National Institute for Health and Care Excellence

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Consultation

Chapter 5 GP extended hours

Emergency and acute medical care in over 16s: service delivery and organisation

NICE guideline <number>

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5 GP extended hours

5.1 Introduction

NHS patients are registered at a general practice which is accessible during core working hours – Monday to Friday 08:00 – 18:30 – although not all offer consultations during that time period. For people who have an urgent care need outside of these core hours, that is, evenings and overnight on weekdays and all day on weekends and bank holidays, a GP Out of Hours provider will triage, assess and treat patients. Very often, the clinicians in the Out of Hours clinical team (GPs, paramedics and nurses) will also work in daytime primary care but will usually not know the patients that are seeking care urgently and will have variable access to the full primary care clinical record.

For people with complex co-morbidities and established clinical relationships with a primary care team, there are many advantages if they can access their familiar and trusted primary care team for urgent care. Often the registered practice will be more conveniently located for people than an 'Out of Hours' primary care hub which usually covers a larger population, and the clinical team at the practice will have full access to all previous encounters in primary care, recent blood results and hospital specialty letters and investigations. Previous research has shown that GPs who know patients well from their own practices make fewer referrals for acute hospital treatment for urgent out of hour's problems than GPs who do not know patients and have no access to their clinical record. Therefore extending access to primary care teams that know patients well could also reduce the workload on hospital based acute services and the ambulance service.

Whilst some areas have 'extended GP access' schemes, this usually covers pre-booked appointments rather than same day requests for care for acute problems outside of core working hours. It is currently uncertain if it would be clinically and cost-effective to extend access for the full spectrum of GP care (both pre-booked and emergency appointments) outside of the current core working hours.

5.2 Review question: Is urgent and/or routine extended access to usual GPs (for example, evenings and 7 day) associated with improved outcomes?

For full details see review protocol in Appendix A.

Table 1: PICO characteristics of review question

Population	Adults and young people (16 years and over) with a suspected or confirmed AME or at risk of an AME.
Intervention	GP access • GP surgery extended access for consultations (early mornings, evenings, 7-day) • Appointments for urgent access (out of hours: within 6 hours; within 2 hours and within 20 minutes; in hours: same day access with GP, with practice nurse).
Comparison	GP, other primary care • Standard hours as defined in the study
Outcomes	Patient outcomes; • Mortality (CRITICAL) • Avoidable adverse events (for example, incorrect diagnosis, delay in diagnosis, delay in treatment or investigations) (CRITICAL) • Quality of life(CRITICAL) • Patient/carer satisfaction (CRITICAL) • ED attendance (CRITICAL) (consider admissions as a proxy in absence of ED

	attendance) • Attendance to other health services (for example, urgent care centre, minor injuries unit) (IMPORTANT) • Complaints and feedback (IMPORTANT)
Study design	Systematic reviews (SRs) of RCTs, RCTs, observational studies only to be included if no relevant SRs or RCTs are identified.

5.3 Clinical evidence

Two non-randomised studies were identified for inclusion, 1 non-randomised study compared GP extension with no GP extension[29]; another non-randomised study compared GP surgery extended access for consultations and GP surgery appointments for urgent access with usual care[44]. Evidence from the studies is summarised in the clinical evidence summary below (Table 3).

See also the study selection flow chart in Appendix B, study evidence tables in Appendix D, forest plots in Appendix C, GRADE tables in Appendix F and excluded studies list in Appendix G.

Table 2: Summary of studies included in the review

Study	Intervention and comparison	Population	Outcomes	Comments
Whittaker 2016[44] UK Non-randomised study	Combination of additional, urgent and routine GP appointments of between 10 and 15 minutes in the evenings, Monday to Friday (approximately 5pm to 9pm) and on both days of the weekend. Versus Routine access.	56 primary care practices (346,024 patients) offered extended access, compared with 469 primary care practices (2,596,330 patients) providing routine access.	ED attendance (patient initiated referrals – minor intensity; total ED use).	Low risk of bias - propensity score matching and ordinary least squares regression used to control for several confounders for example, practice practitioner characteristics (age, gender, country of qualification, size of registered patients per practitioner) and practice patients characteristics (age, gender, deprivation, limited long-standing illness); results robust to several sensitivity analyses.
Lippi 2016 [29] Italy Non-randomised study	Extension of GP's primary care services to between 10 and 12 hours per day (2008-2010). n=907 GP practices Versus GP services with no extension programme (2008-2010). n=2312 GP practices.	n=3219 GP practices (exact number of registered patients not available). GPs working in groups who had more than 300 registered patients each during the period 2008-2010. The panel covered 1069, 1075 and 1075 GPs over	Total ED visits.	Subscribing for the extension programme was voluntary, so the study accounted for the potential endogeneity of participation in a count model for emergency admissions in 2 ways-first a 2 stage residual approach used; and panel methods on data covering a 3 year period, thus accounting directly for individual heterogeneity.

Study	Intervention and comparison	Population	Outcomes	Comments
		the 3 years respectively. Less than a quarter of GPs participated in the extension programme (23%) in 2008, this increased to 30% in 2009 and 31% in 2010.		

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Table 3: Clinical evidence summary: GP extension versus no GP extension

Outcomes	No of Participants (studies) Follow up	Quality of the evidence (GRADE)	Relative effect (95% CI)	Anticipated absolute effects	
				Risk with no GP extension	Risk difference with GP extension (95% CI)
Total ED visits	3219 GP practices (1 study)	⨁⨁⊖⊖ LOW[a]	-		The mean total ED visits in the intervention groups was 43.16 lower (52.39 to 33.93 lower)

(a) All non-randomised studies automatically downgraded to low due to selection bias. Studies may be further downgraded by 1 increment if other factors suggest additional high risk of bias, or 2 increments if other factors suggest additional very high risk of bias. This study was not further downgraded.

Table 4: Quantitativefindings: Average ED use per 1000 registered patients in the pre- (2011-2013) and post- (2014) intervention period

		Average attendance		Estimated difference in 2011-2013 trend[a]	Difference-in-differences estimate[b]		
		Comparator group	Intervention group	Estimate [95% CI]	Estimate	95% CI	*p*-value
Patient initiated referrals (minor intensity)	Pre	29.4	31.2				
	Post	32.3	29.4	-0.004 [-0.015 to 0.007]	-26.39%	-38.61% to -14.16%	<0.001
Total ED attendance	Pre	93.1	95.4				
	Post	94.1	94.6	0.002 [-0.002 to 0.006]	-3.08%	-6.39% to 0.24%	0.069

(a) Estimated divergence of the intervention practices time trend in comparison to the comparator practices time trend.
(b) Relative (risk) difference in ED use for intervention versus comparators.

5.4 Economic evidence

Published literature

One health economic study was identified with the relevant comparison and has been included in this review.[44] This is summarised in the health economic evidence profile below (Table 4) and the health economic evidence tables in Appendix E.

The economic article selection protocol and flow chart for the whole guideline can found in the guideline's Appendix 41A and Appendix 41B.

Table 4: Health economic evidence profile: extended GP opening hours vs usual opening hours

Study	Applicability	Limitations	Other comments	Incremental cost	Incremental effects	Cost-effectiveness	Uncertainty
Whittaker 2016[44] (UK)	Partially applicable[(a)]	Potentially serious limitations[(b)]	**Population:** GP practices in greater Manchester. **Study design:** difference-in-difference analysis **Follow up:** analysis based on administrative data from 2011-14 **Intervention:** GPs opening at weekends and evenings for both urgent and non-urgent appointments.	£2.3 million across Manchester	26.4% reduction in patient-initiated referrals to the ED of minor intensity	N/A	Probability that the intervention is cost saving=10% The results were robust to various sensitivity analyses

Abbreviations: N/A=not applicable

(a) Impacts on health outcomes not captured in the study, additional GP appointments may provide health benefits outside of reducing emergency attendances.

(b) Non-randomised data will mean that confounders were not fully controlled.

5.5 Evidence statements

Clinical

One non-randomised study comprising 3219 primary care practices evaluated the role of GP extension to GP extension for improving outcomes. The evidence suggested that GP extension may provide benefit for reducing total ED visits (1 study, low quality).

One non-randomised study comprising 525 primary care practices with 2,942,354 registered patients evaluated the role of extended access to usual GPs for improving outcomes. Quantitativeevidence suggested that extended access provided a benefit for reducing the number of patient initiated referrals of minor intensity to ED, but there was no difference in overall ED attendances.

Economic

One comparative cost analysis found that extended GP hours was cost increasing compared with usual hours. This was assessed as partially applicable with potentially serious limitations.

5.6 Recommendations and link to evidence

Recommendations	-
Research recommendation	**RR3. Is extended access to GP services for example, during early mornings, evenings and weekends, more clinically and cost effective than standard access?**
Relative values of different outcomes	The guideline committee considered mortality, avoidable adverse events (for example, incorrect diagnosis, delay in diagnosis, delay in treatment or investigations), quality of life, patient and/or carer satisfaction and ED attendance as the critical outcomes for decision making. Other important outcomes included attendance at other health services (for example, urgent care centre and minor injuries unit) and complaints and feedback.
Trade-off between benefits and harms	There was evidence from 2 non-randomised studies. One non-randomised study comprising 3219 primary care practices evaluated the role of GP extension to no GP extension for improving outcomes. The evidence suggested that GP extension might provide a benefit for reduced total ED visits. No evidence was identified for mortality, avoidable adverse events, quality of life, patient and/or carer satisfaction, attendance at other health services or complaints and feedback. One non-randomised study comprising 525 primary care practices with 2,942,354 registered patients evaluated the role of extended access to usual GPs for improving outcomes. Quantitative evidence suggested that extended access may provide a benefit for reduced number of patient initiated referrals of minor intensity to ED, but there was no difference in overall ED attendances. No evidence was identified for mortality, avoidable adverse events, quality of life, patient and/or carer satisfaction, attendance at other health services or complaints and feedback. The committee noted that health policy is evolving in this area. The committee chose not to develop a practice recommendation given the limited evidence available and therefore chose to develop a research recommendation. The committee noted that research should examine a model of extended access that includes same day, emergency access to appointments, rather than the provision of additional routine pre-booked appointments or out of hours GP services.
Trade-off between net effects and costs	The second study described above, evaluated cost and found a net increased cost of £2.3m over the course of the intervention in Manchester, despite a reduction in minor emergency referrals of 26%. The committee noted that health policy is evolving in this area. The committee chose not to develop a practice recommendation given the limited evidence available and therefore chose to develop a research recommendation.
Quality of evidence	Evidence for total ED visits from 1 non-randomised study was graded low due to risk of bias. Narrative evidence for ED attendance from 1 non-randomised study was considered to be at low risk of bias. The economic evidence was considered only partially applicable because health outcomes not captured. Although it was well conducted, it was considered to have potentially serious limitations because it was based on observational evidence.
Other considerations	The committee believed this is an important research question in terms of continuity of care. Extended access to a GP who knows a patient is important in terms of trust and decision making especially for complex conditions. Greater access to primary care could reduce numbers of people presenting at secondary care. For example, access to the patient's usual GP could reduce the risk of conditions worsening and

Recommendations	-
Research recommendation	**RR3. Is extended access to GP services for example, during early mornings, evenings and weekends, more clinically and cost effective than standard access?**
	escalating. Extended access to patients' usual GP could benefit the working population, as it would mean that they are more likely to get appointments outside their working hours. The committee noted that health policy in this area is currently evolving in relation to 7 day services. The next steps on the NHS Five Year Forward view{NHSE2017C} states that 40% of the country will have extended access to GP appointments at evenings and weekends by March 2018 and across the whole of England by March 2019. Pilots of extended access to primary care are being evaluated. There has been a variable impact of extended access to primary care in these pilots and this is likely to be due to the local demographics, socioeconomic status and the current provision of primary, urgent and emergency care. Around 90% of all NHS contact episodes involve primary care.[36] The demand for primary care services continues to rise, with concerns that increasing workload, administrative burden and patient complexity will exceed current capacity and deter new recruits to general practice. If GPs are to extend their working week to include rapid access acute care appointments it is likely new models of care and the use of other healthcare professionals such a pharmacists, practice nurses or secondary care physicians will be required. The use of other methods of communication through IT will probably be required particularly in those areas which are more difficult to reach (for example, rural areas) or where staffing constraints are more severe. The presence of GP within the ED is covered in a separate question (Chapter 17).

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Appendices

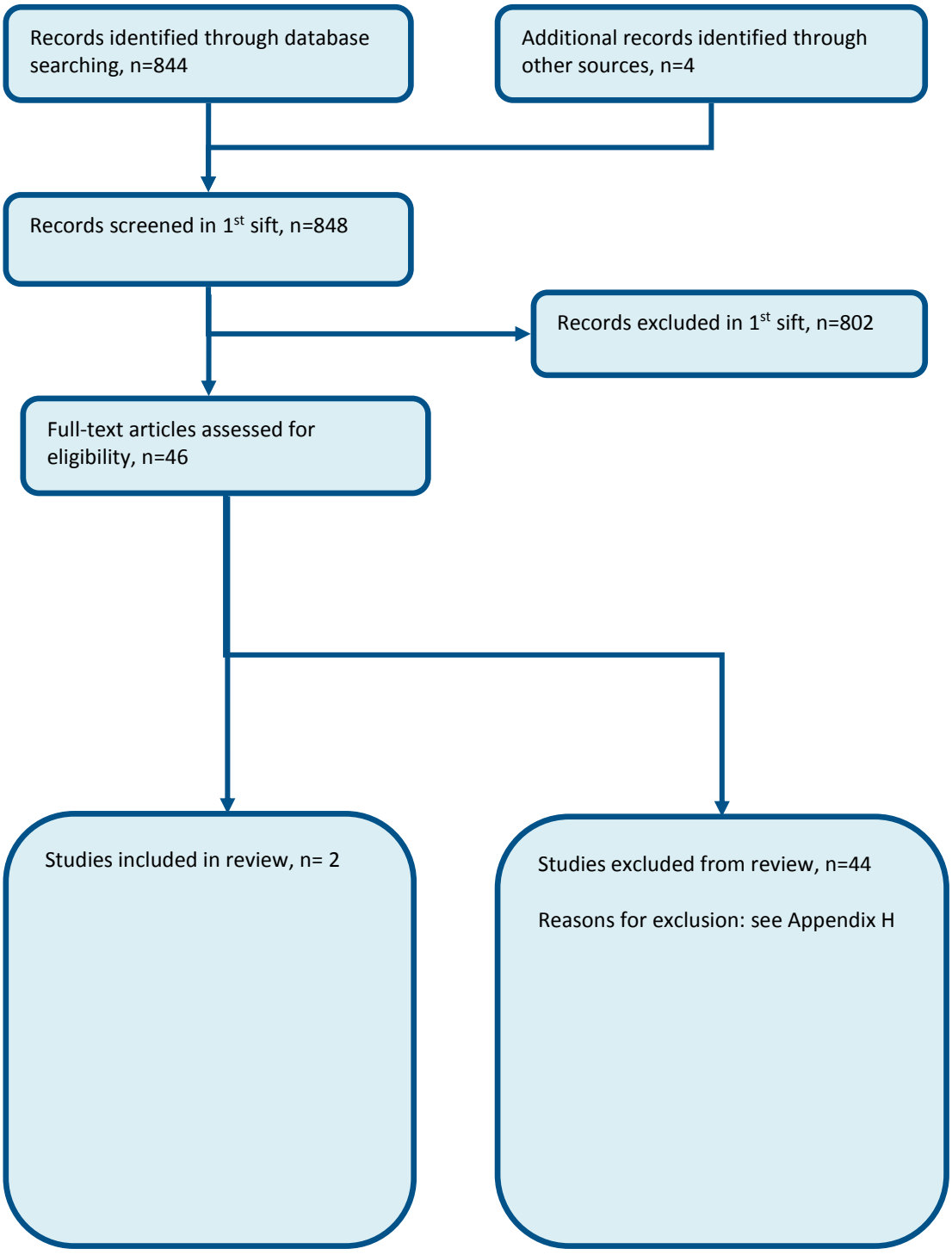
Appendix A: Review protocol

Table 5: Review protocol: GP extended hours

Review question	**Is urgent and/or routine extended access to usual GPs (for example, evenings 7 day) associated with improved outcomes?**
Guideline condition and its definition	Acute Medical Emergencies.
Review population	Adults and young people (16 years and over) with a suspected or confirmed AME or at risk of an AME.
Interventions and comparators: generic/class; specific/drug (All interventions will be compared with each other, unless otherwise stated)	GP surgery extended access for consultations; early mornings, evenings, 7-day GP surgery appointments for urgent access; out of hours: within 6 hours; within 2 hours and within 20 minutes; in hours: same day access with GP, with practice nurse GP surgery, other primary care standard hours; as defined in the study.
Outcomes	- Quality of life (Continuous) CRITICAL - Patient and/or carer satisfaction (Dichotomous) CRITICAL - ED attendance (Dichotomous) CRITICAL - Avoidable adverse events (for example, incorrect diagnosis, delay in diagnosis, delay in treatment or investigations) (Dichotomous) CRITICAL - Attendance to other health services (for example, urgent care centre, minor injuries unit) (Dichotomous) IMPORTANT - Mortality (Dichotomous) CRITICAL - Complaints and feedback (Dichotomous) IMPORTANT
Study design	RCT Quasi-RCT Non-randomised comparative study Prospective cohort study Retrospective cohort study Before and after study Non randomised study Case control study
Unit of randomisation	Patient GP surgeries/practices
Crossover study	Not permitted
Minimum duration of study	Not defined
Subgroup analyses if there is heterogeneity	- Frail elderly (Frail elderly; No frail elderly); Effects may be different in this subgroup
Search criteria	Databases: Medline, Embase, the Cochrane Library Date limits for search: 2005 Language: English language only

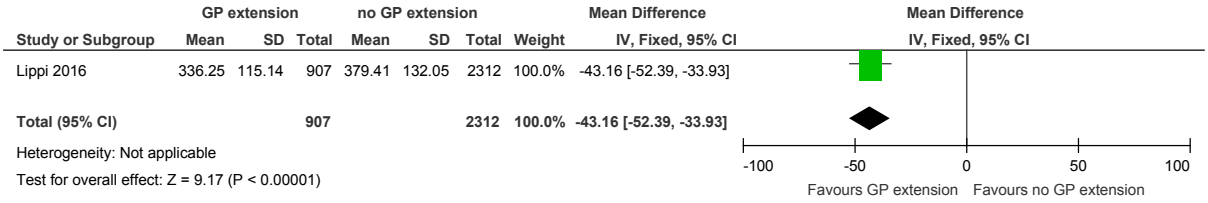
Appendix B: Clinical article selection

Figure 1: Flow chart of clinical article selection for the review of GP extended hours



Appendix C: Forest plots

Figure 2: Total ED visits



Appendix D: Clinical evidence tables

Study	Whittaker 2016[44]
Study type	Controlled interrupted time series
Number of studies (number of participants)	1 (n=2,942,354)
Countries and setting	Conducted in United Kingdom; Setting: primary care practices in Greater Manchester, UK
Line of therapy	Not applicable
Duration of study	Other: 2011-2014
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	GP surgery extended access for consultations; early mornings, evenings, 7-day
Subgroup analysis within study	Not applicable
Inclusion criteria	Patients registered to participating GP practices
Exclusion criteria	not reported
Recruitment/selection of patients	Patients registered to participating GP practices
Age, gender and ethnicity	Age –not reported. Gender (M:F):not reported. Ethnicity: not reported
Further population details	1. Frail elderly: Not applicable / Not stated / Unclear
Indirectness of population	No indirectness: NA
Interventions	(n=346,024) Intervention 1: GP surgery extended access for consultations; early mornings, evenings and 7-day. Combination of additional urgent and routine GP appointments of between 10 and 15 minutes, in the evenings Monday to Friday (approx. 5pm to 9pm) and on both days of the weekend. Duration 1 year (2014). Concurrent medication/care: not reported. (n=2,596,330) Intervention 2: GP surgery, other primary care standard hours; as defined in the study. Routine access – usually appointments between 8.30am and 6.30pm Monday to Friday. Duration 2 years (2011-2013). Concurrent medication/care: not reported.
Funding	Academic/government funded: National Institute for Health Research Collaboration in applied Health Research and Care Greater Manchester, and NHS England (Greater Manchester).
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: GP SURGERY EXTENDED ACCESS FOR CONSULTATIONS; EARLY MORNINGS, EVENING AND 7-DAY	

Study	Whittaker 2016[44]
versus GP SURGERY, OTHER PRIMARY CARE STANDARD HOURS; AS DEFINED IN THE STUDY Quantitativeresults for ED attendance: Low risk of bias.	
Protocol outcomes not reported by the study	Mortality; Avoidable adverse events; Quality of life; Patient and/or carer satisfaction; Attendance at other health services; Complaints and feedback.

Study	Lippi 2016 [29]
Study type	RCT (non-randomised)
Number of studies (number of participants)	1 (n=3219 GP practices)
Countries and setting	Conducted in Italy; Setting: Primary care
Line of therapy	Not applicable
Duration of study	3 years
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: hypertension as defined by seated BP (average of the second and third reading).
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	All primary care physicians working in the Emilia-Romagna region during the period 2008-2010.
Exclusion criteria	Not stated
Recruitment/selection of patients	GPs working in groups who had more than 300 registered patients each during the period 2008-2010. The panel covered 1069, 1075 and 1075 GPs over the 3 years respectively. Less than a quarter of GPs participated in the extension programme (23%) in 2008, this increased to 30% in 2009 and 31% in 2010.
Age, gender and ethnicity	Age (mean, SD)-51 (3.3) Male (mean, SD)- 0.47 (0.038)
Further population details	-
Extra comments	-
Indirectness of population	No indirectness
Interventions	(n=907 GP practices) Intervention 1: Extension of GP‘s primary care services to between 10 and 12 hours per day

Study	Lippi 2016 [29]
	(2008-2010). versus (n=2312 GP practices) Intervention 2: GP services with no extension programme (2008-2010).
Funding	Health Department of Emilia-Romagna, Italy
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: GP extended hours versus no GP extended hours. Protocol outcome 1: ED attendances - Actual outcome: Total ED visits (mean, SD) ; GP extension- 336.25 (115.14) 907; no GP extension -379.41 (132.05) 2312; Risk of bias: All domain - High, Selection - High, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low, Subgroups - Low, Other 1 - Low, Other 2 - Low, Other 3 - Low; Indirectness of outcome: No indirectness ; Group 1 Number missing: ; Group 2 Number missing: Narrative data: Pooled estimate comprised 1,182, 168 ED admissions, 221,010 of which were white codes (19% of the total), while 458,968 fall in to the category of potentially inappropriate visits according to definition (39% of total). White codes- only those episodes identified as inappropriate according to the on-site clinical assessment. Potentially inappropriate visits-Information about the intensity of treatment received at EDs and pools together white codes with those attendances but which are given minor attention at the ED. This consisted of a general check-up with no diagnostic or specialist follow-up.	
Protocol outcomes not reported by the study	Quality of life during the study period; mortality during the study period; GP attendances during the study period; Hospital admissions during the study period; Patient and/or carer satisfaction during the study period.

Appendix E: Economic evidence tables

Study	Whittaker 2016[44]			
Study details	**Population & interventions**	**Costs**	**Health outcomes**	**Cost-effectiveness**
Economic analysis: cost consequence analysis **Approach to analysis:** difference-in-difference analysis **Perspective:** UK NHS **Follow-up**: 3 years **Discounting:** Costs: 0% ; Outcomes: 0%	**Population:** Patients attended GP practices in greater Manchester. **Intervention 1:** GP practices open until 6:30pm and closed at weekends. **Intervention 2:** GP practices open past 6:30pm and on weekends.	**Patient-initiated minor emergency department visits** (2−1) : -26.39% (95% CI: -38.61% to -14.16%; p < 0.001) **Costs** (2−1)**:** Total: £2.3 million Emergency attendances: -£767,976 Intervention cost only: £3.1 million **Currency & cost year:** 2014 UK pounds **Cost components incorporated:** Funding provided for the intervention practices. 2013/14 payments by results tariff.	None	Not applicable **Analysis of uncertainty:** Probability Intervention 2 cost-saving: 10% Several sensitivity analyses were conducted(c)
Data sources				
Health outcomes: n/a **Quality-of-life weights:** n/a. **Cost sources:** payment by results tariff, department of health 2013/14				
Comments				
Source of funding: NIHR. **Applicability and limitations:** Impacts on health outcomes not captured in the study, additional GP appointments may provide health benefits outside of reducing emergency attendances. Non-randomised data will mean confounders not fully controlled.				
Overall applicability[(a)] partially applicable **Overall quality**[(b)] potentially serious limitations				

(a) Directly applicable / Partially applicable / Not applicable

(b) Minor limitations / Potentially serious limitations / Very serious limitations

(c) It excluded patients who were admitted to hospital after an emergency department attendance. This was deemed not to affect the result to a degree of statistical significance. A sensitivity analysis that tested the robustness of the results to regression to the mean concluded that the result finding was not due to random fluctuations around a long-term average. A sensitivity analysis that tested the robustness of the results to baseline differences in the comparators concluded that the result finding was not due to baseline differences. A sensitivity analysis tested to see whether the effect was more pronounced soon after the intervention had been implemented. This is important for assessing whether the long-term impact would decrease over time. The analysis found the treatment effects were slightly larger in the latter half of the year post intervention when compared to the first half of the year. A sensitivity analysis that tested the robustness of the conclusions to different model specifications found that model specification was not a driving factor behind the results.

Appendix F: GRADE tables

Table 6: Clinical evidence profile: GP extension versus no GP extension

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	GP extension (GP practices)	no GP extension (GP practices)	Relative (95% CI)	Absolute		
Total ED visits (Better indicated by lower values)												
1	Non-randomised study	serious risk of bias[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	907	2312	-	MD 43.16 lower (52.39 to 33.93 lower)	⊕⊕OO LOW	CRITICAL

[1] All non-randomised studies automatically downgraded due to selection bias. Studies may be further downgraded by 1 increment if other factors suggest additional high risk of bias, or 2 increments if other factors suggest additional very high risk of bias

Appendix G: Excluded clinical studies

Table 7: Studies excluded from the clinical review

Study	Exclusion reason
Bondevik 2014[1]	Questionnaire study of patient safety attitudes among healthcare providers. No comparison.
Bordman 2005[2]	Telephone survey of after-hours coverage in Canada. No comparison.
Brown 2009[3]	Qualitative study of patient preferences for extended hours in patients receiving radiation therapy. Incorrect study design.
Bryan 2008[4]	Identification of suicidal patients in primary care. Incorrect interventions. Inappropriate comparison.
Buckley 2010	Study assesses the impact of the opening of a new after-hours general practice clinic, where patients will not be seen by a member of their own practice team (protocol states that patients to be seen by a member of their own GP practice team) on the number of daily low-urgency presentations to the nearby emergency department.
Campbell 2005[6]	Cross-sectional patient survey examining accessibility of primary care. No comparison. Incorrect interventions.
Campbell 2006[7]	Qualitative study of patient perceptions of health service. Incorrect study design. No comparison.
Campbell 2013[5]	Study protocol for comparing nurse led and GP management systems. Incorrect interventions.
Carlebach 2010[8]	Literature review.
Carr-bains 2011[9]	Postal questionnaire of patient satisfaction with out of hours GP care. Incorrect interventions.
Cosford 2010[10]	Article.
Cowling 2013 [11]	Incorrect study design. Cross-sectional study.
De Bont 2015[12]	Incorrect population (children <12 years).
Den boer-wolters 2010[13]	Study assesses the characteristics of frequent attenders in primary care out of hours. Incorrect interventions. Inappropriate comparison.
Edwards 2009[14]	Incorrect interventions. Inappropriate comparison. Nurse practitioner management versus normal GP management.
Egbunike 2008[15]	Incorrect interventions. Qualitative study of patient experience of out of hours GP services.
Egbunike 2010[16]	Qualitative study of GP out -of hours service. Incorrect study design.

Flarup 2014[17]	Inappropriate comparison (chronic disease patients versus non-chronic disease patients).
Ford 2015[18]	Article.
Garratt 2007[20]	Patient satisfaction questionnaire for out -of hours primary care. Incorrect study design.
Garratt 2010[19]	Patient experiences questionnaire. No comparison. Incorrect study design.
Gerard 2006[21]	Postal survey of patient preferences for alternative models of care. No comparison.
Giesen 2007[22]	Questionnaire based cross-sectional study of patient evaluation of nurse consultations in out of hours GP care. Incorrect interventions. No comparison
Giesen 2011[23]	Narrative review of quality of out of hours primary care.
Glynn 2007[24]	Qualitative study of patient satisfaction with out of hours care. No comparison.
Huber 2011[25]	Questionnaire based cross-sectional study of demand for out of hours GP. Incorrect interventions. No comparison.
Huibers 2011[26]	Inappropriate comparison. Comparison of out of hours primary care services in 8 European countries.
Hurst 2006[27]	Literature review.
Johansen 2010[28]	Cross-sectional study comparing use of day time and out –of- hours primary care in patients with mental illness. In correct study design.
Lowe 2005 [31]	Inappropriate comparison. Study aimed to determine whether Medicaid patients' ED use is associated with characteristics of their primary care practices.
Lowe 2009 [30]	Inappropriate intervention. Study aimed to look at community variation in ED use.
Margas 2008[32]	Study assessed seasonal and geographical variation in out of hours care use Incorrect interventions.
Moll van charante 2006[33]	Postal questionnaire on patient satisfaction with out of hours primary care. No comparison. In correct study design.
Moll van charante 2007[34]	Out of hours demand for GP care. Incorrect interventions. No comparison.
Morgan 2011[35]	Questionnaire study examining the influence of out of hours GP care on patient satisfaction. Incorrect interventions.
Ono 2015[37]	Incorrect population (trauma patients); incorrect intervention (extended community hospital hours rather than GP extended hours).
Smits 2012[38]	Patient satisfaction with out of hours with the use of patient satisfaction

	questionnaire. No comparison.
Smits 2014[39]	Survey of GP experiences with out of hours. No comparison. Incorrect study design.
Thompson 2010 [40]	The study assessed the effect of changes to out-of-hours primary care services (since 2004) on ED attendances in a District hospital in the UK. The out-of-hours services (evening and weekends) were provided by a primary care centre by the PCT at a site remote from the ED – not extended access as stated in the protocol. Incorrect intervention.
Van uden 2005[42]	Qualitative study on GP satisfaction with out of hours services. Incorrect study design.
Van uden 2005[41]	Patient satisfaction with out of hours survey. No comparison.
Vanuden 2005 [43]	Comparison of out-of-hours before and after establishing PCP (Primary care physician). Incorrect comparison.
Zhou 2015[45]	Patient survey of difficulties in accessing in hours care. No comparison.
Zwart 2011[46]	Comparison of central and local incident reporting in GP out of hours service. Inappropriate comparison.

Appendix H: Excluded economic studies

No studies were excluded.