Recommendation	-
Research recommendations	**RR9. What is the clinical and cost effectiveness of having GPs within or adjoining emergency departments?**
	and cost would be out-dated. The committee considered the cost of a GP conducting a consultation. The duration of a consultation is likely to have a large effect on the overall cost. It is unclear whether GPs might spend more or less time with each patient than ED staff although it is likely the GP would spend less time than ED doctors below a registrar level. The magnitude of cost savings will depend on the extent to which re-directing ED patients with primary care sensitive conditions to GP-delivered care can be translated into more efficient use of the ED, and whether the comparator for GP-delivered care is a consultant in emergency medicine, a trainee or another health care professional. Given these unknown factors, and the weakness of the evidence, the committee chose not to make a recommendation for practice.
Quality of evidence	For the outcomes of diagnostic investigations and patient and/or carer satisfaction, the evidence was considered to be of very low quality due to the study design (observational), risk of bias and indirectness of the study population and study outcome. An original cost analysis was conducted. This analysis should be considered partially applicable because QALYs were not estimated and to have potentially serious limitations because of the observational study design, lack of detail in resource use and limited follow-up. Furthermore, the age of the study on which it was based on, means that it does not account for more care being given directly be ED consultants.
Other considerations	The College of Emergency Medicine currently recommends consultant presence in the ED from 7am to 10pm, 7 days a week. The evidence for this came from a review of Hospital Episode Statistics by the College of Emergency Medicine. They found that up to 15% of patients could be managed in the community by a GP.[4] There are GPs who work locum sessions within EDs, but the regularity of this service is highly variable between hospitals. The committee discussed the definition of an acute medical emergency and appropriate ED attendance, which can range from comparatively mild to acute life-threatening problems. Those with primary care problems which they perceive to require emergency attention will often attend the ED, so diverting these patients to GP-delivered care is consistent with community practice. Two methods of streaming primary care patients to the on-site GP were identified. One was for patients to enter the ED and decide for themselves whether to see a GP or a member of ED staff. The other was for all patients to be triaged, although it was noted that there are some occasions where patients are triaged to primary care but on further investigation turn out to have a more severe and urgent problem that is more appropriately managed by ED staff. The committee also emphasised the importance of the content of the intervention. GPs may be present in or next to the ED specifically for the management of primary care patients, or they may be present within the ED, contributing the benefits of GP expertise to all AME patients. As there is a finite number of GPs, appropriate allocation of these resources (that is, GP practices with extended and weekend opening or located in or co-located in the ED) to deliver best value is essential. The committee considered prioritising this research recommendation but they were aware that the NIHR have already agreed to fund studies in this area (http://www1.uwe.ac.uk/hls/research/gpedproject/studysummary.aspx; GPs in EDs Study: Protocol May 2016: NIHR HS&DR System ...). The committee hope that the

Recommendation	**-**
Research recommendations	**RR9. What is the clinical and cost effectiveness of having GPs within or adjoining emergency departments?**
	findings from these studies will inform a future update to the guideline.

References

1 Boeke AJ, van Randwijck-Jacobze ME, de Lange-Klerk EM, Grol SM, Kramer MH, van der Horst HE. Effectiveness of GPs in accident and emergency departments. British Journal of General Practice. 2010; 60(579):e378-e384

2 Bosmans JE, Boeke AJ, van Randwijck-Jacobze ME, Grol SM, Kramer MH, van der Horst HE et al. Addition of a general practitioner to the accident and emergency department: a cost-effective innovation in emergency care. Emergency Medicine Journal. Netherlands 2012; 29(3):192-196

3 Chmiel C, Wang M, Sidler P, Eichler K, Rosemann T, Senn O. Implementation of a hospital-integrated general practice - a successful way to reduce the burden of inappropriate emergency-department use. Swiss Medical Weekly. 2016; 146:w14284

4 College of Emergency Medicine. Analysis of A&E attendances, 2014. Available from: https://www.hsj.co.uk/download?ac=1281989

5 Colliers A, Remmen R, Streffer ML, Michiels B, Bartholomeeusen S, Monsieurs KG et al. Implementation of a general practitioner cooperative adjacent to the emergency department of a hospital increases the caseload for the GPC but not for the emergency department. Acta Clinica Belgica. 2016;1-6

6 Dale J, Green J, Reid F, Glucksman E. Primary care in the accident and emergency department: I. Prospective identification of patients. BMJ. 1995; 311(7002):423-426

7 Dale J, Green J, Reid F, Glucksman E, Higgs R. Primary care in the accident and emergency department: II. Comparison of general practitioners and hospital doctors. BMJ. 1995; 311(7002):427-430

8 Dale J, Lang H, Roberts JA, Green J, Glucksman E. Cost effectiveness of treating primary care patients in accident and emergency: a comparison between general practitioners, senior house officers, and registrars. BMJ. 1996; 312(7042):1340-1344

9 Daniele RM, Bova AM, LeGar M, Smith PJ, Shortridge-Baggett LM. Rapid response team composition effects on outcomes for adult hospitalised patients: A systematic review. JBI Library of Systematic Reviews. 2011; 9(31):1297-1340

10 Freeman GK, Meakin RP, Lawrenson RA, Leydon GM, Craig G. Primary care units in A&E departments in North Thames in the 1990s: initial experience and future implications. British Journal of General Practice. 1999; 49(439):107-110

11 Gibney D, Murphy AW, Barton D, Byrne C, Smith M, Bury G et al. Randomized controlled trial of general practitioner versus usual medical care in a suburban accident and emergency department using an informal triage system. British Journal of General Practice. 1999; 49(438):43-44

12 Gnani S, Ramzan F, Ladbrooke T, Millington H, Islam S, Car J et al. Evaluation of a general practitioner-led urgent care centre in an urban setting: description of service model and plan of analysis. JRSM Short Reports. 2013; 4(6):2042533313486263

13 Grol R, Giesen P, van Uden CJT. After-hours care in the United Kingdom, Denmark, and the Netherlands: new models. Health Affairs. 2006; 25(6):1733-1737

14 Hallam L, Henthorne K. Cooperatives and their primary care emergency centres: organisation and impact: combined report on seven case studies. Health Technology Assessment. 1999; 3(7):iii-85

15 Ismail SA, Gibbons DC, Gnani S. Reducing inappropriate accident and emergency department attendances: a systematic review of primary care service interventions. British Journal of General Practice. 2013; 63(617):E813-E820

16 Khangura JK, Flodgren G, Perera R, Rowe BH, Shepperd S. Primary care professionals providing non-urgent care in hospital emergency departments. Cochrane Database of Systematic Reviews. 2012; Issue 11:CD002097. DOI:10.1002/14651858.CD002097.pub3

17 Leibowitz R, Day S, Dunt D. A systematic review of the effect of different models of after-hours primary medical care services on clinical outcome, medical workload, and patient and GP satisfaction. Family Practice. 2003; 20(3):311-317

18 MacKichan F, Brangan E, Wye L, Checkland K, Lasserson D, Huntley A et al. Why do patients seek primary medical care in emergency departments? An ethnographic exploration of access to general practice. BMJ Open. 2017; 7(4)

19 Murphy AW, Bury G, Plunkett PK, Gibney D, Smith M, Mullan E et al. Randomised controlled trial of general practitioner versus usual medical care in an urban accident and emergency department: process, outcome, and comparative cost. BMJ. 1996; 312(7039):1135-1142

20 Murphy AW, Plunkett PK, Bury G, Leonard C, Walsh J, Lynam F et al. Effect of patients seeing a general practitioner in accident and emergency on their subsequent reattendance: cohort study. BMJ. 2000; 320(7239):903-904

21 NHS England. Next steps on the NHS Five Year Forward view, 2017. Available from: https://www.england.nhs.uk/wp-content/uploads/2017/03/NEXT-STEPS-ON-THE-NHS-FIVE-YEAR-FORWARD-VIEW.pdf

22 Ramlakhan S, Mason S, O'Keeffe C, Ramtahal A, Ablard S. Primary care services located with EDs: a review of effectiveness. Emergency Medicine Journal. 2016; 33(7):452

23 Roberts E, Mays N. Can primary care and community-based models of emergency care substitute for the hospital accident and emergency (A & E) department? Health Policy. 1998; 44(3):191-214

24 Rogers P, Ward L, Salisbury C, Purdy S. Does a general practitioner support unit reduce admissions following medical referrals from general practitioners? Quality in Primary Care. 2011; 19(1):23-33

25 Sharma A, Inder B. Impact of co-located general practitioner (GP) clinics and patient choice on duration of wait in the emergency department. Emergency Medicine Journal. 2011; 28(8):658-661

26 The King's Fund. What's going on in A&E? The key questions answered, 2016. Available from: http://www.kingsfund.org.uk/projects/urgent-emergency-care/urgent-and-emergency-care-mythbusters

27 Thijssen W. Emergency services in A & E departments: does it work? Huisarts En Wetenschap. 2016; 59(2):54-56

28 Van den Heede K, Van de Voorde C. Interventions to reduce emergency department utilisation: a review of reviews. Health Policy. 2016; 120(12):1337-1349

29 van der Straten LM, van Stel HF, Spee FJM, Vreeburg ME, Schrijvers AJP, Sturms LM. Safety and efficiency of triaging low urgent self-referred patients to a general practitioner at an acute care post: an observational study. Emergency Medicine Journal. 2012; 29(11):877-881

30 Van Gils-Van Rooij ESJ, Yzermans CJ, Broekman SM, Meijboom BR, Welling GP, De Bakker DH. Out-of-hours care collaboration between general practitioners and hospital emergency departments in the Netherlands. Journal of the American Board of Family Medicine. 2015; 28(6):807-815

31 Wang M, Wild S, Hilfiker G, Chmiel C, Sidler P, Eichler K et al. Hospital-integrated general practice: a promising way to manage walk-in patients in emergency departments. Journal of Evaluation in Clinical Practice. 2014; 20(1):20-26

32 Ward P, Huddy J, Hargreaves S, Touquet R, Hurley J, Fothergill J. Primary care in London: an evaluation of general practitioners working in an inner city accident and emergency department. Journal of Accident and Emergency Medicine. 1996; 13(1):11-15

33 Wells C. Integrated care. Emergency ward zen. Health Service Journal. 1998; 108(5632):32-33

Appendices

Appendix A: Review protocol

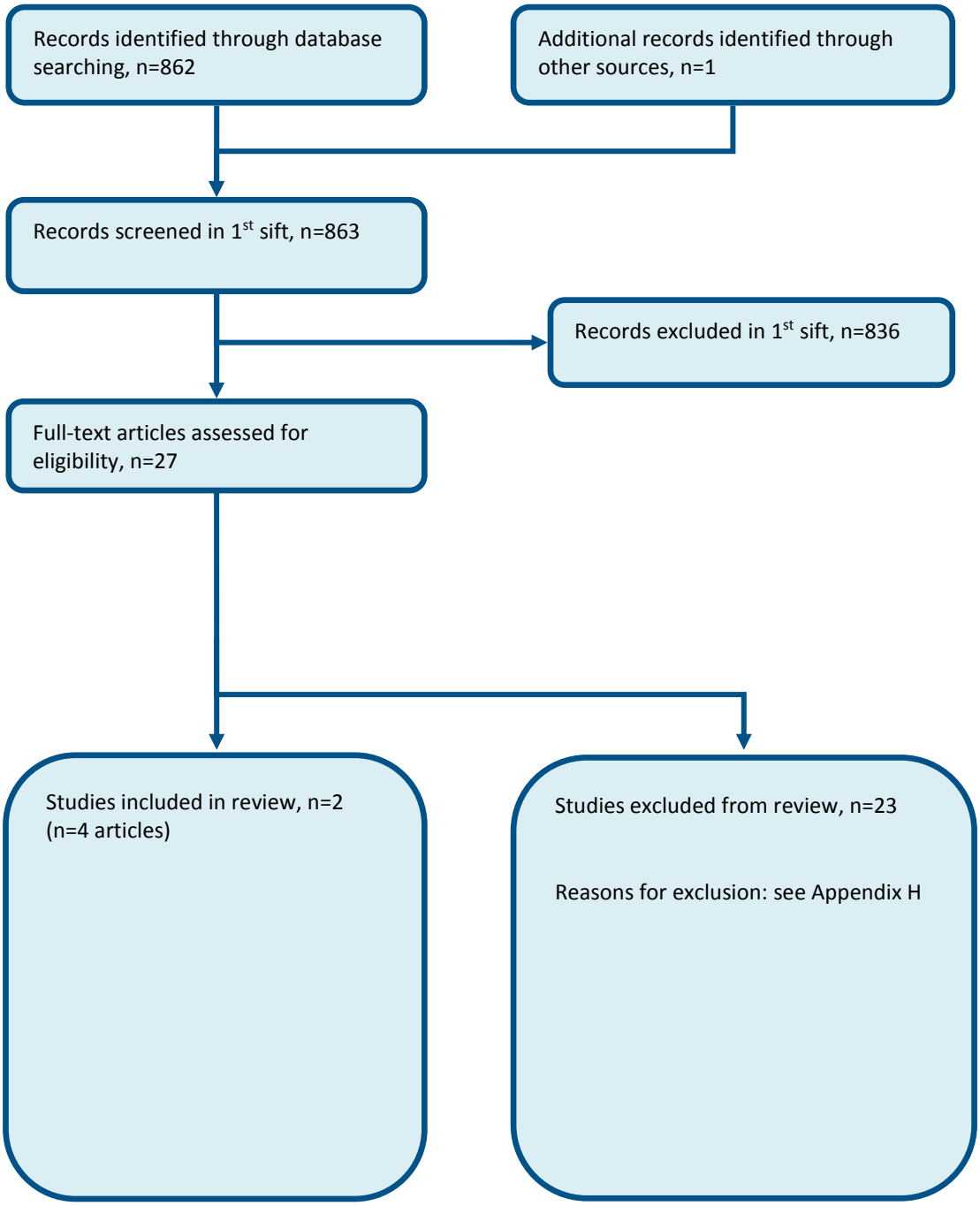
Table 4: Review protocol: GPs within or on the same site as the ED

Review question	GPs within or on the same site as the ED
Guideline condition and its definition	Acute Medical Emergencies. Definition: Acute medical emergencies.
Objectives	Does the presence of GPs within or on the same site as the ED reduce the demand on ED and/or improve outcomes?
Review population	Adults and young people (16 years and over) presenting to an emergency department with a suspected or confirmed acute medical emergency.
	Adults.
	Line of therapy not an inclusion criterion.
Interventions and comparators: generic/class; specific/drug (All interventions will be compared with each other, unless otherwise stated)	GP co-located unit. GPs working within the ED. No GP led unit. No GPs working within the ED. Neither GP led unit or GPs working within the ED. Patients seen by ED staff.
Outcomes	- Mortality (Dichotomous) CRITICAL - Quality of life (Continuous) CRITICAL - Patient and/or carer satisfaction (Dichotomous) CRITICAL -Avoidable adverse events (including misdiagnosis) (Dichotomous) (CRITICAL) - Time to admission/discharge (number meeting ED 4-hour emergency target) (Continuous) CRITICAL - Diagnostic investigations (Dichotomous) IMPORTANT - - Readmission up to 30 days (Dichotomous) IMPORTANT - Hospital admissions (Dichotomous) IMPORTANT - ED demand (Dichotomous) IMPORTANT - Staff satisfaction (Dichotomous) IMPORTANT
Study design	Systematic Review RCT Quasi-RCT Non-randomised comparative study Prospective cohort study Retrospective cohort study Before and after study Case control study Controlled before and after study Interrupted Time series Historical controlled study
Unit of randomisation	Patient Cluster
Crossover study	Not permitted.
Minimum duration of study	Not defined.

Review question	GPs within or on the same site as the ED
Sensitivity/other analysis	Frail elderly. People with co-morbid mental illness. GP acting as triage officer within the ED.
Subgroup analyses if there is heterogeneity	- Frail elderly (Frail elderly; Not frail elderly); Population differs - People with co-morbid mental illness (people with co-morbid mental illness; people without co-morbid mental illness); population differs. - GP acting as triage officer within the ED (GP acting as triage officer within ED; GP not acting as triage officer within ED); population differs.
Exclusions	Non-UK studies.
Search criteria	Databases: Medline, Embase, the Cochrane Library. Date limits for search: None. Language: English only.

Appendix B: Clinical article selection

Figure 1: Flow chart of clinical article selection for the review of GPs within or on the same site as the ED



Appendix C: Forest plots

C.1 GPs working within the ED versus patients seen by ED staff

Figure 2: Diagnostic investigations

Figure 3: Patient and/or carer satisfaction with assessment

Figure 4: Patient and/or carer satisfaction with treatment

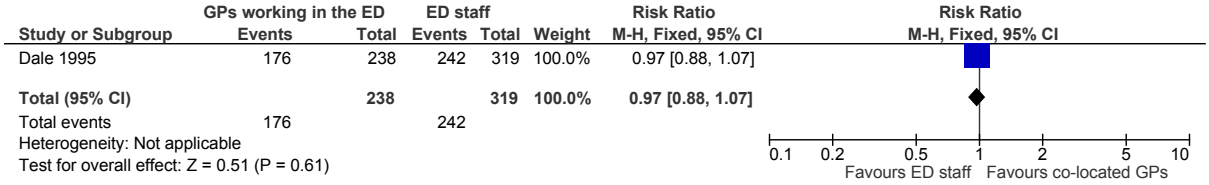
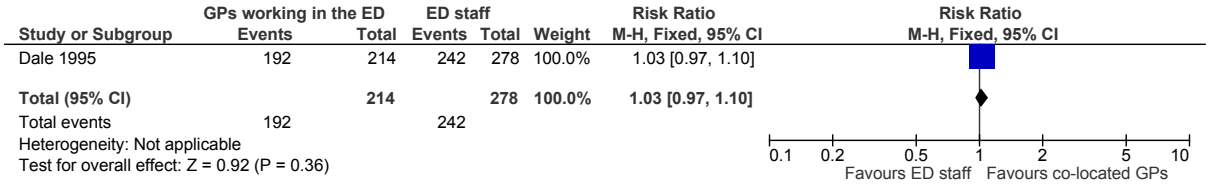


Figure 5: Patient and/or carer satisfaction with doctor's manner



Appendix D: Clinical evidence tables

Study (subsidiary papers)	Dale 1995[7] (Dale 1995[6], Dale 1996[8])
Study type	Non-randomised comparative study
Number of studies (number of participants)	(n=4641)
Countries and setting	Conducted in United Kingdom; setting: A&E department.
Line of therapy	Not applicable.
Duration of study	Intervention + follow up.
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: nurses (with at least 6 months' experience of A&E and who had undergone training on GP expertise) carried out triage.
Stratum	Overall.
Subgroup analysis within study	Not applicable.
Inclusion criteria	Patients assessed at nurse triage as presenting with problems that could be treated in a primary care setting.
Exclusion criteria	Patients whose triage statuses were not recorded.
Recruitment/selection of patients	Random sample of sessions stratified by time of day and day of week using a table of random numbers.
Age, gender and ethnicity	Age - Other: 0-5yrs n=416 (9%); 6-16yrs n=497 (10.7%); 17-20yrs n=426 (9.2%); 21-25yrs n=839 (18.1%); 26-30yrs n=666 (14.4%); 31-50yrs n=1076 (23.2%); 51-60yrs n=312 (6.7%); >60yrs n=409 (8.8%). Gender (M:F): 2435/2192. Ethnicity.
Further population details	1. Frail elderly: Not applicable/Not stated/Unclear 2. GP acting as triage officer within the ED: GP not acting as triage officer within ED 3. People with co-morbid mental illness: Not applicable/Not stated/Unclear.
Indirectness of population	Serious indirectness: patients presented with problems that could be treated in a primary care setting and therefore do not have a suspected or confirmed acute medical emergency.
Interventions	(n=1702) Intervention 1: GPs working within the ED. Duration: 1 year. Concurrent medication/care: not applicable. (n=2939) Intervention 2: Patients seen by ED staff. Patients were seen by ED staff in an ED department which was also staffed by GPs. Duration: 1 year. Concurrent medication/care: not applicable.
Funding	Other (Lambeth Inner City Partnership; King's Fund; SETRHA Primary Care Development).
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: GPS WORKING WITHIN THE ED versus PATIENTS SEEN BY ED STAFF	

Study (subsidiary papers)	Dale 1995[7] (Dale 1995[6], Dale 1996[8])
Protocol outcome 1: Patient and/or carer satisfaction - Actual outcome: Satisfaction with assessment at 7-10 days after consultation; Group 1: 182/239, Group 2: 248/323; Comments: Data from a subsample of 567 patients; 240 had been seen by a GP and 327 by ED staff; Risk of bias: All domain - Very high, Selection - Very high, Blinding - Low, Incomplete outcome data - Very high, Outcome reporting - Low, Measurement - High, Crossover - Low; Indirectness of outcome: Serious indirectness, Comments: patient satisfaction with one aspect of their experience; Baseline details: age and an injury related problem were significantly different between groups; Group 1 Number missing: 1/240, Reason: not stated; Group 2 Number missing: 4/327, Reason: not stated - Actual outcome: Satisfaction with treatment at 7-10 days after consultation; Group 1: 176/238, Group 2: 242/319; Comments: Data from a subsample of 567 patients; 240 had been seen by a GP and 327 by ED staff; Risk of bias: All domain - Very high, Selection - Very high, Blinding - Low, Incomplete outcome data - Very high, Outcome reporting - Low, Measurement - High, Crossover - Low; Indirectness of outcome: Serious indirectness, Comments: patient satisfaction with one aspect of their experience; Baseline details: age and an injury related problem were significantly different between groups; Group 1 Number missing: 2/240, Reason: not stated; Group 2 Number missing: 8/327, Reason: not stated - Actual outcome: Satisfaction with Doctor's manner at 7-10 days after consultation; Group 1: 192/214, Group 2: 242/278; Comments: Data from a subsample of 567 patients; 240 had been seen by a GP and 327 by ED staff; Risk of bias: All domain - Very high, Selection - Very high, Blinding - Low, Incomplete outcome data - Very high, Outcome reporting - Low, Measurement - High, Crossover - Low; Indirectness of outcome: Serious indirectness, Comments: patient satisfaction with one aspect of their experience; Baseline details: age and an injury related problem were significantly different between groups; Group 1 Number missing: 26/240, Reason: not stated; Group 2 Number missing: 49/327, Reason: not stated Protocol outcome 2: Diagnostic investigations - Actual outcome: Use of radiology, haematology, chemical pathology microbiology and electrocardiography investigations at consultation; Group 1: 287/1702, Group 2: 1127/2939; Risk of bias: All domain - High, Selection - Very high, Blinding - Low, Incomplete outcome data - Very high, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Baseline details: age and an injury related problem were significantly different between groups	
Protocol outcomes not reported by the study	Quality of life at end of follow-up; Mortality at end of follow-up; Avoidable adverse events at end of follow-up ;Readmission at end of follow-up; ED demand at end of follow-up; Staff satisfaction at end of follow-up; Hospital admissions at end of follow-up; Time to admission/discharge (number meeting ED 4-hour emergency target) at end of follow-up.

Study	Ward 1996[32]
Study type	Non-randomised comparative study.
Number of studies (number of participants)	(n=970)
Countries and setting	Conducted in United Kingdom; setting: A&E department
Line of therapy	Not applicable.

Study	Ward 1996[32]
Duration of study	Intervention + follow up.
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: pilot study performed to assess the triage system and to ensure that triage was appropriate.
Stratum	Overall.
Subgroup analysis within study	Not applicable.
Inclusion criteria	Patients triaged 'Minor B/primary care' - those who were considered at triage to require minimal nursing, investigation and treatment before discharge and for whom a delay of several hours would not be detrimental to their condition.
Exclusion criteria	Patients triaged to non-primary care categories; patients triaged 'Major B/primary care' category; patients who did not wait to see a doctor; patients whose notes were unavailable.
Recruitment/selection of patients	Consecutive patients.
Age, gender and ethnicity	Age - Other: 35.6% of patients were aged between 21 and 30 years. Gender (M:F): not reported. Ethnicity.
Further population details	1. Frail elderly: Not applicable/Not stated/Unclear 2. GP acting as triage officer within the ED: GP not acting as triage officer within ED 3. People with co-morbid mental illness: Not applicable/Not stated/Unclear.
Indirectness of population	Serious indirectness: Patients who were considered at triage to require minimal nursing, investigation and treatment before discharge and for whom a delay of several hours would not be detrimental to their condition, therefore did not have a suspected or confirmed acute medical emergency.
Interventions	(n=566) Intervention 1: GPs working within the ED. Duration: 5 weeks. Concurrent medication/care: not applicable. (n=404) Intervention 2: Patients seen by ED staff. Patients were seen by ED staff in an ED department which was also staffed by GPs. Duration: 5 weeks. Concurrent medication/care: not applicable.
Funding	Funding not stated.
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: GPS WORKING WITHIN THE ED versus PATIENTS SEEN BY ED STAFF Protocol outcome 1: Diagnostic investigations - Actual outcome: Investigations (x-ray; haematology; biochemistry; microbiology) at consultation; Group 1: 90/561, Group 2: 118/399; Risk of bias: All domain - High, Selection - High, Blinding - High, Incomplete outcome data - Low, Outcome reporting - Low, Measurement - Low, Crossover - Low; Indirectness of outcome: No indirectness ; Baseline details: patients seen by GPs and A&E doctors were similar in age, sex and case mix; Group 1 Number missing: 5, Reason: not stated; Group 2 Number missing: 5, Reason: not stated	
Protocol outcomes not reported by the study	Quality of life at end of follow-up; Patient and/or carer satisfaction at end of follow-up; Mortality at end of follow-up; Avoidable adverse events at end of follow-up; Readmission at end of follow-up; ED demand at end of follow-up; Staff

Study	Ward 1996[32]
	satisfaction at end of follow-up; Hospital admissions at end of follow-up; Time to admission/discharge (number meeting ED 4-hour emergency target) at end of follow-up.

Appendix E: Economic evidence tables

No economic studies were identified.

Appendix F: GRADE tables

Table 5: Clinical evidence profile: GPs working within the ED versus patients seen by ED staff

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	GPs working within the ED	ED staff	Relative (95% CI)	Absolute		
Diagnostic investigations (assessed with: number of diagnostic investigations)												
2	observational studies	serious[1]	no serious inconsistency	serious[2]	no serious imprecision	None	377/2263 (16.7%)	34%	RR 0.45 (0.41 to 0.5)	187 fewer per 1000 (from 170 fewer to 201 fewer)	⊕OOO VERY LOW	IMPORTANT
Satisfaction with assessment (follow-up 7-10 days; assessed with: five point Likert scale)												
1	observational studies	very serious[1]	no serious inconsistency	very serious[2,3]	no serious imprecision	None	182/239 (76.2%)	76.8%	RR 0.99 (0.9 to 1.09)	8 fewer per 1000 (from 77 fewer to 69 more)	⊕OOO VERY LOW	CRITICAL
Satisfaction with treatment (follow-up 7-10 days; assessed with: five point Likert scale)												
1	observational studies	very serious[1]	no serious inconsistency	very serious[2,3]	no serious imprecision	None	176/238 (73.9%)	75.9%	RR 0.97 (0.88 to 1.07)	23 fewer per 1000 (from 91 fewer to 53 more)	⊕OOO VERY LOW	CRITICAL
Satisfaction with doctor's manner (follow-up 7-10 days; assessed with: five point Likert scale)												
1	observational studies	very serious[1]	no serious inconsistency	very serious[2,3]	no serious imprecision	None	192/214 (89.7%)	87.1%	RR 1.03 (0.97 to 1.1)	26 more per 1000 (from 26 fewer to 87 more)	⊕OOO VERY LOW	CRITICAL
Mortality												
0	No evidence available					None	-	0%	-	-		CRITICAL
Quality of life												

0	No evidence available					None	-	0%	-	-		CRITICAL
Time to admission/discharge (number meeting A&E 4 hour waiting target)												
0	No evidence available					None	-	0%	-	-		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
[2] Downgraded by 1 increment because the majority of evidence included an indirect population, and downgraded by 2 increments if the majority of the evidence included a very indirect population (patients presented with problems that could be treated in a primary care setting and therefore did not have a suspected or confirmed acute medical emergency –1 increment).
[3] Downgraded by 1 increment because majority of evidence had indirect outcomes, and downgraded by 2 increments if the majority of the evidence had very indirect outcomes (patient and/or carer satisfaction with only 1 aspect of their experience –1 increment).

Appendix G: Excluded clinical studies

Table 6: Studies excluded from the clinical review

Study	Exclusion reason
Boeke 2010[1]	Non-UK study
Bosmans 2012[2]	Non-UK study
Chmiel 2016[3]	Non-UK study. Inappropriate study design-prospective before and after study (RCT evidence available)
Colliers2016[5]	no extractable outcomes
Daniele 2011[9]	Qualitative review of a pilot scheme
Freeman 1999[10]	Qualitative study
Gibney 1999[11]	Non-UK study
Gnani 2013[12]	Inappropriate comparison. (Descriptive article - no comparator)
Grol 2006[13]	Inappropriate comparison. (Descriptive article - no comparator)
Hallam 1999[14]	Qualitative study
Ismail 2013[15]	Systematic review is not relevant to review question or unclear PICO
Khangura 2012[16]	Systematic review is not relevant to review question or unclear PICO
Leibowitz 2003[17]	Systematic review is not relevant to review question or unclear PICO
Murphy 1996[19]	Non-UK study
Murphy 2000[20]	Non-UK study
Ramlakhan 2016 [22]	Narrative review of primary care services located with EDs. Review included both RCTs and observational studies. Relevant UK studies in the review already included in our evidence review.
Roberts 1998[23]	Systematic review is not relevant to review question or unclear PICO
Rogers 2011[24]	Not review population (patients referred to an admissions unit by GP)
Sharma 2011[25]	Statistical model
Thijssen 2016[27]	Paper not in English
Vangilsvanrooij 2015[30]	Non-UK study
Vandenheede 2016[28]	Narrative review- screened for relevant references
Van der straten 2012[29]	Non-UK study
Wang 2014[31]	Non-UK study
Wells 1998[33]	Inappropriate comparison. (Descriptive article – no comparator)

Appendix H: Excluded economic studies

Table 7: Studies excluded from the health economics review

Study	Exclusion reason
Bosmans 2012[2]	Non-UK studies were excluded for this question. This was conducted in the Netherlands.