

## Postnatal Care

### [O] Emotional attachment

*NICE guideline <TBC>*

*Evidence reviews*

*October 2020*

*Draft for consultation*

*This evidence review was developed by the  
National Guideline Alliance part of the  
Royal College of Obstetricians and  
Gynaecologists*

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ISBN:

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# 1 Emotional attachment

2 This evidence review supports recommendations 1.3.14, 1.3.15, 1.3.16 and 1.3.17.

## 3 Review question

4 What interventions in the postnatal period are effective at promoting emotional  
5 attachment?

## 6 Introduction

7 Emotional attachment is a type of innate behaviour in children. It is the earliest  
8 relationship that a child develops with their primary caregiver(s), and is where a baby  
9 behaves in a way that ensures physical proximity and safety. It is affected by the  
10 primary caregiver's behaviour. For example, responding sensitively to a baby's  
11 distress provides a 'secure base' from which the baby can explore their physical  
12 surroundings and help with emotional and social development. This helps them to  
13 form positive relationships with others in the future. Disturbance of this attachment  
14 'system' can have life-long adverse implications for the emotional and social  
15 development of the child. Bonding is the other side of the coin and means the  
16 positive emotional and psychological connection that the primary caregiver(s),  
17 usually the mother, develop with the baby. Sometimes emotional attachment and  
18 bonding are used interchangeably to describe the relationship between the mother  
19 and the baby. The aim of this review is to determine what interventions in the  
20 postnatal period (defined as up to 8 weeks following birth) are effective at promoting  
21 emotional attachment.

## 22 Summary of the protocol

23 See Table 1 for a summary of the Population, Intervention, Comparison and  
24 Outcome (PICO) characteristics of this review.

25 **Table 1: Summary of the protocol (PICO table)**

<b>Population</b>	Women who have given birth at term to a healthy baby, from the birth of the baby to 8 weeks after birth.
<b>Intervention</b>	<p>Intervention 1. Provision of information (verbally, electronically or on paper); for example, handing out a leaflet about the following topics:</p> <ul style="list-style-type: none"><li>• skin-to-skin contact</li><li>• cuddling the baby</li><li>• talking to the baby</li><li>• massaging the baby</li><li>• being responsive to cues or small signals the baby may send</li><li>• copying the baby's noises and gestures</li><li>• providing comfort when the baby is upset</li><li>• getting enough sleep and having support.</li></ul> <p>Intervention 2. Skills training (for example, teaching mothers how to massage babies or role modelling by a healthcare professional during home visits)</p> <p>Interventions will be included if they are:</p> <ul style="list-style-type: none"><li>• initiated in the first 8 weeks after birth</li></ul>

	<ul style="list-style-type: none"><li>• initiated in the antenatal period and continue into the postnatal period.</li></ul>
<b>Comparison</b>	<p>Comparator 1. Standard care or different information packets. Modalities of information (for example, oral versus written) will be not be compared.</p> <p>Comparator 2. Standard care or different educational intervention</p> <p>Intervention 1 will be compared to comparator 1, intervention 2 will be compared with comparator 2. Data permitting, interventions 1 and 2 will be compared against each other.</p>
<b>Outcomes</b>	<p><b>Critical outcomes</b></p> <ul style="list-style-type: none"><li>• Mother's feelings towards the baby when the baby is 12 to 18 months of age</li><li>• Quality of mother-baby interaction when the baby is 12 to 18 months of age</li><li>• Proportion of babies displaying an insecure attachment type (which includes ambivalent, avoidance, disorganised) when the baby is 12 to 18 months of age</li></ul> <p><b>Important outcomes</b></p> <ul style="list-style-type: none"><li>• The nature of the early mother-baby relationship (based on the mother's subjective perception) when the baby is 12 to 18 months of age</li><li>• Social behaviour of the baby when the baby is 12 to 18 months of age</li></ul>

## 1 Methods and process

2 This evidence review was developed using the methods and process described in  
3 [Developing NICE guidelines: the manual 2014](#). Methods specific to this review  
4 question are described in the review protocol in appendix A.

5 Declarations of interest were recorded according to NICE's 2014 conflicts of interest  
6 policy until March 2018. From April 2018 until June 2019, declarations of interest  
7 were recorded according to NICE's 2018 conflicts of interest policy. From July 2019  
8 onwards, the declarations of interest were recorded according to NICE's 2019  
9 [conflicts of interest policy](#). Those interests declared before July 2019 were  
10 reclassified according to NICE's 2019 conflicts of interest policy (see Register of  
11 Interests).

## 12 Clinical evidence

### 13 Included studies

14 Four randomised controlled trials (RCTs) were included in this review (Guedeney  
15 2013, Hans 2013, Kemp 2011, Walkup 2009). All studies compared different  
16 interventions: usual care plus the Parental Skills and Attachment in Early Childhood  
17 versus usual care only (Guedeney 2013), community doula intervention versus  
18 routine medical and social services (Hans 2013), a long-term nurse home visiting  
19 program versus standard practice (Kemp 2011), and a paraprofessional-delivered,  
20 home-visiting intervention versus breastfeeding/nutrition education program (Walkup  
21 2009). In one study the population were African American women (Hans 2013) and in  
22 another young American Indian women (Walkup 2009).

23 The length of the interventions across the included studies differed greatly from 3  
24 months (Hans 2013) to up to the child's 2<sup>nd</sup> birthday (Guedeney 2013, Kemp 2011).

- 1 The included studies are summarised in Table 2.
- 2 See the literature search strategy in appendix B and study selection flow chart in
- 3 appendix C.

#### 4 Excluded studies

- 5 Studies not included in this review with reasons for their exclusion are provided in
- 6 appendix K.

#### 7 Summary of studies included in the evidence review

- 8 Summaries of the studies that were included in this review are presented in Table 2.

#### 9 Table 2: Summary of included studies

Study	Population	Intervention and comparison	Outcomes
Guedeney 2013 RCT France	N=440 women randomised to: <ul style="list-style-type: none"> <li>• Intervention n=222</li> <li>• Control n=218</li> </ul> <p>Median age for the whole population: 22 years</p>	<p>Intervention group:</p> <ul style="list-style-type: none"> <li>• Usual care and assessment visits plus the Parental Skills and Attachment in Early Childhood: Reducing Mental Health Risks and Promoting Resilience home visiting program (home-visiting, infant mental health promotion program)</li> </ul> <p>Control group:</p> <ul style="list-style-type: none"> <li>• Usual care and assessment visits at participants' homes</li> </ul> <p>The intervention was tailored to each family's needs and consisted of home visits during pregnancy and up to the child's second birthday, with decreasing frequency of visits over time: 6 visits during the antenatal period, 8 in the first 3 months' postpartum, 15 between the fourth and twelfth months' postpartum, and another 15 during the child's second year of life, resulting in a total of 44 home visits per family</p>	<ul style="list-style-type: none"> <li>• The Alarm Distress Baby Scale (ADBB) consisting of 8 items (assessed at 18 months of infant age): <ul style="list-style-type: none"> <li>- facial expression</li> <li>- eye contact</li> <li>- general level of activity</li> <li>- self-stimulation gestures</li> <li>- vocalizations</li> <li>- rapidity of response to stimulation</li> <li>- relationship with the observer</li> <li>- attractiveness to the observer</li> </ul> </li> </ul>

Study	Population	Intervention and comparison	Outcomes
Hans 2013  RCT  US	N=248 women randomised to:  • Intervention n=124  • Control n=124  Age, mean (SD):  • Intervention 18 (1.7)  • Control 17.9 (1.7)	Intervention group:  • Community doula intervention (weekly visits with participating women at their homes, clinics; doulas joined mothers during labour and birth)  Control group:  • Routine medical and social services  Doulas scheduled weekly visits with each woman in the intervention groups throughout her pregnancy and until 3 months post-partum	<ul style="list-style-type: none"> <li>• Mother-child interaction measured using the Parent-Child Observation Guide (PCOG) consisting of mother and child variables (assessed at 12 months of infant age): <ul style="list-style-type: none"> <li>- mother variables (mother sensitive responsiveness, encouragement and guidance, mother prompt responsiveness to upset (for children who displayed upset))</li> <li>- child variables (positive involvement with mother, child displayed no uncomfortably long period of distress)</li> </ul> </li> </ul>
Kemp 2011  RCT  Australia	N=208 women randomised to:  • Intervention n=111  • Control n=97  Age, mean (SD):  • Intervention 27.6 (6.7)  • Control 27.7 (5.9)	Intervention group:  • Long-term nurse home visiting program (visits by a child health nurse commencing at on average 26 (range 12-40) weeks gestation and continuing to their child's second birthday)  Control group:  • Standard practice  Women in the intervention group received an average of 16 (range 0-52) visits, each of 60-90 min duration, by a child health nurse commencing at on average 26 weeks gestation (range 12-40), and continuing to their child's second birthday	<ul style="list-style-type: none"> <li>• Mother-child interaction during free play measured using the National Institute for Child Health and Development scales of parent-child interaction consisting of 3 items (assessed at 18 months of baby age): <ul style="list-style-type: none"> <li>- sensitive stimulating parenting</li> <li>- detached flat parenting</li> <li>- child engagement</li> </ul> </li> </ul>
Walkup 2009  RCT  US	N=167 women randomised to:  • Intervention n=81  • Control n=86	Intervention group:  • Paraprofessional-delivered, home-visiting intervention (the Family Spirit intervention based on recommendations and standards	<ul style="list-style-type: none"> <li>• Social emotional problems and competencies of child measured using the Infant Toddler Social Emotional Assessment (ITSEA) consisting of 4 domains (assessed at 12 months of baby age):</li> </ul>



Study	Population	Intervention and comparison	Outcomes
	Median age for the whole population: 18 years.	<p>documented in the American Academy of Paediatrics' Caring for Your Baby and Child: Birth to Age 5. This includes developmentally timed prenatal and infant-care parenting lessons, family planning, substance abuse prevention, and problem-solving and coping-skills lesson)</p> <p>Control group:</p> <ul style="list-style-type: none"> <li>• Breastfeeding/nutrition education program (the curricular content included a previously developed breastfeeding/nutrition education program) (no more details given)</li> </ul> <p>Mothers received home-visiting lessons from 28 weeks' gestation to 6 months postpartum</p>	<ul style="list-style-type: none"> <li>- externalising domain (includes activity/impulsivity, aggression/defiance, peer aggression)</li> <li>- internalising domain (includes depression/withdraw, general anxiety, separation distress, inhibition to novelty)</li> <li>- dysregulation domain (includes sleep, negative emotionality, eating, sensory sensitivity)</li> <li>- competence domain (includes compliance, attention, imitation/play, mastery motivation, empathy, prosocial peer relations)</li> </ul>

1 ADBB: Alarm Distress Baby Scale; ITSEA: Infant Toddler Social Emotional Assessment; PCOG:  
2 Parent-Child Observation Guide; RCT: randomised controlled trial; SD: standard deviation

3 See the full evidence tables in appendix D. No meta-analysis was conducted (and so  
4 there are no forest plots in appendix E).

## 5 Quality assessment of studies included in the evidence review

6 See the evidence profiles in appendix F.

## 7 Economic evidence

### 8 Included studies

9 A single economic search was undertaken for all topics included in the scope of this  
10 guideline and additional economic searches were conducted that used search terms  
11 specific to this review question combined with a search filter for economic  
12 evaluations but no economic studies were identified which were applicable to this  
13 review question. See the literature search strategy in appendix B and economic study  
14 selection flow chart in appendix G.

### 15 Excluded studies

16 No economic studies were reviewed at full text and excluded from this review.

## 1 Economic model

2 No economic modelling was undertaken for this review because the committee  
3 agreed that other topics were higher priorities for economic evaluation.

## 4 Evidence statements

### 5 Clinical evidence statements

#### 6 *Mother's feelings towards the baby when the baby is 12 to 18 months of age*

7 No evidence was identified for this outcome.

#### 8 *Quality of mother-baby interaction when the baby is 12 to 18 months of age*

- 9
- 10 • Moderate to low quality evidence from 1 RCT (N=248) showed no clinically  
11 important difference between the intervention of a community doula  
12 compared to routine medical and social services in mother-child interaction,  
13 measured using the Parent-Child Observation Guide at 12 months of baby  
14 age.
  - 15 • Very low quality evidence from 1 RCT (N=208) showed no clinically important  
16 difference between long-term nurse home visiting programme and standard  
17 practice in mother-child interaction measured using the National Institute for  
18 Child Health and Development (NICHD) scales of parent-child interaction at  
18 months of baby age.

#### 19 *Proportion of babies displaying an insecure attachment type (which includes* 20 *ambivalent, avoidance, disorganised) when the baby is 12 to 18 months of age*

- 21
- 22 • Low and very low quality evidence from 1 RCT (N=440) showed no clinically  
23 important difference between the intervention of Parental Skills and  
24 Attachment in Early Childhood program and usual care neither in women with  
25 the prenatal depression scale score of >11 nor those women with the prenatal  
26 depression scale score of ≤11 in social withdrawal behaviour in babies,  
27 measured using the Alarm Distress Baby Scale at 18 months of baby age.  
28 Higher scores on the prenatal depression scale indicate higher levels of  
depressive symptoms.

#### 29 *The nature of the early mother-baby relationship (based on the mother's* 30 *subjective perception) when the baby is 12 to 18 months of age*

31 No evidence was identified for this outcome.

#### 32 *Social behaviour of the baby when the baby is 12 to 18 months of age*

- 33
- 34 • Very low quality evidence from 1 RCT (N=167) showed a clinically important  
35 difference between the paraprofessional-delivered home visiting (Family  
36 Spirit) intervention compared to a breastfeeding/nutrition education program  
37 in the baby's social emotional problems and competencies in externalising  
38 domain suggesting fewer problems associated with activity/impulsivity,  
39 aggression/defiance and peer aggression in the intervention group, measured  
40 using the Infant Toddler Social Emotional Assessment at 12 months of baby  
age.
  - 41 • Very low quality evidence from 1 RCT (N=167) showed no clinically important  
42 difference between the paraprofessional-delivered home visiting (Family  
43 Spirit) intervention compared to a breastfeeding/nutrition education program  
44 in the baby's social behaviour in the other domains such as internalising

1 domain (includes depression/ withdraw, general anxiety, separation distress,  
2 inhibition to novelty), dysregulation domain (includes sleep, negative  
3 emotionality, eating, sensory sensitivity) and competence domain (includes  
4 compliance, attention, imitation/play, mastery motivation, empathy, prosocial  
5 peer relations), measured using the Infant Toddler Social Emotional  
6 Assessment at 12 months of baby age.

#### 7 **Economic evidence statement**

8 No economic evidence was identified which was applicable to this review question.

### 9 **The committee's discussion of the evidence**

#### 10 **Interpreting the evidence**

##### 11 ***The outcomes that matter most***

12 This review focused on interventions aimed at promoting emotional attachment. The  
13 committee firstly agreed that all outcomes needed to be assessed at 12 to 18 months  
14 of the babies age as the committee felt that this is the earliest age range when  
15 emotional attachment can be appropriately measured.

16 The committee agreed that the critical outcomes were the mother's feelings towards  
17 the baby when the baby is 12 to 18 months of age, the quality of the mother-baby  
18 interactions when the baby is 12 to 18 months of age and the proportion of babies  
19 displaying an insecure attachment type when the baby is 12 to 18 months of age.  
20 Important outcomes the committee were also interested in were the nature of the  
21 early mother-baby relationship (based on the mother's subjective perception) when  
22 the baby is 12 to 18 months of age, the quality of the mother-baby interaction when  
23 the baby is 12 to 18 months of age and also the social behaviour of the bay with the  
24 baby is 12 to 18 months of age.

##### 25 ***The quality of the evidence***

26 The evidence was assessed using GRADE, the overall confidence in the review  
27 findings ranged from very low to moderate.

28 There were no serious concerns with the consistency of the evidence.

29 There were serious concerns with the indirectness for the outcomes from one study  
30 (Walkip 2009). This study used the Infant Toddler Social Emotional Assessment  
31 (ITSEA) as a proxy outcome for social behavior of the baby. In addition, this study  
32 was conducted among young American indigenous women, and the intervention was  
33 specifically tailored to reflect the local Native practices, making the study not very  
34 applicable to the UK context. There was no concern about indirectness with other  
35 outcomes.

36 With some outcomes, there was serious concerns with imprecision. Serious  
37 imprecision was detected by the 95% confidence interval crossing the minimally  
38 important difference (MID) for continuous outcomes. For these outcomes default  
39 MIDs were calculated as half the median standard deviation (SD) of the control  
40 groups at baseline (or at follow-up if the SD is not available at baseline).

41 There were very serious to serious concerns with the risk of bias for the included  
42 studies had high attrition bias, there was no information provided on how women  
43 were randomised and either no information on assessor blinding to intervention

1 allocations or both assessors and participants were aware of their allocations  
2 consequently increasing performance bias.

### 3 **Benefits and harms**

4 Although some evidence was identified, mainly of low quality, the interventions  
5 generally did not seem to have an effect on outcomes measuring emotional  
6 attachment. Only one study (Walkup 2009) reported a clinically important  
7 improvement in externalising behaviour domain at 12 months of age following the  
8 intervention. The committee noted that assessing externalising behaviours (for  
9 example aggression) at 12 months of age is challenging and perhaps not much can  
10 be read into this result alone. More importantly, this study was conducted among a  
11 very specific population group, among young (mean age 18 years) American  
12 indigenous women and the intervention was specifically tailored to reflect the local  
13 Native practices. Therefore, the committee agreed the results would not be  
14 applicable to the UK population.

15 Given that lack of evidence on effective interventions for promoting emotional  
16 attachment, the recommendations were based on the committee's knowledge and  
17 experience. The evidence review sought to find evidence about interventions to  
18 promote bonding and emotional attachment between the mother and the baby  
19 because mother is usually the primary caregiver of the baby. However, the  
20 committee agreed that the recommendations would apply to both parents (or who  
21 ever are the primary caregivers of the baby) because it was considered important  
22 that these issues are discussed with not just the mother but also other primary  
23 caregivers (often the father) who are developing a relationship with the baby.

24 The committee discussed that the importance of emotional attachment and bonding  
25 is well documented in the wider literature. All babies are born with an innate potential  
26 to develop an attachment to their caregiver(s) and how this can be modified by the  
27 quality, intensity and responsiveness of the care provided. The security of this  
28 attachment forms the building blocks for the baby's socioemotional development.  
29 Disruptions in attachment (so-called insecure attachment styles) can lead to long  
30 term difficulties in the baby's development, causing significant psychological,  
31 behavioural and functional impairment in later life. Bonding, on the other hand, refers  
32 to the positive relationship and connection that the mother (or another primary  
33 caregiver) forms with the baby. Bonding and emotional attachment are therefore  
34 closely linked.

35 The committee discussed how parents should be aware about the importance of  
36 bonding and emotional attachment in the antenatal period and to have discussions  
37 about ways to promote emotional attachment by bonding with their baby in both the  
38 antenatal and postnatal period. Emotional attachment could be promoted through  
39 spending 'high-quality' alone time with the baby, skin-to-skin contact and  
40 encouraging positive interactions, reacting and responding to babies' cues in a  
41 minimally stressful, calm, quiet and distraction-free environment with no set agendas.  
42 The committee agreed that parents should be encouraged to value this type of time  
43 spent with the baby. The committee also discussed how it can be important for the  
44 woman's partner (or whoever supports her) to also be aware of the importance of  
45 emotional attachment so that they can support the woman, including by helping with  
46 other tasks that would otherwise prevent the woman for spending this time with her  
47 baby for example by offering to help with domestic chores or other childcare  
48 demands.

49 The committee discussed how both the birth and caring for a newborn baby are  
50 major life events that are typically normalised in society as being everyday events,

1 however, there are various reasons why this period can be overwhelming and  
2 challenging, which in turn may have an impact on developing emotional attachment.  
3 The most important thing promoting emotional attachment is the wellbeing of the  
4 caregiver. The committee wanted to ensure that healthcare professionals have  
5 discussions with parents about what to expect and the potentially challenging  
6 aspects of the postnatal period. Such information would encompass the physical and  
7 emotional recovery from the birth, the challenges of baby feeding, the demands of  
8 parenthood, and to highlight the inevitable challenge of coping with sleep-deprivation  
9 which is a subjectively unpleasant and stressful state. Traumatic birth or birth  
10 complications can also bring further challenges the postnatal period which could  
11 impact bonding and emotional attachment. Parents may need to be reminded that  
12 everything may not go according to plan and that the experience will inevitably  
13 comprise an array of very intense emotions which is universal to all new parents and  
14 represents an expected adjustment period. Parents may need encouragement that  
15 these feelings are normal, that they can ask for help and that there is additional  
16 support available to them. Preparing, informing and encouraging women of these  
17 changes will hopefully improve their own sense of well-being, which in turn will  
18 encourage the natural development of emotional attachment.

19 The committee discussed how particular groups of parents may be more susceptible  
20 to challenges in bonding and developing emotional attachment and may need more  
21 support. The committee were aware of longitudinal observational studies showing  
22 that often how one reacts to one's child might be similar to how one was reacted to  
23 as a child. Therefore, parents who have been through the care system or who have  
24 experienced adverse childhood events might need more support in developing  
25 bonding and emotional attachment. Furthermore, some parents with complex social  
26 needs, which might include people needing a high level of support with many aspects  
27 of their daily life due an illness, disability, broader life circumstances or a combination  
28 of these, may have need additional support with bonding with their baby.

29 The committee discussed the harms that could potentially result from these  
30 recommendations are small and will be outweighed by the improvement in the  
31 emotional attachment between the mother and the baby. The main harm considered  
32 would be the additional pressure and anxiety parents may face striving to achieve  
33 emotional attachment and finding the time to spend one-to-one time with their baby.

34 The committee acknowledged the need for research in this area, particularly  
35 research exploring longer term outcomes. However, the committee were aware of at  
36 least 4 concurrent longitudinal studies currently being conducted in the UK. The  
37 committee considered that this research would likely provide valuable evidence for  
38 future updates and so did not make their own research recommendation in order to  
39 prioritise other topics. The committee particularly emphasised the importance of  
40 exploring intergenerational impact on bonding and emotional attachment.

#### 41 **Cost-effectiveness and resource use**

42 No economic evidence is available for this review question. The committee agreed  
43 that providing information and support to mothers to enhance emotional attachment  
44 with their babies should be part of the routine postnatal care contacts. There may be  
45 minor resource implications relating to the time spent by the health professionals on  
46 providing such information and support, however, the anticipated emotional benefits  
47 for mothers and babies are expected to outweigh related costs. Therefore, the  
48 committee agreed that the recommendations ensure efficient use of healthcare  
49 resources.

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

2 The committee noted during protocol development that certain subgroups of women  
3 and health care professionals may require special consideration:

- 4 • young women (19 years or under)
- 5 • women with physical and cognitive disabilities
- 6 • women who had difficulty accessing postnatal care services.

7 A stratified analysis was therefore predefined in the protocol based on these  
8 subgroups. However, considering the lack of evidence for these sub-groups, the  
9 committee agreed not to make separate recommendations and that the  
10 recommendations they did make should apply universally.

11 **References**

12 **Guedeney 2013**

13 Guedeney A, Wendland J, Dugravier R, Saias T, Tubach F, Welniarz B, Greacen T,  
14 Tereno S, Pasquet B. Impact of a randomized home-visiting trial on infant social  
15 withdrawal in the CAPEDP prevention study. *Infant Mental Health Journal*, 36(4),  
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17 **Hans 2013**

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20 Support for Young Mothers. *Infant Mental Health Journal*, 34(5), 446–457, 2013.

21 **Kemp 2011**

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23 Aslam H, Zapart S. Child and family outcomes of a long-term nurse home visitation  
24 programme: a randomised controlled trial. *Archives of disease in childhood*, 96 (6),  
25 533–540, 2011.

26 **Walkup 2009**

27 Walkup J, Barlow A, Mullany B, Pan W, Goklish N, Hasting R, Cowboy B, Fields P,  
28 Baker E, Speakman K, Ginsburg G. Randomized controlled trial of a  
29 paraprofessional-delivered in-home intervention for young reservation-based  
30 American Indian mothers. *Journal of the American Academy of Child & Adolescent  
31 Psychiatry*, 48(6), 591–601, 2009  
32

# 1 Appendices

## 2 Appendix A – Review protocol

### 3 Review protocol for review question: What interventions in the postnatal period are effective at promoting emotional attachment?

#### 5 Table 3: Review protocol

Field (based on <a href="#">PRISMA-P</a> )	Content
Review question	What interventions in the postnatal period are effective at promoting emotional attachment?
Type of review question	Intervention
Objective of the review	This review aims to determine what interventions in the postnatal period (defined as up to 8 weeks) are effective at promoting emotional attachment between mother and baby.
Eligibility criteria – population/disease/condition/issue/do main	<p>Women who have given birth at term to a healthy baby, from the birth of the baby to 8 weeks after birth.</p> <p>Babies being taken into care, women with a mental health problem and women with alcohol and drug misuse will be excluded from this review</p> <p>Reasons:</p> <ul style="list-style-type: none"> <li>• NICE guideline on antenatal and postnatal mental health (CG192) covers women with depression, anxiety disorders, eating disorders, drug- and alcohol-use disorders and severe mental illness, and has a section titled “The mother-baby relationship”.</li> <li>• Women with alcohol and drug misuse are usually cared for by specialist teams and this guideline covers routine care.</li> <li>• NICE guideline on children’s attachment (NG26) covers the attachment needs of babies being taken into care).</li> </ul>
Eligibility criteria – intervention(s)	<p>Intervention 1. Provision of information (verbally, electronically or on paper), for example, handing out a leaflet about the following topics:</p> <ul style="list-style-type: none"> <li>• skin-to-skin contact</li> <li>• cuddling the baby</li> </ul>

	<ul style="list-style-type: none"> <li>• talking to the baby</li> <li>• massaging the baby</li> <li>• being responsive to cues or small signals the baby may send</li> <li>• copying the baby’s noises and gestures</li> <li>• providing comfort when the baby is upset</li> <li>• getting enough sleep and having support</li> </ul> <p>Intervention 2. Skills training (for example, teaching mothers how to massage babies or role modelling by a healthcare professional during home visits.)</p> <p>Only interventions initiated within the first 8 weeks after birth will be included.</p> <p>Skin-to-skin contact right after birth will not be covered as this is covered by the NICE guideline on intrapartum care for healthy women and babies (CG190) and by the NICE guideline on caesarean section (CG132).</p>
<p>Eligibility criteria – comparator(s)</p>	<p>Comparator 1. Standard care or different information packets. Modalities of information (for example, oral versus written) will be not be compared.</p> <p>Comparator 2. Standard care or different educational intervention</p> <p>Intervention 1 will be compared to comparator 1, intervention 2 will be compared with comparator 2. Data permitting, interventions 1 and 2 will be compared against each other.</p>
<p>Outcomes and prioritisation</p>	<p><u>Critical outcomes:</u></p> <ul style="list-style-type: none"> <li>• Mother’s feelings towards the baby when the baby is 12 to 18 months of age (default MIDs)</li> <li>• Quality of mother-baby interaction when the baby is 12 to 18 months of age (default MIDs)</li> <li>• Proportion of babies displaying an insecure attachment type (which includes ambivalent, avoidance, disorganised) when the baby is 12 to 18 months of age (default MIDs)</li> </ul> <p><u>Important outcomes:</u></p> <ul style="list-style-type: none"> <li>• The nature of the early mother-baby relationship (based on the mother’s subjective perception) when the baby is 12 to 18 months of age (default MIDs)</li> </ul>



	<ul style="list-style-type: none"> <li>• Social behaviour of the baby when the baby is 12 to 18 months of age (default MIDs)</li> </ul> <p>When choosing between proportions and mean scores, outcome measures that allow us to carry out a meta-analysis with the highest number of studies will be prioritised. If meta-analysis is not possible, for example due to the heterogeneity of the interventions, the choice between using proportions or mean scores will be made for each scale based on the way in which most studies report the data. Please note that if the proportions in different studies are based on different cut-off scores, this will not be considered as presenting the outcomes in the same way.</p> <p>If the number of studies is the same for proportions with a specific cut-off score and for mean scores, proportions will be prioritised.</p> <p>If a choice is needed between different cut-off scores used in different papers to calculate proportions, the rationale for using a specific cut-off score, as provided in the paper, will be discussed within the technical team, and if needed with members of the committee, and the most appropriate rationale will be selected</p>
Eligibility criteria – study design	<ul style="list-style-type: none"> <li>• Published full text papers only</li> <li>• Systematic review of RCTs</li> <li>• RCTs</li> <li>• Only if RCTs unavailable or there is limited data to inform decision making: prospective or retrospective comparative cohort studies if at least 100 mother-baby pairs in each arm</li> <li>• Prospective study designs will be prioritised over retrospective study designs</li> <li>• Conference abstracts will not be considered</li> </ul>
Other inclusion exclusion criteria	<p>Studies from low- and middle-income countries will be excluded</p> <p>Date: published from 2000. Practice has changed since 2000 and anything published before this is unlikely to be relevant.</p>
Proposed sensitivity/sub-group analysis, or meta-regression	<p>Groups that will be reviewed and analysed separately:</p> <ul style="list-style-type: none"> <li>• young women (19 years or under)</li> <li>• women with physical or cognitive disabilities</li> <li>• women who have difficulty accessing postnatal care services, for example social circumstances, language, cultural or life-style barriers</li> </ul>

	<p>In the presence of heterogeneity, the following subgroups will be considered for sensitivity analysis:</p> <ul style="list-style-type: none"> <li>• women with history of maltreatment / domestic violence</li> </ul> <p>Statistical heterogeneity will be assessed by visually examining the forest plots and by calculating the I<sup>2</sup> inconsistency statistic (with an I<sup>2</sup> value of more than 50% indicating considerable heterogeneity).</p> <p>Potential confounders:</p> <ul style="list-style-type: none"> <li>• age</li> <li>• educational level</li> <li>• employment condition</li> <li>• income</li> <li>• receiving support for baby care and domestic work</li> <li>• single parent families</li> <li>• sex of the baby</li> </ul>
Selection process – duplicate screening/selection/analysis	<p>Review questions selected as high priorities for health economic analysis (and those selected as medium priorities and where health economic analysis could influence recommendations) will be subject to dual weeding and study selection; any discrepancies above 10% of the dual weeded resources will be resolved through discussion between the first and second reviewers or by reference to a third person. This review question was not prioritised for health economic analysis and so no formal dual weeding, study selection (inclusion/exclusion) or data extraction into evidence tables will be undertaken. (However, internal (NGA) quality assurance processes will include consideration of the outcomes of weeding, study selection and data extraction and the committee will review the results of study selection and data extraction).</p>
Data management (software)	<p>Pairwise meta-analyses will be performed using Cochrane Review Manager (RevMan5). 'GRADEpro' will be used to assess the quality of evidence for each outcome.</p>
Information sources – databases and dates	<p>The following databases will be searched:</p> <ul style="list-style-type: none"> <li>• CCRCT</li> <li>• CDSR</li> <li>• DARE</li> <li>• Embase</li> <li>• EMCare</li> </ul>

	<ul style="list-style-type: none"> <li>• HTA Database</li> <li>• MEDLINE and MEDLINE IN-PROCESS</li> </ul> <p>Searches will be restricted by:</p> <ul style="list-style-type: none"> <li>• Date limitations: 2000 to 4th December 2019</li> <li>• English language</li> <li>• RCTs</li> <li>• Systematic reviews</li> </ul> <p>Other searches:</p> <ul style="list-style-type: none"> <li>• Inclusion lists of systematic reviews</li> </ul>
Identify if an update	<p>This guideline will update the NICE guideline on postnatal care up to 8 weeks after birth. All reviews are being conducted afresh. However the following recommendations on emotional attachment were included in CG37 (2006):</p> <p>1.4.5 Assessment for emotional attachment should be carried out at each postnatal contact. [2006]</p> <p>1.4.6 Home visits should be used as an opportunity to promote parent- or mother-to-baby emotional attachment. [2006]</p> <p>1.4.7 Women should be encouraged to develop social networks as this promotes positive mother–baby interaction. [2006]</p> <p>1.4.8 Group based parent-training programmes designed to promote emotional attachment and improve parenting skills should be available to parents who wish to access them. [2006]</p> <p>1.4.9 Healthcare providers should offer fathers information and support in adjusting to their new role and responsibilities within the family unit. [2006]</p> <p>Note that the committee will not be able to update recommendation 1.4.9 (which will be stood down together with all recommendations from the 2006 version of CG37) because father-child attachment is excluded from this review question.</p>
Author contacts	National Guideline Alliance <a href="https://www.nice.org.uk/guidance/indevelopment/gid-ng10070">https://www.nice.org.uk/guidance/indevelopment/gid-ng10070</a>

Highlight if amendment to previous protocol	For details please see section 4.5 of <a href="#">Developing NICE guidelines: the manual</a>
Search strategy – for one database	For details please see appendix B of the guideline
Data collection process – forms/duplicate	A standardised evidence table format will be used, and published as appendix D (clinical evidence tables) or H (economic evidence tables) of the guideline.
Data items – define all variables to be collected	For details please see evidence tables in appendix D (clinical evidence tables) or H (economic evidence tables) of the guideline.
Methods for assessing bias at outcome/study level	Standard study checklists were used to critically appraise individual studies. For details please see section 6.2 of <a href="#">Developing NICE guidelines: the manual</a> The risk of bias across all available evidence was evaluated for each outcome using an adaptation of the ‘Grading of Recommendations Assessment, Development and Evaluation (GRADE) toolbox’ developed by the international GRADE working group <a href="http://www.gradeworkinggroup.org/">http://www.gradeworkinggroup.org/</a>
Criteria for quantitative synthesis (where suitable)	For details please see section 6.4 of <a href="#">Developing NICE guidelines: the manual</a>
Methods for analysis – combining studies and exploring (in)consistency	For details please see Supplement 1.
Meta-bias assessment – publication bias, selective reporting bias	For details please see section 6.2 of <a href="#">Developing NICE guidelines: the manual</a> .
Assessment of confidence in cumulative evidence	For details please see sections 6.4 and 9.1 of <a href="#">Developing NICE guidelines: the manual</a>
Rationale/context – Current management	For details please see the introduction to the evidence review in the guideline.
Describe contributions of authors and guarantor	A multidisciplinary committee developed the guideline. The committee was convened by The National Guideline Alliance and chaired by Dr David Jewell in line with section 3 of <a href="#">Developing NICE guidelines: the manual</a> .  Staff from The National Guideline Alliance undertook systematic literature searches, appraised the evidence, conducted meta-analysis and cost-effectiveness analysis where appropriate, and drafted the guideline in collaboration with the committee. For details please see the methods chapter of the guideline.

Sources of funding/support	The National Guideline Alliance is funded by NICE and hosted by The Royal College of Obstetricians and Gynaecologists
Name of sponsor	The National Guideline Alliance is funded by NICE and hosted by The Royal College of Obstetricians and Gynaecologists
Roles of sponsor	NICE funds The National Guideline Alliance to develop guidelines for those working in the NHS, public health, and social care in England
PROSPERO registration number	This protocol has not been registered in PROSPERO

- 1 *CDSR: Cochrane Database of Systematic Reviews; CENTRAL: Cochrane Central Register of Controlled Trials; DARE: Database of Abstracts of Reviews of Effects; GRADE:*  
2 *Grading of Recommendations Assessment, Development and Evaluation; HTA: Health Technology Assessment; MID: minimally important difference; NGA: National Guideline*  
3 *Alliance; NICE: National Institute for Health and Care Excellence; RCT: randomised controlled trial; RoB: risk of bias; SD: standard deviation*

## 1 Appendix B – Literature search strategies

### 2 Literature search strategies for review question: What interventions in the 3 postnatal period are effective at promoting emotional attachment?

#### 4 Clinical search

5 The search for this topic was last run on 4<sup>th</sup> December 2019.

6 **Database:** Emcare, Embase, Medline, Medline Ahead of Print and In-Process &  
7 Other Non-Indexed Citations – OVID [Multifile]

#	Search
1	perinatal period/ or exp postnatal care/ or pregnancy/ or pregnant women/ or exp prenatal care/ or exp prenatal diagnosis/
2	1 use emczd, emcr
3	postpartum period/ or peripartum period/ or postnatal care/ or pregnancy/ or pregnant women/ or exp prenatal care/ or exp prenatal diagnosis/
4	3 use ppez
5	(first time mother* or new mother* or ((first time or new) adj mother*) or nullipara* or peri natal* or perinatal* or postbirth or post birth or postdelivery or post delivery or postnatal* or post natal* or postpartum* or post partum* or primipara* or primi para* or puerpera* or puerperium*).ti,ab. or (antenatal* or ante natal* or ante-natal* or maternity or obstetric* or pregnan* or trimester*).ti,ab,hw.
6	newborn/ use emczd, emcr
7	infant, newborn/ use ppez
8	(infant* or neonate* or newborn*).ti,ab.
9	or/2,4-8
10	child parent relation/ or father child relation/ or mother child relation/
11	emotional attachment/ or object relation/ or reactive attachment disorder/
12	or/10-11
13	12 use emczd, emcr
14	parent-child relations/ or father-child relations/ or mother-child relations/
15	object attachment/ or reactive attachment disorder/
16	or/14-15
17	16 use ppez
18	(attachment or bonding or ((early or object or infant* or parent* or mother* or father* or maternal or paternal) adj3 (attach* or bond*))).ti,ab.
19	((father* or mother* or parent*) adj3 (competenc* or interaction* or inter action* or positive or responsiv* or sensitivit*).ti,ab.
20	((parent* or mother* or maternal* or father* or paternal* or infant* or child*) adj3 (attachment* or bond* or relationship* or dyad* or triad*).tw.
21	or/13,17-20
22	9 and 21
23	(father/ or mother/ or parent/) and (education or training).sh.
24	23 use emczd, emcr
25	fathers/ed or mothers/ed or parents/ed
26	25 use ppez

#	Search
27	((father* or mother* or parent*) adj3 (class* or educat* or group* or program* or skill* or support* or train*)) or positive parenting).ti,ab.
28	((baby or babies or infant*) adj massage) or kangaroo care or (skin adj2 skin) or therapeutic touch).ti,ab.
29	or/24,26-28
30	communication/ or computer communication networks/ or consumer health information/ or health education/ or health promotion/ or information dissemination/ or information seeking behaviour/ or internet/ or pamphlets/ or exp patient education as topic/ or posters as topic/ or publications/ or government publications as topic/
31	30 use ppez
32	access to information/ or consumer health information/ or health education/ or health promotion/ or information dissemination/ or information seeking/ or information service/ or internet/ or medical information/ or patient education/ or patient information/ or information/ or publication/
33	32 use emczd, emcr
34	((care giv* or caregive* or carer* or famil* or father* or husband* or mother* or parent* or partner* or user*) adj3 educat*).ti.
35	((care giv* or caregive* or carer* or famil* or father* or husband* or mother* or parent* or partner* or user*) adj3 educat*).ab. /freq=2
36	((care giv* or caregive* or carer* or famil* or father* or husband* or mother* or parent* or partner* or user*) adj3 (advic* or informat*).ti,ab.
37	((app* or booklet* or brochure* or dvd* or handout* or ict or internet* or leaflet* or manual* or media or online* or pamphlet* or phone or publication* or telephone or video* or web based or web page* or web site* or webpage* or website* or written) adj5 (informat* or educat*).ti,ab.
38	((care giv* or caregive* or carer* or famil* or father* or husband* or mother* or parent* or partner* or user*) adj5 (app* or booklet* or brochure* or dvd* or handout* or ict or internet* or leaflet* or manual* or media or online* or pamphlet* or phone or publication* or telephone or video* or web based or web page* or web site* or webpage* or website* or written)).ti,ab.
39	(informat* adj3 (access* or dissem* or model* or need* or program* or provision or requir* or seek* or shar*).ti,ab.
40	(informat* adj3 (provid* or provision)).ti.
41	((informat* or advic*) adj3 (provision or provid*).ab. and informat*.ab. /freq=2
42	(informat* adj3 (accurat* or barrier* or benefi* or clear* or facilita* or help* or hinder* or hindran* or practical* or support*).ti,ab.
43	(informat* adj3 (content* or method* or quality or type*).ti,ab.
44	((added or additional or extra or further) adj3 informat*).ti,ab.
45	((prompt* or time* or timing or when) adj3 informat*).ti,ab.
46	((gave or give* or giving or receive*) adj3 (advic* or informat*).ti,ab.
47	(informat* adj3 (contact* or emergency care or hospital* or red flag* or resource* or service*).ti,ab.
48	patient education handout.pt.
49	(patient care planning/ or critical pathway/ or clinical protocols/) and information*.ti,ab.
50	49 use ppez
51	(informat* adj3 (care plan* or pathway* or protocol*).ti,ab.
52	communication barriers/ use ppez

#	Search
53	((communicat* or language*) adj3 (barrier* or facilitat*)).ti,ab.
54	(communicat* adj3 (bad* or difficult* effect* or encourag* or good or help* or ineffect* or in-effect* or poor* or prevent* or unhelp* or un help*)).ti,ab.
55	(communicat* adj3 (initiate* or timing* or time*)).ti,ab.
56	translating/ use ppez or "translating (language)"/ use emczd, emcr
57	(translat* adj7 (communicat* or informat* or language*)).ti,ab.
58	((care giv* or caregiver* carer* or famil* or father* or husband* or mother* or parent* or partner* or user*) adj3 (advice or informat*)).ab.
59	health information.tw.
60	*patient care planning/ or *clinical pathway/ or *clinical protocols/
61	60 use emczd, emcr
62	patient care planning/ or critical pathway/ or clinical protocols/
63	62 use ppez
64	informat*.ti,ab.
65	(or/61,63) and 64
66	informat*.ti. or ((advice* or information* or support*) adj5 (selfcare* or self care or selfmanag* or self manag* or selfinstruct* or self instruct* or selfmonitor* or self monitor*)).ti,ab.
67	(or/31,33-48,50-59) or (or/65-66)
68	((cues or comfort* or ((copy* or emulat*) adj2 noise*) or cuddle or cuddling or massag* or role model* or talking or sleep*) adj2 (advice* or education or information or promotion or support*) or support* intervention*).ti,ab.
69	((intervention* or program*) adj5 (improv* or increas* or help* or promot*) adj5 (attachment* or bond* or ((father* or mother* or parent*) adj3 (competenc* or interaction* or inter action* or positive or responsiv* or sensitivit*))))).ti,ab.
70	((intervention* or program*) adj3 (attachment* or bond* or ((father* or mother* or parent*) adj3 (competenc* or interaction* or inter action* or positive or responsiv* or sensitivit*))))).ti,ab.
71	or/67-70
72	29 or 71
73	((infant* or neonate* or newborn*) and (attachment or bonding or ((early or object or infant* or parent* or mother* or father* or maternal or paternal) adj3 (attach* or bond*)) or ((father* or mother* or parent*) adj3 (competenc* or interaction* or inter action* or positive or responsiv* or sensitivit*)) or ((parent* or mother* or maternal* or father* or paternal* or infant* or child*) adj3 (attachment* or bond* or relationship* or dyad* or triad*))))).ti.
74	(information or support* or intervention* or therap* or program*).ti,ab.
75	73 and 74
76	clinical trials as topic.sh. or (controlled clinical trial or pragmatic clinical trial or randomized controlled trial).pt. or (placebo or randomi#ed or randomly).ab. or trial.ti.
77	76 use ppez
78	(controlled clinical trial or pragmatic clinical trial or randomized controlled trial).pt. or drug therapy.fs. or (groups or placebo or randomi#ed or randomly or trial).ab.
79	78 use ppez
80	crossover procedure/ or double blind procedure/ or randomized controlled trial/ or single blind procedure/ or (assign* or allocat* or crossover* or cross over* or ((doubl* or singl*) adj blind*) or factorial* or placebo* or random* or volunteer*).ti,ab.



#	Search
81	80 use emczd, emcr
82	or/77,79,81
83	meta-analysis/
84	meta-analysis as topic/
85	systematic review/
86	meta-analysis/
87	(meta analy* or metanaly* or metaanaly*).ti,ab.
88	((systematic or evidence) adj2 (review* or overview*)).ti,ab.
89	((systematic* or evidence*) adj2 (review* or overview*)).ti,ab.
90	(reference list* or bibliograph* or hand search* or manual search* or relevant journals).ab.
91	(search strategy or search criteria or systematic search or study selection or data extraction).ab.
92	(search* adj4 literature).ab.
93	(medline or pubmed or cochrane or embase or psychlit or psyclit or psychinfo or psycinfo or cinahl or science citation index or bids or cancerlit).ab.
94	cochrane.jw.
95	((pool* or combined) adj2 (data or trials or studies or results)).ab.
96	(or/83-84,87,89-94) use ppez
97	(or/85-88,90-95) use emczd, emcr
98	or/96-97
99	or/82,98
100	22 and 72 and 99
101	75 and 9 and 99
102	100 or 101
103	102
104	limit 103 to english language
105	limit 104 to yr="2000-current"

1 **Database:** CDSR, CCRCT [Wiley]

#	Search
#1	mesh descriptor: [postpartum period] this term only
#2	mesh descriptor: [peripartum period] this term only
#3	mesh descriptor: [postnatal care] this term only
#4	mesh descriptor: [pregnant women] this term only
#5	mesh descriptor: [pregnancy] this term only
#6	mesh descriptor: [prenatal care] this term only
#7	mesh descriptor: [prenatal diagnosis] explode all trees
#8	((((first time or new) adj mother*) or nullipara* or "peri natal*" or perinatal* or postbirth or "post birth" or postdelivery or "post delivery" or postnatal* or "post natal*" or postpartum* or "post partum*" or primipara* or "primi para*" or puerpera* or puerperium*) or (antenatal* or "ante natal*" maternity or obstetric* or pregnan* or trimester*)):ti,ab,kw

#	Search
#9	mesh descriptor: [infant, newborn] this term only
#10	((infant* or neonate* or newborn*)):ti,ab,kw
#11	#1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10
#12	mesh descriptor: [parent-child relations] this term only
#13	mesh descriptor: [father-child relations] this term only
#14	mesh descriptor: [mother-child relations] explode all trees
#15	mesh descriptor: [object attachment] this term only
#16	mesh descriptor: [reactive attachment disorder] this term only
#17	((attachment or bonding or ((early or object or infant* or parent* or mother* or father* or maternal or paternal) near/3 (attach* or bond*)))):ti,ab,kw
#18	((((father* or mother* or parent*) near/3 (competenc* or interaction* or inter action* or positive or responsiv* or sensitivit*)))):ti,ab,kw
#19	((((parent* or mother* or maternal* or father* or paternal* or infant* or child*) near/3 (attachment* or bond* or relationship* or dyad* or triad*)))):ti,ab,kw
#20	#12 or #13 or #14 or #15 or #16 or #17 or #18 or #19
#21	#11 and #20
#22	mesh descriptor: [fathers] this term only and with qualifier(s): [education - ed]
#23	mesh descriptor: [mothers] this term only and with qualifier(s): [education - ed]
#24	mesh descriptor: [parents] explode this term only and with qualifier(s): [education - ed]
#25	(((((father* or mother* or parent*) near/3 (class* or educat* or group* or program* or skill* or support* or train*)) or positive parenting)):ti,ab,kw
#26	(((((baby or babies or infant*) near/1 massage) or kangaroo care or (skin near/2 skin) or therapeutic touch)):ti,ab,kw
#27	#22 or #23 or #24 or #25 or #26
#28	mesh descriptor: [communication] this term only
#29	mesh descriptor: [computer communication networks] this term only
#30	mesh descriptor: [health education] this term only
#31	mesh descriptor: [consumer health information] this term only
#32	mesh descriptor: [health promotion] this term only
#33	mesh descriptor: [information dissemination] this term only
#34	mesh descriptor: [information seeking behavior] this term only
#35	mesh descriptor: [internet] this term only
#36	mesh descriptor: [pamphlets] this term only
#37	mesh descriptor: [patient education as topic] explode all trees
#38	mesh descriptor: [posters as topic] this term only
#39	mesh descriptor: [publications] this term only
#40	mesh descriptor: [government publications as topic] this term only
#41	((((parent* or father* or husband* or mother*) near/3 educat*)):ti,ab,kw
#42	((((parent* or father* or husband* or mother*) near/3 (advice or informat*)))):ti,ab,kw
#43	((((pamphlet* or leaflet* or booklet* or ict or phone or telephone or manual* or media or brochure* or publication* or handout* or written or website* or "web site*"))

#	Search
	or "web page*" or webpage* or "web based" or video* or dvd* or online* or internet* or app* or application*) near/5 (informat* or educat*)):ti,ab,kw
#44	((parent* or father* or husband* or mother*) near/5 (pamphlet* or leaflet* or booklet* or manual* or brochure* or publication* or handout* or written or website* or "web site*" or "web page*" or webpage* or "web based" or video* or dvd* or online* or internet* or app* or application*)):ti,ab,kw
#45	((informat* near/3 (model* or program* or need* or requir* or seek* or access* or dissem* or shar* or provision))):ti,ab,kw
#46	((informat* near/3 (provid* or provision))):ti,ab,kw
#47	((informat* or advice) near/3 (provision or provid*)) and informat*):ab
#48	((informat* near/3 (help* or support* or benefi* or hinder* or hindran* or barrier* or facilitat* or practical* or clear* or accurat*)):ti,ab,kw
#49	((informat* near/3 (type* or content* or method* or quality))):ti,ab,kw
#50	((additional or extra or added or further) near/3 informat*)):ti,ab,kw
#51	((time* or timing or when or prompt*) near/3 informat*)):ti,ab,kw
#52	((give* or giving or gave or receive*) near/3 (advice or informat*)):ti,ab,kw
#53	((informat* near/3 (hospital* or service* or resource* or "red flag*" or "emergency care" or contact*)):ti,ab,kw
#54	mesh descriptor: [patient care planning] this term only
#55	mesh descriptor: [critical pathways] this term only
#56	mesh descriptor: [clinical protocols] this term only
#57	(information*):ti,ab,kw
#58	(#54 or #55 or #56) and #57
#59	(informat*):ti
#60	((information* or advice* or support*) near/5 (selfcare* or "self care" or selfmanag* or "self manag*" or selfinstruct* or "self instruct*" or selfmonitor* or "self monitor*")):ti,ab,kw
#61	#28 or #29 or #30 or #31 or #32 or #33 or #34 or #35 or #36 or #37 or #38 or #39 or #40 or #41 or #42 or #43 or #44 or #45 or #46 or #47 or #48 or #49 or #50 or #51 or #52 or #53 or #58 or #59 or #60
#62	((cues or comfort* or ((copy* or emulat*) near/2 noise*) or cuddle or cuddling or massag* or "role model*" or talking or sleep*) near/2 (advice* or education or information or promotion or support*)) or "support* intervention*")):ti,ab,kw
#63	((intervention* or program*) near/5 (improv* or increas* or help* or promot*) near/5 (attachment* or bond* or ((father* or mother* or parent*) near/3 (competenc* or interaction* or "inter action*" or positive or responsiv* or sensitivit*)))):ti,ab,kw
#64	((intervention* or program*) near/3 (attachment* or bond* or ((father* or mother* or parent*) near/3 (competenc* or interaction* or inter action* or positive or responsiv* or sensitivit*)))):ti,ab,kw
#65	#61 or #62 or #63 or #64
#66	#27 or #65
#67	((infant* or neonate* or newborn*) and (attachment or bonding or ((early or object or infant* or parent* or mother* or father* or maternal or paternal) near/3 (attach* or bond*)) or ((father* or mother* or parent*) near/3 (competenc* or interaction* or inter action* or positive or responsiv* or sensitivit*)) or ((parent* or mother* or maternal* or father* or paternal* or infant* or child*) near/3 (attachment* or bond* or relationship* or dyad* or triad*)))):ti

#	Search
#68	((information or support* or intervention* or therap* or program*)):ti,ab,kw
#69	#67 and #68
#70	#21 and #66
#71	#69 and #11
#72	#70 or #71
#73	#72 with cochrane library publication date from jan 2000 to dec 2019

1 **Database:** DARE, HTA [CRD Web]

#	Search
#1	mesh descriptor postpartum period in dare, hta
#2	mesh descriptor peripartum period in dare, hta
#3	mesh descriptor postnatal care in dare, hta
#4	mesh descriptor pregnant women in dare, hta
#5	mesh descriptor pregnancy in dare, hta
#6	mesh descriptor prenatal care in dare, hta
#7	mesh descriptor prenatal diagnosis] explode all trees
#8	((((first time or new) adj mother*) or nullipara* or "peri natal*" or perinatal* or postbirth or "post birth" or postdelivery or "post delivery" or postnatal* or "post natal*" or postpartum* or "post partum*" or primipara* or "primi para*" or puerpera* or puerperium*) or (antenatal* or "ante natal*" maternity or obstetric* or pregnan* or trimester*)) in dare, hta
#9	mesh descriptor infant, newborn in dare, hta
#10	((infant* or neonate* or newborn*))
#11	#1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10
#12	mesh descriptor parent-child relations in dare, hta
#13	mesh descriptor father-child relations in dare, hta
#14	mesh descriptor mother-child relations] explode all trees in dare, hta
#15	mesh descriptor object attachment in dare, hta
#16	mesh descriptor reactive attachment disorder in dare, hta
#17	((attachment or bonding or ((early or object or infant* or parent* or mother* or father* or maternal or paternal) near3 (attach* or bond*)))) in dare, hta
#18	((((father* or mother* or parent*) near3 (competenc* or interaction* or inter action* or positive or responsiv* or sensitivit*)))
#19	((((parent* or mother* or maternal* or father* or paternal* or infant* or child*) near3 (attachment* or bond* or relationship* or dyad* or triad*)))
#20	#12 or #13 or #14 or #15 or #16 or #17 or #18 or #19
#21	#11 and #20
#22	mesh descriptor fathers in dare, hta and with qualifier(s): [education - ed]
#23	mesh descriptor mothers in dare, hta and with qualifier(s): [education - ed]
#24	mesh descriptor parents] explode this term only and with qualifier(s): [education - ed]
#25	((((father* or mother* or parent*) near3 (class* or educat* or group* or program* or skill* or support* or train*)) or positive parenting))
#26	((((baby or babies or infant*) near1 massage) or kangaroo care or (skin near2 skin) or therapeutic touch))

#	Search
#27	#22 or #23 or #24 or #25 or #26
#28	mesh descriptor communication in dare, hta
#29	mesh descriptor computer communication networks in dare, hta
#30	mesh descriptor health education in dare, hta
#31	mesh descriptor consumer health information in dare, hta
#32	mesh descriptor health promotion in dare, hta
#33	mesh descriptor information dissemination in dare, hta
#34	mesh descriptor information seeking behavior in dare, hta
#35	mesh descriptor internet in dare, hta
#36	mesh descriptor pamphlets in dare, hta
#37	mesh descriptor patient education as topic] explode all trees
#38	mesh descriptor posters as topic in dare, hta
#39	mesh descriptor publications in dare, hta
#40	mesh descriptor government publications as topic in dare, hta
#41	((parent* or father* or husband* or mother*) near3 educat*)
#42	((parent* or father* or husband* or mother*) near3 (advice or informat*)) in dare, hta
#43	((pamphlet* or leaflet* or booklet* or ict or phone or telephone or manual* or media or brochure* or publication* or handout* or written or website* or "web site*" or "web page*" or webpage* or "web based" or video* or dvd* or online* or internet* or app* or application*) near5 (informat* or educat*))
#44	((parent* or father* or husband* or mother*) near5 (pamphlet* or leaflet* or booklet* or manual* or brochure* or publication* or handout* or written or website* or "web site*" or "web page*" or webpage* or "web based" or video* or dvd* or online* or internet* or app* or application*))
#45	((informat* near3 (model* or program* or need* or requir* or seek* or access* or dissem* or shar* or provision)))
#46	((informat* near3 (provid* or provision))) in dare, hta
#47	((informat* or advice) near3 (provision or provid*)) and informat*):ab
#48	((informat* near3 (help* or support* or benefi* or hinder* or hindran* or barrier* or facilitat* or practical* or clear* or accurat*)) in dare, hta
#49	((informat* near3 (type* or content* or method* or quality))) in dare, hta
#50	((additional or extra or added or further) near3 informat*)
#51	((time* or timing or when or prompt*) near3 informat*)
#52	((give* or giving or gave or receive*) near3 (advice or informat*))
#53	((informat* near3 (hospital* or service* or resource* or "red flag*" or "emergency care" or contact*))
#54	mesh descriptor patient care planning in dare, hta
#55	mesh descriptor critical pathways in dare, hta
#56	mesh descriptor clinical protocols in dare, hta
#57	(information*) in dare, hta
#58	(#54 or #55 or #56) and #57
#59	(informat*):ti

#	Search
#60	((information* or advice* or support*) near5 (selfcare* or "self care" or selfmanag* or "self manag*" or selfinstruct* or "self instruct*" or selfmonitor* or "self monitor*"))
#61	#28 or #29 or #30 or #31 or #32 or #33 or #34 or #35 or #36 or #37 or #38 or #39 or #40 or #41 or #42 or #43 or #44 or #45 or #46 or #47 or #48 or #49 or #50 or #51 or #52 or #53 or #58 or #59 or #60
#62	((cues or comfort* or ((copy* or emulat*) near2 noise*) or cuddle or cuddling or massag* or "role model*" or talking or sleep*) near2 (advice* or education or information or promotion or support*)) or "support* intervention*") in dare, hta
#63	((intervention* or program*) near5 (improv* or increas* or help* or promot*) near5 (attachment* or bond* or ((father* or mother* or parent*) near3 (competenc* or interaction* or "inter action*" or positive or responsiv* or sensitivit*))))
#64	((intervention* or program*) near3 (attachment* or bond* or ((father* or mother* or parent*) near3 (competenc* or interaction* or inter action* or positive or responsiv* or sensitivit*))))
#65	#61 or #62 or #63 or #64
#66	#27 or #65
#67	((infant* or neonate* or newborn*) and (attachment or bonding or ((early or object or infant* or parent* or mother* or father* or maternal or paternal) near3 (attach* or bond*)) or ((father* or mother* or parent*) near3 (competenc* or interaction* or inter action* or positive or responsiv* or sensitivit*)) or ((parent* or mother* or maternal* or father* or paternal* or infant* or child*) near3 (attachment* or bond* or relationship* or dyad* or triad*)))):ti
#68	((information or support* or intervention* or therap* or program*))
#69	#67 and #68
#70	#21 and #66
#71	#69 and #11
#72	#70 or #71
#73	#72 from 2000 to 2019

1 **Database:** DARE, HTA (global) [CRD Web]

#	Search
1	mesh descriptor postpartum period in dare,hta
2	mesh descriptor peripartum period in dare,hta
3	mesh descriptor postnatal care in dare,hta
4	(nullipara* or peri natal* or perinatal* or postbirth or post birth or postdelivery or post delivery or postnatal* or post natal* or postpartum* or post partum* or primipara* or puerpera* or puerperium* or ((after or follow*) near2 birth*)) in dare, hta
5	#1 or #2 or #3 or #4
6	mesh descriptor breast feeding explode all trees in dare,hta
7	mesh descriptor lactation in dare,hta
8	(breastfeed* or breast feed* or breastfed* or breastfeed* or breast fed or breastmilk or breast milk or expressed milk* or lactat* or (nursing next (baby or infant* or mother* or neonate* or newborn*))) in dare, hta
9	#6 or #7 or #8
10	mesh descriptor bottle feeding in dare,hta
11	mesh descriptor infant formula in dare,hta

#	Search
12	((bottle or formula or synthetic) near2 (artificial or fed or feed* or infant* or milk*)) or (artificial next (formula or milk)) or bottlefed or bottlefeed or cup feeding or (milk near2 (substitut* or supplement*)) or ((infant or milk or water or glucose or dextrose or formula) next supplement* or formula supplement* or supplement feed or milk feed or ((baby or babies or infant* or neonate* or newborn*) next (formula* or milk)) or formulafeed or formulated or (milk near2 powder*) or hydrolyzed formula* or (((feeding or baby or infant) next bottle*) or infant feeding or bottle nipple* or milk pump*)) in dare, hta
13	#10 or #11 or #12
14	#5 or #9 or #13

## 1 Health economic search

2 The search for this topic was last run on 4<sup>th</sup> December 2019.

3 **Database:** Emcare, Embase, Medline, Medline Ahead of Print and In-Process &  
4 Other Non-Indexed Citations– OVID [Multifile]

#	Search
1	perinatal period/ or exp postnatal care/ or pregnancy/ or pregnant women/ or exp prenatal care/ or exp prenatal diagnosis/
2	1 use emczd, emcr
3	postpartum period/ or peripartum period/ or postnatal care/ or pregnancy/ or pregnant women/ or exp prenatal care/ or exp prenatal diagnosis/
4	3 use ppez
5	(first time mother* or new mother* or ((first time or new) adj mother*) or nullipara* or peri natal* or perinatal* or postbirth or post birth or postdelivery or post delivery or postnatal* or post natal* or postpartum* or post partum* or primipara* or primi para* or puerpera* or puerperium*).ti,ab. or (antenatal* or ante natal* or ante-natal* or maternity or obstetric* or pregnan* or trimester*).ti,ab,hw.
6	newborn/ use emczd, emcr
7	infant, newborn/ use ppez
8	(infant* or neonate* or newborn*).ti,ab.
9	or/2,4-8
10	child parent relation/ or father child relation/ or mother child relation/
11	emotional attachment/ or object relation/ or reactive attachment disorder/
12	or/10-11
13	12 use emczd, emcr
14	parent-child relations/ or father-child relations/ or mother-child relations/
15	object attachment/ or reactive attachment disorder/
16	or/14-15
17	16 use ppez
18	(attachment or bonding or ((early or object or infant* or parent* or mother* or father* or maternal or paternal) adj3 (attach* or bond*))).ti,ab.
19	((father* or mother* or parent*) adj3 (competenc* or interaction* or inter action* or positive or responsiv* or sensitivit*).ti,ab.
20	((parent* or mother* or maternal* or father* or paternal* or infant* or child*) adj3 (attachment* or bond* or relationship* or dyad* or triad*).tw.
21	or/13,17-20



#	Search
22	9 and 21
23	(father/ or mother/ or parent/) and (education or training).sh.
24	23 use emczd, emcr
25	fathers/ed or mothers/ed or parents/ed
26	25 use ppez
27	((father* or mother* or parent*) adj3 (class* or educat* or group* or program* or skill* or support* or train*)) or positive parenting).ti,ab.
28	((baby or babies or infant*) adj massage) or kangaroo care or (skin adj2 skin) or therapeutic touch).ti,ab.
29	or/24,26-28
30	communication/ or computer communication networks/ or consumer health information/ or health education/ or health promotion/ or information dissemination/ or information seeking behaviour/ or internet/ or pamphlets/ or exp patient education as topic/ or posters as topic/ or publications/ or government publications as topic/
31	30 use ppez
32	access to information/ or consumer health information/ or health education/ or health promotion/ or information dissemination/ or information seeking/ or information service/ or internet/ or medical information/ or patient education/ or patient information/ or information/ or publication/
33	32 use emczd, emcr
34	((care giv* or caregive* or carer* or famil* or father* or husband* or mother* or parent* or partner* or user*) adj3 educat*).ti.
35	((care giv* or caregive* or carer* or famil* or father* or husband* or mother* or parent* or partner* or user*) adj3 educat*).ab. /freq=2
36	((care giv* or caregive* or carer* or famil* or father* or husband* or mother* or parent* or partner* or user*) adj3 (advice or informat*)).ti,ab.
37	((app* or booklet* or brochure* or dvd* or handout* or ict or internet* or leaflet* or manual* or media or online* or pamphlet* or phone or publication* or telephone or video* or web based or web page* or web site* or webpage* or website* or written) adj5 (informat* or educat*)).ti,ab.
38	((care giv* or caregive* or carer* or famil* or father* or husband* or mother* or parent* or partner* or user*) adj5 (app* or booklet* or brochure* or dvd* or handout* or ict or internet* or leaflet* or manual* or media or online* or pamphlet* or phone or publication* or telephone or video* or web based or web page* or web site* or webpage* or website* or written)).ti,ab.
39	(informat* adj3 (access* or dissem* or model* or need* or program* or provision or requir* or seek* or shar*)).ti,ab.
40	(informat* adj3 (provid* or provision)).ti.
41	((informat* or advice) adj3 (provision or provid*)).ab. and informat*.ab. /freq=2
42	(informat* adj3 (accurat* or barrier* or benefi* or clear* or facilita* or help* or hinder* or hindran* or practical* or support*)).ti,ab.
43	(informat* adj3 (content* or method* or quality or type*)).ti,ab.
44	((added or additional or extra or further) adj3 informat*).ti,ab.
45	((prompt* or time* or timing or when) adj3 informat*).ti,ab.
46	((gave or give* or giving or receive*) adj3 (advice or informat*)).ti,ab.
47	(informat* adj3 (contact* or emergency care or hospital* or red flag* or resource* or service*)).ti,ab.
48	patient education handout.pt.



#	Search
49	(patient care planning/ or critical pathway/ or clinical protocols/) and information*.ti,ab.
50	49 use ppez
51	(informat* adj3 (care plan* or pathway* or protocol*)).ti,ab.
52	communication barriers/ use ppez
53	((communicat* or language*) adj3 (barrier* or facilitat*)).ti,ab.
54	(communicat* adj3 (bad* or difficult* effect* or encourag* or good or help* or ineffect* or in-effect* or poor* or prevent* or unhelp* or un help*)).ti,ab.
55	(communicat* adj3 (initiate* or timing* or time*)).ti,ab.
56	translating/ use ppez or "translating (language)"/ use emczd, emcr
57	(translat* adj7 (communicat* or informat* or language*)).ti,ab.
58	((care giv* or caregiver* carer* or famil* or father* or husband* or mother* or parent* or partner* or user*) adj3 (advice or informat*)).ab.
59	health information.tw.
60	*patient care planning/ or *clinical pathway/ or *clinical protocols/
61	60 use emczd, emcr
62	patient care planning/ or critical pathway/ or clinical protocols/
63	62 use ppez
64	informat*.ti,ab.
65	(or/61,63) and 64
66	informat*.ti. or ((advice* or information* or support*) adj5 (selfcare* or self care or selfmanag* or self manag* or selfinstruct* or self instruct* or selfmonitor* or self monitor*)).ti,ab.
67	(or/31,33-48,50-59) or (or/65-66)
68	((cues or comfort* or ((copy* or emulat*) adj2 noise*) or cuddle or cuddling or massag* or role model* or talking or sleep*) adj2 (advice* or education or information or promotion or support*)) or support* intervention*).ti,ab.
69	((intervention* or program*) adj5 (improv* or increas* or help* or promot*) adj5 (attachment* or bond* or ((father* or mother* or parent*) adj3 (competenc* or interaction* or inter action* or positive or responsiv* or sensitivit*))).ti,ab.
70	((intervention* or program*) adj3 (attachment* or bond* or ((father* or mother* or parent*) adj3 (competenc* or interaction* or inter action* or positive or responsiv* or sensitivit*))).ti,ab.
71	or/67-70
72	29 or 71
73	((infant* or neonate* or newborn*) and (attachment or bonding or ((early or object or infant* or parent* or mother* or father* or maternal or paternal) adj3 (attach* or bond*)) or ((father* or mother* or parent*) adj3 (competenc* or interaction* or inter action* or positive or responsiv* or sensitivit*)) or ((parent* or mother* or maternal* or father* or paternal* or infant* or child*) adj3 (attachment* or bond* or relationship* or dyad* or triad*))).ti.
74	(information or support* or intervention* or therap* or program*).ti,ab.
75	73 and 74
76	budget/ or exp economic evaluation/ or exp fee/ or funding/ or exp health care cost/ or health economics/
77	76 use emczd, emcr

#	Search
78	exp budgets/ or exp "costs and cost analysis"/ or economics/ or exp economics, hospital/ or exp economics, medical/ or economics, nursing/ or economics, pharmaceutical/ or exp "fees and charges"/ or value of life/
79	78 use ppez
80	budget*.ti,ab. or cost*.ti. or (economic* or pharmaco?economic*).ti. or (price* or pricing*).ti,ab. or (cost* adj2 (effective* or utilit* or benefit* or minimi* or unit* or estimat* or variable*)).ab. or (financ* or fee or fees).ti,ab. or (value adj2 (money or monetary)).ti,ab.
81	or/77,79-80
82	economic model/ or quality adjusted life year/ or "quality of life index"/
83	(cost-benefit analysis.sh. and (cost-effectiveness ratio* and (perspective* or life expectanc*)).tw.)
84	((quality of life or qol).tw. and cost benefit analysis.sh. )
85	or/82-84 use emczd, emcr
86	models, economic/ or quality-adjusted life years/
87	(cost-benefit analysis.sh. and (cost-effectiveness ratio* and (perspective* or life expectanc*)).tw.)
88	((quality of life or qol).tw. and cost-benefit analysis.sh. )
89	or/86-88 use ppez
90	(eq-5d* or eq5d* or eq-5* or eq5* or euroqual* or euro qual* or euroqual 5d* or euro qual 5d* or euro qol* or euroqol* or euro qual* or euro qual 5d* or euro qual 5d* or euroqol5d* or eur qol* or eurqol* or eur qol5d* or eurqol5d* or eur?qul* or eur?qul5d* or euro* quality of life or european qol).tw.
91	(euro* adj3 (5 d* or 5d* or 5 dimension* or 5dimension* or 5 domain* or 5domain*)).tw.
92	(hui or hui2 or hui3).tw.
93	(illness state* or health state*).tw.
94	(multiattribute* or multi attribute*).tw.
95	(qaly* or qal or qald* or qale* or qtime* or qwb* or daly).tw.
96	(quality adjusted or quality adjusted life year*).tw.
97	(sf36 or sf 36 or sf thirty six or sf thirtysix).tw.
98	sickness impact profile.sh.
99	(time trade off*1 or time tradeoff*1 or tto or timetradeoff*1).tw.
100	(utilit* adj3 (score*1 or valu* or health* or cost* or measur* or disease* or mean or gain or gains or index*)).tw.
101	utilities.tw.
102	((qol or hrqol or quality of life).tw. or *quality of life/) and ((qol or hrqol* or quality of life) adj2 (change*1 or declin* or decreas* or deteriorat* or effect or effects or high* or impact*1 or impacted or improve* or increas* or low* or reduc* or score or scores or worse)).ab.
103	quality of life.sh. and ((health-related quality of life or (health adj3 status) or ((quality of life or qol) adj3 (chang* or improv*))) or ((quality of life or qol) adj (measure*1 or score*1))).tw. or (quality of life or qol).ti. or ec.fs.)
104	or/85,89-103
105	or/81,104
106	((22 and 72) or (75 and 9)) and 105

#	Search
107	limit 106 to english language
108	(animals/ not humans/) or exp animals, laboratory/ or exp animal experimentation/ or exp models, animal/ or exp rodentia/
109	108 use ppez
110	(animal/ not human/) or nonhuman/ or exp animal experiment/ or exp experimental animal/ or animal model/ or exp rodent/
111	110 use emczd, emcr
112	(rat or rats or mouse or mice).ti.
113	or/109,111-112
114	106 not 113
115	limit 114 to yr="2000-current"

1 **Database:** HTA, NHS EED [CRD Web]

#	Search
#1	mesh descriptor postpartum period in hta, nhs eed
#2	mesh descriptor peripartum period in hta, nhs eed
#3	mesh descriptor postnatal care in hta, nhs eed
#4	mesh descriptor pregnant women in hta, nhs eed
#5	mesh descriptor pregnancy in hta, nhs eed
#6	mesh descriptor prenatal care in hta, nhs eed
#7	mesh descriptor prenatal diagnosis] explode all trees
#8	((((first time or new) adj mother*) or nullipara* or "peri natal*" or perinatal* or postbirth or "post birth" or postdelivery or "post delivery" or postnatal* or "post natal*" or postpartum* or "post partum*" or primipara* or "primi para*" or puerpera* or puerperium*) or (antenatal* or "ante natal*" maternity or obstetric* or pregnan* or trimester*)) in hta, nhs eed
#9	mesh descriptor infant, newborn in hta, nhs eed
#10	((infant* or neonate* or newborn*))
#11	#1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10
#12	mesh descriptor parent-child relations in hta, nhs eed
#13	mesh descriptor father-child relations in hta, nhs eed
#14	mesh descriptor mother-child relations] explode all trees in hta, nhs eed
#15	mesh descriptor object attachment in hta, nhs eed
#16	mesh descriptor reactive attachment disorder in hta, nhs eed
#17	((attachment or bonding or ((early or object or infant* or parent* or mother* or father* or maternal or paternal) near3 (attach* or bond*)))) in hta, nhs eed
#18	((((father* or mother* or parent*) near3 (competenc* or interaction* or inter action* or positive or responsiv* or sensitivit*)))
#19	((((parent* or mother* or maternal* or father* or paternal* or infant* or child*) near3 (attachment* or bond* or relationship* or dyad* or triad*)))
#20	#12 or #13 or #14 or #15 or #16 or #17 or #18 or #19
#21	#11 and #20
#22	mesh descriptor fathers in hta, nhs eed and with qualifier(s): [education - ed]
#23	mesh descriptor mothers in hta, nhs eed and with qualifier(s): [education - ed]

#	Search
#24	mesh descriptor parents] explode this term only and with qualifier(s): [education - ed]
#25	(((((father* or mother* or parent*) near3 (class* or educat* or group* or program* or skill* or support* or train*)) or positive parenting))
#26	(((((baby or babies or infant*) near1 massage) or kangaroo care or (skin near2 skin) or therapeutic touch))
#27	#22 or #23 or #24 or #25 or #26
#28	mesh descriptor communication in hta, nhs eed
#29	mesh descriptor computer communication networks in hta, nhs eed
#30	mesh descriptor health education in hta, nhs eed
#31	mesh descriptor consumer health information in hta, nhs eed
#32	mesh descriptor health promotion in hta, nhs eed
#33	mesh descriptor information dissemination in hta, nhs eed
#34	mesh descriptor information seeking behavior in hta, nhs eed
#35	mesh descriptor internet in hta, nhs eed
#36	mesh descriptor pamphlets in hta, nhs eed
#37	mesh descriptor patient education as topic] explode all trees
#38	mesh descriptor posters as topic in hta, nhs eed
#39	mesh descriptor publications in hta, nhs eed
#40	mesh descriptor government publications as topic in hta, nhs eed
#41	((((parent* or father* or husband* or mother*) near3 educat*))
#42	(((((parent* or father* or husband* or mother*) near3 (advice or informat*)) in hta, nhs eed
#43	(((((pamphlet* or leaflet* or booklet* or ict or phone or telephone or manual* or media or brochure* or publication* or handout* or written or website* or "web site*" or "web page*" or webpage* or "web based" or video* or dvd* or online* or internet* or app* or application*) near5 (informat* or educat*))
#44	(((((parent* or father* or husband* or mother*) near5 (pamphlet* or leaflet* or booklet* or manual* or brochure* or publication* or handout* or written or website* or "web site*" or "web page*" or webpage* or "web based" or video* or dvd* or online* or internet* or app* or application*))
#45	((informat* near3 (model* or program* or need* or requir* or seek* or access* or dissem* or shar* or provision)))
#46	((informat* near3 (provid* or provision))) in hta, nhs eed
#47	(((((informat* or advice) near3 (provision or provid*)) and informat*):ab
#48	((informat* near3 (help* or support* or benefi* or hinder* or hindran* or barrier* or facilitat* or practical* or clear* or accurat*)) in hta, nhs eed
#49	((informat* near3 (type* or content* or method* or quality))) in hta, nhs eed
#50	((((additional or extra or added or further) near3 informat*))
#51	(((((time* or timing or when or prompt*) near3 informat*))
#52	(((((give* or giving or gave or receive*) near3 (advice or informat*))
#53	((informat* near3 (hospital* or service* or resource* or "red flag*" or "emergency care" or contact*))
#54	mesh descriptor patient care planning in hta, nhs eed
#55	mesh descriptor critical pathways in hta, nhs eed

#	Search
#56	mesh descriptor clinical protocols in hta, nhs eed
#57	(information*) in hta, nhs eed
#58	(#54 or #55 or #56) and #57
#59	(informat*):ti
#60	((((information* or advice* or support*) near5 (selfcare* or "self care" or selfmanag* or "self manag*" or selfinstruct* or "self instruct*" or selfmonitor* or "self monitor*"))))
#61	#28 or #29 or #30 or #31 or #32 or #33 or #34 or #35 or #36 or #37 or #38 or #39 or #40 or #41 or #42 or #43 or #44 or #45 or #46 or #47 or #48 or #49 or #50 or #51 or #52 or #53 or #58 or #59 or #60
#62	(((((cues or comfort* or ((copy* or emulat*) near2 noise*) or cuddle or cuddling or massag* or "role model*" or talking or sleep*) near2 (advice* or education or information or promotion or support*)) or "support* intervention*")) in hta, nhs eed
#63	((((intervention* or program*) near5 (improv* or increas* or help* or promot*) near5 (attachment* or bond* or ((father* or mother* or parent*) near3 (competenc* or interaction* or "inter action*" or positive or responsiv* or sensitivit*))))))
#64	((((intervention* or program*) near3 (attachment* or bond* or ((father* or mother* or parent*) near3 (competenc* or interaction* or inter action* or positive or responsiv* or sensitivit*))))))
#65	#61 or #62 or #63 or #64
#66	#27 or #65
#67	((((infant* or neonate* or newborn*) and (attachment or bonding or ((early or object or infant* or parent* or mother* or father* or maternal or paternal) near3 (attach* or bond*)) or ((father* or mother* or parent*) near3 (competenc* or interaction* or inter action* or positive or responsiv* or sensitivit*)) or ((parent* or mother* or maternal* or father* or paternal* or infant* or child*) near3 (attachment* or bond* or relationship* or dyad* or triad*))))):ti
#68	((information or support* or intervention* or therap* or program*))
#69	#67 and #68
#70	#21 and #66
#71	#69 and #11
#72	#70 or #71
#73	#72 from 2000 to 2019

- 1 **Database:** Emcare, Embase, Medline, Medline Ahead of Print and In-Process &
- 2 Other Non-Indexed Citations (global) – OVID [Multifile]

#	Search
1	puerperium/ or perinatal period/ or postnatal care/
2	1 use emczd, emcr
3	postpartum period/ or peripartum period/ or postnatal care/
4	3 use ppez
5	(nullipara* or peri natal* or perinatal* or postbirth or post birth or postdelivery or post delivery or postnatal* or post natal* or postpartum* or post partum* or primipara* or puerpera* or puerperium* or ((after or follow*) adj2 birth*)):ti,ab.
6	or/2,4-5
7	breast feeding/ or breast feeding education/ or lactation/
8	7 use emczd, emcr
9	exp breast feeding/ or lactation/
10	9 use ppez

#	Search
11	(breastfeed* or breast feed* or breastfed* or breastfeed* or breast fed or breastmilk or breast milk or expressed milk* or lactat* or (nursing adj (baby or infant* or mother* or neonate* or newborn*))).ti,ab.
12	or/8,10-11
13	artificial food/ or bottle feeding/ or infant feeding/
14	13 use emczd, emcr
15	bottle feeding/ or infant formula/
16	15 use ppez
17	((((bottle or formula or synthetic) adj2 (artificial or fed or feed* or infant* or milk*)) or (artificial adj (formula or milk)) or bottlefed or bottlefeed or cup feeding or (milk adj2 (substitut* or supplement*)) or ((infant or milk or water or glucose or dextrose or formula) adj supplement) or formula supplement* or supplement feed or milk feed or ((baby or babies or infant* or neonate* or newborn*) adj (formula* or milk)) or formulafeed or formulated or (milk adj2 powder*) or hydrolyzed formula* or (((feeding or baby or infant) adj bottle*) or infant feeding or bottle nipple* or milk pump*))).ti,ab.
18	or/14,16-17
19	or/6,12,18
20	budget/ or exp economic evaluation/ or exp fee/ or funding/ or exp health care cost/ or health economics/
21	20 use emczd, emcr
22	exp budgets/ or exp "costs and cost analysis"/ or economics/ or exp economics, hospital/ or exp economics, medical/ or economics, nursing/ or economics, pharmaceutical/ or exp "fees and charges"/ or value of life/
23	22 use ppez
24	budget*.ti,ab. or cost*.ti. or (economic* or pharmaco?economic*).ti. or (price* or pricing*).ti,ab. or (cost* adj2 (effective* or utilit* or benefit* or minimi* or unit* or estimat* or variable*)).ab. or (financ* or fee or fees).ti,ab. or (value adj2 (money or monetary)).ti,ab.
25	or/21,23-24
26	economic model/ or quality adjusted life year/ or "quality of life index"/
27	(cost-benefit analysis.sh. and (cost-effectiveness ratio* and (perspective* or life expectanc*)).tw.)
28	((quality of life or qol).tw. and cost benefit analysis.sh. )
29	or/26-28 use emczd, emcr
30	models, economic/ or quality-adjusted life years/
31	(cost-benefit analysis.sh. and (cost-effectiveness ratio* and (perspective* or life expectanc*)).tw.)
32	((quality of life or qol).tw. and cost-benefit analysis.sh. )
33	or/30-32 use ppez
34	(eq-5d* or eq5d* or eq-5* or eq5* or euroqual* or euro qual* or euroqual 5d* or euro qual 5d* or euro qol* or euroqol* or euro qol* or euroquol* or euro quol5d* or euroquol5d* or eur qol* or eurqol* or eur qol5d* or eurqol5d* or eur?qul* or eur?qul5d* or euro* quality of life or european qol).tw.
35	(euro* adj3 (5 d* or 5d* or 5 dimension* or 5dimension* or 5 domain* or 5domain*)).tw.
36	(hui or hui2 or hui3).tw.
37	(illness state* or health state*).tw.
38	(multiattribute* or multi attribute*).tw.
39	(qaly* or qal or qald* or qale* or qtime* or qwb* or daly).tw.

#	Search
40	(quality adjusted or quality adjusted life year*).tw.
41	(sf36 or sf 36 or sf thirty six or sf thirtysix).tw.
42	sickness impact profile.sh.
43	(time trade off*1 or time tradeoff*1 or tto or timetradeoff*1).tw.
44	(utilit* adj3 (score*1 or valu* or health* or cost* or measur* or disease* or mean or gain or gains or index*)).tw.
45	utilities.tw.
46	((qol or hrqol or quality of life).tw. or *quality of life/) and ((qol or hrqol* or quality of life) adj2 (change*1 or declin* or decreas* or deteriorat* or effect or effects or high* or impact*1 or impacted or improve* or increas* or low* or reduc* or score or scores or worse)).ab.
47	quality of life.sh. and ((health-related quality of life or (health adj3 status) or ((quality of life or qol) adj3 (chang* or improv*))) or ((quality of life or qol) adj (measure*1 or score*1))).tw. or (quality of life or qol).ti. or ec.fs.)
48	or/29,33-47
49	or/25,48
50	19 and 50
51	limit 50 to english language
52	(animals/ not humans/) or exp animals, laboratory/ or exp animal experimentation/ or exp models, animal/ or exp rodentia/
53	52 use ppez
54	(animal/ not human/) or nonhuman/ or exp animal experiment/ or exp experimental animal/ or animal model/ or exp rodent/
55	54 use emczd, emcr
56	(rat or rats or mouse or mice).ti.
57	or/53,55-56
58	51 not 57

1 **Database:** HTA, NHS EED (global) [CRD Web]

#	Search
1	mesh descriptor postpartum period in hta, nhs eed
2	mesh descriptor peripartum period in hta, nhs eed
3	mesh descriptor postnatal care in hta, nhs eed
4	(nullipara* or peri natal* or perinatal* or postbirth or post birth or postdelivery or post delivery or postnatal* or post natal* or postpartum* or post partum* or primipara* or puerpera* or puerperium* or ((after or follow*) near2 birth*)) in hta, nhs eed
5	#1 or #2 or #3 or #4
6	mesh descriptor breast feeding explode all trees in hta, nhs eed
7	mesh descriptor lactation in hta, nhs eed
8	(breastfeed* or breast feed* or breastfed* or breastfeed* or breast fed or breastmilk or breast milk or expressed milk* or lactat* or (nursing next (baby or infant* or mother* or neonate* or newborn*))) in hta, nhs eed
9	#6 or #7 or #8
10	mesh descriptor bottle feeding in hta, nhs eed
11	mesh descriptor infant formula in hta, nhs eed
12	((((bottle or formula or synthetic) near2 (artificial or fed or feed* or infant* or milk*)) or (artificial next (formula or milk)) or bottlefed or bottlefeed or cup feeding or (milk near2 (substitut* or supplement*)) or ((infant or milk or water or glucose or dextrose or formula) next supplement) or formula supplement* or supplement feed or milk feed or ((baby or babies or infant* or neonate* or newborn*) next (formula* or milk)) or formula feed or formulated or (milk near2 powder*) or hydrolyzed formula* or

#	Search
	((((feeding or baby or infant) next bottle*) or infant feeding or bottle nipple* or milk pump*)) in hta, nhs eed
13	#10 or #11 or #12
14	#5 or #9 or #13

1

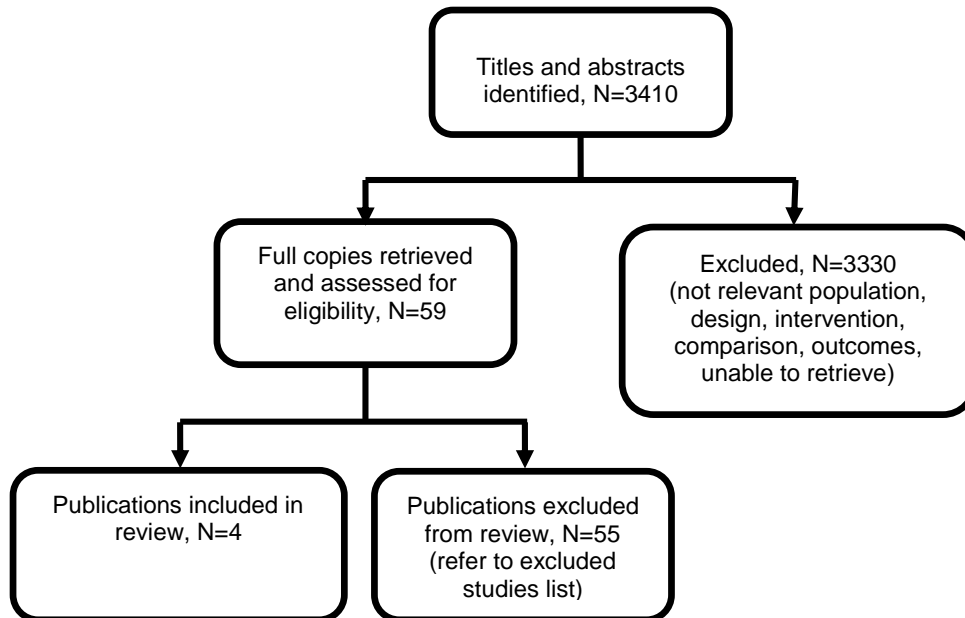
2



## 1 Appendix C – Clinical evidence study selection

### 2 Clinical study selection for review question: What interventions in the 3 postnatal period are effective at promoting emotional attachment?

#### 4 Figure 1: Flow diagram of clinical text article selection for promoting emotional 5 attachment



6

## 1 Appendix D – Clinical evidence tables

### 2 Clinical evidence tables for review question: What interventions in the postnatal period are effective at promoting emotional attachment?

4 Table 4: Clinical evidence table

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
<p><b>Full citation</b></p> <p>Guedeney, A., Wendland, J., Dugravier, R., Saias, T., Tubach, F., Welniarz, B., Guedeney, N., Greacen, T., Tereno, S., Pasquet, B., Impact of a randomized home-visiting trial on infant social withdrawal in the CAPEDP prevention study, <i>Infant Mental Health Journal</i>, 34, 594-601, 2013</p> <p><b>Ref Id</b></p> <p>885246</p>	<p><b>Sample size</b></p> <p>N=440 women randomised to intervention group (n=222) or comparison group (n=218). At 18 month follow-up, n=90/222 and n=62/218 were included in the analysis.</p> <p><b>Characteristics</b></p> <p>Age (median): 22.3 years; Participants with less than 12 years of schooling: 307 (83.9%); 99 (27.1%) declared that they were planning to bring up their child without the child's father.</p>	<p><b>Interventions</b></p> <p><u>Intervention group:</u> In addition to usual care and assessment visits, families received the Parental Skills and Attachment in Early Childhood: Reducing Mental Health Risks and Promoting Resilience (The Competences parentales et Attachement dans la Petite Enfance: Diminution des risques liés aux troubles de sante mentale et Promotion de la resilience (CAPEDP)) home visiting program. It is as an evidence-based, home-visiting, infant</p>	<p><b>Details</b></p> <p><u>Randomisation</u> After completing baseline screening and informed consent procedures, participants were randomly and alternatively assigned to either the intervention or the usual care group using a computer-generated randomisation sequence, stratified by recruitment centre, with random block sizes of 2, 4, or 6 participants.</p> <p><u>Concealment</u> Investigators, psychologists performing the CAPEDP intervention, and participants were blinded to assignment before, but not after randomisation.</p>	<p><b>Results</b></p> <p><u>The Alarm Distress Baby Scale (ADBB) at child age 18 months in women with Edinburgh Postnatal Depression Scale Score &gt;11 or ≤11 (mean (SD))*:</u></p> <p>Intervention Group/EPDS&gt;11 (n=38): 3.3 (3.9) Intervention Group/EPDS≤11 (n=52): 2 (2.6) Control Group/EPDS&gt;11 (n=27): 3.3 (4.5) Control Group/EPDS≤11 (n=35): 4.1 (4.7) *Edinburgh Postnatal Depression Scale</p>	<p><b>Limitations</b></p> <p>Risk of bias assessed with Cochrane risk of bias tool for randomised trials</p> <p>Selection Bias: Low risk</p> <p>Performance Bias: High risk (investigators, psychologists performing the intervention and participants were blinded to assignment before, but not after randomisation)</p> <p>Detection Bias: low risk</p> <p>Attrition Bias: High risk (data at 18 months was available for n=90 (40.5%) in the intervention group and for n=62 (28%) in the</p>

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
<p><b>Country/ies where the study was carried out</b> France</p> <p><b>Study type</b> RCT</p> <p><b>Aim of the study</b> To measure the impact of the intervention on children's sustained social withdrawal behaviour at 18 months of age.</p> <p><b>Study dates</b> Not reported</p> <p><b>Source of funding</b> Not reported</p>	<p><b>Inclusion criteria</b> Young mothers (&lt;26 years of age) and primiparous, with sufficient fluency in French to be able to understand the informed consent procedure, and had at least one of three additional risk criteria concerning their future child's mental health: planning to raise the child alone, low socioeconomic status (defined as receiving welfare benefits, or being close to the poverty threshold, that is with an income of ≤800 euros per month), and having less than 12 years of schooling.</p> <p><b>Exclusion criteria</b> Not reported</p>	<p>mental health promotion program carried out in France.</p> <p>The intervention was conducted by a team of supervised psychologists with specific training on working alliance skills, early child development, attachment issues, and health promotion and prevention during pregnancy. Mothers were recruited in 10 public hospital maternity wards.</p> <p>The intervention was manualised and tailored to each family's needs. It consisted of home visits during pregnancy and up to the child's second birthday, with decreasing frequency of visits over time: 6 visits during the antenatal period, 8 in the first 3 months' postpartum, 15 between the fourth and twelfth months' postpartum, and another 15 during the</p>	<p>Outcome assessors were blinded to assignment, and no investigators, psychologists, or participants had any knowledge of aggregate outcomes at any point during the course of the study. Psychologists who assessed the families were not involved in any aspect of care and had no knowledge of the family's group assignment.</p> <p><u>Outcomes</u> The Alarm Distress Baby Scale (ADBB) The scale consists of 8 items and aims to assess prolonged reactions of social withdrawal in infants. The 8 items are: facial expression, eye contact, general level of activity, self-stimulation gestures, vocalizations, rapidity of response to stimulation, relationship with the observer, and attractiveness to the observer. Each item is rated on a scale of 0 (no</p>	<p>was used to assess <b>prenatal</b> depression. Total scores range from 0 to 30; higher scores indicate higher levels of depressive symptoms. A cut-off score of &gt;11 was chosen by the authors because it had good sensitivity (0.80) and specificity (0.80).</p>	<p>comparison group; reasons for attrition: no evaluation visit during the first year, refusal after inclusion, missing data, excluded (baby deceased or medical interruption of pregnancy), included wrongly, lost consent forms, moved away; mothers with a greater number of risk factors for later infant mental health problems were significantly more likely to dropout of the program, with comparable dropout rates in the intervention and the comparison groups)</p>

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
		<p>child's second year of life, resulting in a total of 44 home visits per family.</p> <p><u>Comparison group:</u> Usual care and assessment visits at participant's home across the study period.</p> <p>All families, whether they were in the intervention group or in the control group, could access usual care.</p>	<p>unusual behaviour) to 4 (very unusual behaviour), resulting in 0 as the minimum and 32 as the maximum ADBB total score; the higher the ADBB score, the greater the signs of social withdrawal shown by the infant.</p> <p><u>Statistical analysis</u> Modified intention to treat principle (in participants with at least one evaluation visit during the first year)</p> <p><u>Follow-up</u> At 18 months postpartum</p>		
<p><b>Full citation</b> Hans, S. L., Thullen, M., Henson, L. G., Lee, H., Edwards, R. C., Bernstein, V. J., Promoting Positive Mother-Infant Relationships: A Randomized Trial of Community Doula Support For Young Mothers, Infant Mental Health Journal, 34, 446-457, 2013</p>	<p><b>Sample size</b> N=248 randomised to Doula group (n=124) or control group (n=124). n=107 and n=112 were analysed at 12 month follow-up in Doula group and control group, respectively.</p> <p><b>Characteristics</b> All participants were African American. 94 % of the participating</p>	<p><b>Interventions</b> <u>Intervention group:</u> The program was established 1 year in advance of the planned start of the study to ensure that services were being appropriately delivered before the beginning of the study. 4 African American doulas worked in the program. The doulas each had previous experience as helpers, through</p>	<p><b>Details</b> <u>Randomisation</u> Immediately following completion of the baseline interview, participants were randomly assigned to either intervention or control groups. Randomisation took place in blocks of 4, 6, or 8 (with equal numbers to intervention and comparison group within a block) to ensure balanced numbers in the 2 groups throughout the study period. Randomisation was done</p>	<p><b>Results</b> <u>Parent-child interaction assessed using The Parent-Child Observation Guide (PCOG) at child-age 12 months*:</u> <u>Mother Variables (mean (SD)):</u> <u>Mother sensitive responsiveness:</u> Doula group (n=107): 7.75 (1.56) Control group (n=112): 7.65 (1.44)</p>	<p><b>Limitations</b> Risk of bias assessed with Cochrane risk of bias tool for randomised trials</p> <p>Selection Bias: Low risk</p> <p>Performance Bias: Low risk</p> <p>Detection Bias: Low risk</p> <p>Attrition Bias: High risk (data at 12 months was available for n=107 (86%) in the intervention group)</p>

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
<p><b>Ref Id</b> 823139</p> <p><b>Country/ies where the study was carried out</b> USA</p> <p><b>Study type</b> RCT</p> <p><b>Aim of the study</b> To examine the efficacy of a community doula intervention in supporting behavioural, attitudinal, and emotional aspects of the early parent-child relationship.</p> <p><b>Study dates</b> Not reported</p>	<p>women were receiving Medicaid. Age (mean (SD)): Doula group = 18.2 (1.7), intervention group = 17.9 (1.7); Private health insurance: Doula group = 6 (4.8%), intervention group = 9 (7.3%); Mother Expecting First Child: Doula group = 110 (88.7%), intervention group = 109 (87.9%) Mother in School at Enrolment: Doula group = 67 (54.0%), intervention group = 68 (54.8%) Baby Gestational Age (in weeks) at Enrolment: Doula group = 23.3 (4.6), intervention group = 23.8 (5.3)</p> <p><b>Inclusion criteria</b> Pregnant women attending two affiliated prenatal clinics, one</p>	<p>counselling pregnant teenagers at their churches, working as peer lactation counsellors, or working as home health care assistants, but had no formal training as doulas or as child development professionals prior to being hired by this program. The doulas participated in an intensive 10 week training session provided by the Chicago Health Connection, which was a developer of the community doula model and offers training to community-based doula programs nationally. Doulas were supervised in their work by an experienced paediatric nurse who also had been trained as a doula. Participating mothers were assigned to one of the four doulas by the supervisor. Doulas</p>	<p>from a series of sealed opaque envelopes prepared by the biostatistician before the study was begun, each labelled with a sequential subject identification number and each containing an assignment to either the intervention group or the comparison group. <u>Concealment</u> Investigators and staff members responsible for recruitment, interviewing, or providing intervention were not able to influence the process of assignment to the intervention group. <u>Outcomes</u> Parent-child interaction The Parent-Child Observation Guide (PCOG) was used to code parent-child interaction from the video recordings made at the 4-, 12-, and 24 month sessions. It consists of multi-item scales and addresses interaction that is occurring in general social interaction.</p>	<p><u>Mother encouragement and guidance:</u> Doula group (n=107): 4.82 (1.87) Control group (n=112): 4.51 (1.84) <u>Mother prompt responsiveness to upset (for children who displayed upset):</u> Doula group (n=14): 0.64 (0.5) Control group (n=14): 0.36 (0.5) <u>Child Variables (mean (SD)):</u> <u>Child positive involvement with mother:</u> Doula group (n=107): 5.63 (2.04) Control group (n=112): 5.7 (1.79) <u>Infant displayed no uncomfortably long period of distress:</u> Doula group (n=107): 0.98 (0.14) Control group (n=112): 0.96 (0.21)</p>	<p>and for n=112 (90%) in the comparison group; attrition was related to the inability to locate mothers, some declined to participate in follow-up interviews, few babies die due to sudden infant death syndrome, and some mothers lost custody of their children because of child endangerment); sample retention was not statistically different between the 2 trial groups).</p>

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
<p><b>Source of funding</b> Not reported</p>	<p>located in a community health centre and one in a nearby teaching hospital, were approached to participate in the study if they were under the age of 22 and were less than 34 weeks gestation.</p> <p><b>Exclusion criteria</b> Not reported</p>	<p>initiated contact with the participants by telephone and then made an appointment to meet at the participant's home. Doulas scheduled weekly visits with each woman throughout her pregnancy and until 3 months postpartum. These visits occurred at mothers' homes, at the prenatal clinic, and at specialty clinics, such as for ultrasound examination. Doulas also joined the mother at the hospital during labour and birth. Mothers were encouraged to call their doulas when they went into labour.</p> <p>The average mother in the doula group received 2.49 prenatal home visits from her doula with an average duration of 56 min and 3.82 prenatal clinic visits with her doula with an</p>	<p>Mother Variables: Mother sensitive responsiveness Mother encouragement and guidance Mother prompt responsiveness to upset (for children who displayed upset) Child Variables Child positive involvement with mother Infant displayed no uncomfortably long period of distress The PCOG forms used for the 4- and 12 month-old infants also include a single dichotomous item to assess whether children displayed "no uncomfortably long period of upset" and whether the parent responded to child upset with prompt responsiveness (with parents whose children did not cry not coded on this scale). <u>Statistical analysis</u> Intention to treat <u>Follow-up</u></p>	<p>*items were coded dichotomously 0=not observed, 1=observed, so assume higher number is better</p>	

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
		<p>average duration of 61 min.</p> <p>The mean amount of contact across settings prenatally was 11.6 hr (SD = 12.0, range = 0–70.9), with a mean of 1.8 hr (SD = 2.0) of contact focused on preparing for parenting/childcare.</p> <p>Doulas made an average of 12 contacts with each mother during the 3 months postpartum and the mean number of hours of contact postnatally was 10.2 (SD = 6.6, range = 0–31.5), with a mean of 4.3 (SD = 3.1) hr of contact focused on parenting/childcare.</p> <p><u>Comparison group:</u> Received routine medical and social services.</p>	<p>Follow-ups were at the time points when the infant was 4 months, 12 months, and 24 months of age.</p>		
<p><b>Full citation</b></p> <p>Kemp, L, Harris, E, McMahon, C,</p>	<p><b>Sample size</b></p> <p>N=208 pregnant women randomised to sustained nurse home visiting</p>	<p><b>Interventions</b></p> <p>All participating women received usual antenatal</p>	<p><b>Details</b></p> <p><u>Randomisation</u></p> <p>Eligible mothers were randomised to the</p>	<p><b>Results</b></p> <p><u>Parent–child interaction during free play at child-age 18</u></p>	<p><b>Limitations</b></p> <p>Risk of bias assessed with Cochrane risk of bias tool for randomised trials</p>

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
<p>Matthey, S, Vimpani, G, Anderson, T, Schmied, V, Aslam, H, Zapart, S, Child and family outcomes of a long-term nurse home visitation program: a randomised controlled trial, Archives of Disease in Childhood, 96, 533-540, 2011</p> <p><b>Ref Id</b> 698828</p> <p><b>Country/ies where the study was carried out</b> Australia</p> <p><b>Study type</b> RCT</p> <p><b>Aim of the study</b> To investigate the impact of a long-</p>	<p>intervention (n=111) or to comparison group receiving usual care (n=97). N=108 analysed at 18 month follow-up, no sample size for each group reported.</p> <p><b>Characteristics</b> Mean age (SD): intervention = 27.6 (6.7); comparison = 27.7 (5.9). Married (registered marriage): intervention = 67 (62%); comparison = 62 (67%); n=7 missing data Parity &gt;=1: intervention = 80 (72%); comparison = 63 (65%). Country of birth Australia: intervention = 56 (50%); comparison = 50 (52%). Number of risk factors: One: intervention = 56 (50%); comparison = 49 (50%);</p>	<p>midwifery, obstetric and birthing services. <u>Intervention group:</u> Women received an average of 16.3 (range 0–52) visits, each of 60–90 min duration, by a child health nurse commencing at on average 26 weeks gestation (range 12–40), and continuing to their child's second birthday (average duration of participation in program to child-age 57.0 weeks (range 0–122): 82% visited antenatally, 95% visited in the first year postnatally, and 53% visited in the second year). <u>Comparison group:</u> Comparison group participating women were expected to receive a home visit by a child health nurse within 2 weeks of giving birth, in accordance with</p>	<p>intervention or comparison group prior to collection of baseline data. No details provided. <u>Concealment</u> Not reported <u>Outcomes</u> Parent–child interaction during free play (sensitive stimulating parenting, detached flat parenting, child engagement) observed in a structured clinic environment at child-age 18 months, measured using the National Institute for Child Health and Development scales of parent–child interaction. <u>Statistical analysis</u> <u>Intention to treat</u> <u>Follow-up</u> Data were collected antenatally on recruitment, and then at 1, 6, 12, 18 and 24 months postnatally.</p>	<p><u>months, measured using the National Institute for Child Health and Development (NICHD) scales of parent–child interaction:</u> <u>Sensitive stimulating parenting** (mean (SD)):</u> Intervention group (n=60): 9.57 (2.47) Comparison group (n=50): 10.16 (2.85) <u>Detached flat parenting** (mean (SD)):</u> Intervention group (n=60): 3.95 (1.58) Comparison group (n=50): 3.63 (1.47) <u>Child engagement** (mean (SD)):</u> Intervention group (n=60): 6.88 (1.40) Comparison group (n=50): 6.63 (1.25)</p>	<p>Selection Bias: High risk (no information provided how women were randomised to intervention and comparison groups).</p> <p>Performance Bias: Unclear risk (no information provided whether personnel were aware of the group allocation).</p> <p>Detection Bias: Unclear risk (no information provided whether researchers assessing outcomes were aware of the group allocation)</p> <p>Attrition Bias: High risk (data at 18 months was available for n=60 (54.1%) in the intervention group and for n=50 (51.5%) in the comparison group; no reasons for attrition given).</p> <p>Other bias: no information provided what scale was used to measure sensitive stimulating parenting, detached flat parenting and</p>



Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
<p>term nurse home visiting program, embedded within a universal child health system, on the health, development and well-being of the child, mother and family.</p> <p><b>Study dates</b> Not reported</p> <p><b>Source of funding</b> The trial was funded by the Australian Research Council (LP0560285), Sydney South West Area Health Service, the NSW Department of Community Services and the NSW Department of Health.</p>	<p>2 or more: intervention = 55 (50%); comparison = 48 (50%).</p> <p><b>Inclusion criteria</b> Mothers were eligible to participate if they did not require the use of an interpreter, and reported one or more of the following risk factors for poor maternal or child outcomes in their responses to routine standardised psychosocial and domestic violence screening conducted by midwives for every mother booking in to the local hospital for confinement:</p> <ul style="list-style-type: none"> <li>• maternal age under 19 years;</li> <li>• current probable distress (assessed as an Edinburgh Depression Scale score of 10 or more) (as a lower cut-off</li> </ul>	<p>standard practice in New South Wales.</p>		<p>*Not clear from the paper the direction of the scale</p>	<p>child engagement, so the direction of the scale is not clear. No statistical comparison was made between mothers who dropped out of the study and those who remained.</p>

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
	<p>score was used than the antenatal validated cut-off score for depression, the term 'distress' is used rather than 'depression'; use of this cut-off to indicate those distressed approximated the subgroups labelled in other trials as 'psychologically vulnerable' or as having 'low psychological resources');</p> <ul style="list-style-type: none"> <li>• lack of emotional and practical support;</li> <li>• late antenatal care (after 20 weeks gestation);</li> <li>• major stressors in the past 12 months;</li> <li>• current substance misuse;</li> <li>• current or history of mental health problem or disorder;</li> </ul>				

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
	<ul style="list-style-type: none"> <li>• history of abuse in mother's own childhood;</li> <li>• history of domestic violence.</li> </ul> <p><b>Exclusion criteria</b> Not reported</p>				
<p><b>Full citation</b> Walkup, Jt, Barlow, A, Mullany, Bc, Pan, W, Goklish, N, Hasting, R, Cowboy, B, Fields, P, Baker, Ev, Speakman, K, Ginsburg, G, Reid, R, Randomized controlled trial of a paraprofessional-delivered in-home intervention for young reservation-based American Indian mothers, Journal of the American Academy of Child and Adolescent</p>	<p><b>Sample size</b> N=167 pregnant women were randomised to Family Spirit intervention (n=81) or Breastfeeding/nutrition education program (n=86). At 12 month follow-up, 35/81 (43%) and 30/86 (35%) were included in the analysis, respectively.</p> <p><b>Characteristics</b> Age (median) for the whole study population: 18 years</p>	<p><b>Interventions</b> Mothers received home-visiting lessons from 28 weeks' gestation to 6 months postpartum and were evaluated with their children at baseline and 2, 6, and 12 months postpartum. <u>Intervention group:</u> Family Spirit intervention The curricular content for the Family Spirit intervention was based on recommendations and standards documented in the American Academy of Pediatrics' Caring for Your Baby and Child:</p>	<p><b>Details</b> <u>Randomisation</u> Expectant young American Indian mothers were randomised (1:1) to one of two home-visiting interventions: the Family Spirit intervention versus a breastfeeding/nutrition education program. Prospective participants were recruited from prenatal and school-based clinics in four Indian Health Service catchment areas on the Navajo and White Mountain Apache reservations in New Mexico and Arizona. Follow-up of study participants was completed in May 2005. Incentives in the form of gift</p>	<p><b>Results</b> <u>Social emotional problems and competencies of the infant at 12 months, measured using Infant Toddler Social Emotional Assessment (ITSEA)*:</u> <u>Externalising domain (includes activity/impulsivity, aggression/defiance, peer aggression (mean (SD))):</u> Intervention group (n=35): 0.39 (0.29) Control group (n=30): 0.57 (0.27) <u>Internalising domain (includes</u></p>	<p><b>Limitations</b> Risk of bias assessed with Cochrane risk of bias tool for randomised trials  Selection Bias: High risk (no information provided how women were randomised to intervention and comparison groups; only stated that the website <a href="http://randomization.com">http://randomization.com</a> was used)  Performance Bias: High risk (participants and interventionist were aware of the group allocation)  Detection Bias: Unclear risk (no information</p>

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
<p>Psychiatry, 48, 591-601, 2009</p> <p><b>Ref Id</b> 886054</p> <p><b>Country/ies where the study was carried out</b> US</p> <p><b>Study type</b> RCT</p> <p><b>Aim of the study</b> To evaluate the efficacy of a paraprofessional-delivered, home-visiting intervention among young, reservation-based American Indian mothers on parenting knowledge, involvement, and maternal and infant outcomes.</p>	<p>Age 14-17 years at time of conception: intervention group = 36 (44%), control group = 43 (50%). Parity <math>\geq 1</math>: intervention group = 8 (10%), comparison group = 8 (9%). Currently married: intervention group = 9 (11%), comparison group = 5 (6%). Gestational age <math>\leq 20</math> weeks: intervention group = 39 (48), comparison group = 53 (62)</p> <p><b>Inclusion criteria</b> Pregnant American Indian mothers aged 12 to 22 years and with 28 weeks or lesser of gestation.</p> <p><b>Exclusion criteria</b> Women if they had extreme medical, legal,</p>	<p>Birth to Age 5. This includes developmentally timed prenatal and infant-care parenting lessons, as well as family planning, substance abuse prevention, and problem-solving and coping-skills lessons. Mothers were expected to receive 25 home visits, each lasting approximately 1 hour. The intervention was carefully crafted to reflect local native practices but not community-specific traditions or spiritual beliefs.</p> <p><u>Comparison group:</u> Breastfeeding/nutrition education program. The curricular content included a previously developed breastfeeding/nutrition education program. Mothers were to receive 23 home visits, each lasting approximately 1 hour. The control</p>	<p>cards to a local grocery store were provided to all participants after completion of study assessments. The randomisation sequence was generated by a Web site and stored confidentially by the data manager in Baltimore.</p> <p><u>Concealment</u> Randomisation was revealed to participants after the baseline assessment. Neither the participants nor the interventionists were blind to study group assignment.</p> <p><u>Outcomes</u> Infant Toddler Social Emotional Assessment (ITSEA) (range 0–2 for individual items and 0–2 for domains). A 126-item parent report that assesses four primary domains of child behaviour for ages 12 to 36 months including Externalising, Internalizing, Dysregulation, and Competence. It was</p>	<p><u>depression/withdraw, general anxiety, separation distress, inhibition to novelty):</u> Intervention group (n=35): 0.48 (0.16) Control group (n=30): 0.55 (0.23) <u>Dysregulation domain (includes sleep, negative emotionality, eating, sensory sensitivity):</u> Intervention group (n=35): 0.43 (0.27) Control group (n=30): 0.49 (0.26) <u>Competence domain (includes compliance, attention, imitation/play, mastery, prosocial peer relations):</u> Intervention group (n=35): 0.94 (0.36) Control group (n=30): 0.95 (0.33)</p> <p>*It is a proxy outcome for baby's social behaviour; scale</p>	<p>provided whether researchers assessing outcomes were aware of the group allocation)</p> <p>Attrition Bias: High Risk (data at 12 months was available for n=35 (43%) in the intervention group and for n=30 (35%) in the comparison group; no reasons for attrition given, only stated that "high attrition rates were likely related to participant factors such as Family Spirit intervention time burden and transient living status post-delivery"; reported rates of attrition were similar in both groups at 12 month follow-up and that participants lost to follow-up at 12 months were not different in baseline demographic characteristics or outcome variables from those still in the study).</p>

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
<p><b>Study dates</b> From 2002 to 2004</p> <p><b>Source of funding</b> One author has received research grant support from Eli Lilly, Pfizer, and Abbott. He has been a consultant to GlaxoSmithKline, Eli Lilly, and the Cliff's Communities and received speaker's honoraria from the Tourette Syndrome Association. Financial support for this work was provided by the Substance Abuse Mental Health Services Administration (SAMHSA I: Grant No. UD1SP08860, SAMHSA II: Grant No. UD1SP09588),</p>	<p>or social problems that precluded their ability to participate in visits or assessments, for example, women with medical, psychiatric, or substance abuse problems that required extended hospitalization or residential care off the reservation or legal problems that resulted in incarceration. Also those women who were at acute risk for self or others at the time of consent.</p>	<p>condition was selected to provide participating mothers a valuable home-visiting experience and hold constant the amount of supportive contact for mothers, so between-group differences could be linked to intervention content.</p> <p>For both groups: lessons were delivered by trained native bilingual American Indian paraprofessionals to participants in their homes or setting of participant's choice. The paraprofessionals received approximately 500 hours of training in home-visiting methods and curricular content. They were tested on their knowledge through oral and written examinations.</p>	<p>conducted at 12 months postpartum. NGA note: This is a proxy outcome for child's social behaviour. Interpretation of the scale: "On the Externalising, Internalising, and Dysregulation scales, a T-score of 65 or higher are termed "of concern". T-scores of 35 or lower on the Competence scale are also termed "of concern" (Baxter, 2007)" (from: <a href="https://cloudfront.ualberta.ca/-/media/ualberta/faculties-and-programs/centres-institutes/community-university-partnership/resources/tools--assessment/itseajun2012.pdf">https://cloudfront.ualberta.ca/-/media/ualberta/faculties-and-programs/centres-institutes/community-university-partnership/resources/tools--assessment/itseajun2012.pdf</a> ). <u>Statistical analysis</u> Multivariate generalised linear mixed models <u>Follow-up</u> Both groups were assessed at 4 intervals: baseline (~28 weeks' gestation), and 2, 6, and 12 months postpartum</p>	<p>interpretation: the higher the worse **Adjusted for age, parity, gestational age, educational status, whether the participant resided with her partner, whether her partner was also enrolled in the Family Spirit program, and study site</p>	<p><b>Other information</b> Proxy outcome for child's social behaviour</p>

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
and the Ford Foundation, the Annie E. Casey Foundation, and the C.S. Mott Foundation.					

- 1 *ADBB: Alarm Distress Baby Scale; CAPEDP: Competences parentales et Attachement dans la Petite Enfance: Diminution des risques lies aux troubles de sante mentale et*
- 2 *Promotion de la resilience (home visiting program); EPDS: Edinburgh Postnatal Depression Scale; ITSEA: Infant Toddler Social Emotional Assessment; NGA: National*
- 3 *Guideline Alliance; NICHD: National Institute for Child Health and Development; NSW: New South Wales; PCOG: Parent-Child Observation Guide; RCT: randomised*
- 4 *controlled trial; SD: standard deviation*

## 1 **Appendix E – Forest plots**

### 2 **Forest plots for review question: What interventions in the postnatal period** 3 **are effective at promoting emotional attachment?**

- 4 No meta-analysis was conducted for this review question and so there are no forest  
5 plots.

## 1 Appendix F – GRADE tables

### 2 GRADE tables for review question: What interventions in the postnatal period are effective at promoting emotional attachment?

4 Table 5: Clinical evidence profile for comparison of usual care plus the Parental Skills and Attachment in Early Childhood program  
5 versus usual care in women with prenatal depression scale score of >11 or ≤11

Quality assessment							No of participants		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Parental Skills and Attachment in Early Childhood program	Usual care	Relative (95% CI)	Absolute		
<b>Social withdrawal behaviour assessed using the Alarm Distress Baby Scale (ADBB). Intervention up to infant's second birthday and follow-up at 18 months baby age</b>												
<b>In women with prenatal depression scale<sup>1</sup> score &gt;11 (Better indicated by lower values)</b>												
1 (Guedeney 2013)	randomised trials	very serious <sup>2</sup>	no serious inconsistency	no serious indirectness	no serious imprecision	none	38	27	-	MD 0 higher (2.1 lower to 2.1 higher)	LOW	IMPORTANT
<b>In women with prenatal depression score ≤11 (Better indicated by lower values)</b>												
1 (Guedeney 2013)	randomised trials	very serious <sup>2</sup>	no serious inconsistency	no serious indirectness	serious <sup>3</sup>	none	52	35	-	MD 2.1 lower (3.81 to 0.39 lower)	VERY LOW	IMPORTANT

6 CI: confidence interval; MD: mean difference; MID: minimally important difference

7 1 Edinburgh Postnatal Depression Scale (EPDS) was used to assess prenatal depression. Total scores range from 0 to 30; higher scores indicate higher levels of depressive  
8 symptoms. A cut-off score of >11 was chosen by the authors because it has a good sensitivity (0.80) and specificity (0.80).



- 1 2 The quality of the evidence was downgraded by 2 levels because of high performance bias as investigators, psychologists performing the intervention and participants were  
 2 blinded to assignment before but not after the randomisation; also high attrition bias as data at 18 month follow-up was available for n=90 (40.5%) in the intervention group and  
 3 for n=62 (28%) in the comparison group; reasons for attrition: no evaluation visit during the first year, refusal after inclusion, missing data, excluded (baby deceased or medical  
 4 interruption of pregnancy, included wrongly, lost consent forms, moved away; mothers with a greater number of risk factors for later infant mental health problems were  
 5 significantly more likely to dropout of the program, with comparable dropout rates in the intervention and the comparison groups.  
 6 3 The quality the evidence was downgraded by 1 level due to serious imprecision as 95% CI crosses 1 MID for continuous outcomes (+/- 2.4).

7 **Table 6: Clinical evidence profile for comparison of community doula intervention versus routine medical and social services**

Quality assessment							No of participants		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Community doula	Routine medical and social services	Relative (95% CI)	Absolute		
<b>Mother-child interaction assessed using the Parent-Child Observation Guide (PCOG). Intervention up to 3 months post-partum and follow-up at 12 months baby age</b>												
<b>Mother variables - Mother sensitive responsiveness (Better indicated by higher values)</b>												
1 (Hans 2013)	randomised trials	serious <sup>1</sup>	no serious inconsistency	no serious indirectness	no serious imprecision	none	107	112	-	MD 0.1 higher (0.3 lower to 0.5 higher)	MODERATE	CRITICAL
<b>Mother variables - Mother encouragement (Better indicated by higher values)</b>												
1 (Hans 2013)	randomised trials	serious <sup>1</sup>	no serious inconsistency	no serious indirectness	no serious imprecision	none	107	112	-	MD 0.31 higher (0.18 lower to 0.8 higher)	MODERATE	CRITICAL
<b>Mother variables - Mother prompt responsiveness to upset child<sup>2</sup> (Better indicated by higher values)</b>												

1 (Hans 2013)	randomised trials	serious <sup>1</sup>	no serious inconsistency	no serious indirectness	serious <sup>3</sup>	none	14	14	-	MD 0.28 higher (0.09 lower to 0.65 higher)	LOW	CRITICAL
<b>Child variables - Child positive involvement with mother (Better indicated by higher values)</b>												
1 (Hans 2013)	randomised trials	serious <sup>1</sup>	no serious inconsistency	no serious indirectness	no serious imprecision	none	107	112	-	MD 0.07 lower (0.58 lower to 0.44 higher)	LOW	CRITICAL
<b>Child variables - Child displayed no uncomfortably long periods of distress (Better indicated by higher values)</b>												
1 (Hans 2013)	randomised trials	serious <sup>1</sup>	no serious inconsistency	no serious indirectness	no serious imprecision	none	107	112	-	MD 0.02 higher (0.03 lower to 0.07 higher)	MODERATE	CRITICAL

1 CI: confidence interval; MD: mean difference; MID: minimally important difference

2 1 The quality of the evidence was downgraded by 1 level because of high attrition bias: data at 12 month follow-up was available for n=107 (86%) in the intervention group and for n=112 (90%) in the comparison group; attrition was related to the inability to locate mothers, some declined to participate in follow-up interviews, few babies die due to sudden infant death syndrome, and some mothers lost custody of their children because of child endangerment; sample retention was not statistically different between the 2 trial groups.

6 2 Only parents whose children cried were coded on this scale.

7 3 The quality the evidence was downgraded by 1 level due to serious imprecision as 95% CI crosses 2 MIDs for continuous outcomes (+/- 0.25).

8 **Table 7: Clinical evidence profile for comparison of a long-term nurse home visiting program versus standard practice**

Quality assessment							No of participants		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Long-term nurse home visiting program	Standard practice	Relative (95% CI)	Absolute		

**Mother-child interaction assessed using the National Institute for Child Health and Development (NICHD) scales of parent-child interaction. Intervention up to baby's second birthday and follow-up at 18 months baby age**
**Sensitive stimulating parenting<sup>1</sup>**

1 (Kemp 2011)	randomised trials	very serious <sup>2</sup>	no serious inconsistency	no serious indirectness	serious <sup>3</sup>	none	60	50	-	MD 0.59 lower (1.6 lower to 0.42 higher)	VERY LOW	CRITICAL
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**Detached flat parenting<sup>1</sup>**

1 (Kemp 2011)	randomised trials	very serious <sup>2</sup>	no serious inconsistency	no serious indirectness	serious <sup>2</sup>	none	60	50	-	MD 0.32 higher (0.25 lower to 0.89 higher)	VERY LOW	CRITICAL
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**Child engagement<sup>1</sup>**

1 (Kemp 2011)	randomised trials	very serious <sup>2</sup>	no serious inconsistency	no serious indirectness	serious <sup>5</sup>	none	60	50	-	MD 0.25 higher (0.25 lower to 0.75 higher)	VERY LOW	CRITICAL
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1 CI: confidence interval; MD: mean difference; MID: minimally important difference

2 1 Direction of the scale is not clear as no information provided.

3 2 The quality of the evidence was downgraded by 2 levels because of high selection bias as no information provided how women were randomised to intervention and comparison groups; high attrition bias as data at 18 month follow-up was available for n=60 (54.1%) in the intervention group and for n=50 (51.5%) in the comparison group; no reasons for attrition given. There was unclear risk of performance bias as no information provided whether personnel were aware of the group allocation and unclear risk of detection bias as no information provided whether researchers assessing outcomes were aware of the group allocation. Also there was other bias as no information was provided what scale was used to measure sensitive stimulating parenting, detached flat parenting and child engagement, so the direction of the scale is not clear. No statistical comparison was made between mothers who dropped out of the study and those who remained.

9 3 The quality of the evidence was downgraded by 1 level due to serious imprecision as 95% CI crosses 1 MID for continuous outcomes (+/- 1.4).

10 4 The quality of the evidence was downgraded by 1 level due to serious imprecision as 95% CI crosses 1 MID for continuous outcomes (+/- 0.7).

11 5 The quality of the evidence was downgraded by 1 level due to serious imprecision as 95% CI crosses 1 MID for continuous outcomes (+/- 0.6).

1

2 **Table 8: Clinical evidence profile for comparison of a paraprofessional-delivered, home-visiting (Family Spirit) intervention versus**  
 3 **breastfeeding/nutrition education program**

Quality assessment							No of participants		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Family Spirit, home visting intervention	Breastfeeding/nutrition education program	Relative (95% CI)	Absolute		
<b>Social emotional problems and competencies of the baby assessed using the Infant Toddler Social Emotional Assessment (ITSEA). Intervention up to 6 months post-partum and follow-up at 12 months infant age</b>												
<b>Externalising domain (includes activity/impulsivity, aggression/defiance, peer aggression) (Better indicated by lower values)</b>												
1 (Walkup 2009)	randomised trials	very serious <sup>1</sup>	no serious inconsistency	serious <sup>2</sup>	serious <sup>3</sup>	none	35	30	-	MD 0.18 lower (0.32 to 0.04 lower)	VERY LOW	IMPORTANT
<b>Internalising domain (includes depression/withdraw, general anxiety, separation distress, inhibition to novelty) (Better indicated by lower values)</b>												
1 (Walkup 2009)	randomised trials	very serious <sup>1</sup>	no serious inconsistency	serious <sup>2</sup>	serious <sup>4</sup>	none	35	30	-	MD 0.07 lower (0.17 lower to 0.03 higher)	VERY LOW	IMPORTANT
<b>Dysregulation domain (includes sleep, negative emotionality, eating, sensory sensitivity) (Better indicated by lower values)</b>												
1 (Walkup 2009)	randomised trials	very serious <sup>1</sup>	no serious inconsistency	serious <sup>2</sup>	serious <sup>5</sup>	none	35	30	-	MD 0.06 lower (0.19 lower to 0.07 higher)	VERY LOW	IMPORTANT
<b>Competence domain (includes compliance, attention, imitation/play, mastery motivation, empathy, prosocial peer relations) (Better indicated by higher values)</b>												

1 (Walkup trials 2009)	randomised	very serious <sup>1</sup>	no serious inconsistency	serious <sup>2</sup>	serious <sup>6</sup>	none	35	30	-	MD 0.01 lower (0.18 lower to 0.16 higher)	VERY LOW	IMPORTANT
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- 1 *CI: confidence interval; MD: mean difference; MID: minimally important difference*
- 2 *1 The quality of the evidence was downgraded by 2 levels because of selection bias as no information was provided about how women were randomised to intervention and*
- 3 *comparison groups; only stated that the website <http://randomization.com> was used); high performance bias as participants and interventionist were aware of the group*
- 4 *allocation; high attrition bias as data at 12 month follow-up was available for n=35 (43%) in the intervention group and for n=30 (35%) in the comparison group; no reasons for*
- 5 *attrition given, only stated that "high attrition rates were likely related to participant factors such as Family Spirit intervention time burden and transient living status post-*
- 6 *delivery"; reported rates of attrition were similar in both groups at 12 month follow-up and that participants lost to follow-up at 12 months were not different in baseline*
- 7 *demographic characteristics or outcome variables from those still in the study); unclear detection bias as no information provided whether researchers assessing outcomes*
- 8 *were aware of the group allocation.*
- 9 *2 ITSEA outcome is a proxy outcome for social behaviour of the baby*
- 10 *3 The quality of the evidence was downgraded by 1 level due to serious imprecision as 95% CI crosses 1 MID for continuous outcomes (+/- 0.14)*
- 11 *4 The quality of the evidence was downgraded by 1 level due to serious imprecision as 95% CI crosses 1 MID for continuous outcomes (+/- 0.12)*
- 12 *5 The quality of the evidence was downgraded by 1 level due to serious imprecision as 95% CI crosses 1 MID for continuous outcomes (+/- 0.13)*
- 13 *6 The quality of the evidence was downgraded by 1 level due to serious imprecision as 95% CI crosses 1 MID for continuous outcomes (+/- 0.17)*

1

## 2 Appendix G – Economic evidence study selection

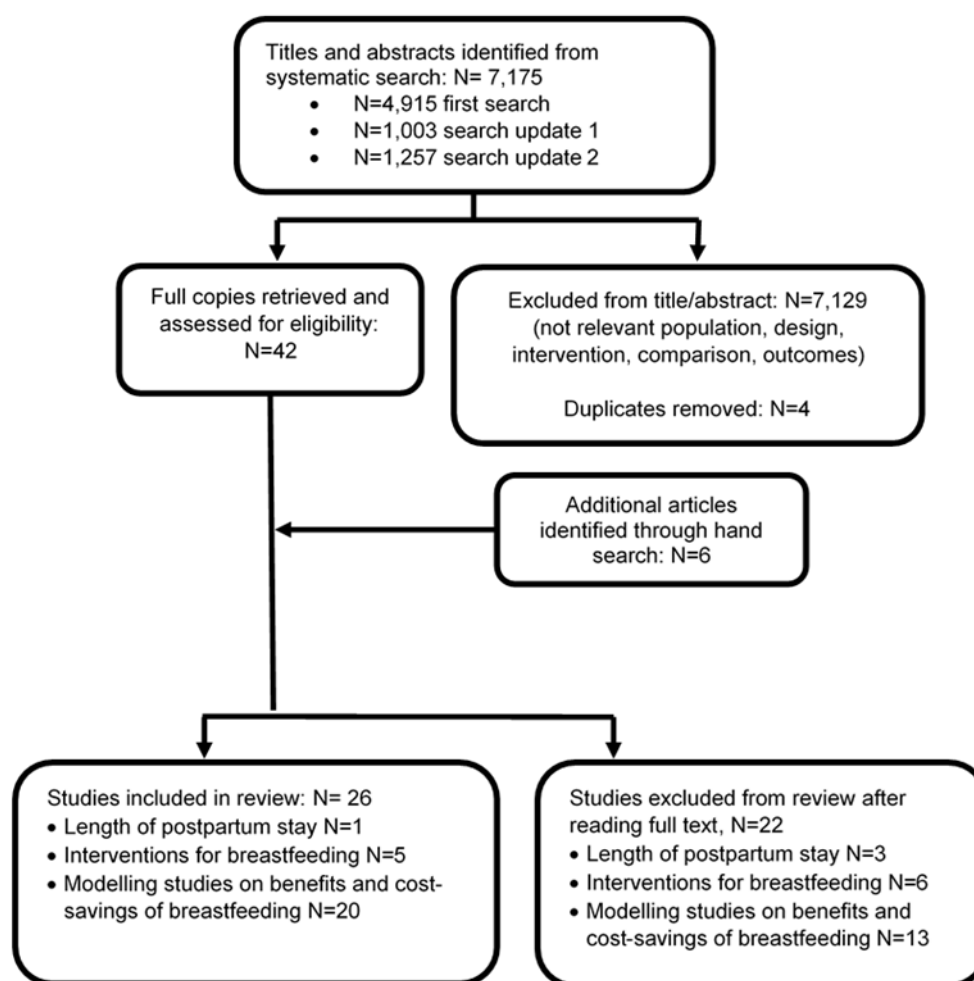
### 3 Economic evidence study selection for review question: What 4 interventions in the postnatal period are effective at promoting 5 emotional attachment?

6 A global health economics search was undertaken for all areas covered in the  
7 guideline. Figure 2 shows the flow diagram of the selection process for economic  
8 evaluations of postnatal care interventions, including modelling studies on the  
9 benefits and cost-savings of breastfeeding.

10

11 **Figure 2. Flow diagram of selection process for economic evaluations of**  
12 **postnatal care interventions and modelling studies on the benefits**  
13 **and cost-savings of breastfeeding**

14



15

16

## 1 **Appendix H – Economic evidence tables**

### 2 **Economic evidence tables for review question: What interventions in the** 3 **postnatal period are effective at promoting emotional attachment?**

4 No economic evidence was identified which was applicable to this review question.

5

## 1 **Appendix I – Economic evidence profiles**

### 2 **Economic evidence profiles for review question: What interventions in the** 3 **postnatal period are effective at promoting emotional attachment?**

4 No economic evidence was identified which was applicable to this review question.

5



## 1 **Appendix J – Economic analysis**

2 **Economic analysis for review question: What interventions in the postnatal**  
3 **period are effective at promoting emotional attachment?**

4 No economic analysis was conducted for this review question.

5

## 1 Appendix K – Excluded studies

### 2 Excluded studies for review question: What interventions in the postnatal period are effective at promoting emotional attachment?

#### 4 Clinical studies

#### 5 Table 9: Excluded studies and reasons for their exclusion

Study	Reason for exclusion
Effectiveness of attachment based STEEPTM intervention in a German high-risk sample, Attachment & human development, 18, 443–460, 2016	Not a RCT
'Make the Connection' parenting skills programme: a controlled trial of associated improvement in maternal attitudes, Journal of Reproductive and Infant Psychology, 2018	Not relevant population
Exploring partners' emotional wellbeing, parenting and attachment at six months postpartum, Women and Birth, Conference: The Australian College of Midwives 2018 "Coming of Age" 21st National Conference. Australia. 31, S31, 2018	Abstract
Mothers With Perceived Insufficient Milk: preliminary Evidence of Home Interventions to Boost Mother-Infant Interactions, Western journal of nursing research, 40, 1184–1202, 2018	Not an RCT
Adding "Circle of Security - Parenting" to treatment as usual in three Swedish infant mental health clinics. Effects on parents' internal representations and quality of parent-infant interaction, Scandinavian journal of psychology, 59, 262–272, 2018	Not relevant population
Adams, E. L., Marini, M. E., Brick, T. R., Paul, I. M., Birch, L. L., Savage, J. S., Ecological momentary assessment of using food to soothe during infancy in the INSIGHT trial, International Journal of Behavioral Nutrition and Physical Activity, 16 (1) (no pagination), 2019	No relevant outcomes
Anzman-Frasca, S, Paul, Im, Moding, Kj, Savage, Js, Hohman, Ee, Birch, LI, Effects of the INSIGHT Obesity Preventive Intervention on Reported and Observed Infant Temperament, Journal of Developmental and Behavioral Pediatrics, 39, 736–743, 2018	No relevant outcomes
Armstrong, KI, Fraser, Ja, Dadds, Mr, Morris, J, Promoting secure attachment, maternal mood and child health in a vulnerable population: a randomized controlled trial, Journal of Paediatrics and Child Health, 36, 555-562, 2000	No relevant outcomes
Barlow, J, Herath, Nins, Bartram, Torrance C, Bennett, C, Wei, Y, The Neonatal Behavioral Assessment Scale (NBAS) and Newborn Behavioral Observations (NBO) system for supporting caregivers and improving outcomes in caregivers and their infants, Cochrane Database of Systematic Reviews, 2018	Systematic review - included studies checked for relevance
Berlin, L. J., Martoccio, T. L., Bryce, C. I., Jones Harden, B., Improving infants' stress-induced cortisol regulation	Not relevant intervention

Study	Reason for exclusion
through attachment-based intervention: A randomized controlled trial, <i>Psychoneuroendocrinology</i> , 103, 225-232, 2019	
Blizzard, A. M., Barroso, N. E., Ramos, F. G., Graziano, P. A., Bagner, D. M., Behavioral Parent Training in Infancy: What About the Parent-Infant Relationship?, <i>Journal of clinical child and adolescent psychology : the official journal for the Society of Clinical Child and Adolescent Psychology</i> , American Psychological Association, Division 53, 47, S341-S353, 2018	Not relevant population
Bywater, T., Berry, V., Blower, S. L., Cohen, J., Gridley, N., Kiernan, K., Mandefield, L., Mason-Jones, A., McGilloway, S., McKendrick, K., Pickett, K., Richardson, G., Teare, M. D., Tracey, L., Walker, S., Whittaker, K., Wright, J., Enhancing Social-Emotional Health and Wellbeing in the Early Years (E-SEE): A study protocol of a community-based randomised controlled trial with process and economic evaluations of the incredible years infant and toddler parenting programmes, delivered in a proportionate universal model, <i>BMJ Open</i> , 8, 2018	Protocol
Carnes, D., Plunkett, A., Ellwood, J., Miles, C., Manual therapy for unsettled, distressed and excessively crying infants: A systematic review and meta-analyses, <i>BMJ open</i> , 8 (1) (no pagination), 2018	Systematic review - included studies checked for relevance, none found
Cox, J. E., Harris, S. K., Conroy, K., Engelhart, T., Vyavaharkar, A., Federico, A., Woods, E. R., A parenting and life skills intervention for teen mothers: A randomized controlled trial, <i>Pediatrics</i> , 143, 2019	Not relevant population
Dumas, L., Lepage, M., Bystrova, K., Matthiesen, As, Welles-Nyström, B, Widström, Am, Influence of skin-to-skin contact and rooming-in on early mother-infant interaction: a randomized controlled trial, <i>Clinical nursing research</i> , 22, 310-36, 2013	Not relevant intervention
Easterbrooks, M. A., Kotake, C., Fauth, R., Recurrence of Maltreatment After Newborn Home Visiting: A Randomized Controlled Trial, <i>American journal of public health</i> , 109, 729-735, 2019	Not relevant population
Feinberg, M. E., Kan, M. L., Establishing Family Foundations: Intervention Effects on Coparenting, Parent/Infant Well-Being, and Parent-Child Relations, <i>Journal of Family Psychology</i> , 22, 253-263, 2008	No relevant outcomes
Fraser, J. A., Armstrong, K. L., Morris, J. P., Dadds, M. R., Home visiting intervention for vulnerable families with newborns: Follow-up results of a randomized controlled trial, <i>Child Abuse and Neglect</i> , 24, 1399-1429, 2000	Not relevant population
Goldfeld, S, Price, A, Bryson, H, Bruce, T, Mensah, F, Orsini, F, Gold, L, Hiscock, H, Smith, C, Bishop, L, Jackson D. 'right@home': a randomised controlled trial of sustained nurse home visiting from pregnancy to child age 2 years, versus usual care, to improve parent care, parent responsivity and the home learning environment at 2 years, <i>BMJ Open</i> , 7, e013307, 2017	Protocol
Goldfeld, S., Price, A., Smith, C., Bruce, T., Bryson, H., Mensah, F., Orsini, F., Gold, L., Hiscock, H., Bishop, L., Smith, A., Perlen, S., Kemp, L., Nurse home visiting for	Not relevant intervention

Study	Reason for exclusion
families experiencing adversity: A randomized trial, <i>Pediatrics</i> , 143, 2019	
Gualdron, L. M. V., Villalobos, M. M. D., Effect of infant stimulation on the adaptation to birth: a randomized trial, <i>Revista latino-americana de enfermagem</i> , 27, e3176, 2019	Study conducted in Colombia
Hayes, L., Matthews, J., Copley, A., Welsh, D., A randomized controlled trial of a mother-infant or toddler parenting program: demonstrating effectiveness in practice, <i>Journal of Pediatric Psychology</i> , 33, 473-486, 2008	Not relevant population
Heinig, M. J., Maternal perception of the mother-infant relationship: results of a professional education intervention, <i>Journal of Human Lactation</i> , 22, 463, 2006	Not an RCT
Henderson, M., Wittkowski, A., McIntosh, E., McConnachie, A., Buston, K., Wilson, P., Calam, R., Minnis, H., Thompson, L., O'Dowd, J., Law, J., McGee, E., Wight, D., Nixon, C., Shinwell, S., White, J., Crawford, K., O'Brien, R., Clarke, C., Boyd, K., MacLachlan, A., Trial of healthy relationship initiatives for the very early years (THRIVE), evaluating Enhanced Triple P for Baby and Mellow Bumps additional social and care needs during pregnancy and their infants who are at higher risk of maltreatment: Study protocol for a randomised controlled trial, <i>Trials</i> , 20, 2019	Protocol
Hesselink, A. E., van Poppel, M. N., van Eijdsden, M., Twisk, J. W. R., van der Wal, M. F., The effectiveness of a perinatal education programme on smoking, infant care, and psychosocial health for ethnic Turkish women, <i>Midwifery</i> , 28, 306-313, 2012	Not an RCT
Hoivik, M. S., Lydersen, S., Drugli, M. B., Onsoien, R., Hansen, M. B., Nielsen, T. S. B., Video feedback compared to treatment as usual in families with parent-child interactions problems: A randomized controlled trial, <i>Child and Adolescent Psychiatry and Mental Health</i> , 9 (1) (no pagination), 2015	Not a relevant intervention
Huebner, C. E., Barlow, W. E., Tyll, L. T., Johnston, B. D., Thompson, R. S., Expanding developmental and behavioral services for newborns in primary care: Program design, delivery, and evaluation framework, <i>American Journal of Preventive Medicine</i> , 26, 344-355, 2004	No relevant outcomes
Hutcheson, J. L., Cheeseman, S. E., An Innovative Strategy to Improve Family-Infant Bonding, <i>Neonatal network : NN</i> , 34, 189-191, 2015	No relevant outcomes
Kenyon, S, Jolly, K, Hemming, K, Hope, L, Blissett, J, Dann, S-A, Lilford, R, MacArthur, C, Lay support for pregnant women with social risk: a randomised controlled trial, <i>BMJ Open</i> , 6, 2016	No relevant outcomes
Kenyon, S, Jolly, K, Hemming, K, Ingram, L, Blissett, J, Dann, S, Lilford, R, MacArthur, C, Effects of additional lay support for pregnant women with social risk factors on antenatal attendance and maternal psychological health: a randomised controlled trial (ELSIPS), <i>Archives</i>	Poster presentation

Study	Reason for exclusion
of Disease in Childhood: Fetal and Neonatal Edition., 99, A18, 2014	
Kenyon, S, Jolly, K, Hemming, K, Ingram, L, Gale, N, Dann, Sa, Chambers, J, MacArthur, C, Evaluation of Lay Support in Pregnant women with Social risk (ELSIPS): a randomised controlled trial, BMC Pregnancy and Childbirth, 12, 11, 2012	No relevant outcomes
Klopfer, Margaret J, Examining the effectiveness of a multiple antecedent intervention for increasing secure infant attachment, Dissertation abstracts international: section B: the sciences and engineering, 70, 3205, 2009	Dissertation
Koniak-Griffin, D., Ludington-Hoe, S., Verzemnieks, I., Longitudinal effects of unimodal and multimodal stimulation on development and interaction of healthy infants, Research in nursing & health, 18, 27-38, 1995	Published before 2000
Koniak-Griffin, D., Verzemnieks, I., Cahill, D., Using videotape instruction and feedback to improve adolescents' mothering behaviors, Journal of Adolescent Health, 13, 570-575, 1992	Published before 2000
Kristensen, I. H., Kronborg, H., What are the effects of supporting early parenting by enhancing parents' understanding of the infant? Study protocol for a cluster-randomized community-based trial of the Newborn Behavioral Observation (NBO) method, BMC public health, 18, 832, 2018	Protocol
Letourneau, N., Improving adolescent parent-infant interactions: a pilot study, Journal of Pediatric Nursing, 16, 53-62, 2001	No relevant outcomes
Longhi, E, Murray, L, Hunter, R, Wellsted, D, Taylor-Colls, S, MacKenzie, K, Rayns, G, Cotmore, R, Fonagy, P, Fearon, Rm, The NSPCC UK Minding the Baby® (MTB) home-visiting programme, supporting young mothers (aged 14-25) in the first 2 years of their baby's life: study protocol for a randomised controlled trial, Trials, 17, 486, 2016	Protocol
Lutenbacher, M., Elkins, T., Dietrich, M. S., Riggs, A., The Efficacy of Using Peer Mentors to Improve Maternal and Infant Health Outcomes in Hispanic Families: Findings from a Randomized Clinical Trial, Maternal and child health journal, 22, 92-104, 2018	No relevant outcomes
Macdonald, G, Alderdice, F, Clarke, M, Perra, O, Lynn, F, McShane, T, Millen, S, Right from the start: protocol for a pilot study for a randomised trial of the New Baby Programme for improving outcomes for children born to socially vulnerable mothers, Pilot and feasibility studies, 4, 2018	Relevant protocol, full text published paper searched for but not identified
Magill-Evans, J, Harrison, Mj, Rempel, G, Slater, L, Interventions with fathers of young children: systematic literature review, Journal of Advanced Nursing, 55, 248-264, 2006	Systematic review - included studies checked for relevance, none found
Mihelic, M, Morawska, A, Filus, A, Preparing parents for parenthood: protocol for a randomized controlled trial of a preventative parenting intervention for expectant parents, BMC Pregnancy and Childbirth, 18, 2018	Protocol

Study	Reason for exclusion
Mihelic, M., Morawska, A., Filus, A., Does a Perinatal Parenting Intervention Work for Fathers? A Randomized Controlled Trial, <i>Infant Mental Health Journal</i> , 39, 687-698, 2018	No relevant outcomes
Munns, A, Watts, R, Hegney, D, Walker, R, Effectiveness and experiences of families and support workers participating in peer-led parenting support programs delivered as home visiting programs: a comprehensive systematic review, <i>JBIC Database of Systematic Reviews and Implementation Reports</i> , 14, 167-208, 2016	Systematic review, included studies checked for relevance, none found
Nct., Efficacy of Group Attachment Based Intervention for Vulnerable Families, <a href="https://clinicaltrials.gov/show/nct01641744">https://clinicaltrials.gov/show/nct01641744</a> , 2012	Trial record, not full paper
Niccols, A., 'Right from the Start': randomized trial comparing an attachment group intervention to supportive home visiting, <i>Journal of Child Psychology and Psychiatry</i> , 49, p754-764, 2008	Intervention not relevant
Nicolson, S., Judd, F., Thomson-Salo, F., Mitchell, S., Supporting the adolescent mother-infant relationship: Preliminary trial of a brief perinatal attachment intervention, <i>Archives of Women's Mental Health</i> , 16, 511-520, 2013	Not an RCT
Nugent, Jk, Dym-Bartlett, J, Von, Ende A, Killough, J, Valim, C, A randomized study of the effects of the Newborn Behavioural Observations (NBO) system on sensitivity in mother-infant interaction, 2015	No relevant outcomes
O'Brien, R, Buston, K, Wight, D, McGee, E, White, J, Henderson, M, A realist process evaluation of Enhanced Triple P for Baby and Mellow Bumps, within a Trial of Healthy Relationship Initiatives for the Very Early years (THRIVE): study protocol for a randomized controlled trial, <i>Trials</i> , 20, 2019	Protocol
O'Neill, A, Swigger, K, Kuhlmeier, V, 'Make the Connection' parenting skills programme: a controlled trial of associated improvement in maternal attitudes, <i>Journal of Reproductive and Infant Psychology</i> , 36, 536-547, 2018	Infants not less than 8 weeks old at enrollment
Park, M, Park, Km, Effects of a Reinforcement Program for Postpartum Care Behavioral Skills of Couples with Their First Baby, <i>Journal of Korean Academy of Nursing</i> , 49, 137-148, 2019	Not in English language
Risholm Mothander, P., Furmark, C., Neander, K., Adding "Circle of Security - Parenting" to treatment as usual in three Swedish infant mental health clinics. Effects on parents' internal representations and quality of parent-infant interaction, <i>Scandinavian journal of psychology</i> , 59, 262-272, 2018	Infant not less than 8 weeks at enrollment
Saïas, T, Greacen, T, Tubach, F, Dugravier, R, Marcault, E, Tereno, S, Tremblay, Re, Guédeney, A, Supporting families in challenging contexts: the CAPEDP project, <i>Global health promotion</i> , 20, 66-70, 2013	Protocol
Salehi, K., Taleghani, F., Kohan, S., Effect of attachment-based interventions on prenatal attachment:	Relevant protocol - Published SR not available yet

Study	Reason for exclusion
a protocol for systematic review, Reproductive Health, 16, 2019	
Sawyer, Ac, Lynch, J, Bowering, K, Jeffs, D, Clark, J, Mpundu-Kaambwa, C, Sawyer, Mg, An equivalence evaluation of a nurse-moderated group-based internet support program for new mothers versus standard care: a pragmatic preference randomised controlled trial, BMC Pediatrics, 14, 119, 2014	Study protocol
Tester-Jones, M., O'Mahen, H., Karl, A., Watkins, E., An experimental study to investigate how inducing rumination in dysphoric mothers will affect mother-infant interaction, Archives of Women's Mental Health, 18 (2), 407, 2015	Conference abstract

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## 2 Economic studies

3 No economic evidence was identified for this review.

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## 1 **Appendix L – Research recommendations**

- 2 **Research recommendations for review question: What interventions in the**
- 3 **postnatal period are effective at promoting emotional attachment?**
- 4 No research recommendations were made for this review question.