up to 15 years. Where Jackson 2016 is included, and the finding refers to Travellers this may also include Gypsy and Roma people. We have used
5 Traveller as an umbrella term to make the finding less unwieldy. Where findings relate to people who are immigrants, the country which people had
6 migrated from, and the length of time that they had been living in a new country, will be stated at the end of the finding (where this information is
7 available).

8 **Table 16 Barriers to and facilitators for vaccination identified from studies spanning age/ life stage multiple categories**

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
Views on vaccine-safety, effectiveness and usefulness							
4 (Bell 2019*, Bell 2020a, McCoy 2019, Ruijs 2012a)	Semi-structured interviews	<p>Parents are uncertain about the importance of vaccinations for their children, but many were in favour, especially among Polish and Romanian parents and Traveller parents*.</p> <p>Most Polish and Romanian parents regarded vaccines as essential protection against disease, but some vaccines were considered unnecessary and refused or generated particular concern such as the MMR vaccine. However, vaccination was not a priority for some Romanian immigrants and Romanian Roma who were more concerned about surviving and feeding their children.</p> <p>In contrast, parents of homeschooled children (from an evangelical Protestant background) believed that their healthy lifestyle would protect them together with a reduced risk of exposure and vaccines were therefore unnecessary.</p> <p>Orthodox Protestant parents had mixed views: some thought they were necessary to protect</p>	Not serious	High	High	High	High

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		<p>against disease while others disagreed and placed their faith in God.</p> <p>Healthcare providers perceived Travellers as having mainly positive views about vaccination. Travellers agree that there has been a shift in beliefs and acceptance between generations, although Travellers had more confidence in some vaccines than others (such as HPV and MMR). This increased confidence was linked to growing integration of Travellers into society and greater contact with non-Travellers. However, a minority of completely rejected vaccinations as unnecessary and preferred to treat any resulting infections instead.</p> <p>*Polish and Romanian immigrants living in the UK (average time living in the UK was 11 years for Polish people and 9 years for Romanians)</p>					
6 (Bell 2020a, Gorman 2019, Jackson 2016, McCoy 2019, Ruijs 2012a, 2012b)	Semi-structured interviews and focus groups	<p>Parent's assessment of the risk posed by the vaccine preventable diseases varied but an appreciation of the potential consequences of not vaccinating was not sufficient to encourage some parents to vaccinate their children.</p> <p>Older members of Traveller communities had personal experience of some of the diseases and remembered the caring for sick children, while outbreaks of measles in some traveller communities had increased uptake of the MMR as a result. Some Travellers were positive about accepting the HPV vaccine to try to prevent cervical cancer in part because of family experiences of this cancer.</p>	Not serious	High	High	High	High

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		<p>In contrast, most evangelical Protestant homeschooling parents and orthodox Protestant parents thought that childhood infections were a natural way of strengthening the immune system and did not pose a great risk to their children. many reported that because they had survived the diseases as children meant that they were mild. Health care professionals report explaining the severity of the diseases to these parents and some were aware that severe side effects and death were possibilities, but this did not necessarily lead to an increase in vaccination.</p> <p>Some Polish parents identified a greater risk of disease in multicultural cities in the UK than at home which emphasised the importance of vaccination to them. However, providers also reported similar sentiments to Protestant parents in Romanian and Romanian Roma communities concerning measles.</p>					
3 (Bell 2020a, Jackson 2016, Keshet 2021)	Semi-structured interviews and focus groups	<p>Most Travellers believed the protective benefits of vaccination outweighed the short term side effects and accepted vaccinations for themselves and their children as the normal thing to do. Others expressed reservations about the pain of injection and potential side effects although they usually went ahead with the vaccinations after thinking about the balance of benefits and harms. However, a minority of parents in Traveller communities were concerned that vaccinating their daughters for HPV would lead to community censure as it could imply that they were promiscuous.</p>	Not serious	High	High	Moderate ²	Moderate

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		<p>In contrast some Romanian immigrants and Romanian Roma declined vaccination for their children because they were aware of people who had been vaccinated but still got measles and therefore believed the vaccines were ineffective. In addition, they thought that the risk of serious side effects was high and outweighed the benefits.</p> <p>Some Ultra-Orthodox Jewish mothers also declined vaccination because of fears over side effects, even if this meant going against the advice of their Rabbi.</p>					
2 (Gorman 2019, Jackson 2016)		Previous experiences of having the vaccination themselves or seeing no ill effects in other children encouraged acceptance, especially of the MMR vaccine by Travellers. This point was also raised by Polish immigrant parents.	Not serious	High	High	Moderate ²	Moderate
1 (McCoy 2019)	Semi-structured interviews	Some homeschooling evangelical Protestant parents reported that establishing herd immunity within a community was a valid reason to vaccinate their children to protect other vulnerable children who could not be vaccinated themselves for medical reasons. However, a lack of trust in the government and their perceived links with pharma companies were cause for concern and had a negative effect on decision making.	Not serious	High	High	Moderate ²	Moderate
6 (Bell 2019*, Gorman 2019, Jackson 2016, McCoy 2019, Ruis 2012a, Keshet 2021)	Semi-structured interviews and focus groups	<p>Parents who are Travellers, Polish and Romanian immigrants*, orthodox Protestant and evangelical Protestant homeschoolers shared concerns about the safety of vaccines with more concern being raised about certain vaccines (specifically MMR and HPV).</p> <p>These concerns were due to the perceived link between MMR vaccination and autism and in</p>	Not serious	High	High	High	High

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		<p>some cases were the result of being influenced by other people in their community who attributed their child's autism to the vaccination. Some Ultra-Orthodox Jewish parents also had concerns about vaccination based on experiences by others in the community. However, Polish and Romanian immigrant parents were no more concerned than the general population about this issue.</p> <p>Parents were concerned about the lack of long-term safety data for new vaccines such as HPV, and worried about their children being 'guinea pigs' in medical research. In addition, HPV was considered problematic by some parents due to negative media stories about side effects.</p> <p>*Polish and Romanian immigrants living in the UK (average time living in the UK was 11 years for Polish people and 9 years for Romanians)</p>					
1 (Jackson 2016)	Semi-structured	Many Travellers were concerned about the safety of the pertussis vaccine during pregnancy because the immune system was perceived to be weak at this time while older travellers believed that the vaccine could lead to brain damage and disability, therefore vaccination of the baby after birth was favoured.	Not serious	High	High	Moderate ²	Moderate
Access							
3 (Bell 2019*, Bell 2020a*, Jackson 2016)	Semi-structured interviews	<p>Some parents who are Polish or Romanian immigrants* and Roma Travellers are unfamiliar with the NHS and can find it difficult to navigate the UK health system to obtain healthcare.</p> <p>They reported difficulties in registering with GPs and this was linked to lack of appropriate documentation in some cases, while Roma travellers were not necessarily aware that they</p>	Not serious	High	High	High ³	High

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		<p>needed to book appointments to be seen by a GP. In addition, pregnant Roma often arrive without having had any antenatal care and cannot access it in the UK until they are registered with a GP.</p> <p>These difficulties are overcome with the support of family members and friends and a growing understanding of how the system works. Once registered some Romanian and Polish parents report finding it easy to book appointments at GP practices.</p> <p>In contrast other Romanian and Romanian Roma parents still find it hard to book GP appointments, and this may be due to language difficulties affecting communication or discrimination. Providers report that these parents are more likely to see help at A&E if they are unwell than to visit a GP, which may be linked to problems with booking appointments. However, providers also thought that these communities have a more reactive response to healthcare. This could negatively affect their uptake of vaccines.</p> <p>*Polish and Romanian immigrants living in the UK (average time living in the UK was 11 years for Polish people and 9 years for Romanians in one study, 3 years or less in another study)</p>					
1 (Bell 2020a*)	Semi-structured interviews	Providers thought that drop-in clinics would be more effective at increasing vaccine uptake in Romanian and Romanian Roma communities* than booked appointments. This might be due to difficulties in making and attending appointments if families are often travelling and/or do not speak English well (or at all).	Not serious	High	High	Moderate ²	Moderate

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
1 (Jackson 2016)	Semi-structured interviews	*Polish people living in the UK for 3 years or less A minority of Travellers described problems with accessing healthcare that included difficulties with registering with GPs, problems booking appointments and having to wait weeks for appointments, which could be a problem for those who are travelling. Some Travellers prefer to use A&E and use out-of-hours services to avoid these waits.	Not serious	High	High	Moderate ²	Moderate
1 (Jackson 2016)	Semi-structured interviews	Healthcare providers recognised the importance of being flexible and using a number of approaches to make vaccinations more accessible to Travellers including holding drop-in clinics, using opportunistic vaccinations, improving the accessibility of appointments and delivering outreach services. Opportunistic vaccinations were suggested at And E and other non-vaccination clinics plus during other appointments at GP practices while some providers reported having longer GP opening hours with increased numbers of vaccination clinics to improve uptake. However, most travellers reported being able to attend appointments and they agreed with service providers that outreach service should be limited to those who cannot attend mainstream services such as the elderly and those who travel regularly or do not ever attend GPs .	Not serious	High	High	Moderate ²	Moderate
Implementation and delivery							
3 (Bell 2019*, Bell 2020a*, Jackson 2019)	Semi-structured interviews	Recall and reminder systems may need tailoring for Traveller and Polish and Romanian immigrant communities* to achieve maximum levels of vaccination. Polish and Romanian families may miss appointments with their regular visits to their home countries. Standard recall and reminder systems do not account for people who travel regularly, whose children are not in school, who	Not serious	High	High	High ³	High

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		are not registered with GP or who rely on communal mailboxes. Providers report identifying and targeting by phone or text families that are particularly hard to immunise. Invitations letters and information is also provided by schools, while midwives, health visitors and support workers remind people during home visits. Travellers also referred to receiving face to face reminders at other appointments with healthcare staff.					
1 (Bell 2020a)	Semi-structured interviews	Providers identified several facilitators for vaccine uptake in the Romanian Roma and Romanian immigrant communities. These included involving community members as vaccine advocates, using outreach strategies to build trust and facilitate face to face communication; and using an integrated approach involving schools, health care providers, social care providers and local authorities.	Not serious	High	High	Moderate ²	Moderate
1 (Jackson 2016)	Semi-structured interviews	<p>Poor levels of attendance or being homeschooled can make it harder for children to be vaccinated in some Traveller communities.</p> <p>Girls from some Traveller communities (such as Romanian Roma) are withdrawn from school when they reach puberty to avoid them mixing with non-Traveller boys while a minority of adolescents may have reduced attendance due to racism and discrimination at school. This makes it harder to ensure that they receive the vaccinations that are normally provided at school such as HPV. Other Traveller children miss vaccinations if the family is travelling when the vaccines are administered at school. In contrast, other groups of Travellers such as Scottish show people have good school attendance.</p>	Not serious	High	High	Moderate ²	Moderate

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
1 (Bell 2020b)	Semi-structured interviews	<p>The use of financial incentives based on uniform target vaccination rates can discourage effort in areas with harder to reach populations.</p> <p>Financial incentives aimed at increasing providers effort to vaccinate do not reflect differences in populations across the country. They are seen to unfairly penalise providers in underserved communities who may expend a lot of effort but fail to reach the 90% target for childhood vaccination. GPs in other areas may reach targets with much less effort due to their population demographics. This can be discouraging and may lead to reduced effort to increase vaccination.</p>	Not serious	High	High	Moderate ²	Moderate
1 (Wiot 2019)	Focus groups	<p>Parents can be reluctant for their young children to receive multiple injections at one time. Healthcare providers noted that the increase in number of vaccines and frequency of vaccinations on the routine schedule could lead to parental reluctance to vaccinate due to not wishing to inflict pain repeatedly and that this leads to logistical problems for healthcare staff in ensuring that the children receive all of the vaccinations.</p>	Serious ¹	High	High	Moderate ²	Low
1 (Wiot 2019)	Focus groups	<p>Healthcare providers reported a number of challenges to achieving vaccination targets. These included: the use of performance targets; vaccine shortages; frequent changes to vaccination schedules and a lack of continuity of care. Performance targets were unpopular with healthcare providers as they led to feelings of stress and powerlessness and reduced their ability to provide more holistic care. Uncertainty around the vaccination schedule was caused by frequent changes in the schedule and the associated changes in information about side effects and this could cause problems when</p>	Serious ¹	High	High	Moderate ²	Low

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		dealing with patient questions. A lack of continuity of care was considered problematic because this can result in incomplete patient records, difficulties in managing vaccination targets and different healthcare professionals (such as pharmacists) may not provide the same level of information and discussion with the patient.					
3 (Bell 2019, Bell 2020a, Wiot 2019)	Semi-structured interviews and focus groups	Appointment times are usually fixed and short which results in rushed discussions between healthcare providers and parents or individuals about vaccinations. As a result, healthcare providers feel pressured and limited in their ability to provide effective care because during these short appointments they may be expected to discuss, gain consent and administer vaccines. This can be exacerbated by communication barriers if the patient is not fluent in English. Romanian and Polish parents also feel rushed and not listened too and this can negatively affect their decision to vaccinate their children.	Not serious	High	High	High ³	High
Barriers linked to the re-organisation of the NHS in 2013							
1 (Chantler 2016)		The reallocation of immunisation functions across new or reformed organisations was viewed as having fragmented the delivery of the immunisation programme. It had the result that the responsibility for immunisation was retained by the NHS although the management of local public health programmes was transferred to local government. This dispersal of responsibilities across multiple organisations raised questions about leadership and accountability. In some cases, different providers were involved in running different vaccinations within the same school, which increased the risk of poor communication with parents and schools, and between providers and people managing the contracts and data.	Not serious	High	High	Moderate ²	Moderate

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
1 (Chantler 2016)		Adapting to the reorganisation was time consuming and required people to revise previous patterns of working, adopt new roles and responsibilities, acquire new skills and make new connections.	Not serious	High	High	Moderate ²	Moderate
1 (Chantler 2016)		Staff redeployment was disruptive and the level of disruption for the individual was linked to how comparable the new role was to the old for one. Key challenges were finding staff with skills and experience in immunisation, screening and commissioning, and “developing a team, that is embedded within NHS England employed by Public Health England. A significant consequence of the redeployment was the removal of budgets and decision-making from local players to regional ones and a loss of local knowledge (the historical memory gained from working in an area for a long time and the relationships built over time between providers and service managers), insights into underperforming areas and practices, and the understanding of contextual factors that affected the uptake of immunisations	Not serious	High	High	Moderate ²	Moderate
1 (Chantler 2016)		The dispersal of duties and formation of new teams resulted in a lack of clarity about responsibility and how the system should be implemented collaboratively. For example, the existence of different organisational reporting procedures was viewed as having complicated the management of incidents such as errors in the administration of vaccines or failures in cold chain storage.	Not serious	High	High	Moderate ²	Moderate
1 (Chantler 2016)		Screening and immunisation teams reported that they were less able to apply their clinical expertise and were more focussed on commissioning and logistics. They reported difficulties in monitoring provider performance due to a lack of resources	Not serious	High	High	Moderate ²	Moderate

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		and wider geographical areas of responsibility(footprints), but having larger footprints also meant that they could implement a more					
1 (Chantler 2016)		<p>The introduction of tripartite working with immunisations being led by DH, PHE Na NHS England required different ways of working. Instead of a single organisation agreeing on and implementing strategies, these policies had to be reviewed by all partners, making rapid responses to public health issue more challenging. The process of clearing and checking each other's contributions to official correspondence was mentioned as an example of difficulties encountered in balancing power and exercising trust in tripartite relationships. However, annual reviews of Section 7a agreements were viewed as a successful example of cross-organisational planni Screening and immunisation teams are considered to be an important resource and potential strength of the new system. However, their dual accountability to PHE and NHS England has complicated defining their role and achieving a good balance between commissioning and supporting providers resulting in a lot of variation in how they operate. Many SITs are short staffed and have problems attracting staff, which reduces their ability to performance manage immunisation providers.</p> <p>Strategies to overcome these issues included: NHS England providing SITs with real time immunisation uptake statistics via a data management system, and data sharing agreements to enable LA Public health teams fulfil their assurance responsibilities. There were also a</p>	Not serious	High	High	Moderate ²	Moderate

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		number of ad hoc and sometimes short lived (due to funding constraints) mitigating strategies at local levels: such as a CCG prioritising funding for immunisation and a LA public health team linking SITs with schools and community based children's centres. "to do and collaboration.					
1 (Chantler 2016)		There is a huge inconsistency in training provision because it is not clear what role SITs should play in helping ensure that healthcare professionals are trained appropriately. Different approaches are used in different places such as getting local universities to provide essential skills courses for practice nurses, having practice nurses set up monthly training sessions supported by their CCG and a management company.	Not serious	High	High	Moderate ²	Moderate
1 (Chantler 2016)		Establishing and maintaining relationships is essential to make the national framework and local operating models work well, but require significant time, effort and creativity. The National Immunisation Programme Board (IPB) and LA Health Protection Forums were part of the implementation of the HSCA 2013, while other partnerships have developed iteratively over time. Examples of these include regular strategic meetings between senior SIT members and LA DPHs and reappointing pre-existing immunisation committees; a SIT established immunisation board with senior representation from NHS England, CCGs, PHE health protection teams, academia, pharmacy, LA Public Health Teams and NHS Trusts.	Not serious	High	High	Moderate ²	Moderate
Immunisation board findings							
1 (Chantler 2019b)		Immunization board members think they are responsible for overseeing commissioning and providing input into commissioning decisions, but	Not serious	High	High	Moderate ²	Moderate

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		the nature of this oversight is unclear and people thought the role of the board in decision-making needed to be more transparent. They would like the board to demonstrate more strategic leadership, be better at holding NHS England to account and delivering agreed strategies, e.g. establishing borough level immunisation steering committees with local action plans.					
1 (Chantler 2019b)		Immunisation board members think they lack a collective affiliation and common goals. Different members have different reasons for being part of the board and these can include representing parents organisations, staying in the loop as well as ensuring that decision-making accounted for the realities on the ground and was evidence-based. This also has an affect on meeting attendance with board members with an active rather than a watching brief for immunisation finding it easier to prioritise attendance since the meetings corresponded with their direct responsibilities.	Not serious	High	High	Moderate ²	Moderate
Facilitators from GP practices with high uptake							
1 (McGeown 2018)		Building positive relationships between medical staff and patients over time was considered to be vital in achieving increased vaccine uptake. The examples cited involved people being offered vaccinations by their 'named GP'; using antenatal appointments with GPs to establish relationships that could improve adherence to postnatal care plans (including vaccinations); providing appointments with child vaccination specialist nurses that allowed sufficient time to address parental concerns and having consultations with homeless people that were not time limited.	Not serious	High	High	Moderate ²	Moderate
1 (McGeown 2018)		Flexibility in addressing the needs of patients was thought to be essential in facilitating vaccine	Not serious	High	High	Moderate ²	Moderate

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		uptake. This was manifested by increasing the opportunities for vaccination by offering opportunistic vaccination when people were attending the surgery for other reasons; increased out of hours clinics; 'walk-in' clinics at weekends for working parents; longer appointments for non-English speakers or those with complex needs. Online appointment booking also increased immunisation bookings.					
1 (McGeown 2018)		Having well trained, designated staff who were up to date with current guidance on vaccinations was linked to increased uptake by staff. The designated individuals, including administrative staff as well as nurses, were responsible for vaccinations and accountable to practice managers. Regular training events and updates on the latest guidance were in place in all practices and having the latest vaccine guidance embedded in the IT system to automatically prompt clinicians was thought to be helpful.	Not serious	High	High	Moderate ²	Moderate
1 (McGeown 2018)		Team-work was highlighted as an important factor in achieving vaccine uptake. This involved a multidisciplinary approach working with colleagues in other fields, such as health visitors who hold baby clinics and visit parents at home to discuss vaccinations and CCG immunisation leads who could provide expertise to answer questions and address concerns. In addition, having an element of competition within and between practices was also linked to increased vaccine uptake.	Not serious	High	High	Moderate ²	Moderate
1 (McGeown 2018)		The importance of planning ahead was emphasised across all interviews as important facilitator for vaccine uptake. This involved identifying eligible children in advance and contacting parents to make appointments and	Not serious	High	High	Moderate ²	Moderate

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		ensuring records are up to date to facilitate identification. For example, one practice booked the 8 week vaccinations at the 6 week baby check, another discussed childhood vaccinations at antenatal clinics where vaccination for pregnancy were administered.					
1 (McGeown 2018)		An escalating system of contact was used to help catch non-responders. Initially people received email, texts or letters (often automated), but if they did not book an appointment they were called by a member of the admin staff, then the practice nurse and finally the GP if this continued. Different approaches worked with different people, for example the elderly were thought to respond to contact from their GP.	Not serious	High	High	Moderate ²	Moderate
Information and influences							
3 (Jackson 2016, McCoy 2019, Ruijs 2012b)	Semi-structured interviews	<p>Healthcare professionals are trusted sources of information for many parents and can influence decision making, but not all parents respond positively.</p> <p>Where the health care providers and parents have established a trusting relationship based on long-term positive interactions, this allows the healthcare staff to promote vaccinations.</p> <p>Travellers overwhelmingly identified healthcare providers as the key trusted source of written and verbal information about childhood and adult vaccinations, while many home schooling</p> <p>Evangelical Protestant parents also identified physicians as having a real positive influence on their decision to vaccinate based on trusting that doctors want the best for their kids. However other Protestant parents felt pressured to vaccinate and</p>	Not serious	High	High	High ³	High

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		<p>this damaged their relationship with the healthcare providers or reported that they were pressured not to vaccinate by nurses and other respected healthcare related individuals.</p> <p>Healthcare professionals working with Orthodox Protestant parents who have religious objections to vaccination provide information to try to persuade the parents to change their minds, but very few parents respond to this approach, which can be frustrating for the healthcare providers.</p>					
2 (Bell 2020a, Jackson 2016)	Semi-structured interviews	<p>Knowledge about and awareness of vaccinations was variable in Traveller communities.</p> <p>In general, Travellers were more aware of childhood vaccines including HPV, than those aimed at adults, although they were less familiar with some of the more recently introduced childhood vaccines (such as rotavirus). There was increased awareness of vaccines such as MMR due to controversies about their safety.</p> <p>Some Travellers (Romanian Roma) had limited understanding of specific vaccines, the diseases they protect against and the time at which they are routinely provided. However other Roma participants were more knowledgeable.</p>	Not serious	High	High	Moderate ²	Moderate
1 (Wiot 2019)	Focus groups	<p>Health care providers identified the lack of knowledge or misinformation about vaccines as the main problem affecting vaccine uptake because this required a substantial amount of time to provide information and attempt to correct misinformation that could be better used to address other patient needs. They suggested a public education programme to provide the correct</p>	Serious ¹	High	High	Moderate ²	Low

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		information needed for decision making and challenge misinformation.					
3 (Bell 2019*, Gorman 2019, Jackson 2016)	Semi-structured interviews and focus groups	<p>Providing credible, trustworthy and unbiased information to parents could help improve their decision making. Polish and Romanian immigrant parents* report challenges in identifying trustworthy sources of information amongst the unregulated information available on the internet. They find the NHS literature more credible but would like more information about vaccine side effects. Scottish Show people commented on the biased information provided by the media, specifically around the MMR vaccine.</p> <p>*Polish and Romanian immigrants living in the UK (average time living in the UK was 11 years for Polish people and 9 years for Romanians)</p>	Not serious	High	High	High ³	High
1 (Jackson 2016)	Semi-structured interviews	Schools can also be a useful source of information for Traveller parents and girls. Some Traveller parents and girls reported receiving information about vaccinations from schools in written format and in presentations in school assemblies. This was generally well received.	Not serious	High	High	Moderate ²	Moderate
3 (Jackson 2016, McCoy 2019, Ruijs 2012a)	Semi-structured interviews	The influence of family and community was felt by both Travellers and evangelical Protestant parents but to different degrees. These influences were still strong in Traveller communities but there was a shift to health professionals as the primary source of information. In contrast some Orthodox Protestant parents reported discussing vaccinations with family and friends, but others did not do so deliberately because they feel pressured to make the same decision as their non-vaccinating community. Protestant home schooling parents also experienced pressure from family and friends not to vaccinate their children.	Not serious	High	High	High ³	High

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
3 (Gorman 2019, Jackson 2016, McCoy 2019)	Semi-structured interviews and focus groups	Parents reported looking at information in the media, social media and on the internet as part of their decision making process, but this information was often conflicting and could be confusing. Polish and Romanian immigrant parents were aware of antivaccination groups and celebrities in their home countries promoting not vaccinating their children. Travellers reported coming across biased, scaremongering information in the media (especially about MMR) and social media as well as accurate and balanced information. In contrast, some Travellers had no access to the internet or had to rely on their children to use it for them. Evangelical Protestant homeschooling parents reported feeling empowered by the research they did online, but this could also lead to confusion with the amount of conflicting information.	Not serious	High	High	High ³	High
1 (McCoy 2018)	Semi-structured interviews	Parental autonomy in the decision-making process was very important for evangelical Protestant homeschooling parents and they were empowered by their research. In some cases, they reported changing doctors if their decisions were challenged and they did not feel respected.	Not serious	High	High	Moderate ²	Moderate
2 (Demi 2019, Mittring-Junghans 2021)	Semi-structured interviews	Complementary and alternative medicine providers mostly thought that decisions on vaccinations should be made on an individual-basis rather than one recommendation for all and that some diseases are an important part of life. They preferred to discuss vaccination with parents, basing their discussion on both evidence and their own opinions (whether positive or negative), rather than providing a strong stance either before or against vaccination.	Not serious	High	High	Moderate ²	Moderate

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		Those who were against vaccination did not think they should be the primary person for consultations about vaccination.					
Religious and cultural differences							
Language and literacy barriers							
4 (Bell 2019*, Bell 2020a*, Gorman 2019, Jackson 2016)	Semi-structured interviews and focus groups	<p>Language barriers can make communication between healthcare workers and parents who are from abroad difficult and this is compounded by the lack of availability of translators at consultations and information in languages other than English. Polish and Romanian immigrant parents* report difficulties in understanding medical terminology and would like information to be provided in their own language. Healthcare providers report that interpreting services are difficult to organise, can be impersonal and increase the time needed for a consultation, but agree that face to face communication using interpreters is preferable for certain groups who have low levels of literacy (such as Roma Romanian Traveller communities) and have a culture of oral communication. There can be additional difficulties with obtaining translation services for Romanian Roma as they do not necessarily speak Romanian proficiently or at all and the use of Romanian translators may be culturally inappropriate. Romanian Roma also speak a number of dialects and it may be hard to locate a suitable translator.</p> <p>Language difficulties can make it hard to obtain accurate vaccination histories for immigrants.</p> <p>*Polish and Romanian immigrants living in the UK (average time living in the UK was 11 years for</p>	Not serious	High	High	High	High

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
2 (Bell 2020a*, Jackson 2016)	Semi-structured interviews	<p>Polish people and 9 years for Romanians in one study, 3 years or less in another study)</p> <p>Low levels of literacy act as a barrier preventing some Travellers and immigrants* from understanding written information about vaccines and appointment letters. Romanian Roma and some Romanians have low literacy levels and may struggle to read information even when it is translated into their native language. Low levels of literacy may also be found in older members of other Traveller communities, which may include the current generation of parents. As a result, Travellers and providers agree that simple written information with pictures may prove useful but verbal information is preferable.</p> <p>*Romanian immigrants living in the UK for 3 years or less</p>	Not serious	High	High	Moderate ²	Moderate
UK versus Poland and Romania's schedules and processes							
3 (Bell 2019*, Gorman 2019, Jackson 2016)	Semi-structured interviews and focus groups	<p>Some immigrant parents* are aware that there is an emphasis on informed consent and choice concerning vaccination in the UK while others think they are mandatory. Polish parents were aware of differences in the rules around consent in the UK compared to Poland where vaccination was mandatory. In contrast, some Roma Travellers were unaware that vaccinations were not mandatory and believed that their children would not be allowed to attend school unless they had all their childhood vaccinations. The requirement for written consent in schools was seen by some healthcare providers as off putting for parents who may not be used to a formal approach to consent in Romania.</p>	Not serious	High	High	High ³	High

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		*Polish and Romanian immigrants living in the UK (average time living in the UK was 11 years for Polish people and 9 years for Romanians)					
2 (Bell 2019*, Gorman 2019)	Semi-structured interviews and focus groups	Polish and Romanian parents* were aware of differences between the UK schedules and those of their home countries but while this could lead to uncertainties it was not necessarily viewed as a problem by parents. Some followed the UK system as their children were born and living in the UK, while others report consulting their own doctor in Poland or continuing to use their native health services particularly if they were visiting just after birth. Healthcare providers noted that this could cause difficulties if the children returned to the UK with undocumented vaccine histories. *Polish and Romanian immigrants living in the UK (average time living in the UK was 11 years for Polish people and 9 years for Romanians)	Not serious	High	High	Moderate ²	Moderate
3 (Bell 2019*, Gorman 2019, Jackson 2016)	Semi-structured interviews and focus groups	The number of vaccinations, new combination vaccines and lack of an ability to customise the schedule by accessing vaccine individually were raised as issued by Polish and Romanian parents*. However, there was a common belief that vaccines in the UK were superior to those in Poland and had fewer side effects and many parents appreciated that vaccines were free in the UK as they could be expensive elsewhere. *Polish and Romanian immigrants living in the UK (average time living in the UK was 11 years for Polish people and 9 years for Romanians)	Not serious	High	High	High ³	High
3 (Bell 2019*, Bell 2020a, Gorman 2019)	Semi-structured interviews	Levels of trust in the UK system were varied with many Polish and Romanian immigrant parents* being sceptical about the quality of the UK system and in particular the medical staff.	Not serious	High	High	High ³	High

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
	and focus groups	<p>There was a lack of trust in nurses giving vaccinations because these are carried out by doctors in Poland while some parents were concerned that GPs were generalists, while vaccination was considered a specialist service. Parents also viewed the expertise of health visitors negatively comparing them to paediatricians at home.</p> <p>Lack of trust in primary healthcare was a driving factor for people opting to access emergency services in England and for seeking care in Poland and Romania or private Polish doctors in England. In addition, parents were unhappy about a lack of continuity of care preferring to have a single member of staff who has a relationship with them and their child. Health care providers thought that it was important to explain the UK system to parents to improve trust.</p> <p>In contrast, some Romanian Roma and Romanian parents reported more trust in UK health providers and the NHS compared to their own health system and providers. This was based on negative experiences at home and positive contact with the NHS in the UK.</p> <p>*Polish and Romanian immigrants living in the UK (average time living in the UK was 11 years for Polish people and 9 years for Romanians)</p>					
Religious beliefs- Orthodox Protestants							
1 (Ruijs 2012a)	Semi-structured interviews	Family tradition can be a barrier or a facilitator to vaccination in Orthodox Protestant families, but some families break with tradition and make their own decisions.	Not serious	High	High	Moderate ²	Moderate

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		Some Orthodox Protestant parents automatically vaccinated their children because it was the tradition in their family, while others followed family tradition by not vaccinating their children. Other Orthodox Protestant parents broke with family tradition and made decisions to vaccinate or not vaccinate mainly based on religious arguments. The Orthodox Protestant parents mainly made decisions regarding vaccinations together, although the man is the head of the family and main decision maker.					
1(Ruijs 2012a)	Semi-structured interviews	<p>Religion can be a barrier or facilitator to vaccination in Orthodox Protestant communities, however traditionally vaccinating parents do not necessarily link their decision to God.</p> <p>Traditionally non- vaccinating parents believed in divine intervention and that they could not interfere with the will of God, but were willing to accept vaccinations in some cases such as for tetanus post-exposure prophylaxis or in the case of a polio epidemic where they considered the vaccinations to be more curative than preventative measures. Deliberately non-vaccinating parents held similar religious views.</p> <p>Deliberately vaccinating parents used predominantly religious arguments to justify their decision and considered vaccinations to be a gift from God. In contrast, traditionally vaccinating parents used medical arguments to justify their decisions.</p>	Not serious	High	High	Moderate ²	Moderate
1(Ruijs 2012a)	Semi-structured interviews	Both vaccinating parents and non-vaccinating parents suffered from guilt over their choices and	Not serious	High	High	Moderate ²	Moderate

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		<p>in some cases feel regret which could affect their decisions to vaccinate their children in the future.</p> <p>Non-vaccinating parents worried about disease epidemics (especially polio) while first generation deliberately vaccinating parents feared the adverse effects of vaccination and these could be taken as a sign from God that they have made the wrong decision.</p>					
1(Ruijs 2012b)	Semi-structured interviews	<p>Providing information is usually ineffective in persuading reluctant Orthodox Protestant parents to accept vaccination.</p> <p>All healthcare providers responded to religious objections to vaccination from Orthodox Protestant parents by providing information about the severity of the diseases concerned, benefits and side effects of vaccinations and how the vaccines work, however, this was rarely a successful approach and led to feelings of frustration amongst the staff.</p>	Not serious	High	High	Moderate ²	Moderate
1(Ruijs 2012b)	Semi-structured interviews	<p>Providers try to engage Orthodox Protestant parents in discussions about vaccinations and a knowledge of Orthodox Protestantism or being Protestant themselves is beneficial.</p> <p>Providers who had knowledge about orthodox Protestantism or were Protestant themselves (although not necessarily Orthodox) were able to relate the parents more easily, could engage them in discussions about the religious and medical issues and support their decision making. Although they were clear that the parents had to make the final decision themselves.</p>	Not serious	High	High	Moderate ²	Moderate

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		Discussions between healthcare providers and parents were dependent on the willingness of the parents to be engaged. The staff reported only discussing vaccinations for the first-born child. After this, they confirmed with the parents that the decision was the same for subsequent children: They were worried that the parents would stop attending the clinics if they were repeatedly challenged about their decisions.					
1(Ruijs 2012b)	Semi-structured interviews	Adoption of an authoritarian position is helpful in obtaining permission to vaccinate from Orthodox Protestant parents when tetanus post-exposure prophylaxis is needed. When (and only when) tetanus post-exposure prophylaxis is concerned healthcare providers adopt an authoritarian stance and tell parents what to do in the best interest of the child because they have a serious risk of disease at that point in time.	Not serious	High	High	Moderate ²	Moderate
Traveller specific issues (or only raised by Travellers in this section)							
1 (Jackson 2016)	Semi-structured interviews	Healthcare providers who work with Travellers all noted the importance of working in partnership with colleagues within their own organisation and sector as well as with those working in other sectors. This collaboration could take the form of sharing information on Travellers between providers, encouraging families to access services at other contacts and working with other staff to ensure that appropriate care is available and maintained over time building trust with the Travellers.	Not serious	High	High	Moderate ²	Moderate
1 (Jackson 2016)	Semi-structured interviews	The lack of accurate, consistent methods of recording Traveller identity in medical records makes it hard to measure vaccine uptake in these	Not serious	High	High	Moderate ²	Moderate

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		communities and target funding and services appropriately. Some staff also worry that recording this information could be seen to be discriminatory.					
1 (Jackson 2016)	Semi-structured interviews	Healthcare providers reported a lack of funding to carry out work with Travellers to promote vaccine uptake. This lack of funding affects work with the Roma communities in particular in some areas and may be due to commissioners and senior managers failing to understand the complex nature of working with these communities. Rather than being proactive in trying to address inequalities and promote vaccine uptake routinely, vaccination services are now seen to be more reactive with catch up campaigns in the case of outbreaks. Service providers also raised concerns that there was a lack of fund for training staff carrying out immunisations and schools may be prevented from taking part in immunisation campaigns by the lack of money to provide consent forms in other languages.	Not serious	High	High	Moderate ²	Moderate
1 (Jackson 2016)	Semi-structured interviews	NHS reforms have led to system changes that make it hard for healthcare providers to provide vaccinations because teams that are involved in commissioning work do not necessarily have any involvement in its delivery and therefore things like training of staff may be overlooked.	Not serious	High	High	Moderate ²	Moderate
1 (Jackson 2016)	Semi-structured interviews	Some local and national strategies exist to support work with Travellers and in particular the Roma community (e.g. ROMA-Net, the Romani Local Action Plan) to increase vaccine uptake. However, strategies do not necessarily cover housed Roma and healthcare workers may be unaware of these initiatives and they no longer available in some areas.	Not serious	High	High	Moderate ²	Moderate

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		Local Traveller health or immunisation initiatives have included programmes developed to raise awareness of, and increase access to, health services and uptake of immunisations as well as specialist posts to work with Travellers. Some approaches were more effective than others with healthcare providers reporting having doors slammed in their faces when trying to promote the MMR vaccination in some places. However, specialist health visitor roles were unanimously recognised as beneficial for Travellers because these staff were able to develop long-term trustful relationships with Travellers, supporting them to access health and welfare information and services, including the Healthy Child Programme, and assessing vulnerable families to see if they need an enhanced service. They also used to give vaccinations in people's home. These posts are no longer funded in all areas.					
1 (Jackson 2016)	Semi-structured interviews	Collaboration between health providers, schools and Initiatives such as Traveller Education Services were raised by healthcare providers as being helpful in enabling them to identify children and young people who have missed their vaccinations and follow up with their families, however this service is no longer funded in some areas.	Not serious	High	High	Moderate ²	Moderate
1 (Jackson 2016)	Semi-structured interviews	Targeting Traveller mothers could help increase vaccine uptake because they are viewed as having responsibility for their children and are often the main decision makers regarding vaccinations.	Not serious	High	High	Moderate ²	Moderate
1 (Jackson 2016)	Semi-structured interviews	A lack of cultural understanding and experience of interacting with Travellers can lead to discrimination by healthcare providers who may resent chasing up people for vaccinations. Many	Not serious	High	High	Moderate ²	Moderate

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		healthcare providers were concerned about this problem, However, some stereotyping of the Roma community in particular was seen as helpful in identifying them and offering them suitable support to access healthcare. Staff who worked with Travellers more routinely were considered more understanding and less judgemental.					
1 (Jackson 2016)	Semi-structured interviews	Continuity of care helps build positive relationships between Travellers and healthcare providers that can be influential in decision making concerning vaccinations. Many Travellers report having positive relationships based on trust and respect that often developed by attending the same GP practice and seeing the same health professionals over a prolonged period of time. However, there were a few accounts of negative encounters with health professionals which had damaged relationships when for example staff did not take time to discuss vaccinations or were judgemental about their decisions. Healthcare providers also noted the importance of continuity of care in building relationships, but that this could be time consuming.	Not serious	High	High	Moderate ²	Moderate
1 (Jackson 2016)	Semi-structured interviews	The travelling lifestyle can make it hard to build relationships with Travellers and encourage vaccinations, but the amount of travelling varies across Traveller communities. English Gypsy and Scottish Showpeople are more settled and travel for shorter times so they don't lose their spaces on site. This allows them to access GP services and book appointments around their travelling commitments. Travelling is seen as being more disruptive in other communities such as the Roma Travellers with staff commenting that they spend time build relationships and then the families move on.	Not serious	High	High	Moderate ²	Moderate

Studies	Study design	Theme	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
<ol style="list-style-type: none"> 1. Finding was downgraded once because it was only identified in studies at moderate or high risk of bias. 2. Finding was downgraded once for adequacy because it was supported by very few studies (1-2 studies) but it was not downgraded further because it contained at least one highly detailed study that provided rich data for the issue identified or population of interest. 3. Finding was not downgraded for adequacy even though it was supported by a small number of studies (3-4 studies) because it contained at least one highly detailed study that provided rich data for the issue identified or population of interest. 4. Finding was downgraded twice for adequacy because it was supported by very few studies (1-2 studies) which did not provide particularly detailed or rich findings for the population of interest. 							

1

1 **Appendix G – Economic evidence study selection**

2 No economic literature review was conducted for this review question.

3

4 **Appendix H – Economic evidence tables**

5 No economic literature review was conducted for this review question.

6

7 **Appendix I – Health economic model**

8 No economic modelling was undertaken for this review question.

9

1 Appendix J – Excluded studies

2 Excluded from the original search

Study	Reason
<p>Adams, Jean, McNaughton, Rebekah J, Wigham, Sarah et al. (2016) Acceptability of Parental Financial Incentives and Quasi-Mandatory Interventions for Preschool Vaccinations: Triangulation of Findings from Three Linked Studies. PloS one 11(6): e0156843</p>	<p>- Secondary publication of an included study that does not provide any additional relevant information</p> <p><i>Paper examines the findings of 3 studies in relation to each other. The qualitative study component has been published separately.</i></p>
<p>Albright, Karen, Barnard, Juliana, O'Leary, Sean T et al. (2017) Noninitiation and Noncompletion of HPV Vaccine Among English- and Spanish-Speaking Parents of Adolescent Girls: A Qualitative Study. Academic pediatrics 17(7): 778-784</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Albright, Karen, Hurley, Laura P, Lockhart, Steven et al. (2017) Attitudes about adult vaccines and reminder/recall in a safety net population. Vaccine 35(52): 7292-7296</p>	<p>- Study participants are the wrong age group</p> <p><i>Participants were 18–64 or 65+ and results were not separated by age. 19-64 year olds are only of interest if they are parents because these people do not receive vaccines on the UK routine schedule themselves.</i></p>
<p>Alexander, Andreia B, Best, Candace, Stupiansky, Nathan et al. (2015) A model of health care provider decision making about HPV vaccination in adolescent males. Vaccine 33(33): 4081-6</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Alexander, Andreia B, Stupiansky, Nathan W, Ott, Mary A et al. (2012) Parent-son decision-making about human papillomavirus vaccination: a qualitative analysis. BMC pediatrics 12: 192</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Alexander, Andreia B, Stupiansky, Nathan W, Ott, Mary A et al. (2014) What parents and their adolescent sons suggest for male HPV vaccine messaging. Health Psychology 33(5): 448-456</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Allan, N and Harden, J (2015) Parental decision-making in uptake of the MMR vaccination: a systematic review of qualitative literature. Journal of public health (Oxford, England) 37(4): 678-87</p>	<p>- Systematic review used as a source of primary studies</p>

Study	Reason
<p>Allen, J.D., De Jesus, M., Mars, D. et al. (2012) Decision-making about the HPV vaccine among ethnically diverse parents: Implications for health communications. <i>Journal of Oncology</i>: 401979</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Ames, Heather Mr; Glenton, Claire; Lewin, Simon (2017) Parents' and informal caregivers' views and experiences of communication about routine childhood vaccination: a synthesis of qualitative evidence. <i>The Cochrane database of systematic reviews</i> 2: cd011787</p>	<p>- Systematic review contains non-OECD countries</p> <p>- Systematic review used as a source of primary studies</p>
<p>Angelica M Roncancio , Becky T Muñoz, Chakema C Carmack, Kristy K Ward, Miguel A Cano FLCANF (2019) Understanding HPV vaccine initiation in Hispanic adolescents using social marketing theory. <i>Health Education Journal</i> 78: 743-755</p>	<p>- Remaining OECD country study that is not required for 0-5 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Aragones, Abraham, Genoff, Margaux, Gonzalez, Cynthia et al. (2016) HPV Vaccine and Latino Immigrant Parents: If They Offer It, We Will Get It. <i>Journal of Immigrant and Minority Health</i> 18(5): 1060-1065</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Askelson, N., Ryan, G., Seegmiller, L. et al. (2019) Intersectoral cooperation to increase HPV vaccine coverage: an innovative collaboration between Managed Care Organizations and state-level stakeholders. <i>Human Vaccines and Immunotherapeutics</i></p>	<p>- Qualitative study not relevant to UK</p> <p><i>Study examines a collaboration between the Iowa Department of public health, Medicaid and a cancer charity to increase HPV vaccine uptake</i></p>
<p>Attwell K, Leask J, Meyer SB et al. (2017) Vaccine Rejecting Parents' Engagement With Expert Systems That Inform Vaccination Programs. <i>Journal of bioethical inquiry</i> 14(1): 65-76</p>	<p>- Subset OECD country study that is not required because there are sufficient UK studies, but meets the review protocol</p>
<p>Attwell, K, Wiley, K E, Waddington, C et al. (2018) Midwives' attitudes, beliefs and concerns about childhood vaccination: A review of the global literature. <i>Vaccine</i> 36(44): 6531-6539</p>	<p>- Systematic review used as a source of primary studies</p>
<p>Auslander, Beth A, Meers, Jessica M, Short, Mary B et al. (2019) A qualitative analysis of the vaccine intention-behaviour relationship:</p>	<p>- Subset OECD country study that is not required for 0-5 age group because there are</p>

Study	Reason
parents' descriptions of their intentions, decision-making behaviour and planning processes towards HPV vaccination. <i>Psychology & health</i> 34(3): 271-288	sufficient UK studies, but meets the review protocol
Baezconde-Garbanati, Lourdes, Lienemann, Brianna A, Robles, Marisela et al. (2017) Implementation of HPV vaccination guidelines in a diverse population in Los Angeles: Results from an environmental scan of local HPV resources and needs. <i>Vaccine</i> 35(37): 4930-4935	- Subset OECD country study that is not required for 11-18 age group because there are sufficient UK studies, but meets the review protocol
Bair, R.M., Mays, R.M., Sturm, L.A. et al. (2008) Acceptability of the Human Papillomavirus Vaccine among Latina Mothers. <i>Journal of Pediatric and Adolescent Gynecology</i> 21(6): 329-334	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Baldwin, Austin S, Denman, Deanna C, Sala, Margarita et al. (2017) Translating self-persuasion into an adolescent HPV vaccine promotion intervention for parents attending safety-net clinics. <i>Patient education and counseling</i> 100(4): 736-741	- Study based in USA. Committee decision to exclude as views may differ from those about the UK health system
Barnard, Juliana G, Dempsey, Amanda F, Brewer, Sarah E et al. (2017) Facilitators and barriers to the use of standing orders for vaccination in obstetrics and gynecology settings. <i>American journal of obstetrics and gynecology</i> 216(1): 69e1-69e7	- No outcomes of interest
Barnes, Kathrine L, VanWormer, Jeffrey J, Stokley, Shannon et al. (2018) Determinants of human papillomavirus vaccine attitudes: an interview of Wisconsin parents. <i>BMC public health</i> 18(1): 746	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Baron-Epel, O, Bord, S, Madjar, B et al. (2012) What lies behind the low rates of vaccinations among nurses who treat infants?. <i>Vaccine</i> 30(21): 3151-4	- Study is about staff receiving the vaccine(s), not the patients
Bastani, Roshan, Glenn, Beth A, Tsui, Jennifer et al. (2011) Understanding suboptimal human papillomavirus vaccine uptake among ethnic minority girls. <i>Cancer epidemiology, biomarkers & prevention</i> : a publication of the American Association for Cancer Research, cosponsored	- Not a relevant study design <i>Not a qualitative study- results obtained using a 75 item questionnaire</i>

Study	Reason
by the American Society of Preventive Oncology 20(7): 1463-72	
Bean, S.J. and Catania, J.A. (2018) Immunology beliefs as a factor in vaccine opposition among complementary and alternative medical providers. SAGE Open Medicine 6	<p>- Study does not look at barriers and facilitators to vaccination</p> <p><i>Study looks at the views of alternative medicine providers about vaccination and how these might affect the decisions of their patients to be vaccinated</i></p>
Bell, S., Edelstein, M., Zatonski, M. et al. (2019) 'I don't think anybody explained to me how it works': Qualitative study exploring vaccination and primary health service access and uptake amongst Polish and Romanian communities in England. BMJ Open 9(7): e028228	<p>- Study addresses identification or recording of eligibility or status</p> <p><i>Qualitative study</i></p>
Benin, Andrea L, Wisler-Scher, Daryl J, Colson, Eve et al. (2006) Qualitative analysis of mothers' decision-making about vaccines for infants: the importance of trust. Pediatrics 117(5): 1532-1541	<p>- Remaining OECD country study that is not required because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
Berenson, A.B., Rupp, R., Dinehart, E.E. et al. (2019) Achieving high HPV vaccine completion rates in a pediatric clinic population. Human Vaccines and Immunotherapeutics 15(78): 1562-1569	<p>- Study based in USA. Committee decision to exclude as views may differ from those about the UK health system</p>
Berenson, Abbey B; Hirth, Jacqueline M; Southerland, Janet H (2020) Knowledge of human papillomavirus among dental providers: A mixed methods study. Vaccine 38(3): 423-426	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
Bernard, Diana M, Cooper Robbins, Spring C, McCaffery, Kirsten J et al. (2011) The domino effect: adolescent girls' response to human papillomavirus vaccination. The Medical journal of Australia 194(6): 297-300	<p>- Subset OECD country study that is not required for 11-18 age group because there are sufficient UK studies, but meets the review protocol</p>
Beskin, Kera M and Caskey, Rachel (2019) Parental Perspectives on Financial Incentives for Adolescents: Findings From Qualitative Interviews. Global pediatric health 6: 2333794x19845926	<p>- Study based in USA. Committee decision to exclude as views may differ from those about the UK health system</p>

Study	Reason
<p>Blaisdell, Laura L, Gutheil, Caitlin, Hootsmans, Norbert A M et al. (2016) Unknown Risks: Parental Hesitation about Vaccination. Medical decision making : an international journal of the Society for Medical Decision Making 36(4): 479-489</p>	<p>- Remaining OECD country study that is not required because there are sufficient UK or OECD subset studies, but meets the review protocol</p> <p><i>Study covers multiple age categories</i></p>
<p>Bland, Marian, Clear, Geraldine M, Grogan, Adrianna et al. (2009) Mum's the word: factors that influenced young adults' participation in the New Zealand Meningococcal B immunisation programme. The New Zealand medical journal 122(1307): 30-8</p>	<p>- Study participants are the wrong age group</p> <p><i>Participants were 16-19 years old and MenB is given around 16 weeks old in UK.</i></p>
<p>Blumling, Amy A; Thomas, Tami L; Stephens, Dionne P (2013) Researching and Respecting the Intricacies of Isolated Communities. Online journal of rural nursing and health care : the official journal of the Rural Nurse Organization 13(2)</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Bond, L, Nolan, T, Pattison, P et al. (1998) Vaccine preventable diseases and immunisations: a qualitative study of mothers' perceptions of severity, susceptibility, benefits and barriers. Australian and New Zealand journal of public health 22(4): 441-6</p>	<p>- Subset OECD country study that is not required because there are sufficient UK studies, but meets the review protocol</p>
<p>Bond, Lyndal and Nolan, Terry (2011) Making sense of perceptions of risk of diseases and vaccinations: a qualitative study combining models of health beliefs, decision-making and risk perception. BMC public health 11: 943-943</p>	<p>- Subset OECD country study that is not required because there are sufficient UK studies, but meets the review protocol</p>
<p>Bond, Sharon M, Cartmell, Kathleen B, Lopez, Cristina M et al. (2016) Racial and Ethnic Group Knowledge, Perceptions and Behaviors about Human Papillomavirus, Human Papillomavirus Vaccination, and Cervical Cancer among Adolescent Females. Journal of pediatric and adolescent gynecology 29(5): 429-435</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Bouchez M, Ward JK, Bocquier A et al. Physicians' decision processes about the HPV vaccine: A qualitative study. Vaccine 39(3): 521-528</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Bowen, Deborah J, Weiner, Diane, Samos, Markos et al. (2014) Exploration of New</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are</p>

Study	Reason
England Native American women's views on human papillomavirus (HPV), testing, and vaccination. <i>Journal of Racial and Ethnic Health Disparities</i> 1(1): 45-51	sufficient UK or OECD subset studies, but meets the review protocol
Boyce, Tammy and Holmes, Alison (2012) Addressing health inequalities in the delivery of the human papillomavirus vaccination programme: examining the role of the school nurse. <i>PloS one</i> 7(9): e43416	- Study addresses identification or recording of eligibility or status <i>Qualitative study</i>
Boyd, Erin D, Phillips, Janice M, Schoenberger, Yu-Mei M et al. (2018) Barriers and facilitators to HPV vaccination among rural Alabama adolescents and their caregivers. <i>Vaccine</i> 36(28): 4126-4133	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Brabin L; Roberts SA; Kitchener HC (2007) A semi-qualitative study of attitudes to vaccinating adolescents against human papillomavirus without parental consent. <i>BMC public health</i> 7: 20	- UK study that is not required because there are sufficient UK studies of higher quality study design that meet the protocol <i>Study is an analysis of an open-ended question from a survey or questionnaire.</i>
Brandt, H.M., Sharpe, P.A., Mccree, D.H. et al. (2009) HPV Vaccine acceptance in a clinic-based sample of women in the rural south. <i>American Journal of Health Education</i> 40(3): 174-180	- Not a relevant study design <i>Study used a questionnaire and was not qualitative</i>
Brandt, Heather M, Vanderpool, Robin C, Curry, Susan J et al. (2019) A multi-site case study of community-clinical linkages for promoting HPV vaccination. <i>Human vaccines & immunotherapeutics</i> 15(78): 1599-1606	- Not a relevant study design <i>Does not appear to be a qualitative study, but rather a process evaluation paper</i>
Brewer, Noel T, Gottlieb, Sami L, Reiter, Paul L et al. (2011) Longitudinal predictors of human papillomavirus vaccine initiation among adolescent girls in a high-risk geographic area. <i>Sexually transmitted diseases</i> 38(3): 197-204	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Brown KF, Kroll JS, Hudson MJ et al. (2010) Factors underlying parental decisions about combination childhood vaccinations including MMR: a systematic review. <i>Vaccine</i> 28(26): 4235-4248	- Systematic review used as a source of primary studies

Study	Reason
Brown, E.C.F.; Little, P.; Leydon, G.M. (2010) Communication challenges of HPV vaccination. <i>Family Practice</i> 27(2): 224-229	<p>- Study examining issues concerning uptake of a new vaccine on the routine schedule</p> <p><i>Study looking at anticipated challenges to do with the implementation of the new HPV vaccination in 2008</i></p>
Brown, T., Goldman, S.N., Persell, S.D. et al. (2017) Development and evaluation of a patient education video promoting pneumococcal vaccination. <i>Patient Education and Counseling</i> 100(5): 1024-1027	<p>- Study based in USA. Committee decision to exclude as views may differ from those about the UK health system</p>
Brunson, Emily K (2013) How parents make decisions about their children's vaccinations. <i>Vaccine</i> 31(46): 5466-5470	<p>- Remaining OECD country study that is not required because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
Brunson, Emily K (2015) Identifying Parents Who Are Amenable to Pro-Vaccination Conversations. <i>Global pediatric health</i> 2: 2333794x15616332-2333794x15616332	<p>- Remaining OECD country study that is not required because there are sufficient UK or OECD subset studies, but meets the review protocol</p> <p><i>Study covers multiple age categories</i></p>
Btoush, Rula, Brown, Diane R, Tsui, Jennifer et al. (2019) Knowledge and Attitudes Toward Human Papillomavirus Vaccination Among Latina Mothers of South American and Caribbean Descent in the Eastern US. <i>Health equity</i> 3(1): 219-230	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
Buller, D.B., Walkosz, B.J., Berteletti, J. et al. (2019) Insights on HPV vaccination in the United States from mothers' comments on Facebook posts in a randomized trial. <i>Human Vaccines and Immunotherapeutics</i> 15(78): 1479-1487	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
Burke, Nancy J, Do, Huyen H, Talbot, Jocelyn et al. (2015) Protecting our Khmer daughters: ghosts of the past, uncertain futures, and the human papillomavirus vaccine. <i>Ethnicity & health</i> 20(4): 376-90	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>

Study	Reason
<p>Calo, William A, Fernandez, Maria E, Fernandez-Espada, Natalie et al. (2015) Exploring the role of ethnic identity on the attitudes towards HPV vaccine advertising among Puerto Ricans: a qualitative analysis. Journal of immigrant and minority health 17(1): 314-7</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Carhart, Miev Y, Schminkey, Donna L, Mitchell, Emma M et al. (2018) Barriers and Facilitators to Improving Virginia's HPV Vaccination Rate: A Stakeholder Analysis With Implications for Pediatric Nurses. Journal of pediatric nursing 42: 1-8</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Cartmell, K.B., Mzik, C.R., Sundstrom, B.L. et al. (2019) HPV Vaccination Communication Messages, Messengers, and Messaging Strategies. Journal of cancer education : the official journal of the American Association for Cancer Education 34(5): 1014-1023</p>	<p>- Subset OECD country study that is not required for 11-18 age group because there are sufficient UK studies, but meets the review protocol</p>
<p>Cartmell, Kathleen B, Young-Pierce, Jennifer, McGue, Shannon et al. (2018) Barriers, facilitators, and potential strategies for increasing HPV vaccination: A statewide assessment to inform action. Papillomavirus research (Amsterdam, Netherlands) 5: 21-31</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Cassady D, Castaneda X, Ruelas MR et al. (2012) Pandemics and vaccines: perceptions, reactions, and lessons learned from hard-to-reach Latinos and the H1N1 campaign. Journal of health care for the poor and underserved 23(3): 1106-1122</p>	<p>- Study does not report any of the factors of interest specified in the protocol <i>This is a study on influenza and therefore does not match the protocol</i></p>
<p>Cates, Joan R, Ortiz, Rebecca, Shafer, Autumn et al. (2012) Designing messages to motivate parents to get their preteenage sons vaccinated against human papillomavirus. Perspectives on sexual and reproductive health 44(1): 39-47</p>	<p>- Study based in USA. Committee decision to exclude as views may differ from those about the UK health system</p>
<p>Cates, Joan R, Shafer, Autumn, Diehl, Sandra J et al. (2011) Evaluating a county-sponsored social marketing campaign to increase mothers' initiation of HPV vaccine for their preteen daughters in a primarily rural area. Social Marketing Quarterly 17(1): 4-26</p>	<p>- Study based in USA. Committee decision to exclude as views may differ from those about the UK health system</p>
<p>Cerigo, Helen, Macdonald, Mary Ellen, Franco, Eduardo L et al. (2012) Inuit women's attitudes</p>	<p>- No outcomes of interest</p>

Study	Reason
<p>and experiences towards cervical cancer and prevention strategies in Nunavik, Quebec. International journal of circumpolar health 71: 17996</p>	<p><i>Study is a survey with focus groups but the qualitative data is not reported in a format that can be extracted for analysis by us as it is merged with the survey results.</i></p>
<p>Chang, Jane, Ipp, Lisa S, de Roche, Ariel M et al. (2018) Adolescent-Parent Dyad Descriptions of the Decision to Start the HPV Vaccine Series. Journal of pediatric and adolescent gynecology 31(1): 28-32</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Chhabra, Rosy, Chisolm, Deena J, Bayldon, Barbara et al. (2018) Evaluation of Pediatric Human Papillomavirus Vaccination Provider Counseling Written Materials: A Health Literacy Perspective. Academic pediatrics 18(2s): 28-s36</p>	<p>- Not a relevant study design <i>Results from interviews are reported quantitatively.</i></p>
<p>Christy, Shannon M; Winger, Joseph G; Mosher, Catherine E (2019) Does Self-Efficacy Mediate the Relationships Between Social-Cognitive Factors and Intentions to Receive HPV Vaccination Among Young Women?. Clinical Nursing Research 28(6): 708-725</p>	<p>- Not a relevant study design <i>Survey / questionnaire, not a qualitative study</i></p>
<p>Chuang, Emmeline, Cabrera, Claudia, Mak, Selene et al. (2017) Primary care team- and clinic level factors affecting HPV vaccine uptake. Vaccine 35(35ptb): 4540-4547</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Cicek, H.S., Naharci, M.I., Cinar, F.I. et al. (2015) Vaccination status and related factors in an elderly Turkish population sample: A cross-sectional study. International Journal of Caring Sciences 8(1): 77-85</p>	<p>- Not a relevant study design <i>Quantitative study</i></p>
<p>Clark, Cheryl R, Baril, Nashira C, Achille, Erline et al. (2014) Trust yet verify: physicians as trusted sources of health information on HPV for black women in socioeconomically marginalized populations. Progress in community health partnerships : research, education, and action 8(2): 169-79</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Coles VA, Patel AS, Allen FL et al. (2015) The association of human papillomavirus vaccination with sexual behaviours and human papillomavirus knowledge: a systematic review.</p>	<p>- Systematic review used as a source of primary studies</p>

Study	Reason
International journal of STD & AIDS 26(11): 777-788	
Cooper Robbins, S C; Bernard, D; McCaffery, K Brotherton, K; Garland, S, S. Rachel Skinner (2010) Is cancer contagious?": Australian adolescent girls and their parents: Making the most of limited information about HPV and HPV vaccination. Vaccine 28: 3398-3408	- Duplicate reference <i>Author is Cooper Robbins</i>
Cooper, S.C., Davies, C., McBride, K. et al. (2016) Development of a human papillomavirus vaccination intervention for Australian adolescents. Health Education Journal 75(5): 610-620	- No outcomes of interest
Crocker-Buque T and Mounier-Jack S (2018) Vaccination in England: a review of why business as usual is not enough to maintain coverage. BMC public health 18(1): 1351	- Systematic review. References checked but no additional studies to add to the review
Crocker-Buque, Tim; Edelstein, Michael; Mounier-Jack, Sandra (2018) A process evaluation of how the routine vaccination programme is implemented at GP practices in England. Implementation science : IS 13(1): 132	- Study does not look at barriers and facilitators to vaccination <i>Study is a process evaluation and does not report views of participants about issues affecting vaccine uptake</i>
Cunningham-Erves, Jennifer, Forbes, Laura, Ivankova, Nataliya et al. (2018) Black mother's intention to vaccinate daughters against HPV: A mixed methods approach to identify opportunities for targeted communication. Gynecologic oncology 149(3): 506-512	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
D'Souza, Clare, Mort, Gillian Sullivan, Zyngier, Suzanne et al. (2013) Preventive innovation: an Australian case study on HPV vaccination. Health marketing quarterly 30(3): 206-20	- Review article but not a systematic review
D'Souza, Clare, Zyngier, Suzanne, Robinson, Priscilla et al. (2011) Health belief model: Evaluating marketing promotion in a public vaccination program. Journal of Nonprofit & Public Sector Marketing 23(2): 134-157	- No outcomes of interest
Dailey, Phokeng M and Krieger, Janice L (2017) Communication and US-Somali Immigrant Human Papillomavirus (HPV) Vaccine Decision-Making. Journal of cancer education : the official	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol

Study	Reason
journal of the American Association for Cancer Education 32(3): 516-521	
Davis, M.M., Halasyamani, L.K., Sneller, V.-P. et al. (2005) Provider response to different formats of the adult immunization schedule. American Journal of Preventive Medicine 29(1): 34-40	<p>- Not a relevant study design</p> <p><i>Not a qualitative study but rather an evaluation of the acceptability of 2 different proposed forms of the adult vaccination schedule in USA presented quantitatively.</i></p>
Dempsey, Amanda F, Abraham, Leah M, Dalton, Vanessa et al. (2009) Understanding the reasons why mothers do or do not have their adolescent daughters vaccinated against human papillomavirus. Annals of epidemiology 19(8): 531-8	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
Dennison, C., King, A.R., Rutledge, H. et al. (2019) HPV Vaccine-Related Research, Promotion and Coordination in the State of Georgia: A Systematic Review. Journal of community health 44(2): 313-321	<p>- Systematic review used as a source of primary studies</p>
DiAnna Kinder, Frances (2016) Parental Refusal of the Human Papillomavirus Vaccine. Journal of pediatric health care : official publication of National Association of Pediatric Nurse Associates & Practitioners 30(6): 551-557	<p>- Not a relevant study design</p> <p><i>Survey / questionnaire data presented. Although study did have open ended questions the results were not reported in a useful format.</i></p>
Dilley, Sarah E, Peral, Sylvia, Straughn, J Michael Jr et al. (2018) The challenge of HPV vaccination uptake and opportunities for solutions: Lessons learned from Alabama. Preventive medicine 113: 124-131	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
Dixon, Brian E, Kasting, Monica L, Wilson, Shannon et al. (2017) Health care providers' perceptions of use and influence of clinical decision support reminders: qualitative study following a randomized trial to improve HPV vaccination rates. BMC medical informatics and decision making 17(1): 119	<p>- Study based in USA. Committee decision to exclude as views may differ from those about the UK health system</p>
Do, Hoai, Seng, Paularita, Talbot, Jocelyn et al. (2009) HPV vaccine knowledge and beliefs among Cambodian American parents and community leaders. Asian Pacific journal of cancer prevention : APJCP 10(3): 339-44	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>

Study	Reason
Doroshenko, A., Hatchette, J., Halperin, S.A. et al. (2012) Challenges to immunization: The experiences of homeless youth. BMC Public Health 12(1): 338	- Subset OECD country study that is not required because there are sufficient UK studies, but meets the review protocol
Dube, E, Bettinger, J A, Halperin, B et al. (2012) Determinants of parents' decision to vaccinate their children against rotavirus: results of a longitudinal study. Health education research 27(6): 1069-80	- Not a relevant study design <i>Survey / questionnaire, not a qualitative study</i>
Dube, Eve, Vivion, Maryline, Sauvageau, Chantal et al. (2016) "Nature Does Things Well, Why Should We Interfere?": Vaccine Hesitancy Among Mothers. Qualitative health research 26(3): 411-425	- Subset OECD country study that is not required for 0-5 age group because there are sufficient UK studies, but meets the review protocol
Díaz Crescitelli ME, Ghirotto L, Sisson H et al. (2020) A meta-synthesis study of the key elements involved in childhood vaccine hesitancy. Public health 180: 38-45	- Systematic review used as a source of primary studies
Eason, E, Graham, I D, Sabourin, M et al. (2002) Introducing printed postpartum orders for measles-mumps-rubella vaccination: a qualitative study. Journal of obstetrics and gynaecology Canada : JOGC = Journal d'obstetrique et gynecologie du Canada : JOGC 24(5): 410-4	- Vaccine on UK routine schedule but wrong context for administration
Eilers R; Krabbe PF; de Melker HE (2014) Factors affecting the uptake of vaccination by the elderly in Western society. Preventive medicine 69: 224-234	- Systematic review used as a source of primary studies
Ely, Gretchen E; Fields, Morgan; Dignan, Mark (2014) School-based vaccination programs and the HPV vaccine in 16 Appalachian Kentucky school districts: results from a pilot study. Social work in public health 29(4): 368-79	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Enkel, Stephanie L, Attwell, Katie, Snelling, Thomas L et al. (2018) 'Hesitant compliers': Qualitative analysis of concerned fully-vaccinating parents. Vaccine 36(44): 6459-6463	- Subset OECD country study that is not required because there are sufficient UK studies, but meets the review protocol
Erves, J.; Hull, P.C.; Wilkins, C.H. (2018) Views of African American parent-child dyads on the	- Conference abstract

Study	Reason
immunization neighborhood to improve HPV vaccination rates. Journal of Clinical and Translational Science: 77	
Escoffery, C., Riehman, K., Watson, L. et al. (2019) Facilitators and Barriers to the Implementation of the HPV VACs (Vaccinate Adolescents Against Cancers) Program: A Consolidated Framework for Implementation Research Analysis. Preventing chronic disease 16: e85	- Study based in USA. Committee decision to exclude as views may differ from those about the UK health system
Espeleta, H.C., Beasley, L.O., Ridings, L.E. et al. (2017) Immunizing Children: A Qualitative Analysis of Future Parental Decision Making. Clinical Pediatrics 56(11): 1032-1039	- Study participants are the wrong age group <i>Participants were undergraduates with a mean age of 19.41 years and would not be eligible for HPV vaccination on the UK schedule.</i>
Evans, M, Stoddart, H, Condon, L et al. (2001) Parents' perspectives on the MMR immunisation: a focus group study. The British journal of general practice : the journal of the Royal College of General Practitioners 51(472): 904-10	- Study addresses identification or recording of eligibility or status <i>Qualitative study</i>
Fadda, M.; Depping, M.K.; Schulz, P.J. (2015) Addressing issues of vaccination literacy and psychological empowerment in the measles-mumps-rubella (MMR) vaccination decision-making: A qualitative study Infectious Disease epidemiology. BMC Public Health 15(1): 836	- Remaining OECD country study that is not required because there are sufficient UK or OECD subset studies, but meets the review protocol
Fadda, Marta; Depping, Miriam K; Schulz, Peter J (2015) Addressing issues of vaccination literacy and psychological empowerment in the measles-mumps-rubella (MMR) vaccination decision-making: a qualitative study. BMC public health 15: 836	- Duplicate reference
Fadda, Marta, Galimberti, Elisa, Carraro, Valter et al. (2016) What are parents' perspectives on psychological empowerment in the MMR vaccination decision? A focus group study. BMJ open 6(4): e010773	- Remaining OECD country study that is not required because there are sufficient UK or OECD subset studies, but meets the review protocol
Fadda, Marta, Galimberti, Elisa, Fiordelli, Maddalena et al. (2018) Evaluation of a Mobile Phone-Based Intervention to Increase Parents' Knowledge About the Measles-Mumps-Rubella Vaccination and Their Psychological	- Remaining OECD country study that is not required because there are sufficient UK or OECD subset studies, but meets the review protocol

Study	Reason
Empowerment: Mixed-Method Approach. JMIR mHealth and uHealth 6(3): e59	
Feigelman, S, Stanton, B, Rubin, J D et al. (1993) Effectiveness of family notification efforts and compliance with measles post-exposure prophylaxis. Journal of community health 18(2): 83-93	- Not a relevant study design <i>Survey / questionnaire, not a qualitative study</i>
Fenton, Anny T (2019) Abandoning Medical Authority: When Medical Professionals Confront Stigmatized Adolescent Sex and the Human Papillomavirus (HPV) Vaccine. Journal of Health and Social Behavior 60(2): 240-256	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Fernandez, Maria E, Le, Yen-Chi L, Fernandez-Espada, Natalie et al. (2014) Knowledge, attitudes, and beliefs about human papillomavirus (HPV) vaccination among Puerto Rican mothers and daughters, 2010: a qualitative study. Preventing chronic disease 11: e212	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Ferrara, Pietro; Stromillo, Lucia; Albano, Luciana (2018) Awareness, Attitudes, and Practices Toward Meningococcal B Vaccine among Pediatricians in Italy. Medicina (Kaunas, Lithuania) 54(6)	- Not a relevant study design <i>Survey / questionnaire, not a qualitative study</i>
Ferrer, Harriet Batista, Trotter, Caroline, Hickman, Matthew et al. (2014) Barriers and facilitators to HPV vaccination of young women in high-income countries: a qualitative systematic review and evidence synthesis. BMC public health 14: 700	- Systematic review used as a source of primary studies
Fisher H, Hickman M, Ferrie J et al. (2020) Impact of new consent procedures on uptake of the schools-based human papillomavirus (HPV) vaccination programme. Journal of public health (Oxford, England)	- Not a relevant study design <i>Quantitative study. Also picked up in the search for the quantitative review questions - used in the Acceptability of specific interventions review</i>
Fisher, H., Harding, S., Hickman, M. et al. (2019) Barriers and enablers to adolescent self-consent for vaccination: A mixed-methods evidence synthesis. Vaccine 37(3): 417-429	- Systematic review used as a source of primary studies
Fontenot, Holly B; Domush, Vanessa; Zimet, Gregory D (2015) Parental Attitudes and Beliefs Regarding the Nine-Valent Human	- Remaining OECD country study that is not required for 11-18 age group because there are

Study	Reason
Papillomavirus Vaccine. The Journal of adolescent health : official publication of the Society for Adolescent Medicine 57(6): 595-600	sufficient UK or OECD subset studies, but meets the review protocol
Ford, Carol A, English, Abigail, Davenport, Amy F et al. (2009) Increasing adolescent vaccination: barriers and strategies in the context of policy, legal, and financial issues. The Journal of adolescent health : official publication of the Society for Adolescent Medicine 44(6): 568-74	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Forsner, M, Nilsson, S, Finnstrom, B et al. (2016) Expectation prior to human papilloma virus vaccination: 11 to 12-year-old girls' written narratives. Journal of Child Health Care 20(3): 365-373	- Subset OECD country study that is not required for 11-18 age group because there are sufficient UK studies, but meets the review protocol
Forster AS, Rockliffe L, Chorley AJ et al. (2016) A qualitative systematic review of factors influencing parents' vaccination decision-making in the United Kingdom. SSM - population health 2: 603-612	- Systematic review used as a source of primary studies
Forster AS, Rockliffe L, Chorley AJ et al. (2017) Ethnicity-specific factors influencing childhood immunisation decisions among Black and Asian Minority Ethnic groups in the UK: a systematic review of qualitative research. Journal of epidemiology and community health 71(6): 544-549	- Systematic review used as a source of primary studies
Fournet N, Mollema L, Ruijs WL et al. Under-vaccinated groups in Europe and their beliefs, attitudes and reasons for non-vaccination; two systematic reviews. BMC public health 18(1): 196	- Systematic review used as a source of primary studies
Frawley, Jane E, McKenzie, Kirsty, Cummins, Allison et al. (2020) Midwives' role in the provision of maternal and childhood immunisation information. Women and birth : journal of the Australian College of Midwives 33(2): 145-152	- Duplicate reference
Friedman, Allison L and Shepeard, Hilda (2007) Exploring the knowledge, attitudes, beliefs, and communication preferences of the general public regarding HPV: findings from CDC focus group research and implications for practice. Health education & behavior : the official	- Study participants are the wrong age group <i>Study only includes 25-45 year olds. These people are too old to receive HPV in the UK and are not recruited as parents of eligible children/teenagers.</i>

Study	Reason
publication of the Society for Public Health Education 34(3): 471-85	
Galbraith-Gyan, Kayoll V, Lechuga, Julia, Jenerette, Coretta M et al. (2019) HPV vaccine acceptance among African-American mothers and their daughters: an inquiry grounded in culture. <i>Ethnicity & health</i> 24(3): 323-340	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Galbraith-Gyan, Kayoll V, Lechuga, Julia, Jenerette, Coretta M et al. (2019) African-American parents' and daughters' beliefs about HPV infection and the HPV vaccine. <i>Public health nursing (Boston, Mass.)</i> 36(2): 134-143	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Garbutt, Jane M, Dodd, Sherry, Walling, Emily et al. (2018) Barriers and facilitators to HPV vaccination in primary care practices: a mixed methods study using the Consolidated Framework for Implementation Research. <i>BMC family practice</i> 19(1): 53	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Gardner, Aja R (2017) Beliefs among mothers of adolescent females on cervical cancer vaccination. <i>Dissertation Abstracts International: Section B: The Sciences and Engineering</i> 78(3be): no-specified	- Not a peer-reviewed publication <i>Dissertation</i>
Gerend, M.A.; Weibley, E.; Bland, H. (2009) Parental Response to Human Papillomavirus Vaccine Availability: Uptake and Intentions. <i>Journal of Adolescent Health</i> 45(5): 528-531	- Not a relevant study design <i>Survey / questionnaire, not a qualitative study</i>
Gerend, M.A.; Zapata, C.; Reyes, E. (2013) Predictors of human papillomavirus vaccination among daughters of low-income latina mothers: The role of acculturation. <i>Journal of Adolescent Health</i> 53(5): 623-629	- Not a relevant study design <i>Survey / questionnaire, not a qualitative study</i>
Gesser-Edelsburg, Anat, Shir-Raz, Yaffa, Green, Manfred S et al. (2016) Why do parents who usually vaccinate their children hesitate or refuse? General good vs. individual risk. <i>Journal of Risk Research</i> 19(4): 405-424	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Getrich, Christina M, Broidy, Lisa M, Kleymann, Erin et al. (2014) Different models of HPV vaccine decision-making among adolescent	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol

Study	Reason
girls, parents, and health-care clinicians in New Mexico. <i>Ethnicity & Health</i> 19(1): 47-63	
Gidengil, C., Chen, C., Parker, A.M. et al. (2019) Beliefs around childhood vaccines in the United States: A systematic review. <i>Vaccine</i> 37(45): 6793-6802	- Systematic review used as a source of primary studies
Gilkey, Melissa B and McRee, Annie-Laurie (2016) Provider communication about HPV vaccination: A systematic review. <i>Human vaccines & immunotherapeutics</i> 12(6): 1454-68	- Systematic review used as a source of primary studies
Gill, E. & Sutton S (1993) Immunisation uptake: the role of parental attitudes in Immunisation Research: a Summary Volume, V. Hey, ed., Health Education Authority, London.	- Full text paper or book chapter is unavailable
Glanz JM, Wagner NM, Narwaney KJ et al. (2013) A mixed methods study of parental vaccine decision making and parent-provider trust. <i>Academic pediatrics</i> 13(5): 481-488	- Remaining OECD country study that is not required because there are sufficient UK or OECD subset studies, but meets the review protocol
Glenn, Beth A, Tsui, Jennifer, Singhal, Rita et al. (2015) Factors associated with HPV awareness among mothers of low-income ethnic minority adolescent girls in Los Angeles. <i>Vaccine</i> 33(2): 289-93	- Not a relevant study design <i>Survey</i>
Glode, M P (2001) Combination vaccines: practical considerations for public health and private practice. <i>The Pediatric infectious disease journal</i> 20(11 suppl): 19-22	- Not a relevant study design <i>Not a qualitative study. This is a from a process evaluation paper concerned with implementation of new formulation of vaccines for children.</i>
Goff, Sarah L, Mazor, Kathleen M, Gagne, Shawn J et al. (2011) Vaccine counseling: a content analysis of patient-physician discussions regarding human papilloma virus vaccine. <i>Vaccine</i> 29(43): 7343-9	- Not a relevant study design <i>Survey / questionnaire, not a qualitative study</i>
Golden, Shelley D, Moracco, Kathryn E, Feld, Ashley L et al. (2014) Process evaluation of an intervention to increase provision of adolescent vaccines at school health centers. <i>Health Education & Behavior</i> 41(6): 625-632	- Not a relevant study design <i>Survey / questionnaire, not a qualitative study</i>

Study	Reason
Gottlieb, Sami L, Brewer, Noel T, Sternberg, Maya R et al. (2009) Human papillomavirus vaccine initiation in an area with elevated rates of cervical cancer. <i>Journal of Adolescent Health</i> 45(5): 430-437	- Not a relevant study design <i>Survey / questionnaire, not a qualitative study</i>
Gottvall, Maria, Grandahl, Maria, Høglund, Anna T et al. (2013) Trust versus concerns-how parents reason when they accept HPV vaccination for their young daughter. <i>Upsala journal of medical sciences</i> 118(4): 263-70	- Vaccine was not on the routine schedule in that country at the time of the study <i>HPV vaccination in Sweden</i>
Gottvall, Maria, Tyden, Tanja, Larsson, Margareta et al. (2011) Challenges and opportunities of a new HPV immunization program perceptions among Swedish school nurses. <i>Vaccine</i> 29(28): 4576-83	- Vaccine was not on the routine schedule in that country at the time of the study <i>HPV vaccination in Sweden</i>
Gottvall, Maria, Tydén, Tanja, Larsson, Margareta et al. (2015) Informed Consent for HPV Vaccination: A Relational Approach. <i>Health Care Analysis: HCA</i> 23(1): 50-62	- Vaccine was not on the routine schedule in that country at the time of the study <i>HPV vaccination in Sweden</i>
Grandahl, Maria, Tyden, Tanja, Gottvall, Maria et al. (2015) Immigrant women's experiences and views on the prevention of cervical cancer: A qualitative study. <i>Health Expectations: An International Journal of Public Participation in Health Care & Health Policy</i> 18(3): 344-354	- Study participants are the wrong age group <i>Participants are discussing HPV vaccination and are 18-54 years old. The study does not state whether they are parents and the majority of participants would be too old to be vaccinated themselves on the UK schedule.</i>
Greenfield, Lauren S, Page, Libby C, Kay, Meagan et al. (2015) Strategies for increasing adolescent immunizations in diverse ethnic communities. <i>The Journal of adolescent health : official publication of the Society for Adolescent Medicine</i> 56(5suppl): 47-53	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Griffioen, Anne M, Glynn, Susan, Mullins, Tanya K et al. (2012) Perspectives on decision making about human papillomavirus vaccination among 11- to 12-year-old girls and their mothers. <i>Clinical pediatrics</i> 51(6): 560-8	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Gross, Karin, Hartmann, Karin, Zemp, Elisabeth et al. (2015) 'I know it has worked for millions of years': the role of the 'natural' in parental	- Remaining OECD country study that is not required because there are sufficient UK or

Study	Reason
reasoning against child immunization in a qualitative study in Switzerland. BMC public health 15: 373	OECD subset studies, but meets the review protocol <i>Study covers multiple age categories</i>
Gullion JS; Henry L; Gullion G (2008) Deciding to opt out of childhood vaccination mandates. Public health nursing (Boston, Mass.) 25(5): 401-408	- Remaining OECD country study that is not required because there are sufficient UK or OECD subset studies, but meets the review protocol
Gust, Deborah A, PhD, MPH, Kennedy, Allison, MPH, Weber, Deanne, PhD et al. (2009) Parents Questioning Immunization: Evaluation of an Intervention. American Journal of Health Behavior 33(3): 287-98	- Study based in USA. Committee decision to exclude as views may differ from those about the UK health system
Gust, Deborah A, Kennedy, Allison, Wolfe, Skip et al. (2008) Developing tailored immunization materials for concerned mothers. Health Education Research 23(3): 499-511	- Remaining OECD country study that is not required because there are sufficient UK or OECD subset studies, but meets the review protocol
Haesebaert, Julie, Lutringer-Magnin, Delphine, Kalecinski, Julie et al. (2012) French women's knowledge of and attitudes towards cervical cancer prevention and the acceptability of HPV vaccination among those with 14 - 18 year old daughters: a quantitative-qualitative study. BMC public health 12: 1034	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Hamlish, Tamara; Clarke, Laura; Alexander, Kenneth A (2012) Barriers to HPV immunization for African American adolescent females. Vaccine 30(45): 6472-6	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Hansen, Caitlin E, Credle, Marisol, Shapiro, Eugene D et al. (2016) "It All Depends": A Qualitative Study of Parents' Views of Human Papillomavirus Vaccine for their Adolescents at Ages 11-12 years. Journal of cancer education : the official journal of the American Association for Cancer Education 31(1): 147-52	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Hansen, Caitlin E; North, Anna; Niccolai, Linda M (2019) Cognitive Bias in Clinicians' Communication about Human Papillomavirus Vaccination. Health communication: 1-8	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol

Study	Reason
<p>Hansen, Caitlin E, Okoloko, Edirin, Ogunbajo, Adedotun et al. (2017) Acceptability of School-Based Health Centers for Human Papillomavirus Vaccination Visits: A Mixed-Methods Study. The Journal of school health 87(9): 705-714</p>	<p>- Study looked at barriers and facilitators to implementing a specific intervention, but the study was not carried out in the UK</p> <p><i>Acceptability of specific interventions review only included studies from the UK</i></p>
<p>Harmsen IA, Mollema L, Ruiter RA et al. (2013) Why parents refuse childhood vaccination: a qualitative study using online focus groups. BMC public health 13: 1183</p>	<p>- Subset OECD country study that is not required because there are sufficient UK studies, but meets the review protocol</p> <p><i>Study covers multiple age categories</i></p>
<p>Harrington, P M; Woodman, C; Shannon, W F (1999) Vaccine, yes; injection, no: maternal responses to the introduction of Haemophilus influenzae type b (Hib) vaccine. The British journal of general practice : the journal of the Royal College of General Practitioners 49(448): 901-2</p>	<p>- Subset OECD country study that is not required because there are sufficient UK studies, but meets the review protocol</p>
<p>Head, Katharine J; Vanderpool, Robin C; Mills, Laurel A (2013) Health Care Providers' Perspectives on Low HPV Vaccine Uptake and Adherence in Appalachian Kentucky. Public Health Nursing 30(4): 351-360</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Henderson, Lorna, Clements, Alison, Damery, Sarah et al. (2011) 'A false sense of security'? Understanding the role of the HPV vaccine on future cervical screening behaviour: a qualitative study of UK parents and girls of vaccination age. Journal of medical screening 18(1): 41-5</p>	<p>- No outcomes of interest</p> <p><i>Effects of HPV vaccination on views about cervical screening</i></p>
<p>Henderson, R I, Shea-Budgell, M, Healy, C et al. (2018) First nations people's perspectives on barriers and supports for enhancing HPV vaccination: Foundations for sustainable, community-driven strategies. Gynecologic oncology 149(1): 93-100</p>	<p>- Subset OECD country study that is not required because there are sufficient UK studies, but meets the review protocol</p>
<p>Hendry, Maggie, Lewis, Ruth, Clements, Alison et al. (2013) "HPV? Never heard of it!": a systematic review of girls' and parents' information needs, views and preferences about</p>	<p>- Systematic review used as a source of primary studies</p>

Study	Reason
human papillomavirus vaccination. Vaccine 31(45): 5152-67	
Henrikson, N.B., Tuzzio, L., Gilkey, M.B. et al. (2016) "You're never really off time": Healthcare providers' interpretations of optimal timing for HPV vaccination. Preventive Medicine Reports 4: 94-97	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Hermann JS, Featherstone RM, Russell ML et al. (2019) Immunization Coverage of Children in Care of the Child Welfare System in High-Income Countries: A Systematic Review. American journal of preventive medicine 56(2): e55-e63	- Systematic review used as a source of primary studies
Hirth, J.M., Berenson, A.B., Cofie, L.E. et al. (2019) Caregiver acceptance of a patient navigation program to increase human papillomavirus vaccination in pediatric clinics: a qualitative program evaluation. Human Vaccines and Immunotherapeutics 15(78): 1585-1591	- Study based in USA. Committee decision to exclude as views may differ from those about the UK health system
Hoffman, Beth L, BSc, Felter, Elizabeth M, MCHES, DrPH, Chu, Kar-Hai, PhD et al. (2019) THE EMERGING LANDSCAPE OF ANTI-VACCINATION SENTIMENT ON FACEBOOK. Journal of Adolescent Health 64(2s)	- Conference abstract
Hofman, Robine, van Empelen, Pepijn, Vogel, Ineke et al. (2013) Parental decisional strategies regarding HPV vaccination before media debates: a focus group study. Journal of health communication 18(7): 866-80	- Vaccine was not on the routine schedule in that country at the time of the study <i>HPV vaccination in the Netherlands</i>
Hudson, Sharon M, Rondinelli, June, Glenn, Beth A et al. (2016) Human papillomavirus vaccine series completion: Qualitative information from providers within an integrated healthcare organization. Vaccine 34(30): 3515-21	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Hughes, Cayce C, Jones, Amanda L, Feemster, Kristen A et al. (2011) HPV vaccine decision making in pediatric primary care: a semi-structured interview study. BMC pediatrics 11: 74	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Hull, Pamela C, Williams, Elizabeth A, Khabele, Dineo et al. (2014) HPV vaccine use among	- Remaining OECD country study that is not required for 11-18 age group because there are

Study	Reason
African American girls: qualitative formative research using a participatory social marketing approach. <i>Gynecologic oncology</i> 132(suppl1): 13-20	sufficient UK or OECD subset studies, but meets the review protocol
Humiston, Sharon G, Albertin, Christina, Schaffer, Stanley et al. (2009) Health care provider attitudes and practices regarding adolescent immunizations: a qualitative study. <i>Patient education and counseling</i> 75(1): 121-7	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Huston, S.A., Ha, D.R., Hohmann, L.A. et al. (2019) Qualitative Investigation of Community Pharmacy Immunization Enhancement Program Implementation. <i>Journal of Pharmacy Technology</i> 35(5): 208-218	- Study based in USA. Committee decision to exclude as views may differ from those about the UK health system
Hutton S and Finlay F (2009) Allaying parental concerns about the human papillomavirus vaccine. <i>Paediatric nursing</i> 21(9): 20-23	- Not a relevant study design <i>Not a focus group or interview. Study was an analysis of comments written on a vaccination consent form by parents.</i>
Jackson, C., Dyson, L., Bedford, H. et al. (2016) UNderstanding uptake of immunisations in travelling aNd gypsy communities (UNITING): A qualitative interview study. <i>Health Technology Assessment</i> 20(72)	- Study addresses identification or recording of eligibility or status <i>Qualitative study</i>
Jackson, Cath, Bedford, Helen, Cheater, Francine M et al. (2017) Needles, Jabs and Jags: a qualitative exploration of barriers and facilitators to child and adult immunisation uptake among Gypsies, Travellers and Roma. <i>BMC public health</i> 17(1): 254	- Study addresses identification or recording of eligibility or status <i>Qualitative study</i>
Jacobs-Wingo, Jasmine L; Jim, Cheyenne C; Groom, Amy V (2017) Human Papillomavirus Vaccine Uptake: Increase for American Indian Adolescents, 2013-2015. <i>American journal of preventive medicine</i> 53(2): 162-168	- Not a relevant study design <i>Quantitative study</i>
Javanbakht, Marjan, Stahlman, Shauna, Walker, Susan et al. (2012) Provider perceptions of barriers and facilitators of HPV vaccination in a high-risk community. <i>Vaccine</i> 30(30): 4511-6	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol

Study	Reason
<p>Jim, Cheyenne C, Lee, Jennifer Wai-Yin, Groom, Amy V et al. (2012) Human papillomavirus vaccination practices among providers in Indian health service, tribal and urban Indian healthcare facilities. <i>Journal of Women's Health</i> 21(4): 372-378</p>	<p>- Not a relevant study design <i>Survey / questionnaire, not a qualitative study</i></p>
<p>Johnson, David R; Nichol, Kristin L; Lipczynski, Kim (2008) Barriers to adult immunization. <i>The American journal of medicine</i> 121(7suppl2): 28-35</p>	<p>- Not a relevant study design <i>Survey / questionnaire, not a qualitative study</i></p>
<p>Joseph, N.P., Clark, J.A., Mercilus, G. et al. (2014) Racial and ethnic differences in HPV knowledge, attitudes, and vaccination rates among low-income African-American, Haitian, Latina, and Caucasian young adult women. <i>Journal of Pediatric and Adolescent Gynecology</i> 27(2): 83-92</p>	<p>- Study participants are the wrong age group <i>Women were 18-22 years old (average age 19 years old) and being asked about their intention to accept HPV vaccination. This is too old for vaccination on the UK routine schedule.</i></p>
<p>Joseph, Natalie Pierre, Clark, Jack A, Bauchner, Howard et al. (2012) Knowledge, attitudes, and beliefs regarding HPV vaccination: ethnic and cultural differences between African-American and Haitian immigrant women. <i>Women's health issues : official publication of the Jacobs Institute of Women's Health</i> 22(6): e571-9</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Kahn, Jessica A, Rosenthal, Susan L, Tissot, Abigail M et al. (2007) Factors influencing pediatricians' intention to recommend human papillomavirus vaccines. <i>Ambulatory pediatrics : the official journal of the Ambulatory Pediatric Association</i> 7(5): 367-73</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Karafillakis K, Simas C, Jarrett C et al. (2019) HPV vaccination in a context of public mistrust and uncertainty: a systematic literature review of determinants of HPV vaccine hesitancy in Europe. <i>Human Vaccines & Immunotherapeutics</i> 15: 1615-1627</p>	<p>- Systematic review used as a source of primary studies</p>
<p>Karamanidou, Christina and Dimopoulos, Kostas (2016) Greek health professionals' perceptions of the HPV vaccine, state policy recommendations and their own role with regards to communication of relevant health information. <i>BMC public health</i> 16: 467</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Kashani, Beeta M, Tibbits, Melissa, Potter, Rachel C et al. (2019) Human Papillomavirus</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are</p>

Study	Reason
Vaccination Trends, Barriers, and Promotion Methods Among American Indian/Alaska Native and Non-Hispanic White Adolescents in Michigan 2006-2015. <i>Journal of community health</i> 44(3): 436-443	sufficient UK or OECD subset studies, but meets the review protocol
Katz, Ingrid T, Bogart, Laura M, Fu, Chong Min et al. (2016) Barriers to HPV immunization among blacks and latinos: a qualitative analysis of caregivers, adolescents, and providers. <i>BMC public health</i> 16(1): 874	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Katz, Mira L, Reiter, Paul L, Heaner, Sarah et al. (2009) Acceptance of the HPV vaccine among women, parents, community leaders, and healthcare providers in Ohio Appalachia. <i>Vaccine</i> 27(30): 3945-52	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Kaufman, J., Attwell, K., Hauck, Y. et al. (2019) Vaccine discussions in pregnancy: interviews with midwives to inform design of an intervention to promote uptake of maternal and childhood vaccines. <i>Human Vaccines and Immunotherapeutics</i> 15(11): 2534-2543	- Study addresses identification or recording of eligibility or status <i>Qualitative study</i>
Keating, Katie M, Brewer, Noel T, Gottlieb, Sami L et al. (2008) Potential barriers to HPV vaccine provision among medical practices in an area with high rates of cervical cancer. <i>The Journal of adolescent health : official publication of the Society for Adolescent Medicine</i> 43(4suppl): 61-7	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Kemberling, Melissa, Hagan, Kyla, Leston, Jessica et al. (2011) Alaska Native adolescent views on cervical cancer, the human papillomavirus (HPV), genital warts and the quadrivalent HPV vaccine. <i>International journal of circumpolar health</i> 70(3): 245-53	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Kennedy, Allison M and Gust, Deborah A (2008) Measles outbreak associated with a church congregation: a study of immunization attitudes of congregation members. <i>Public health reports (Washington, D.C. : 1974)</i> 123(2): 126-34	- Remaining OECD country study that is not required because there are sufficient UK or OECD subset studies, but meets the review protocol
Kesten, J.M., Flannagan, C., Ruane-Mcateer, E. et al. (2019) Mixed-methods study in England and Northern Ireland to understand young men who have sex with men's knowledge and	- Vaccine on UK routine schedule but wrong context for administration <i>Population of men who have sex with men with vaccine offered because they are a high risk</i>

Study	Reason
attitudes towards human papillomavirus vaccination. <i>BMJ Open</i> 9(5): e025070	<i>group. Mean age is 20.5 years for the focus groups and this is older than the target group for HPV vaccination on the UK routine schedule.</i>
Kikuta, A., Gardezi, F., Dubey, V. et al. (2011) Practices and perceptions regarding pain and pain management during routine childhood immunizations: Findings from a focus-group study with nurses working at Toronto Public Health, Ontario. <i>Canadian Journal of Infectious Diseases and Medical Microbiology</i> 22(2): 43-48	- Subset OECD country study that is not required because there are sufficient UK studies, but meets the review protocol
Kim, Hae Won and Kim, Duck Hee (2015) Awareness of cervical cancer prevention among mothers of adolescent daughters in Korea: qualitative research. <i>BMJ open</i> 5(5): e006915	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Kinder, Frances DiAnna (2018) Parental refusal of human papillomavirus vaccine: Multisite study. <i>Journal of Pediatric Health Care</i> 32(2): 150-156	- Not a relevant study design <i>Survey / questionnaire, not a qualitative study</i>
Kitayama, Ken, Stockwell, Melissa S, Vawdrey, David K et al. (2014) Parent perspectives on the design of a personal online pediatric immunization record. <i>Clinical pediatrics</i> 53(3): 238-242	- Study addresses identification or recording of eligibility or status <i>Included in identification of eligibility review</i>
Ko, L.K., Taylor, V.M., Mohamed, F.B. et al. (2019) "We brought our culture here with us": A qualitative study of perceptions of HPV vaccine and vaccine uptake among East African immigrant mothers. <i>Papillomavirus Research</i> 7: 21-25	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Kose, Dilek, Erkorkmaz, Unal, Cinar, Nursan et al. (2014) Mothers' knowledge and attitudes about HPV vaccination to prevent cervical cancers. <i>Asian Pacific journal of cancer prevention</i> : <i>APJCP</i> 15(17): 7263-6	- Not a relevant study design <i>Survey / questionnaire, not a qualitative study</i>
Koskan, A.M.; Dominick, L.N.; Helitzer, D.L. (2019) Rural Caregivers' Willingness for Community Pharmacists to Administer the HPV Vaccine to Their Age-Eligible Children. <i>Journal of cancer education</i> : the official journal of the American Association for Cancer Education	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol

Study	Reason
<p>Kriwy, P (2012) Similarity of parents and physicians in the decision to vaccinate children against measles, mumps and rubella. <i>International journal of public health</i> 57(2): 333-40</p>	<p>- Not a relevant study design <i>Survey / questionnaire, not a qualitative study</i></p>
<p>Kulczycki, A.; Wensel, T.M.; Hogue, M. (2017) Practices, Challenges, and Opportunities to Improving Pneumococcal Immunization in Working-Age, At-Risk Adults Through Community Pharmacies. <i>Infectious Diseases in Clinical Practice</i> 25(1): 23-28</p>	<p>- Vaccine on UK routine schedule but wrong context for administration <i>Vaccination programme was targeting at risk working-age adults for Pneumococcal vaccination rather than administering vaccines according to a routine schedule.</i></p>
<p>Lacombe-Duncan A; Newman PA; Baiden P Human papillomavirus vaccine acceptability and decision-making among adolescent boys and parents: A meta-ethnography of qualitative studies. <i>Vaccine</i> 36(19): 2545-2558</p>	<p>- Systematic review used as a source of primary studies</p>
<p>Lacombe-Duncan, Ashley; Newman, Peter A; Baiden, Philip (2018) Human papillomavirus vaccine acceptability and decision-making among adolescent boys and parents: A meta-ethnography of qualitative studies. <i>Vaccine</i> 36(19): 2545-2558</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Ladd, Ilene G, Gogoi, Radhika P, Bogaczyk, Tyler L et al. (2019) Cervical cancer patients' willingness and ability to serve as health care educators to advocate for human papillomavirus vaccine uptake. <i>Journal of Cancer Education</i> 34(3): 608-613</p>	<p>- Study participants are the wrong age group</p>
<p>Lake, Paige, Kasting, Monica L, Malo, Teri et al. (2019) An environmental scan to examine stakeholder perspectives on human papillomavirus vaccination: A mixed methods study. <i>Vaccine</i> 37(1): 187-194</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Landis, S. and Scarbrough, M.L. (1995) Using a vaccine manager to enhance in-hospital vaccine administration. <i>Journal of Family Practice</i> 41(4): 364-369</p>	<p>- Conference abstract</p>
<p>Leader, Amy E, Cashman, Rebecca, Voytek, Chelsea D et al. (2011) An exploratory study of adolescent female reactions to direct-to-consumer advertising: The case of the human</p>	<p>- Study based in USA. Committee decision to exclude as views may differ from those about the UK health system</p>

Study	Reason
papillomavirus (HPV) vaccine. Health Marketing Quarterly 28(4): 372-385	
Lee, H.Y., Lee, M.H., Sharratt, M. et al. (2019) Development of a mobile health intervention to promote papanicolaou tests and human papillomavirus vaccination in an underserved immigrant population: A culturally targeted and individually tailored text messaging approach. Journal of Medical Internet Research 21(6): e13256	<p>- Study participants are the wrong age group</p> <p><i>Target women are 21 to 29 years old and are too old to receive HPV vaccination according to the UK routine schedule.</i></p>
Lee, Hee Yun and Lee, Mi Hwa (2017) Barriers to Cervical Cancer Screening and Prevention in Young Korean Immigrant Women: Implications for Intervention Development. Journal of transcultural nursing : official journal of the Transcultural Nursing Society 28(4): 353-362	<p>- Study participants are the wrong age group</p> <p><i>Participants are women aged 21 and older and are too old to receive HPV vaccination according to the UK routine schedule. .</i></p>
Lee, Young-Me, Mondragon, Emilia, Jeong, Yoo Mi et al. (2019) Exploring the Need of HPV Education Programs in Korean American Communities. Journal of community health nursing 36(1): 19-30	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
Lefevre, H., Samain, S., Ibrahim, N. et al. (2019) HPV vaccination and sexual health in France: Empowering girls to decide. Vaccine 37(13): 1792-1798	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
Lefevre, Herve, Schrimpf, Cecile, Moro, Marie Rose et al. (2018) HPV vaccination rate in French adolescent girls: an example of vaccine distrust. Archives of disease in childhood 103(8): 740-746	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
Leung, S.O.A., Akinwunmi, B., Elias, K.M. et al. (2019) Educating healthcare providers to increase Human Papillomavirus (HPV) vaccination rates: A Qualitative Systematic Review. Vaccine: X 3: 100037	<p>- Systematic review. References checked but no additional studies to add to the review</p>
Lieu, T A, Glauber, J H, Fuentes-Afflick, E et al. (1994) Effects of vaccine information pamphlets on parents' attitudes. Archives of pediatrics & adolescent medicine 148(9): 921-5	<p>- Not a relevant study design</p> <p><i>Study uses a survey to obtain views about the information pamphlets.</i></p>

Study	Reason
Lode, Hartmut; Ludwig, Endre; Kassianos, George (2013) Pneumococcal infection--low awareness as a potential barrier to vaccination: results of a European study. <i>Advances in therapy</i> 30(4): 387-405	- Not a relevant study design <i>Survey / questionnaire, not a qualitative study</i>
Louis-Nance, T.R., Flournoy, M.W., Clinton, K.S. et al. (2012) The females against cancer educational series: A qualitative evaluation of mother/daughter knowledge and perceptions of human papillomavirus and its related cancers. <i>Journal of the National Medical Association</i> 104(34): 194-198	- Study looked at barriers and facilitators to implementing a specific intervention, but the study was not carried out in the UK
Lupi, Silvia, Bergamini, Mauro, Guidi, Enrica et al. (2014) Cross-sectional seroprevalence of antibodies against 6, 11, 16 and 18 human papilloma virus (HPV) types among teenagers and young women in Italy. <i>Annali dell'Istituto superiore di sanita</i> 50(2): 171-7	- Not a relevant study design <i>Survey of HPV sero-prevalence - not a qualitative study</i>
Luque, John S; Raychowdhury, Swati; Weaver, Mary (2012) Health care provider challenges for reaching Hispanic immigrants with HPV vaccination in rural Georgia. <i>Rural and remote health</i> 12(2): 1975	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Luthy KE; Beckstrand RL; Callister LC (2010) Parental hesitation in immunizing children in Utah. <i>Public health nursing (Boston, Mass.)</i> 27(1): 25-31	- Remaining OECD country study that is not required because there are sufficient UK or OECD subset studies, but meets the review protocol
Luthy KE, Beckstrand RL, Callister LC et al. (2012) Reasons parents exempt children from receiving immunizations. <i>The Journal of school nursing : the official publication of the National Association of School Nurses</i> 28(2): 153-160	- Remaining OECD country study that is not required because there are sufficient UK or OECD subset studies, but meets the review protocol
Lutz, Chelsea S, Carr, Wendy, Cohn, Amanda et al. (2018) Understanding barriers and predictors of maternal immunization: Identifying gaps through an exploratory literature review. <i>Vaccine</i> 36(49): 7445-7455	- Systematic review used as a source of primary studies
Macdonald H (2004) Low uptake of immunisation: Contributing factors. <i>Community Practitioner</i> 77(3): 95-100	- Not a relevant study design <i>The methods section briefly mentions that a focus group was conducted. However, the</i>

Study	Reason
	<i>results section only reports results from the surveys which are not a qualitative study design.</i>
MacDougall, D M, Halperin, B A, MacKinnon-Cameron, D et al. (2015) The challenge of vaccinating adults: attitudes and beliefs of the Canadian public and healthcare providers. <i>BMJ open</i> 5(9): e009062	- Study participants are the wrong age group <i>This study looks at attitudes towards vaccinations for adults who are aged 45 to 54 years old. This age group is not part of the UK routine immunisation schedule (with the exception of any pregnant women).</i>
Madeddu, G., Vroling, H., Oordt-Speets, A. et al. (2019) Vaccinations in prison settings: A systematic review to assess the situation in EU/EEA countries and in other high income countries. <i>Vaccine</i> 37(35): 4906-4919	- No outcomes of interest <i>No qualitative outcomes reported for MMR vaccination.</i> - Vaccine on UK routine schedule but wrong context for administration <i>Only potentially relevant included study looks at MMR vaccination in prison population following an outbreak of mumps. This type of catch up campaign is out of scope of the review.</i>
Malo, Teri L, Ali, Karla N, Sutton, Steven K et al. (2016) The content and context of physicians' communication with males about human papillomavirus vaccination. <i>Human vaccines & immunotherapeutics</i> 12(6): 1511-8	- Not a relevant study design <i>Quantitative study. Also picked up in the search for the quantitative review questions</i>
Marlow LA (2011) HPV vaccination among ethnic minorities in the UK: knowledge, acceptability and attitudes. <i>British journal of cancer</i> 105(4): 486-492	- Systematic review used as a source of primary studies
Marlow, Laura A V; Wardle, Jane; Waller, Jo (2009) Attitudes to HPV vaccination among ethnic minority mothers in the UK: an exploratory qualitative study. <i>Human vaccines</i> 5(2): 105-10	- Vaccine was not on the routine schedule in that country at the time of the study <i>HPV vaccination was not available in the UK at that time.</i>
Marshall S and Swerissen H (1999) A qualitative analysis of parental decision making for childhood immunisation. <i>Australian and New Zealand journal of public health</i> 23(5): 543-545	- Subset OECD country study that is not required because there are sufficient UK studies, but meets the review protocol

Study	Reason
<p>Marshall, Helen; Clarke, Michelle; Sullivan, Thomas (2014) Parental and community acceptance of the benefits and risks associated with meningococcal B vaccines. <i>Vaccine</i> 32(3): 338-44</p>	<p>- Not a relevant study design <i>Survey carried out using face to face interviews</i></p>
<p>Marshall, S, Fleming, A, Moore, A C et al. (2019) Views of parents regarding human papillomavirus vaccination: A systematic review and meta-ethnographic synthesis of qualitative literature. <i>Research in social & administrative pharmacy : RSAP</i> 15(4): 331-337</p>	<p>- Systematic review used as a source of primary studies</p>
<p>Marshall, S, Sahm, L J, Moore, A C et al. (2019) A systematic approach to map the adolescent human papillomavirus vaccine decision and identify intervention strategies to address vaccine hesitancy. <i>Public Health</i> 177: 71</p>	<p>- Subset OECD country study that is not required for 11-18 age group because there are sufficient UK studies, but meets the review protocol</p>
<p>Masserey Spicher, V. and Weiss, M.G. (2019) Policy and socio-cultural differences between cantons in Switzerland with high and low adolescent vaccination coverage for hepatitis B and HPV. <i>Vaccine</i> 37(52): 7539-7546</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Mays, Rose M; Sturm, Lynne A; Zimet, Gregory D (2004) Parental perspectives on vaccinating children against sexually transmitted infections. <i>Social science & medicine</i> (1982) 58(7): 1405-13</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>McComb, Erin, Ramsden, Vivian, Olatunbosun, Olufemi et al. (2018) Knowledge, attitudes and barriers to human papillomavirus (HPV) vaccine uptake among an immigrant and refugee catch-up group in a western Canadian province. <i>Journal of Immigrant and Minority Health</i> 20(6): 1424-1428</p>	<p>- Study participants are the wrong age group <i>Study participants are 18-26 years old, with a mean age of 23.5 years. This is older than the age group for HPV vaccination on the routine schedule in the UK.</i></p>
<p>McHale, P; Keenan, A; Ghebrehewet, S (2016) Reasons for measles cases not being vaccinated with MMR: investigation into parents' and carers' views following a large measles outbreak. <i>Epidemiology and infection</i> 144(4): 870-5</p>	<p>- Not a relevant study design <i>Survey / questionnaire, not a qualitative study</i></p>

Study	Reason
McRee, Annie-Laurie; Reiter, Paul L; Brewer, Noel T (2012) Parents' Internet use for information about HPV vaccine. <i>Vaccine</i> 30(25): 3757-62	- Not a relevant study design <i>Survey / questionnaire, not a qualitative study</i>
McRee, Annie-Laurie, Reiter, Paul L, Brewer, Noel T et al. (2010) Vaccinating adolescent girls against human papillomavirus-Who decides?. <i>Preventive Medicine: An International Journal Devoted to Practice and Theory</i> 50(4): 213-214	- Not a relevant study design <i>Survey / questionnaire, not a qualitative study</i>
McSherry, Lisa A, Dombrowski, Stephan U, Francis, Jill J et al. (2012) 'It's a can of worms': understanding primary care practitioners' behaviours in relation to HPV using the Theoretical Domains Framework. <i>Implementation science</i> : IS 7: 73	- Vaccine was not on the routine schedule in that country at the time of the study <i>It is unclear from the study whether HPV vaccination was on the routine schedule in Ireland at the time the study was conducted as no dates are provided for data collection.</i>
Mena Cantero, Alvin (2018) Educational Intervention for Engaging Adolescents and Their Parents in HPV Vaccination. <i>Dissertation Abstracts International: Section B: The Sciences and Engineering</i> 79(3be): no-specified	- Not a peer-reviewed publication <i>Abstract refers to a dissertation</i>
Mendel-Van Alstyne JA; Nowak GJ; Aikin AL What is 'confidence' and what could affect it?: A qualitative study of mothers who are hesitant about vaccines. <i>Vaccine</i> 36(44): 6464-6472	- Remaining OECD country study that is not required because there are sufficient UK or OECD subset studies, but meets the review protocol
Miller, Melissa K, Wickliffe, Joi, Jahnke, Sara et al. (2014) Views on human papillomavirus vaccination: a mixed-methods study of urban youth. <i>Journal of community health</i> 39(5): 835-41	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Miller, Nancy Kay; Verhoef, Marja; Cardwell, Kelly (2008) Rural parents' perspectives about information on child immunization. <i>Rural and remote health</i> 8(2): 863-863	- Subset OECD country study that is not required because there are sufficient UK studies, but meets the review protocol
Mipatrini, Daniele, Stefanelli, Paola, Severoni, Santino et al. (2017) Vaccinations in migrants and refugees: a challenge for European health systems. A systematic review of current scientific evidence. <i>Pathogens and global health</i> 111(2): 59-68	- Systematic review but not of qualitative studies

Study	Reason
<p>Mishra, Amrita Implementing HPV vaccines: public knowledge, attitudes, and the need for education. <i>International quarterly of community health education</i> 31(1): 71-98</p>	<ul style="list-style-type: none"> - More recent systematic review available that covers the same topic - Systematic review contains non-OECD countries
<p>Mishra, Amrita and Graham, Janice E (2012) Risk, choice and the 'girl vaccine': Unpacking human papillomavirus (HPV) immunisation. <i>Health, Risk & Society</i> 14(1): 57-69</p>	<ul style="list-style-type: none"> - Subset OECD country study that is not required for 11-18 age group because there are sufficient UK studies, but meets the review protocol
<p>Morales-Campos, D.Y., Snipes, S.A., Villarreal, E.K. et al. (2018) Cervical cancer, human papillomavirus (HPV), and HPV vaccination: exploring gendered perspectives, knowledge, attitudes, and cultural taboos among Mexican American adults. <i>Ethnicity & health</i>: 1-19</p>	<ul style="list-style-type: none"> - Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
<p>Morales-Campos, Daisy Y, Markham, Christine M, Peskin, Melissa Fleschler et al. (2013) Hispanic mothers' and high school girls' perceptions of cervical cancer, human papilloma virus, and the human papilloma virus vaccine. <i>The Journal of adolescent health : official publication of the Society for Adolescent Medicine</i> 52(5suppl): 69-75</p>	<ul style="list-style-type: none"> - Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
<p>Mortensen, Gitte Lee (2011) Perceptions of herpes zoster and attitudes towards zoster vaccination among 50-65-year-old Danes. <i>Danish medical bulletin</i> 58(12): a4345</p>	<ul style="list-style-type: none"> - Study examining issues concerning uptake of a new vaccine on the routine schedule <p><i>The vaccine had yet to be introduced in Denmark at the time of the study.</i></p>
<p>Mortensen, Gitte Lee (2010) Drivers and barriers to acceptance of human-papillomavirus vaccination among young women: a qualitative and quantitative study. <i>BMC public health</i> 10: 68</p>	<ul style="list-style-type: none"> - Subset OECD country study that is not required for 11-18 age group because there are sufficient UK studies, but meets the review protocol
<p>Mortensen, Gitte Lee (2010) Parental attitudes towards vaccinating sons with human papillomavirus vaccine. <i>Danish medical bulletin</i> 57(12): a4230</p>	<ul style="list-style-type: none"> - Not a relevant study design <p><i>Survey / questionnaire, not a qualitative study</i></p>

Study	Reason
Moss, Jennifer L, Feld, Ashley L, O'Malley, Brittany et al. (2014) Opportunities for increasing human papillomavirus vaccine provision in school health centers. <i>The Journal of school health</i> 84(6): 370-8	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Mullins, Tanya L Kowalczyk, Griffioen, Anne M, Glynn, Susan et al. (2013) Human papillomavirus vaccine communication: perspectives of 11-12 year-old girls, mothers, and clinicians. <i>Vaccine</i> 31(42): 4894-901	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Mytton J, Bedford H, Condon L et al. (2020) Improving immunization uptake rates among Gypsies, Roma and Travellers: a qualitative study of the views of service providers. <i>Journal of public health (Oxford, England)</i>	- Study addresses identification or recording of eligibility or status <i>Qualitative study</i>
Nan, Xiaoli; Futerfas, Michelle; Ma, Zexin (2017) Role of Narrative Perspective and Modality in the Persuasiveness of Public Service Advertisements Promoting HPV Vaccination. <i>Health communication</i> 32(3): 320-328	- Not a relevant study design <i>Quantitative study. Also picked up in the search for the quantitative review questions</i>
New, S.J. and Senior, M.L. (1991) I don't believe in needles: Qualitative aspects of a study into the uptake of infant immunisation in two English Health Authorities. <i>Social Science and Medicine</i> 33(4): 509-518	- Study addresses identification or recording of eligibility or status <i>Qualitative study</i>
New, Sarah, Winter, Kathleen, Boyte, Rebeca et al. (2018) Barriers to Receipt of Prenatal Tetanus Toxoid, Reduced Diphtheria Toxoid, and Acellular Pertussis Vaccine Among Mothers of Infants Aged <4 Months with Pertussis - California, 2016. <i>MMWR. Morbidity and mortality weekly report</i> 67(38): 1068-1071	- Not a relevant study design <i>Report is based on case-reports and questionnaires and does not report a qualitative component.</i>
Niccolai, L.M., Hansen, C.E., Credle, M. et al. (2014) Parents' views on human papillomavirus vaccination for sexually transmissible infection prevention: A qualitative study. <i>Sexual Health</i> 11(3): 274-279	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Niccolai, L.M., North, A.L., Footman, A. et al. (2018) Lack of school requirements and clinician recommendations for human papillomavirus	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol

Study	Reason
vaccination. Journal of Public Health Research 7(1): 29-34	
Niccolai, Linda M, Hansen, Caitlin E, Credle, Marisol et al. (2016) Parents' Recall and Reflections on Experiences Related to HPV Vaccination for Their Children. Qualitative health research 26(6): 842-50	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Noakes, Karen; Yarwood, Joanne; Salisbury, David (2006) Parental response to the introduction of a vaccine against human papilloma virus. Human vaccines 2(6): 243-8	- Vaccine was not on the routine schedule in that country at the time of the study <i>HPV vaccination was not available in the UK at that time</i>
Nodulman, Jessica A, Starling, Randall, Kong, Alberta S et al. (2015) Investigating stakeholder attitudes and opinions on school-based human papillomavirus vaccination programs. The Journal of school health 85(5): 289-98	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Nonzee, Narissa J, Baldwin, Susie B, Cui, Yan et al. (2018) Disparities in parental human papillomavirus (HPV) vaccine awareness and uptake among adolescents. Vaccine 36(10): 1243-1247	- Not a relevant study design <i>Survey / questionnaire, not a qualitative study</i>
Ogunbajo, A, Hansen, C E, North, A L et al. (2016) "I think they're all basically the same": parents' perceptions of human papilloma virus (HPV) vaccine compared with other adolescent vaccines. Child: care, health and development 42(4): 582-7	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Oliver, K., McCorkell, C., Pister, I. et al. (2019) Improving HPV vaccine delivery at school-based health centers. Human Vaccines and Immunotherapeutics 15(78): 1870-1877	- Not a relevant study design <i>Study uses a questionnaire and interviews but the interview data is not presented in an extractable format</i>
Olshen, Elyse, Woods, Elizabeth R, Austin, S Bryn et al. (2005) Parental acceptance of the human papillomavirus vaccine. The Journal of adolescent health : official publication of the Society for Adolescent Medicine 37(3): 248-51	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol

Study	Reason
<p>Orr, Daniela and Baram-Tsabari, Ayelet (2018) Science and Politics in the Polio Vaccination Debate on Facebook: A Mixed-Methods Approach to Public Engagement in a Science-Based Dialogue. <i>Journal of microbiology & biology education</i> 19(1)</p>	<p>- Not a relevant study design</p> <p><i>Qualitative component of work is an analysis of a Facebook message board rather than an interview, focus group or open ended questionnaire question.</i></p>
<p>Oscarsson MG; Dahlberg A; Tydén T (2011) Midwives at youth clinics attitude to HPV vaccination and their role in cervical cancer prevention. <i>Sexual & reproductive healthcare : official journal of the Swedish Association of Midwives</i> 2(4): 137-142</p>	<p>- Vaccine was not on the routine schedule in that country at the time of the study</p> <p><i>HPV vaccination for girls in Sweden</i></p>
<p>Painter, J.E., Viana De O. Mesquita, S., Jimenez, L. et al. (2019) Vaccine-related attitudes and decision-making among uninsured, Latin American immigrant mothers of adolescent daughters: a qualitative study. <i>Human Vaccines and Immunotherapeutics</i> 15(1): 121-133</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Painter, Julia Ellenberg (2011) The association between attitudes toward vaccination and vaccine uptake among adolescents. <i>Dissertation Abstracts International: Section B: The Sciences and Engineering</i> 71(11b): 6722</p>	<p>- Not a peer-reviewed publication</p> <p><i>Dissertation</i></p>
<p>Panatto, D., Domnich, A., Gasparini, R. et al. (2016) Development and preliminary data on the use of a mobile app specifically designed to increase community awareness of invasive pneumococcal disease and its prevention. <i>Human Vaccines and Immunotherapeutics</i> 12(4): 1080-1084</p>	<p>- Not a relevant study design</p> <p><i>This study only presents data about the use of the app. It does not report on qualitative data that was collected.</i></p>
<p>Patty, Nathalie J S, van Dijk, Hanna Maria, Wallenburg, Iris et al. (2017) To vaccinate or not to vaccinate? Perspectives on HPV vaccination among girls, boys, and parents in the Netherlands: a Q-methodological study. <i>BMC public health</i> 17(1): 872</p>	<p>- Study does not include a relevant method of analysis</p> <p><i>Study uses Q methodology to rank statements about vaccination as well as qualitative methods, but the results cannot be separated with confidence for data analysis.</i></p>
<p>Pellman, Harry and Brown, Brandon (2016) Parental Reasons for Acceptance or Refusal of Human Papillomavirus Vaccine in a Southern California Pediatric Practice. <i>The Pediatric infectious disease journal</i> 35(1): 119-20</p>	<p>- Not a peer-reviewed publication</p> <p><i>This is a letter to the editors</i></p>

Study	Reason
Pereira ,J, Quach S, Heidebrecht CL, Quan SD, Kolbe F FMAKJFTPHAOCIOHRIRN(VCTG (2012) Barriers to the use of reminder/recall interventions for immunizations: a systematic review. BMC Medical Informatics and Decision Making 12: 145-154	- Systematic review. References checked but no additional studies to add to the review
Perkins, R.B. and Clark, J.A. (2012) What Affects Human Papillomavirus Vaccination Rates? A Qualitative Analysis of Providers' Perceptions. Women's Health Issues 22(4): e379-e386	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Perkins, R.B., Clark, J.A., Apte, G. et al. (2014) Missed opportunities for HPV vaccination in adolescent girls: A qualitative study. Pediatrics 134(3): e666-e674	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Perkins, Rebecca B, Apte, Gauri, Marquez, Cecilia et al. (2013) Factors affecting human papillomavirus vaccine use among White, Black and Latino parents of sons. The Pediatric infectious disease journal 32(1): e38-44	- Not a relevant study design <i>Data analysis used quantitative methods.</i>
Perkins, Rebecca B, Chigurupati, Nagasudha L, Apte, Gauri et al. (2016) Why don't adolescents finish the HPV vaccine series? A qualitative study of parents and providers. Human vaccines & immunotherapeutics 12(6): 1528-35	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Perkins, Rebecca B and Clark, Jack A (2013) Providers' Perceptions of Parental Concerns about HPV Vaccination. Journal of Health Care for the Poor and Underserved 24(2): 828-839	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Perkins, Rebecca B, Pierre-Joseph, Natalie, Marquez, Cecilia et al. (2010) Why do low-income minority parents choose human papillomavirus vaccination for their daughters?. The Journal of Pediatrics 157(4): 617-622	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Perkins, Rebecca B, Tipton, Hailey, Shu, Elaine et al. (2013) Attitudes toward HPV vaccination among low-income and minority parents of sons: a qualitative analysis. Clinical pediatrics 52(3): 231-40	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol

Study	Reason
<p>Pitts, Margaret Jane and Adams Tufts, Kimberly (2013) Implications of the Virginia human papillomavirus vaccine mandate for parental vaccine acceptance. <i>Qualitative health research</i> 23(5): 605-17</p>	<p>- Study based in USA. Committee decision to exclude as views may differ from those about the UK health system</p>
<p>Pratt, R., Njau, S.W., Ndagire, C. et al. (2019) "We are Muslims and these diseases don't happen to us": A qualitative study of the views of young Somali men and women concerning HPV immunization. <i>Vaccine</i> 37(15): 2043-2050</p>	<p>- Study participants are the wrong age group <i>Study looked at the views of young adults (18-26 year old; mean ages of groups ranged from 19.2-20.4 years) and they would be too old for HPV vaccination under the UK routine schedule.</i></p>
<p>Quadri-Sheriff, M., Hendrix, K.S., Downs, S.M. et al. (2012) The role of herd immunity in parents' decision to vaccinate children: A systematic review. <i>Pediatrics</i> 130(3): 522-530</p>	<p>- Systematic review used as a source of primary studies</p>
<p>Radisic G, Chapman J, Flight I et al. (2017) Factors associated with parents' attitudes to the HPV vaccination of their adolescent sons : A systematic review. <i>Preventive medicine</i> 95: 26-37</p>	<p>- Systematic review used as a source of primary studies</p>
<p>Raman S; Reynolds S; Khan R (2011) Addressing the well-being of Aboriginal children in out-of-home care: are we there yet?. <i>Journal of paediatrics and child health</i> 47(11): 806-811</p>	<p>- Study does not look at barriers and facilitators to vaccination <i>Focus of study is on evaluating the usefulness of a clinic for looked after children. Vaccination was only covered in the quantitative part of the study.</i></p>
<p>Ramirez, Michelle, Jessop, Amy B, Leader, Amy et al. (2014) Acceptability of the human papilloma virus vaccine among diverse Hispanic mothers and grandmothers. <i>Hispanic Health Care International</i> 12(1): 24-33</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Ramsay, Mary E, Yarwood, J, Lewis, D et al. (2002) Parental confidence in measles, mumps and rubella vaccine: evidence from vaccine coverage and attitudinal surveys. <i>The British journal of general practice : the journal of the Royal College of General Practitioners</i> 52(484): 912-6</p>	<p>- Not a relevant study design <i>Survey / questionnaire, not a qualitative study</i></p>

Study	Reason
Redman, Sarah (2014) Media influence on human papillomavirus vaccine decision-making behavior. Dissertation Abstracts International: Section B: The Sciences and Engineering 75(3be): no-specified	<ul style="list-style-type: none"> - Not a peer-reviewed publication <p><i>Dissertation</i></p>
Reich JA (2016) Of natural bodies and antibodies: Parents' vaccine refusal and the dichotomies of natural and artificial. Social science & medicine (1982) 157: 103-110	<ul style="list-style-type: none"> - Remaining OECD country study that is not required because there are sufficient UK or OECD subset studies, but meets the review protocol
Reich, Jennifer A (2016) Neoliberal parenting, future sexual citizens, and vaccines against sexual risk. Sexuality Research & Social Policy: A Journal of the NSRC 13(4): 341-355	<ul style="list-style-type: none"> - Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Rendle, Katharine A and Leskinen, Emily A (2017) Timing Is Everything: Exploring Parental Decisions to Delay HPV Vaccination. Qualitative health research 27(9): 1380-1390	<ul style="list-style-type: none"> - Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Rhodes, Darson, Visker, Joseph, Cox, Carol et al. (2017) Public Health and School Nurses' Perceptions of Barriers to HPV Vaccination in Missouri. Journal of community health nursing 34(4): 180-189	<ul style="list-style-type: none"> - Not a relevant study design <p><i>Study uses a survey to look at views of nurses</i></p>
Rockliffe, Lauren, McBride, Emily, Heffernan, Catherine et al. (2020) Factors Affecting Delivery of the HPV Vaccination: A Focus Group Study With NHS School-Aged Vaccination Teams in London. The Journal of school nursing : the official publication of the National Association of School Nurses 36(2): 135-143	<ul style="list-style-type: none"> - Duplicate reference
Rodrigues VC (2004) Health of children looked after by the local authorities. Public health 118(5): 370-376	<ul style="list-style-type: none"> - Not a relevant study design <p><i>Qualitative work is a minor part of the study and it does not present the findings of interviews in a format that can be used- just as a very high level list of themes.</i></p> <ul style="list-style-type: none"> - Study does not look at barriers and facilitators to vaccination

Study	Reason
	<i>Study is looking at the needs of looked after children in general and the qualitative data does not examine why vaccination is a problem in these children.</i>
Rogers, A and Pilgrim, D (1994) Rational non-compliance with childhood immunisation: personal accounts of parents and primary health care professionals in Uptake of Immunisation: Issues for Health Education.	- Full text paper or book chapter is unavailable
Roncancio, A M, Ward, K K, Carmack, C C et al. (2017) Hispanic mothers' beliefs regarding HPV vaccine series completion in their adolescent daughters. Health education research 32(1): 96-106	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Roncancio, A.M., Carmack, C.C., Ward, K.K. et al. (2019) Toward a Model of HPV Vaccine Series Completion in Adolescent Hispanic Males. Family and Community Health 42(2): 161-169	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Roncancio, A.M., Munoz, B.T., Carmack, C.C. et al. (2019) Understanding HPV vaccine initiation in Hispanic adolescents using social marketing theory. Health Education Journal 78(7): 743-755	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Roncancio, Angelica M, Carmack, Chakema C, Garcia-Morales, Veronica et al. (2018) Hispanic mothers' accounts of vaccinating their adolescent children against HPV: features of the clinic visit. Ethnicity & health: 1-15	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Roncancio, Angelica M, Carmack, Chakema C, Ward, Kristy K et al. (2019) Toward a Model of HPV Vaccine Series Completion in Adolescent Hispanic Males: Identifying Mothers' Salient Behavioral, Normative, and Control Beliefs. Family & community health 42(2): 161-169	- Duplicate reference
Roncancio, Angelica M, Vernon, Sally W, Carmack, Chakema C et al. (2019) Hispanic Mothers' Beliefs About Having Their Adolescent Sons Initiate the HPV Vaccine Series. Journal of Immigrant and Minority Health 21(6): 1356-1364	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol

Study	Reason
<p>Roncancio, Angelica M, Ward, Kristy K, Carmack, Chakema C et al. (2017) Using Social Marketing Theory as a Framework for Understanding and Increasing HPV Vaccine Series Completion Among Hispanic Adolescents: A Qualitative Study. <i>Journal of community health</i> 42(1): 169-178</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Rosen, Brittany L; Shepard, Allie; Kahn, Jessica A (2018) US Health Care Clinicians' Knowledge, Attitudes, and Practices Regarding Human Papillomavirus Vaccination: A Qualitative Systematic Review. <i>Academic pediatrics</i> 18(2s): 53-s65</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Rosenthal, Doreen, Dyson, Sue, Pitts, Marian et al. (2007) Challenges to accepting a human papilloma virus (HPV) vaccine: a qualitative study of Australian women. <i>Women & health</i> 45(2): 59-73</p>	<p>- Study participants are the wrong age group <i>Participants are women aged 22-71 years old and they would be too old to be vaccinated on the UK routine schedule.</i></p>
<p>Ross, A.; Sadler, L.; Brabin, L. (2010) Developing a Model of Human Papillomavirus Vaccine Acceptance among Older Teenagers. <i>International Journal of Cancer Research and Prevention</i> 3(4): 187-194</p>	<p>- Full text paper or book chapter is unavailable</p>
<p>Rozbroj, T; Lyons, A; Lucke, J (2019) Vaccine-Hesitant and Vaccine-Refusing Parents' Reflections on the Way Parenthood Changed Their Attitudes to Vaccination. <i>Journal of community health</i></p>	<p>- Subset OECD country study that is not required because there are sufficient UK studies, but meets the review protocol</p>
<p>Sanchez Anguiano, L.F., Lechuga Quinones, A.M., Villeda, R.H.M. et al. (2013) Knowledge and acceptance of the vaccine against human papillomavirus among mothers of students from the city of Durango, Mexico. <i>Ginecologia y Obstetricia de Mexico</i> 81(2): 77-85</p>	<p>- Study not reported in English</p>
<p>Santibanez, Tammy A, Zimmerman, Richard Kent, Nowalk, Mary Patricia et al. (2004) Physician attitudes and beliefs associated with patient pneumococcal polysaccharide vaccination status. <i>Annals of family medicine</i> 2(1): 41-8</p>	<p>- Not a relevant study design <i>One open ended question but results analysed quantitatively</i></p>

Study	Reason
<p>Saville, Alison W, Albright, Karen, Nowels, Carolyn et al. (2011) Getting under the hood: exploring issues that affect provider-based recall using an immunization information system. <i>Academic pediatrics</i> 11(1): 44-9</p>	<p>- Study based in USA. Committee decision to exclude as views may differ from those about the UK health system</p> <p><i>Study looks at views concerning the implementation of a specific intervention.</i></p>
<p>Schmidt-Grimminger, Delf, Frerichs, Leah, Black Bird, Arlene E et al. (2013) HPV knowledge, attitudes, and beliefs among Northern Plains American Indian adolescents, parents, young adults, and health professionals. <i>Journal of cancer education : the official journal of the American Association for Cancer Education</i> 28(2): 357-66</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Selove, Rebecca, Foster, Maya, Mack, Raquel et al. (2017) Using an Implementation Research Framework to Identify Potential Facilitators and Barriers of an Intervention to Increase HPV Vaccine Uptake. <i>Journal of public health management and practice : JPHMP</i> 23(3): e1-e9</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Seok, J., Heffernan, C., Mounier-Jack, S. et al. (2018) Perspectives of vaccinators on the factors affecting uptake of meningococcal ACWY vaccine amongst school leavers in London. <i>Public Health</i> 164: 128-133</p>	<p>- Vaccine on UK routine schedule but wrong context for administration</p> <p><i>This study is about a catch-up programme for school leavers that is out of scope because it accompanies the introduction of a new vaccine.</i></p>
<p>Shafer, Autumn, Cates, Joan R, Diehl, Sandra J et al. (2011) Asking mom: Formative research for an HPV vaccine campaign targeting mothers of adolescent girls. <i>Journal of Health Communication</i> 16(9): 988-1005</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Shahbari, Nour Abed Elhadi, BSc, MHA; Gesser-Edelsburg, Anat, PhD; Mesch, Gustavo S, PhD (2019) Case of Paradoxical Cultural Sensitivity: Mixed Method Study of Web-Based Health Informational Materials About the Human Papillomavirus Vaccine in Israel. <i>Journal of Medical Internet Research</i> 21(5)</p>	<p>- Study does not look at barriers and facilitators to vaccination</p> <p><i>Study examines the content of web based information using qualitative content analysis.</i></p> <p>- Not a relevant study design</p> <p><i>Qualitative component of study is not a focus group, interview or open ended survey question.</i></p>

Study	Reason
<p>Shay, L Aubree, Street, Richard L Jr, Baldwin, Austin S et al. (2016) Characterizing safety-net providers' HPV vaccine recommendations to undecided parents: A pilot study. <i>Patient education and counseling</i> 99(9): 1452-60</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Shay, Laura A, Baldwin, Austin S, Betts, Andrea C et al. (2018) Parent-provider communication of HPV vaccine hesitancy. <i>Pediatrics</i> 141(6): 1-10</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Shui, Irene, Kennedy, Allison, Wooten, Karen et al. (2005) Factors influencing African-American mothers' concerns about immunization safety: a summary of focus group findings. <i>Journal of the National Medical Association</i> 97(5): 657-666</p>	<p>- Remaining OECD country study that is not required because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Simone, B; Carrillo-Santistevae, P; Lopalco, P L (2012) Healthcare workers role in keeping MMR vaccination uptake high in Europe: a review of evidence. <i>Euro surveillance : bulletin European sur les maladies transmissibles = European communicable disease bulletin</i> 17(26)</p>	<p>- Systematic review used as a source of primary studies</p>
<p>Skea, Zoe C, Entwistle, Vikki A, Watt, Ian et al. (2008) 'Avoiding harm to others' considerations in relation to parental measles, mumps and rubella (MMR) vaccination discussions - an analysis of an online chat forum. <i>Social science & medicine</i> (1982) 67(9): 1382-90</p>	<p>- Not a relevant study design <i>Study is a qualitative analysis of a message board and not a focus group, interview or open-ended question on a questionnaire</i></p>
<p>Skiles, Martha P, Cai, Jianwen, English, Abigail et al. (2011) Retail pharmacies and adolescent vaccination--an exploration of current issues. <i>The Journal of adolescent health : official publication of the Society for Adolescent Medicine</i> 48(6): 630-2</p>	<p>- Not a relevant study design <i>Survey / questionnaire, not a qualitative study</i></p>
<p>Spratt, Jennifer, Shucksmith, Janet, Philip, Kate et al. (2013) Active agents of health promotion? The school's role in supporting the HPV vaccination programme. <i>Sex Education</i> 13(1): 82-95</p>	<p>- Vaccine was not on the routine schedule in that country at the time of the study <i>HPV vaccination for girls in UK</i></p>
<p>Stefanoff, P., Mamelund, S.-K., Tuells, J. et al. (2010) Tracking parental attitudes on vaccination across European countries: The Vaccine Safety, Attitudes, Training and</p>	<p>- Not a relevant study design <i>Survey data mainly, with focus groups in some countries</i></p>

Study	Reason
<p>Communication Project (VACSATC). Vaccine 28(35): 5731-5737</p>	<p>- No outcomes of interest</p> <p><i>Does not present qualitative data from focus groups</i></p>
<p>Strobino, D., Keane, V., Holt, E. et al. (1996) Parental attitudes do not explain underimmunization. Pediatrics 98(6): 1076-1083</p>	<p>- Not a relevant study design</p> <p><i>Not a qualitative study- it uses logistic regression to analyse parental attitudes to vaccination</i></p>
<p>Sturm, Lynne, Donahue, Kelly, Kasting, Monica et al. (2017) Pediatrician-Parent Conversations About Human Papillomavirus Vaccination: An Analysis of Audio Recordings. The Journal of adolescent health : official publication of the Society for Adolescent Medicine 61(2): 246-251</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Suarez, Paloma, Wallington, Sherrie Flynt, Greaney, Mary L et al. (2019) Exploring HPV knowledge, awareness, beliefs, attitudes, and vaccine acceptability of Latino fathers living in the United States: An integrative review. Journal of Community Health: The Publication for Health Promotion and Disease Prevention 44(4): 844-856</p>	<p>- Not a relevant study design</p> <p><i>Survey / questionnaire, not a qualitative study</i></p>
<p>Sugerman, David E, Barskey, Albert E, Delea, Maryann G et al. (2010) Measles outbreak in a highly vaccinated population, San Diego, 2008: role of the intentionally undervaccinated. Pediatrics 125(4): 747-55</p>	<p>- Not a relevant study design</p> <p><i>Study has a qualitative component (discussion groups) but the results are presented superficially without any methods and the parent's view are not the main focus of the study.</i></p>
<p>Sussman, Andrew L, Helitzer, Deborah, Bennett, Anzia et al. (2015) Catching up with the HPV vaccine: Challenges and opportunities in primary care. Annals of Family Medicine 13(4): 354-360</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Sussman, Andrew L, Helitzer, Deborah, Sanders, Margaret et al. (2007) HPV and cervical cancer prevention counseling with</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>

Study	Reason
younger adolescents: implications for primary care. <i>Annals of family medicine</i> 5(4): 298-304	
Swaney, Sharon Elizabeth, BSc and Burns, Sharyn, PhD, MPH, PG DHP, Bed, Dip Tch (2019) Exploring reasons for vaccine-hesitancy among higher-SES parents in Perth, Western Australia. <i>Health Promotion Journal of Australia</i> 30(2): 143-152	- Subset OECD country study that is not required because there are sufficient UK studies, but meets the review protocol
Teitelman, Anne M, Stringer, Marilyn, Nguyen, Giang T et al. (2011) Social cognitive and clinical factors associated with HPV vaccine initiation among urban, economically disadvantaged women. <i>Journal of obstetric, gynecologic, and neonatal nursing : JOGNN</i> 40(6): 691-701	- Study participants are the wrong age group <i>The mean age of participants is 21 years (SD 2.95) and they would be too old to receive HPV vaccination on the UK routine schedule.</i>
Thanasas I, Lavranos G, Gkogkou P et al. (2020) Understanding of Young Adolescents About HPV Infection: How Health Education Can Improve Vaccination Rate. <i>Journal of cancer education : the official journal of the American Association for Cancer Education</i>	- Systematic review used as a source of primary studies
Theis, Ryan P; Wells, Brittany A; Staras, Stephanie A S (2020) "I can be the Judge of What's Serious": A Qualitative Pilot Study of Parents' Responses to Messaging About Side Effects of the HPV Vaccine. <i>Maternal and child health journal</i>	- Study based in USA. Committee decision to exclude as views may differ from those about the UK health system
Thomas, S., Cashman, P., Islam, F. et al. (2018) Tailoring immunisation service delivery in a disadvantaged community in Australia; views of health providers and parents. <i>Vaccine</i> 36(19): 2596-2603	- Study addresses identification or recording of eligibility or status <i>Qualitative study</i>
Thomas, Tami Lynn, Strickland, Ora L, Higgins, Melinda et al. (2017) Mothers, fathers, sons, and human papillomavirus immunization practices. <i>Family & Community Health: The Journal of Health Promotion & Maintenance</i> 40(3): 278-287	- Not a relevant study design <i>Survey / questionnaire, not a qualitative study</i>
Thomas, Tami, PhD; Blumling, Amy, BSN; Delaney (2015) The Influence of Religiosity and Spirituality on Rural Parents' Health Decision Making and Human Papillomavirus Vaccine Choices: <i>Advances in Nursing Science</i> Advances in Nursing Science. <i>ANS</i> 38(4)	- Duplicate reference

Study	Reason
<p>Thomas, Tami; Blumling, Amy; Delaney, Augustina (2015) The Influence of Religiosity and Spirituality on Rural Parents' Health Decision Making and Human Papillomavirus Vaccine Choices. <i>ANS. Advances in nursing science</i> 38(4): e1-e12</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Tickner, Sarah; Leman, Patrick J; Woodcock, Alison (2010) The Immunisation Beliefs and Intentions Measure (IBIM): predicting parents' intentions to immunise preschool children. <i>Vaccine</i> 28(19): 3350-62</p>	<p>- Not a relevant study design <i>Survey / questionnaire, not a qualitative study</i></p>
<p>Timmermans, D.R.M., Henneman, L., Hirasing, R.A. et al. (2005) Attitudes and risk perception of parents of different ethnic backgrounds regarding meningococcal C vaccination. <i>Vaccine</i> 23(25): 3329-3335</p>	<p>- Not a relevant study design <i>Survey / questionnaire, not a qualitative study</i></p>
<p>Timmermans, Danielle R M, Henneman, Lidewij, Hirasing, Remy A et al. (2008) Parents' perceived vulnerability and perceived control in preventing Meningococcal C infection: a large-scale interview study about vaccination. <i>BMC public health</i> 8: 45</p>	<p>- Not a relevant study design <i>Survey / questionnaire, not a qualitative study</i></p>
<p>Tissot, Abigail M, Zimet, Gregory D, Rosenthal, Susan L et al. (2007) Effective strategies for HPV vaccine delivery: The views of pediatricians. <i>Journal of Adolescent Health</i> 41(2): 119-125</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Toffolon-Weiss, Melissa, Hagan, Kyla, Leston, Jessica et al. (2008) Alaska Native parental attitudes on cervical cancer, HPV and the HPV vaccine. <i>International journal of circumpolar health</i> 67(4): 363-73</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Topuzoglu, Ahmet, Ay, Pinar, Hidiroglu, Seyhan et al. (2007) The barriers against childhood immunizations: a qualitative research among socio-economically disadvantaged mothers. <i>European journal of public health</i> 17(4): 348-352</p>	<p>- Remaining OECD country study that is not required because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Vadaparampil, Susan T, Murphy, Devin, Rodriguez, Maria et al. (2013) Qualitative responses to a national physician survey on HPV vaccination. <i>Vaccine</i> 31(18): 2267-72</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>

Study	Reason
<p>Vamos, Cheryl A, Vazquez-Otero, Coralia, Kline, Nolan et al. (2018) Multi-level determinants to HPV vaccination among Hispanic farmworker families in Florida. <i>Ethnicity & health</i>: 1-18</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Vardeman, Jennifer Eileen (2009) How teen girls and parents make meaning of a cervical cancer vaccine campaign: Toward a feminist, multicultural critique of health communication. <i>Dissertation Abstracts International Section A: Humanities and Social Sciences</i> 70(1a): 24</p>	<p>- Not a peer-reviewed publication <i>Dissertation</i></p>
<p>Vercruyssen, Jessica, Chigurupati, Nagasudha L, Fung, Leslie et al. (2016) Parents' and providers' attitudes toward school-located provision and school-entry requirements for HPV vaccines. <i>Human vaccines & immunotherapeutics</i> 12(6): 1606-14</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Vielot, N.A., Goldberg, S.K., Zimet, G. et al. (2017) Acceptability of multipurpose human papillomavirus vaccines among providers and mothers of adolescent girls: A mixed-methods study in five countries. <i>Papillomavirus Research</i> 3: 126-133</p>	<p>- Study does not look at vaccines as they are given on the routine UK schedule <i>Study looks at multipurpose vaccines to prevent multiple sexually transmitted infections simultaneously- not all are on the UK routine schedule</i></p>
<p>Visser, Olga, Hautvast, Jeannine L A, van der Velden, Koos et al. (2016) Intention to Accept Pertussis Vaccination for Cocooning: A Qualitative Study of the Determinants. <i>PloS one</i> 11(6): e0155861</p>	<p>- Vaccine was not on the routine schedule in that country at the time of the study</p>
<p>Wakimizu, Rie, Nishigaki, Kaori, Fujioka, Hiroshi et al. (2015) How adolescent Japanese girls arrive at human papilloma virus vaccination: A semistructured interview study. <i>Nursing & Health Sciences</i> 17(1): 15-25</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Waller, Jo; Marlow, Laura A V; Wardle, Jane (2006) Mothers' attitudes towards preventing cervical cancer through human papillomavirus vaccination: a qualitative study. <i>Cancer epidemiology, biomarkers & prevention : a publication of the American Association for Cancer Research, cosponsored by the American Society of Preventive Oncology</i> 15(7): 1257-61</p>	<p>- Vaccine was not on the routine schedule in that country at the time of the study <i>HPV vaccination for girls in UK</i></p>

Study	Reason
<p>Ward PR, Attwell K, Meyer SB et al. (2017) Understanding the perceived logic of care by vaccine-hesitant and vaccine-refusing parents: A qualitative study in Australia. PloS one 12(10): e0185955</p>	<p>- Subset OECD country study that is not required because there are sufficient UK studies, but meets the review protocol</p> <p><i>Study covers multiple age categories</i></p>
<p>Ward, Jeremy K, Crepin, Laure, Bauquier, Charlotte et al. (2017) 'I don't know if I'm making the right decision': French mothers and HPV vaccination in a context of controversy. Health, Risk & Society 19(12): 38-57</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Warner, Echo L, Ding, Qian, Pappas, Lisa et al. (2017) Health Care Providers' Knowledge of HPV Vaccination, Barriers, and Strategies in a State With Low HPV Vaccine Receipt: Mixed-Methods Study. JMIR cancer 3(2): e12</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Warner, Echo L, Fowler, Brynn, Martel, Laura et al. (2017) Improving HPV Vaccination Through a Diverse Multi-state Coalition. Journal of community health 42(5): 911-920</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Warner, Echo L, Lai, Djin, Carbajal-Salisbury, Sara et al. (2015) Latino Parents' Perceptions of the HPV Vaccine for Sons and Daughters. Journal of community health 40(3): 387-94</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Watson, P.B.; Yarwood, J.; Chenery, K. (2007) Meningococcal B: Tell me everything you know and everything you don't know. New Zealanders' decision-making regarding an immunisation programme. New Zealand Medical Journal 120(1263)</p>	<p>- Remaining OECD country study that is not required because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Weiss, Carine; Schropfer, Daniel; Merten, Sonja (2016) Parental attitudes towards measles vaccination in the canton of Aargau, Switzerland: a latent class analysis. BMC infectious diseases 16(1): 400</p>	<p>- Remaining OECD country study that is not required because there are sufficient UK or OECD subset studies, but meets the review protocol</p>
<p>Westrick, S.C., Hohmann, L.A., McFarland, S.J. et al. (2017) Parental acceptance of human papillomavirus vaccinations and community pharmacies as vaccination settings: A</p>	<p>- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol</p>

Study	Reason
qualitative study in Alabama. Papillomavirus Research 3: 24-29	
Widman, Christy A, Rodriguez, Elisa M, Saad-Harfouche, Frances et al. (2018) Clinician and Parent Perspectives on Educational Needs for Increasing Adolescent HPV Vaccination. Journal of cancer education : the official journal of the American Association for Cancer Education 33(2): 332-339	- Remaining OECD country study that is not required for 11-18 age group because there are sufficient UK or OECD subset studies, but meets the review protocol
Wigle, J.; Coast, E.; Watson-Jones, D. (2013) Human papillomavirus (HPV) vaccine implementation in low and middle-income countries (LMICs): Health system experiences and prospects. Vaccine 31(37): 3811-3817	<p>- Systematic review contains non-OECD countries</p> <p><i>Study contains systematic review and primary research. The review focused on low and middle-income countries</i></p> <p>- Study not carried out in an OECD country</p> <p><i>Interviews were carried out in low and middle-income countries. not in OECD</i></p>
Wilder-Smith AB and Qureshi K (2020) Resurgence of Measles in Europe: A Systematic Review on Parental Attitudes and Beliefs of Measles Vaccine. Journal of epidemiology and global health 10(1): 46-58	- Systematic review used as a source of primary studies
Williams, Donna L, Wheeler, Courtney S, Lawrence, Michelle et al. (2017) Louisiana Physicians Are Increasing HPV Vaccination Rates. The Journal of the Louisiana State Medical Society : official organ of the Louisiana State Medical Society 169(3): 63-67	<p>- Not a relevant study design</p> <p><i>Survey / questionnaire, not a qualitative study</i></p>
Williams, Kate, Forster, Alice, Marlow, Laura et al. (2011) Attitudes towards human papillomavirus vaccination: a qualitative study of vaccinated and unvaccinated girls aged 17-18 years. The Journal of Family Planning and Reproductive Health Care 37(1): 22	<p>- Study describes a catch up campaign following the introduction of a vaccine- out of scope of the review</p> <p><i>HPV catch up campaign</i></p>
Wilson L, Rubens-Augustson T, Murphy M et al. Barriers to immunization among newcomers: A systematic review. Vaccine 36(8): 1055-1062	- Systematic review. Checked for additional references
Wilson, Rula, Brown, Diane R, Boothe, Makini A. S et al. (2013) Knowledge and acceptability	- Remaining OECD country study that is not required for 11-18 age group because there are

Study	Reason
of the HPV vaccine among ethnically diverse Black women. <i>Journal of Immigrant and Minority Health</i> 15(4): 747-757	sufficient UK or OECD subset studies, but meets the review protocol
Winterbauer, Nancy L, Bridger, Colleen M, Tucker, Ashley et al. (2015) Adoption of Evidence-Based Interventions in Local Health Departments: "1-2-3 Pap NC". <i>American journal of preventive medicine</i> 49(2): 309-16	- Study based in USA. Committee decision to exclude as views may differ from those about the UK health system
Wiot, F., Shirley, J., Prugnola, A. et al. (2019) Challenges facing vaccinators in the 21st century: results from a focus group qualitative study. <i>Human Vaccines and Immunotherapeutics</i> 15(12): 2806-2815	- Study addresses identification or recording of eligibility or status <i>Qualitative study</i>
Wong-Beringer, Annie; Brodetsky, Elena; Quist, Ryan (2003) Pneumococcal vaccination in hospitalized elderly patients: role of the pharmacist. <i>Pharmacotherapy</i> 23(2): 199-208	- Not a relevant study design <i>Survey / questionnaire, not a qualitative study</i>
Wroe, Abigail L, Bhan, Angela, Salkovskis, Paul et al. (2005) Feeling bad about immunising our children. <i>Vaccine</i> 23(12): 1428-33	- Not a relevant study design <i>Survey / questionnaire, not a qualitative study</i>
Yaqub O, Castle-Clarke S, Sevdalis N et al. (2014) Attitudes to vaccination: a critical review. <i>Social science & medicine</i> (1982) 112: 1-11	- Systematic review used as a source of primary studies
Yoo, Grace J, Fang, Ted, Zola, Janet et al. (2012) Destigmatizing hepatitis B in the Asian American community: lessons learned from the San Francisco Hep B Free Campaign. <i>Journal of cancer education : the official journal of the American Association for Cancer Education</i> 27(1): 138-44	- Study participants are the wrong age group <i>This study is about targeting adults in a high risk community for Hep B vaccination rather than routine childhood vaccination.</i> - Vaccine on UK routine schedule but wrong context for administration <i>This study is about targeting adults in a high risk community for Hep B vaccination rather than routine childhood vaccination.</i>
Zibrik, Lindsay, Huang, Alan, Wong, Vivian et al. (2018) Let's Talk About B: Barriers to Hepatitis B Screening and Vaccination Among Asian and South Asian Immigrants in British Columbia.	- Vaccine on UK routine schedule but wrong context for administration

Study	Reason
Journal of racial and ethnic health disparities 5(6): 1337-1345	<i>Study examines the impact of a programme targeting a high risk group for Hep B vaccination rather than routine childhood vaccination.</i>
Zimmerman, R K, Silverman, M, Janosky, J E et al. (2001) A comprehensive investigation of barriers to adult immunization: a methods paper. The Journal of family practice 50(8): 703	- Conference abstract
Zotti, C, Silvaplana, P, Ditommaso, S et al. (1992) Compulsory and non-compulsory immunizations: contraindications perceived by medical practitioners. Vaccine 10(11): 742-6	- Not a relevant study design <i>Survey / questionnaire, not a qualitative study</i>

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2 Excluded from the re-runs search

Study	Reason
(2020) Factors contributing to parental 'vaccine hesitancy' for childhood immunisations. Nursing Children and Young People (2014+) 32(4): 20-25	- Review article but not a systematic review
Abdullahi, L.H., Kagina, B.M., Ndze, V.N. et al. (2020) Improving vaccination uptake among adolescents. Cochrane Database of Systematic Reviews 2020(1): cd011895	- Not a relevant study design
Alber, Julia M, Cohen, Chari, Racho, Rhea et al. (2020) Exploring the Impact of Storytelling on Storytellers in a Hepatitis B Health Communication Context. Patient education and counseling 103(9): 1760-1766	- The vaccine is on the UK routine schedule but the participants fall outside of the routine schedule <i>This study is about adults of mean age 44 years getting the HepB vaccine in the USA, not children aged 0-5 years. There is no suggestion that they were parents</i>
Albert, Katelin (2019) Beyond the responsibility binary: analysing maternal responsibility in the human papillomavirus vaccination decision. Sociology of health & illness 41(6): 1088-1103	- Duplicate reference <i>Already included in the 11-18 review.</i>

Study	Reason
Bednarczyk, Robert A (2020) Communications to improve intention to receive HPV vaccine. The Lancet. Public health 5(9): e463-e464	- Not a peer-reviewed publication
Bell, S., Saliba, V., Evans, G. et al. (2020) Responding to measles outbreaks in underserved Roma and Romanian populations in England: The critical role of community understanding and engagement. Epidemiology and Infection	- Duplicate reference <i>Already included in review as was highlighted by committee.</i>
Bell, Sadie, Saliba, Vanessa, Ramsay, Mary et al. (2020) What have we learnt from measles outbreaks in 3 English cities? A qualitative exploration of factors influencing vaccination uptake in Romanian and Roma Romanian communities. BMC public health 20(1): 381	- Duplicate reference <i>Already added to review after being highlighted by the committee.</i>
Beskin, K.M. and Caskey, R. (2019) Parental Perspectives on Financial Incentives for Adolescents: Findings From Qualitative Interviews. Global Pediatric Health 6	- OECD remaining study for HPV vaccination. Sufficient evidence from the UK and OECD subset for this category.
Biancarelli, Dea L; Drainoni, Mari-Lynn; Perkins, Rebecca B (2020) Provider Experience Recommending HPV Vaccination Before Age 11 Years. The Journal of pediatrics 217: 92-97	- Study looked at barriers and facilitators to implementing a specific intervention, but the study was not carried out in the UK <i>Study based in the USA</i>
Brewer, Sarah E, Barnard, Juliana, Pyrzanowski, Jennifer et al. (2019) Use of Electronic Health Records to Improve Maternal Vaccination. Women's health issues : official publication of the Jacobs Institute of Women's Health 29(4): 341-348	- Study looked at barriers and facilitators to implementing a specific intervention, but the study was not carried out in the UK
Briggs, Lynne, Fronek, Patricia, Quinn, Val et al. (2019) Perceptions of influenza and pneumococcal vaccine uptake by older persons in Australia. Vaccine 37(32): 4454-4459	- Duplicate reference <i>Already included in the review for people aged 65 and over.</i>
Catalan-Matamoros, Daniel and Penafiel-Saiz, Carmen (2019) The Use of Traditional Media for Public Communication about Medicines: A Systematic Review of Characteristics and Outcomes. Health communication 34(4): 415-423	- Systematic review that was used as a source of references

Study	Reason
Chantler, Tracey, Letley, Louise, Paterson, Pauline et al. (2019) Optimising informed consent in school-based adolescent vaccination programmes in England: A multiple methods analysis. <i>Vaccine</i> 37(36): 5218-5224	<p>- Duplicate reference</p> <p><i>Already included in review as was highlighted by committee.</i></p>
Chantler, Tracey, Pringle, Ellen, Bell, Sadie et al. (2020) Does electronic consent improve the logistics and uptake of HPV vaccination in adolescent girls? A mixed-methods theory informed evaluation of a pilot intervention. <i>BMJ open</i> 10(11): e038963	<p>- Duplicate reference</p> <p><i>Already included in the mixed methods review on acceptability of interventions</i></p>
de Munter, Anne C, Ruijs, Wilhelmina L M, Ruiters, Robert A C et al. (2020) Decision-making on maternal pertussis vaccination among women in a vaccine-hesitant religious group: Stages and needs. <i>PloS one</i> 15(11): e0242261	<p>- Vaccine was not on the routine schedule in that country at the time of the study</p>
Dube, E., Wilson, S., Gagnon, D. et al. (2020) "It takes time to build trust": a survey Ontario's school-based HPV immunization program ten years post-implementation. <i>Human vaccines & immunotherapeutics</i> : 1-6	<p>- Study that is not required for barriers and facilitators review because there are sufficient UK studies</p> <p><i>Barriers and facilitators review for vaccinations for 11-18 year olds only included staff views from UK</i></p>
Dube, Eve, Gagnon, Dominique, Clement, Paule et al. (2019) Challenges and opportunities of school-based HPV vaccination in Canada. <i>Human vaccines & immunotherapeutics</i> 15(78): 1650-1655	<p>- Duplicate reference</p>
Duchsherer, A., Jason, M., Platt, C.A. et al. (2020) Immunized against science: Narrative community building among vaccine refusing/hesitant parents. <i>Public understanding of science (Bristol, England)</i> 29(4): 419-435	<p>- Not a relevant study design</p> <p><i>Study analyses videos from YouTube.</i></p>
Emerson, A., Allison, M., Kelly, P.J. et al. (2020) Barriers and facilitators of implementing a collaborative HPV vaccine program in an incarcerated population: A case study. <i>Vaccine</i> 38(11): 2566-2571	<p>- Study looked at barriers and facilitators to implementing a specific intervention, but the study was not carried out in the UK</p> <p><i>Study based in the USA</i></p>
Fenton, Anny T (2019) Abandoning Medical Authority: When Medical Professionals Confront Stigmatized Adolescent Sex and the Human	<p>- Study does not report any of the factors of interest specified in the protocol</p>

Study	Reason
Papillomavirus (HPV) Vaccine. Journal of health and social behavior 60(2): 240-256	
Galbraith-Gyan, K.V.; Ramanadhan, S.; Viswanath, K. (2021) Community Stakeholders' Perspectives on Introducing Human Papillomavirus Vaccination and Biobanking Evidence-Based Programs Within Medically Underserved Communities: A Community-Engaged Approach. International quarterly of community health education 41(3): 315-323	<p>- OECD remaining study for HPV vaccination. Sufficient evidence from the UK and OECD subset for this category.</p> <p><i>The 11-18 review did not include US studies for HPV.</i></p>
Ganczak, M., Bielecki, K., Drozd-Dabrowska, M. et al. (2021) Vaccination concerns, beliefs and practices among Ukrainian migrants in Poland: a qualitative study. BMC public health 21(1): 93	<p>- Study was not carried out in the UK or the OECD subset of countries</p> <p><i>There was sufficient evidence from the UK and OECD subset for the views of migrants</i></p>
Gorman, D R, Bielecki, K, Willocks, L J et al. (2019) A qualitative study of vaccination behaviour amongst female Polish migrants in Edinburgh, Scotland. Vaccine 37(20): 2741-2747	<p>- Duplicate reference</p> <p><i>Already included in review as was highlighted by committee.</i></p>
Griner, Stacey B, Thompson, Erika L, Vamos, Cheryl A et al. (2019) Dental opinion leaders' perspectives on barriers and facilitators to HPV-related prevention. Human vaccines & immunotherapeutics 15(78): 1856-1862	<p>- OECD remaining study for HPV vaccination. Sufficient evidence from the UK and OECD subset for this category.</p> <p><i>The 11-18 review did not include studies on HPV from US.</i></p>
Hirth, Jacqueline M, Berenson, Abbey B, Cofie, Leslie E et al. (2019) Caregiver acceptance of a patient navigation program to increase human papillomavirus vaccination in pediatric clinics: a qualitative program evaluation. Human vaccines & immunotherapeutics 15(78): 1585-1591	<p>- OECD remaining study for HPV vaccination. Sufficient evidence from the UK and OECD subset for this category.</p> <p><i>The barriers and facilitators review for 11-18 year olds did not include US HPV studies because there were many from the UK and OECD subset already included in the review.</i></p>
Kaufman, J., Attwell, K., Hauck, Y. et al. (2020) Designing a multi-component intervention (P3-MumBubVax) to promote vaccination in antenatal care in Australia. Health promotion journal of Australia : official journal of Australian Association of Health Promotion Professionals	<p>- Qualitative review of a specific intervention with no associated quantitative study</p>

Study	Reason
<p>Kaufman, J., Attwell, K., Tuckerman, J. et al. (2020) Feasibility and acceptability of the multi-component P3-MumBubVax antenatal intervention to promote maternal and childhood vaccination: A pilot study. <i>Vaccine</i> 38(24): 4024-4031</p>	<p>- Study looked at barriers and facilitators to implementing a specific intervention, but the study was not carried out in the UK</p>
<p>Lindsay, A.C., Delgado, D., Valdez, M.J. et al. (2020) "I don't Think He Needs the HPV Vaccine Cause Boys Can't Have Cervical Cancer": a Qualitative Study of Latina Mothers' (Mis) Understandings About Human Papillomavirus Transmission, Associated Cancers, and the Vaccine. <i>Journal of cancer education : the official journal of the American Association for Cancer Education</i></p>	<p>- OECD remaining study for HPV vaccination. Sufficient evidence from the UK and OECD subset for this category.</p> <p><i>US studies were not included in 11-18 barriers and facilitators review as there were many other studies in the UK and OECD subset countries.</i></p>
<p>Loft, L.H., Pedersen, E.A., Jacobsen, S.U. et al. (2020) Using Facebook to increase coverage of HPV vaccination among Danish girls: An assessment of a Danish social media campaign. <i>Vaccine</i> 38(31): 4901-4908</p>	<p>- Study looked at barriers and facilitators to implementing a specific intervention, but the study was not carried out in the UK</p>
<p>Marshall, S, Sahm, L J, Moore, A C et al. (2019) A systematic approach to map the adolescent human papillomavirus vaccine decision and identify intervention strategies to address vaccine hesitancy. <i>Public health</i> 177: 71-79</p>	<p>- Duplicate reference</p>
<p>McFadden, S.M., Ko, L.K., Shankar, M. et al. (2021) Development and evaluation of an online continuing education course to increase healthcare provider self-efficacy to make strong HPV vaccine recommendations to East African immigrant families. <i>Tumour Virus Research</i> 11: 200214</p>	<p>- Study does not have an outcome of interest</p>
<p>Naess, Anders (2019) Trust, cultural health capital, and immigrants' health care integration in Norway. <i>Sociology</i> 53(2): 297-313</p>	<p>- Study did not look at routine vaccinations</p>
<p>Netfa, F., Tashani, M., Booy, R. et al. (2020) Knowledge, attitudes and perceptions of immigrant parents towards human papillomavirus (HPV) vaccination: A systematic review. <i>Tropical Medicine and Infectious Disease</i> 5(2): 58</p>	<p>- Systematic review that was used as a source of references</p>
<p>Ntouva, Antiopi and Sibal, Bharat (2019) RE: 'Vaccination against pertussis and influenza in pregnancy: a qualitative study of barriers and facilitators'. <i>Public health</i> 177: 143</p>	<p>- Not a peer-reviewed publication</p>

Study	Reason
<p>Ortiz, R.R., Shafer, A., Cates, J. et al. (2018) Development and Evaluation of a Social Media Health Intervention to Improve Adolescents' Knowledge About and Vaccination Against the Human Papillomavirus. <i>Global Pediatric Health</i> 5</p>	<p>- Study does not have an outcome of interest</p> <p><i>This study does not report any qualitative data - it only has data on adolescents' knowledge of HPV and vaccination against it following an intervention.</i></p>
<p>Paterson, P, Mounier-Jack, S, Saliba, V et al. (2019) Strengthening HPV vaccination delivery: findings from a qualitative service evaluation of the adolescent girls' HPV vaccination programme in England. <i>Journal of public health (Oxford, England)</i></p>	<p>- Duplicate reference</p> <p><i>Already included in review as was highlighted by committee.</i></p>
<p>Pedersen, Kenneth B, Holck, Marie E, Jensen, Aksel K G et al. (2020) How are children who are delayed in the Childhood Vaccination Programme vaccinated: A nationwide register-based cohort study of Danish children aged 15-24 months and semi-structured interviews with vaccination providers. <i>Scandinavian journal of public health</i> 48(1): 96-105</p>	<p>- Duplicate reference</p> <p><i>Text is identical to Pedersen 2018, which is already included.</i></p>
<p>Perkins, R.B., Banigbe, B., Fenton, A.T. et al. (2020) Effect of a multi-component intervention on providers' HPV vaccine communication. <i>Human Vaccines and Immunotherapeutics</i> 16(11): 2736-2743</p>	<p>- Not a relevant study design</p> <p><i>Mixed methods but does not meet inclusion criteria for qualitative review or location for the mixed methods review</i></p>
<p>Rand, Cynthia M, Concannon, Cathleen, Wallace-Brodeur, Rachel et al. (2020) Identifying Strategies to Reduce Missed Opportunities for HPV Vaccination in Primary Care: A Qualitative Study of Positive Deviants. <i>Clinical pediatrics</i> 59(12): 1058-1068</p>	<p>- OECD remaining study for HPV vaccination. Sufficient evidence from the UK and OECD subset for this category.</p>
<p>Real, F.J., Rosen, B.L., Bishop, J.M. et al. (2020) Usability Evaluation of the Novel Smartphone Application, HPV Vaccine: Same Way, Same Day, Among Pediatric Residents. <i>Academic Pediatrics</i></p>	<p>- Study looked at barriers and facilitators to implementing a specific intervention, but the study was not carried out in the UK</p>
<p>Richardson, E., Ryan, K.A., Lawrence, R.M. et al. (2021) Perceptions and Knowledge About the MenB Vaccine Among Parents of High School Students. <i>Journal of community health</i></p>	<p>- OECD remaining study for HPV vaccination. Sufficient evidence from the UK and OECD subset for this category.</p>

Study	Reason
<p>Rockliffe, L.; Stearns, S.; Forster, A.S. (2020) A qualitative exploration of using financial incentives to improve vaccination uptake via consent form return in female adolescents in London. PLoS ONE 15(8august2020): e0237805</p>	<p>- Duplicate reference</p> <p><i>Already included in the review about acceptability, implementation and effectiveness of specific interventions.</i></p>
<p>Rockliffe, Lauren, McBride, Emily, Heffernan, Catherine et al. (2020) Factors Affecting Delivery of the HPV Vaccination: A Focus Group Study With NHS School-Aged Vaccination Teams in London. The Journal of school nursing : the official publication of the National Association of School Nurses 36(2): 135-143</p>	<p>- Duplicate reference</p>
<p>Rockwell, Pamela G (2019) Bringing the HPV vaccination rate into line with other adolescent immunizations. The Journal of family practice 68(10): e1-e7</p>	<p>- Not a peer-reviewed publication</p>
<p>Rosen, B.L., Real, F.J., Bishop, J.M. et al. (2021) School Health Service Provider Perceptions on Facilitated Interactive Role-Play Around HPV Vaccine Recommendation. Journal of cancer education : the official journal of the American Association for Cancer Education</p>	<p>- OECD remaining study for HPV vaccination. Sufficient evidence from the UK and OECD subset for this category.</p>
<p>Rozbroj, T; Lyons, A; Lucke, J (2020) Vaccine-Hesitant and Vaccine-Refusing Parents' Reflections on the Way Parenthood Changed Their Attitudes to Vaccination. Journal of community health 45(1): 63-72</p>	<p>- Not a relevant study design</p> <p><i>Analysis of open-ended survey questions. There are other studies looking at the same topic using interviews and focus groups so we do not need to include this type of study.</i></p>
<p>Rubens-Augustson, Taylor, Wilson, Lindsay A, Murphy, Malia Sq et al. (2019) Healthcare provider perspectives on the uptake of the human papillomavirus vaccine among newcomers to Canada: a qualitative study. Human vaccines & immunotherapeutics 15(78): 1697-1707</p>	<p>- Duplicate reference</p> <p><i>Already included in barriers and facilitators review</i></p>
<p>Runngren, E.; Eriksson, M.; Blomberg, K. (2020) Balancing Between Being Proactive and Neutral: School Nurses' Experiences of Offering Human Papilloma Virus Vaccination to Girls. The Journal of school nursing : the official publication of the National Association of School Nurses: 1059840520933323</p>	<p>- Study that is not required for barriers and facilitators review because there are sufficient UK studies</p> <p><i>Barriers and facilitators review for vaccinations for 11-18 year olds only included staff views from UK</i></p>

Study	Reason
Tandy, C.B. and Jabson Tree, J.M. (2021) Attitudes of East Tennessee residents towards general and pertussis vaccination: a qualitative study. BMC public health 21(1): 446	- The vaccine is on the UK routine schedule but the participants fall outside of the routine schedule
Theis, Ryan P; Wells, Brittany A; Staras, Stephanie A S (2020) "I can be the Judge of What's Serious": A Qualitative Pilot Study of Parents' Responses to Messaging About Side Effects of the HPV Vaccine. Maternal and child health journal 24(4): 456-461	- OECD remaining study for HPV vaccination. Sufficient evidence from the UK and OECD subset for this category.
Trubeta, Sevasti (2020) Vaccination and the refugee camp: exercising the free choice of vaccination from an abject position in Germany and Greece. Journal of Ethnic and Migration Studies 46(15): 3370-3387	- Not a relevant study design <i>Case study</i>
Waller, Jo, Forster, Alice, Ryan, Mairead et al. (2020) Decision-making about HPV vaccination in parents of boys and girls: A population-based survey in England and Wales. Vaccine 38(5): 1040-1047	- Study does not have an outcome of interest
Wilder-Smith, Annika B and Qureshi, Kaveri (2020) Resurgence of Measles in Europe: A Systematic Review on Parental Attitudes and Beliefs of Measles Vaccine. Journal of epidemiology and global health 10(1): 46-58	- Systematic review that was used as a source of references
Zahid, S.; Morrissey, H.; Ball, P. (2020) Investigating future pharmacists understanding of vaccines and myths surrounding vaccination. International Journal of Current Pharmaceutical Research 12(5): 95-98	- Study does not include participants of interest

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1 Appendix K – Research recommendations – full 2 details

K.131 Research recommendation 1

4 What are the most effective and acceptable strategies to increase HPV vaccine
5 uptake in adolescent boys?

K.132 Why this is important

7 There is much evidence available on the effectiveness and acceptability of the HPV vaccine,
8 and HPV vaccination programmes, for adolescent girls. The inclusion of adolescent boys in
9 HPV vaccination programmes only began in September 2019 in the UK and so there is
10 considerably less evidence than there is for adolescent girls in the UK. Evidence on HPV
11 vaccination of boys in other countries is also limited as their expanded HPV vaccination
12 programmes are also new. Currently, uptake of the HPV vaccine is also lower for adolescent
13 boys than girls, with Public Health England reporting that 54.4% and 59.2% respectively
14 received their first doses in the 2019/2020 academic year. (These numbers are lower than
15 expected normally because of the COVID-19 pandemic disrupting school-based
16 vaccinations. In 2018/19, 83.9% of Year 9 females completed the 2-dose HPV vaccination
17 course, but there are no corresponding numbers available for boys as they were not eligible
18 for vaccination at that time.) It is therefore important that research considers what strategies
19 are the most effective at increasing HPV vaccine uptake in adolescent boys, and how
20 acceptable these strategies are. This will help to determine whether the same strategies that
21 have been used for girls are equally applicable to boys or whether other strategies should
22 also be considered.

K.133 Rationale for research recommendation

24

Importance to communities	High levels of HPV vaccine uptake are necessary to reduce the incidence of cervical cancer and some head and neck cancers.
Relevance to NICE guidance	Medium: the research is relevant to the recommendations in the guidance, but the research recommendations are not essential to future updates. If the most effective and acceptable strategies to increase HPV vaccine uptake in boys differed from those that were effective for girls then this could have an impact on the recommendations. This information could be used to help ensure that boys have equal opportunities to access HPV vaccination.
Relevance to the NHS	Understanding the most effective and acceptable strategies could help to increase the number of people vaccinated against HPV and thus reduce the number of women diagnosed with cervical cancer and men/ women with head and neck cancers caused by HPV. This would reduce the resources needed to treat these people for cancer, allowing staff (and other resources) to be targeted at people with other cancers or other diseases.
National priorities	There is a new DHSC vaccination strategy due in late 2021 and it is expected that this work would fall under the goal of increasing the uptake of routine vaccinations.
Current evidence base	Four, low to moderate quality qualitative studies included in this review explored the views of parents and adolescent boys on HPV vaccination. None were based in the UK and all took place before the vaccination was introduced for boys. No quantitative

	evidence was identified that examined the effectiveness of HPV vaccination programmes for boys.
Equality considerations	Boys who are in alternative education settings or who are home schooled should also be considered.

1

K.124 Modified PICO table

3

Population	<ul style="list-style-type: none"> Adolescent boys eligible for routine schedule HPV vaccination(s) including transgender individuals who identify as male, or their parents or carers (as appropriate). Healthcare staff organising HPV vaccination programmes or administering vaccinations
Intervention	<p>Interventions designed to increase uptake of routine HPV vaccinations. Interventions could be related to (but not limited to):</p> <ul style="list-style-type: none"> improving access providing information or education providing reminders infrastructure changes (e.g., recording of status and vaccinations; audit and feedback) combinations of the above <p>The interventions could be aimed at adolescent boys, their parents (or careers, as appropriate), healthcare staff or combinations of these groups.</p>
Comparator	<ul style="list-style-type: none"> usual processes different formats of the same interventions different combinations of interventions
Outcomes	<p>Quantitative outcomes including:</p> <ul style="list-style-type: none"> HPV vaccine uptake by adolescent boys offers of HPV vaccination. <p>Qualitative outcomes including:</p> <ul style="list-style-type: none"> acceptability of the intervention views about implementation other views about the intervention or general barriers or facilitators to uptake of HPV vaccination by adolescent boys. <p>The qualitative work should look at the views of adolescent boys, their parents (or carers, as appropriate) and relevant healthcare staff.</p>
Study design	<ul style="list-style-type: none"> Quantitative study: RCTs, cluster RCTs, cohort studies Qualitative study: interviews, focus groups only (not surveys or open -ended questions on surveys)
Timeframe	There is no specified time frame in which the study needs to be completed.
Additional information	<ul style="list-style-type: none"> HPV vaccinations should be available as detailed in the UK routine schedule (i.e. administered to school- aged adolescent boys).

4

K.1.15 Research recommendation 2

K.1.16 What are the most effective and acceptable interventions to increase routine vaccine uptake in older people?
3

K.1.17 Why this is important

5 The evidence identified for this guideline has included a number of different types of
6 interventions and their effects on vaccine uptake such as incentives for providers, individuals
7 and families, different settings to access vaccinations, different formats of information and
8 reminders and combinations of each of these. However, while there is some evidence for the
9 barriers and facilitators of vaccination for adults aged 65, only 1 of these studies was based
10 in the UK. In addition, there is very limited quantitative evidence about the effectiveness of
11 different types of intervention to increase vaccination uptake in this age group. UK-based
12 research is therefore needed to identify what types of interventions are the most effective at
13 increasing vaccine uptake for older people, and which of these interventions are considered
14 most acceptable to this group of people.

15 At this time (October 2021) the UK schedule has routine vaccinations for adults who are
16 aged 65 years and over, but this is expected to change in line with the reduction in age for
17 eligibility for the shingles vaccination. As a result, we have used the term 'older people' to
18 future proof the research recommendation. Older people are defined as adults who are
19 eligible for routine vaccination on the UK schedule, excluding pregnancy-related
20 vaccinations.

K.1.18 Rationale for research recommendation

22

Importance to 'patients' or the population	Pneumonia and shingles vaccinations could prevent older people from becoming ill, possibly seriously so or even dying in the case of pneumonia. Shingles is also painful.
Relevance to NICE guidance	Medium: the research is relevant to the recommendations in the guidance, but the research recommendations are not essential to future updates. Identifying the most effective and acceptable interventions for older people could help improve the existing recommendations or lead to new recommendations specifically aimed at this population.
Relevance to the NHS	Identifying the most effective interventions to increase vaccine uptake will help providers to plan effective services for vaccination in this population. The reduced incidence of pneumonia expected if vaccination rates increase would lead to reduced numbers of hospitalisations and thereby free up resources that could be deployed to address other priorities.
National priorities	There is a new DHSC vaccination strategy due in late 2021 and it is expected that this work would fall under the goal of increasing the uptake of routine vaccinations.
Current evidence base	There is a limited evidence base for interventions to increase uptake in this age group and only 1 UK-based qualitative study and 1 UK-based quantitative study were identified.

Equality considerations	Some older people may have dementia and other comorbidities that need to be taken into account when designing interventions to increase their vaccine uptake.
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K.129 Modified PICO table

Population	<ul style="list-style-type: none"> Older people (see additional information below) who are eligible for pneumococcal or shingles vaccination (or other new routine vaccinations), or their family members or carers (as appropriate). Healthcare staff organising pneumococcal or shingles vaccination programmes or administering vaccinations.
Intervention	<p>Interventions designed to increase uptake of pneumococcal or shingles vaccinations (or other new routine vaccinations for older people). Interventions could be related to (but not limited to):</p> <ul style="list-style-type: none"> improving access providing information or education providing reminders infrastructure changes (e.g., recording of status and vaccinations; audit and feedback) combinations of the above <p>The interventions could be aimed at the older person or healthcare staff or both.</p>
Comparator	<ul style="list-style-type: none"> usual processes different formats of the same interventions different combinations of interventions
Outcomes	<p>Quantitative outcomes including:</p> <ul style="list-style-type: none"> pneumococcal or shingles vaccine uptake by older people offers of pneumococcal or shingles vaccination offers and uptake of any other vaccinations that are added to the UK routine schedule for older people (with the exception of influenza vaccination) <p>Qualitative outcomes including:</p> <ul style="list-style-type: none"> acceptability of the intervention views about implementation other views about the intervention or general barriers or facilitators to uptake of shingles or pneumococcal vaccination (or other new routine vaccinations) by older people. <p>The qualitative work should look at the views of both older people and relevant healthcare staff.</p>
Study design	<ul style="list-style-type: none"> Quantitative study: RCT or cluster RCT, cohort studies Qualitative study: interviews, focus groups only (not surveys or open-ended questions on surveys)
Timeframe	There is no specified time frame in which the study needs to be completed.
Additional information	<ul style="list-style-type: none"> Older people are defined as adults who are eligible for routine vaccination on the UK schedule, excluding pregnancy-related vaccinations. Consult the green book for information about current age limits and vaccinations for older people. The vaccinations must be available as detailed on the UK routine schedule. Flu vaccination is excluded as this is out of scope of this guideline.

3

K.1.10 Research recommendation 3

K.1.11 What are the most effective and acceptable interventions to increase uptake in populations or groups with low routine vaccine uptake in the UK?
3

K.1.12 Why this is important

5 The evidence identified for this guideline has included a number of different types of
6 interventions and their effects on vaccine uptake such as incentives for providers, individuals
7 and families, different settings to access vaccinations, different formats of information and
8 reminders and combinations of each of these. However, there is limited research that has
9 specifically targeted populations and groups identified as having low vaccination uptake such
10 as Travellers, Roma and Gypsy; and some immigrants and religious communities and these
11 studies have mainly been qualitative in nature. Research is therefore needed to identify what
12 types of interventions are the most effective at increasing vaccine uptake in these groups,
13 and which of these interventions are considered most acceptable. This information will help
14 providers to tailor vaccination services to the needs of their local population with the aim of
15 increasing the number of people who accept routine vaccinations.

K.1.13 Rationale for research recommendation

17

Importance to communities	Increasing uptake of vaccinations on the UK routine schedule can help to reduce the chances of people experiencing disease and can increase herd immunity in areas that currently have populations with low uptake thus reducing the chance of people who cannot be vaccinated becoming ill.
Relevance to NICE guidance	High: the research is essential to inform future updates of key recommendations in the guidance. Increased understanding of the most effective and acceptable interventions for different groups will make it possible to write recommendations that are more specific for these populations.
Relevance to the NHS	Identifying the most effective and acceptable interventions for different populations with low vaccine uptake will help providers to develop vaccination services tailored to their local communities. This should help reduce the incidence of the vaccine preventable diseases and allow the NHS resources used to treat these diseases to be deployed elsewhere.
National priorities	There is a new DHSC vaccination strategy due in late 2021 and it is expected that this work would fall under the goal of increasing the uptake of routine vaccinations
Current evidence base	There is qualitative evidence on the barriers and facilitators to vaccine uptake in Traveller, Gypsy and Roma communities; some immigrant populations and religious groups but no evidence was identified for other populations with low vaccine uptake. No quantitative evidence was identified for interventions to increase vaccination specifically in these populations in the UK.
Equality considerations	The most effective and acceptable intervention may differ between populations and communities. Communities with low uptake may have specific equality issues that need consideration when designing this research.

18

K.1.14 Modified PICO table

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Population	<ul style="list-style-type: none"> Individuals from populations with low vaccine uptake who are eligible for routine schedule vaccination(s) (or their parents, family members or carers as appropriate). This could include: <ul style="list-style-type: none"> People from the Travelling, Gypsy or Roma communities, Hospitalised children with chronic conditions People with a disability Looked after children and young people Children whose parents have refused vaccination Healthcare staff organising relevant vaccination programmes or administering vaccinations.
Intervention	<p>Interventions designed to increase uptake of routine UK vaccination (excluding influenza vaccination).</p> <p>Interventions could be related to (but not limited to):</p> <ul style="list-style-type: none"> improving access providing information or education providing reminders infrastructure changes (e.g., recording of status and vaccinations; audit and feedback) combinations of the above <p>The interventions could be aimed at the eligible person, their parents, family members or carers (as appropriate) or healthcare staff or combination of these groups.</p>
Comparator	<ul style="list-style-type: none"> usual processes different formats of the same interventions different combinations of interventions
Outcomes	<p>Quantitative outcomes including:</p> <ul style="list-style-type: none"> uptake of routine vaccinations by eligible people offers of vaccination. <p>Qualitative outcomes including:</p> <ul style="list-style-type: none"> acceptability of the intervention views about implementation other views about the intervention or general barriers or facilitators to uptake of the routine vaccinations. <p>The qualitative work should look at the views of eligible people (unless this is a young child or baby), their parents, family members or carers (as appropriate) and relevant healthcare staff.</p>
Study design	<ul style="list-style-type: none"> Quantitative study: RCT or cluster RCT, cohort studies Qualitative study: interviews, focus groups only (not surveys or open - ended questions on surveys)
Timeframe	There is no specified time frame in which the study needs to be completed.
Additional information	<ul style="list-style-type: none"> The vaccinations must be available as detailed on the UK routine schedule. Flu vaccination is excluded as this is out of scope of this guideline.

3