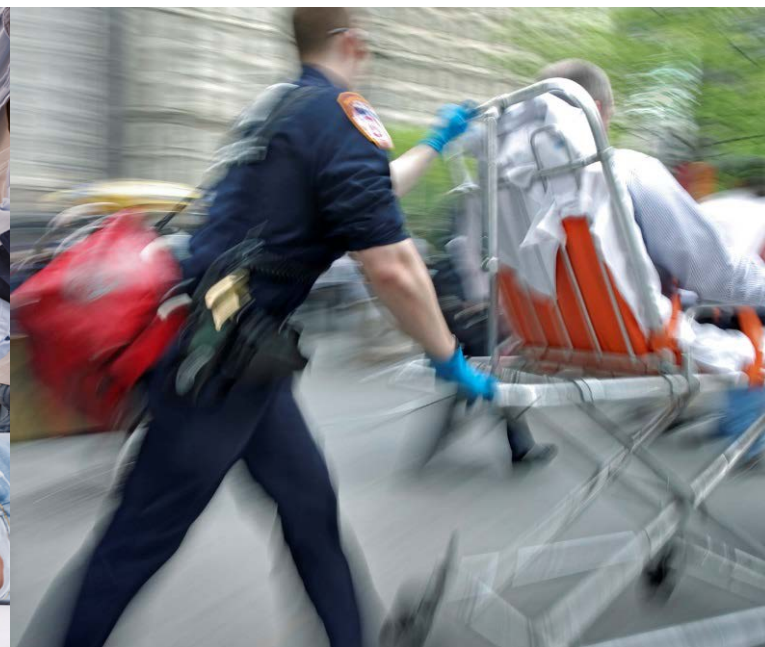


ORGANISATION AND PAYMENT OF EMERGENCY CARE SERVICES IN BELGIUM: CURRENT SITUATION AND OPTIONS FOR REFORM SUPPLEMENT



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Other reported interests: All experts and stakeholders consulted for this report were selected because of their involvement in the topic of the organisation and payment of the emergency care system. Therefore, by definition, each of them might have a certain degree of conflict of interest to the main topic of this report.

Layout: Joyce Grijseels (KCE), Filip Coppens (Smals), Sophie Vaes (KCE)

Disclaimer:

- **The external experts were consulted about a (preliminary) version of the scientific report. Their comments were discussed during meetings. They did not co-author the scientific report and did not necessarily agree with its content.**
- **Subsequently, a (final) version was submitted to the validators. The validation of the report results from a consensus or a voting process between the validators. The validators did not co-author the scientific report and did not necessarily all three agree with its content.**
- **Finally, this report has been approved by a majority of votes by the Executive Board.**
- **Only the KCE is responsible for errors or omissions that could persist. The policy recommendations are also under the full responsibility of the KCE.**

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1 ANNEX TO CHAPTER 2

Table 1 – Interview guide for the in-depth interviews

Topic	Main questions ¹
Introduction	<p>In the governmental declaration of October 2014 the Federal government announced measures to encourage patients to take, in a first instance, contact with their general practitioner or organised duty centre (ODC) before they decide to go to the emergency department of the hospital in order to decrease the pressure on emergency departments (EDs) such that they can focus on severe medical emergencies.</p> <ul style="list-style-type: none"> • Do you think more measures are needed to guide patients in their decision about which care provider to contact in case of acute medical problems? <ul style="list-style-type: none"> ○ What do you think about lower co-payments for patients whom are referred by a general practitioner (GP) compared to self-referrals? ○ What is the role of mass media information campaigns?
Current organisation of emergency care services	<p>The majority of hospitals have a specialised ED ('gespecialiseerde spoedgevallenzorg'/'soins urgents spécialisés') and only a limited number of hospitals or hospital sites have a non-specialised ED that is capable to deal with the first care and treatment of patients with an acute pathology ('eerste opvang van spoedgevallen'/'première prise en charge des urgences'). What is your opinion about this current supply of services?</p> <ul style="list-style-type: none"> • What is your opinion concerning the concentration of specialised EDs (e.g. as in Denmark, the Netherlands, England). In Denmark, for instance, the number of acute hospitals with EDs has decreased since 2007 from 62 to 21? <ul style="list-style-type: none"> ○ Advantages? Disadvantages? What are the preconditions for such a reform in Belgium? ○ Which are the barriers to implement such a reform in Belgium? ○ Is there need for further differentiation, for instance, based on type of pathology (e.g. trauma, stroke, acute myocardial infarction)?
Collaboration emergency departments and organised duty centres	<ul style="list-style-type: none"> • An analysis of the hospital discharge dataset (year 2011) showed that 69% of the patients admitted to the ED are treated as ambulatory patients. The vast majority of these ambulatory patients are self-referred (i.e. 79%). Only 8% of ambulatory patients are referred by a GP. What do you think about these figures? Appropriate? Possible explanations? How do you explain the high proportion of patients with a so-called 'GP pathology' at the ED? <ul style="list-style-type: none"> ○ Shortcomings in the organisation of primary care services? ○ Limited accessibility of after-hours GP services?

¹ The 'second level bullets' probing questions are available in Dutch and French upon request.



Topic	Main questions ¹
	<ul style="list-style-type: none">○ High financial accessibility of the ED?○ Discomfort for patients to go via the GP?● What do you think, in this context, about the investments that are currently made in the after-hours ODCs (15 new ODCs per year to have about 100 ODCs by the end of 2016)?<ul style="list-style-type: none">○ (Dis-)advantages of ODCs?○ Geographical distribution?○ Location (at a hospital site, close to a hospital site, far distance from a hospital site)?○ Do the ODCs fulfil the policy objectives that were set at the start (e.g. better working conditions for GPs, better coordination between primary and secondary care providers)?● What are the alternative organisational models (e.g. integration of ODCs within the ED with a triage role for GPs) to improve the supply of services for unscheduled care in Belgium?<ul style="list-style-type: none">○ What are the preconditions for such a reform in Belgium (e.g. accessible electronic patient record, nurse practitioners, etc.)?● 65% of ambulatory patients in EDs are admitted between 8 AM and 6 PM. What other measures, besides after-hours ODCs, are needed?● A potential important triage can be done at the level of the call centres. What do you think, in this context, about the 1733 telephone number?
Hospital budget	<ul style="list-style-type: none">● The hospital budget is a closed budget that is allocated across hospitals via a complex set of rules and calculations. The B2-part that concerns the EDs was recently reformed: between 2013-2017 a gradual implementation of the new calculation rules will take place.<ul style="list-style-type: none">○ In the 'old model' the basic part of the hospital budget for EDs was expressed as a number of basic points per 100 justified hospital beds: the larger the hospital, the larger the 'basic part' of the hospital budget for EDs. On top of this 'basic part' additional points can be earned via the supplementary fees for urgent medical activities (calculated via a system of deciles). What are the (dis-)advantages and incentives of this former calculation method?○ In the 'new model' the basic part is expressed in terms of 'emergency department units'. One ED unit is allocated for every patient attending the ED (ambulatory and hospitalised). Supplementary Ed units are earned based on patient characteristics (e.g. young children). What are the (dis-)advantages and incentives of this new calculation method?○ Is the allocated hospital budget in line with the underlying costs to run the ED in a way that high-quality care can be provided?
Physician fees	<ul style="list-style-type: none">● The fees for physicians providing services in an ED can be divided in three main groups: fees that reimburse the medical activities of emergency physicians (i.e. physicians with a specialty in emergency care medicine, physicians with a specialty in acute medicine, physicians with a certificate in acute medicine), called 'A-fees'; fees that cover the availability of physicians, called on



Topic

Main questions¹

duty fees; fees that reimburse the medical activities of physicians from outside the emergency department that are consulted by the emergency physicians, called 'C-fees'.

- What are the (dis-)advantages and incentives of the current system of physician fees?
 - What is your opinion about the fee-for-service system for emergency physicians?
 - What do you think about the system of deductions on the physician fees (in particular on the fees for the emergency care activities)?
 - What do you think about the differentiation of the fees based on the educational level of the physicians who work in an ED? (Dis-)advantages?
- Analysis by the RIZIV – INAMI illustrated a large variation between hospitals in the ration between A-fees and C-fees? What are possible explanations for these differences?
- Which (combination of) payment mechanisms are, according to you, appropriate as a payment method for EDs (physician remuneration included) to achieve the desired organisation of emergency care services?
 - To what extent should the high amount of fixed costs to run EDs be translated in the payment system?
 - In case the hospital payment system (in general) is based on pathologies, should the payment system for EDs be included in this system?
 - What are the implications for the payment of GP services?

Other topics

- In the past years shortages of emergency physicians were often reported in the media. Are these messages reflecting a real problem on the field? Possible causes/solutions?
 - What is your opinion about the minimal quota for emergency physicians which were imposed by the workforce planning commission?
 - Are additional policy measures needed?
- To what extent should a reform of the organisation and payment system take into account the evolutions within the field of tele-medicine?
- Quality of care and patient safety are high on the policy agenda (e.g. quality indicators, accreditation programmes, discussions about pay-for-performance). Are there aspects of these initiatives that should be taken into account when reforming the organisation and payment system of EDs?
- What is the impact of medically staffed emergency care transport (Mobile Urgency Groups; MUG – SMUR) on the organisation of EDs?
 - Absence of a nurse/physician in case of an emergency call?
 - Are efficiency gains possible without affecting the quality and accessibility of care?



Topic	Main questions ¹
	<ul style="list-style-type: none"><li data-bbox="492 279 2087 351">• A recurrent complaint by EDs are the bottlenecks that occur because other hospital wards fail to admit patients in time. Which policy measures are needed for a more fluent patient flux within the hospital?
General concluding question	<ul style="list-style-type: none"><li data-bbox="492 351 2087 456">• During this interview several strengths and weaknesses of the current organisation and payment model for emergency departments were discussed. In addition, some solution elements for a future more effective system were expressed. Are there topics that are not yet addressed that you consider important for this interview?



2 ANNEX TO CHAPTER 3

2.1 Inappropriate use of emergency department: definition and prevalence

Search strategy

Database: Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations and Ovid MEDLINE(R) <1946 to Present>

- 1 Emergencies/ (35324)
- 2 Emergency Service, Hospital/ (47373)
- 3 Emergency Medical Services/ (34230)
- 4 (emergency adj2 (care or healthcare or department? or unit or units or room?)).ti,ab. (77644)
- 5 "Utilization Review"/ (7348)
- 6 (inappropriate adj2 (care or visit? or admission? or use? or attendance?)).ti,ab. (4834)
- 7 overuse.mp. (6601)
- 8 5 or 6 or 7 (18482)
- 9 1 or 2 or 3 or 4 (153912)
- 10 8 and 9 (1317)
- 11 limit 10 to systematic reviews (27)

First sifting based on title and abstract

Based on title & abstract: 25 exclusions.

Full text sifting

Only two studies were retained.^{1,2}

2.2 Economies of scale

Search strategy:

We used the literature review by Blank et al. (2013)³ as starting point. The following search was done to retrieve additional studies:

Database: Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations and Ovid MEDLINE(R) <1946 to Present>

- 1 Emergencies/ (35429)
- 2 Emergency Service, Hospital/ (47539)
- 3 Emergency Medical Services/ (34311)
- 4 (emergency adj2 (care or healthcare or department? or unit or units or room?)).ti,ab. (77989)
- 5 (economies adj2 (scale or scope or cost)).ti,ab. (578)
- 6 cost function.ti,ab. (1539)
- 7 stochastic analysis.ti,ab. (224)
- 8 1 or 2 or 3 or 4 (154442)
- 9 5 or 6 or 7 (2315)
- 10 8 and 9 (12)
- 11 limit 10 to yr="2012 -Current" (1)

The retrieved article was not relevant to the scope of the search. As such, no additional articles were found.



2.3 Impact of emergency department closures

Search strategy

Database: Ovid MEDLINE(R) <1946 to August Week 3 2015>

- 1 Health Facility Closure.mp. or Health Facility Closure/ (2233)
- 2 Emergencies/ (35324)
- 3 Emergency Service, Hospital/ (47373)
- 4 Emergency Medical Services/ (34230)
- 5 (emergency adj2 (care or healthcare or department? or unit or units or room?)).ti,ab. (68667)
- 6 2 or 3 or 4 or 5 (144935)
- 7 1 and 6 (112)
- 8 limit 7 to (Dutch or English or French) (109)
- 9 limit 8 to yr="2005 -Current" (49)
- 10 limit 8 to yr="2000 -Current" (75)

Initial sifting

Ten studies were included after a review of title and abstract (only empirical research regarding factors contributing to and impact of ED closures)⁴⁻¹³. In addition, ad-hoc searches resulted in two additional articles.^{14, 15}

Exclusion after full-text review

After reviewing the full text, the following articles were excluded:

- Case-description¹²;
- Letters to the editor^{15, 20};
- Out of scope (not focusing on impact or associated factors ED closures)¹¹;
- Temporary ED closures because of overcrowding, etc. (ambulance diversions) without the aspect of ED closure as focus.¹³


Table 2 – Summary table studies on associated factors and impact emergency department closures

Study	Study objective	Setting	Period	Sample	Results	Discussion
Hsia et al. (2011)⁵	To determine factors associated with closure of hospital emergency departments (closures of hospitals that had an ED or ED closures only); including hospital, community and market-level characteristics	US	1990-2007	All general acute non-federal short stay hospitals (excluding hospitals in rural areas): n=2446 in 1990; n=1779 in 2009 1041 ED closures or 89 per year	<ul style="list-style-type: none"> Hospital characteristics associated with ED closure: safety-net status; for-profit status; low-profit margins Communities: serving population with high levels of poverty Market: another ED within a 15-mile radius; areas with high level of competition 	<ul style="list-style-type: none"> Safety-net hospitals have difficulties to find emergency physicians on call because of the large proportion of uninsured patients. Areas with vulnerable populations (minority groups, uninsured or under-insured patients) are threatened by closures while these groups have proportionally higher ED use than other groups. Most factors are market-driven.
Hsia et al. (2012)⁶	To determine characteristics associated with ED closure (closures of hospitals that had an ED or ED closures only)	US, California	1998-2008	401 hospitals (29 ED closures)	<ul style="list-style-type: none"> Higher proportion of black and MEDICAL insurance (California's Medicaid program) patients → more ED closures Hospitals with more discharges and operating margin → less ED closures More ED closures in for-profit hospitals 	<ul style="list-style-type: none"> Fewer EDs are located in areas with poorly insured residents and hospitals are more likely to add ED capacity in suburban markets with more secure insurance profiles. ED closures have the potential to magnify health disparities in vulnerable populations. This regional analysis (with data of better quality) confirms previous national study results.
Hsia et al. (2012)⁴	To determine whether patients living in areas affected by emergency department closure, with subsequent increased distance to nearest ED, have higher risk of inpatient mortality for time-sensitive conditions	US, California	1999-2009	Patients with time-sensitive medical conditions (AMI, stroke, sepsis, asthma/COPD) admitted via ED in general acute non-federal hospitals (only patients admitted to nearest ED included to exclude patient preferences: e.g. patients included in health plans such as Kaiser Permanente): 785 385 patients of which 67 577 (6.8%) with increased distance to ED	<ul style="list-style-type: none"> Patients experiencing increased distances were more likely to be black or Hispanic, uninsured or insured by Medicaid and less likely to be privately insured The changing distance to the ED was not significantly associated with in-hospital mortality in the general sample 	<ul style="list-style-type: none"> Only a small portion of patients (2%) experience increase in distance with a mean of only 1.4 miles. Time to be seen (probably shorter for patients coming in via ambulance) is more important than transport time, yet data about transport type was missing. ED closures mainly in small volume EDs, which can have a positive impact on patient outcomes. Results suggest that in a certain context where other services exist, it is possible that closures do not have a detrimental effect on patient outcomes.
Liu et al. (2014)¹⁵	To determine the association between ED closures (closures of hospitals that had an ED or ED closures only) and inpatient mortality for patients receiving care in hospitals located near hospitals with ED closures	US, California	1999-2010	Non-elective adult patients in general hospitals, population of California (n=16 246 892): 48 ED closures	Admissions affected by ED closure experienced higher odds of inpatient mortality than unaffected admissions: 1.05 [1.02-1.07]. An even greater increase was found for the non-elderly (18-64 years) and patients admitted with AMI, stroke or sepsis.	<ul style="list-style-type: none"> The study showed an overall association between ED closure and inpatient mortality rates but could not identify the underlying mechanisms causing these different patient outcomes (e.g. increased travel times, wait times, ED crowding, patients delaying care).
Shen and Hsia (2012)¹⁰	To determine whether decreased access (increased driving time to nearest ED) results in adverse patient outcomes or	US, California	1996-2005	Medicare patients with AMI (approx. 150 000 patients per year resulting in 1.49 million patient-year observations)	<ul style="list-style-type: none"> 89% did not experience increased driving times; 8.9% < 10 min; 1.7% 10-30 min; 0.2% > 30 min; Having a cathlab in nearest ED has an impact on 7-day and 30-day mortality For moderate differences in travel times mortality rates do not differ. For patients with 	<ul style="list-style-type: none"> Deterioration in geographical access to ED affects a small segment of the population and most adverse effects are only temporary. This suggests that policy planners can minimize the adverse effects by ensuring adequate capacity of remaining EDs and by facilitating



Study	Study objective	Setting	Period	Sample	Results	Discussion
	changes in patient health profiles				>30 min increase the 1-year mortality increases (persistent over time)	<p>the realignment of healthcare resources during the transition periods.</p> <ul style="list-style-type: none"> It is unclear how robust these results are, there several shortcomings in the reporting of this study: sample size, dealing with multiple testing problems, etc.
Sun et al. (2006)¹²	To determine the impact of hospital closures on emergency department ambulance diversion	US, Los Angeles	1998-2004	Hospitals with EDs decreased from 82 to 75 (12 closures and 5 openings)	<ul style="list-style-type: none"> Hospital closure was associated with an average increase of 56 monthly diversion hours for 4 months at the nearest hospital Diversion hours normalize after 4 months of hospital closure No association between ED visits, ambulance transports and diversion 	<ul style="list-style-type: none"> Hospital closures may increase crowding in adjacent facilities by reducing local supply of inpatient beds and ED capacity. The lack of association between ED visits and ambulance transports with diversion suggests that ED crowding is dominated by a reduction of ED and hospital capacity, rather than by increases in patient demand.
Lee et al. (2015)¹⁴	To calculate the impact of hospital closures on ED utilisation and to determine which factors are associated with ED volume growth	US, New York State	2004-2010	All general acute hospitals with EDs (exclusion: EDs associated with speciality hospitals); 15 acute care hospitals with EDs that closed and 192 that remained open	<ul style="list-style-type: none"> ED volume increased faster at tertiary referral centres (4.8%) compared to non-tertiary referral centres (2.2%) ED volume increased more in urban hospitals (3.7%) compared to non-urban hospitals (2.1%). This latter group also includes suburban hospitals The impact of nearby hospital closures is a significant factor associated with variation in ED volume growth rates For each predicted growth of 1%, the actual growth was 0.8% 	<ul style="list-style-type: none"> Difference predicted and actual growth can potentially be explained by patients deciding not to access the ED (alternative care setting or postponing care). Predicting the effect of hospital closures is critical because it can inform policymakers and affected communities as to whether a given hospital closure may lead to unsustainable strains on nearby hospitals or if the remaining capacity will be sufficient to meet the demand.

US = United States



3 ANNEX TO CHAPTER 4

3.1 Systematic reviews on emergency care workforce issues

Search for systematic reviews on emergency care workforce issues

We have conducted a Medline-search (OVID-Medline) on 20/07/2015 combining the search term (emergency service, hospital/ emergency medical services/ (emergency adj2 (care or healthcare or department? or unit or units or room?))) with (workforce.ti,ab. Nursing Staff/ or Health Manpower/ or Employment/ or Job Satisfaction/ or "Personnel Staffing and Scheduling"/ *Nurse Practitioners/ *Nurse's Role/ *Physician's Role/ nursing staff.ti,ab. nurse practitioners.ti,ab.) with limiting search results to 'systematic reviews' published in English between 2005 and 2015. This resulted in 73 hits of which 63 were excluded based on title and abstract and 5 based on a full-text review. As a result, 5 reviews¹⁶⁻²⁰ were included. An additional review of reference lists resulted in 2 additional reviews^{21, 22}.



4 ANNEX TO CHAPTER 6

4.1 Systematic reviews on telephone triage

Search for systematic reviews on telephone triage

We have conducted a scoping review in google and found a recent review on telephone triage by Turner et al. (2015).²³ This review included the following aspects about telephone triage: effectiveness to reduce ED visits, safety, appropriateness, patient satisfaction and compliance. Effectiveness to reduce ED visits and safety were the main outcomes of interest. The former was part of the narrative review discussed in Chapter 10. The latter was, in the report of Turner et al. (2015)²³, based on an update of the systematic review performed by Huibers et al. (2011).²⁴ In addition to the update of Turner et al. (2015) we also did a citation search of Huibers et al (2011)²⁴ in Web of Knowledge (05/01/2016). This resulted in 17 citations of which two systematic reviews (Wheeler et al. 2015²⁵; Lidal et al. 2013²⁶) and one large randomised clinical trial (Campbell et al. 2015)²⁷. Since the review of Lidal et al. (2013)²⁶ focused on the reduction of ED visits, it was not included in Chapter 6 but in Chapter 10 (the narrative review of systematic reviews).



5 ANNEX TO CHAPTER 10

5.1 List of experts

Table 3 – List of experts

Country	Name	Organisation
Australia	Terri Jackson	University of Melbourne
Denmark	Mickael Bech Andreas Rudkjobing	University of Southern Denmark University of Copenhagen, Danish Medical Association
England	Thomas Cowling	Imperial College, London
France	David Bernstein	Various (Freelancer)
The Netherlands	Johan van Manen	Dutch Healthcare Authority



5.2 Expert survey on emergency care services in selected countries

5.2.1 Introduction

This survey is conducted as part of a larger project, which aims to contribute to discussions on the organisation and payment system of emergency care services in Belgium, with a particular focus on emergency departments (ED). Based on your expertise, future emergency care reforms in Belgium may consider the experiences from Australia, Denmark, England, France, Switzerland and the Netherlands. In addition to this survey, we are conducting an extensive literature review. The results of both will be integrated into a report on emergency care in high income countries.

Emergency services in Belgium face a number of challenges: a) organisation suffers from poor coordination of different emergency providers (e.g. primary care out-of-hours facilities vs. hospital EDs); b) financial incentives encourage EDs to treat a high number of cases, and as a result c) EDs struggle with overcrowding and potentially inappropriate utilization.

Our study aims to answer the following questions for each country:

1. How are emergency care services organised?
2. Which payment systems are used for emergency care? What are the incentives of these payment systems?
3. Have there been organisational and/or payment reforms in order to restructure emergency care services?

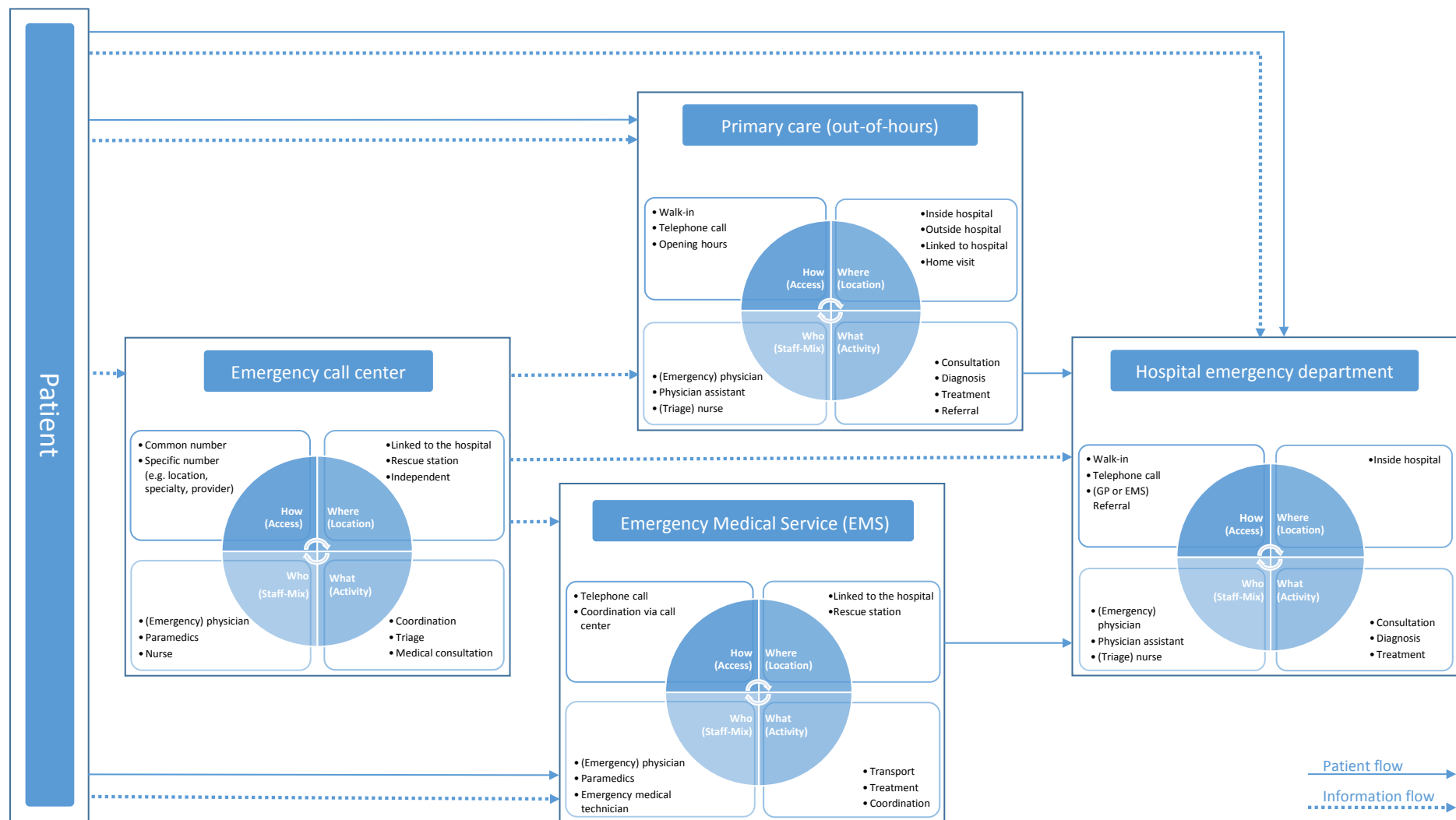
5.2.2 Context

Organisational context

In order to analyse the configuration of emergency care services across countries, we have developed a framework to systematically describe the characteristics of different providers and the flow of patients and information through the system. Figure 1 shows that patients in need of an emergency treatment can contact different providers, which depending on the country specific organisation may include emergency call centres, primary care (out-of-hours) providers, emergency medical services or hospital emergency departments. The characteristics of each provider can be described by four main dimensions which may differ depending on national/ regional or local arrangements: Access (How can patients contact the provider?), Location (Where is the provider located?), Activity (What kind of services are performed?) and Staff-mix (Who is providing the service/treatment?).



Figure 1 – Framework for analysing different emergency service providers and the flow of patients



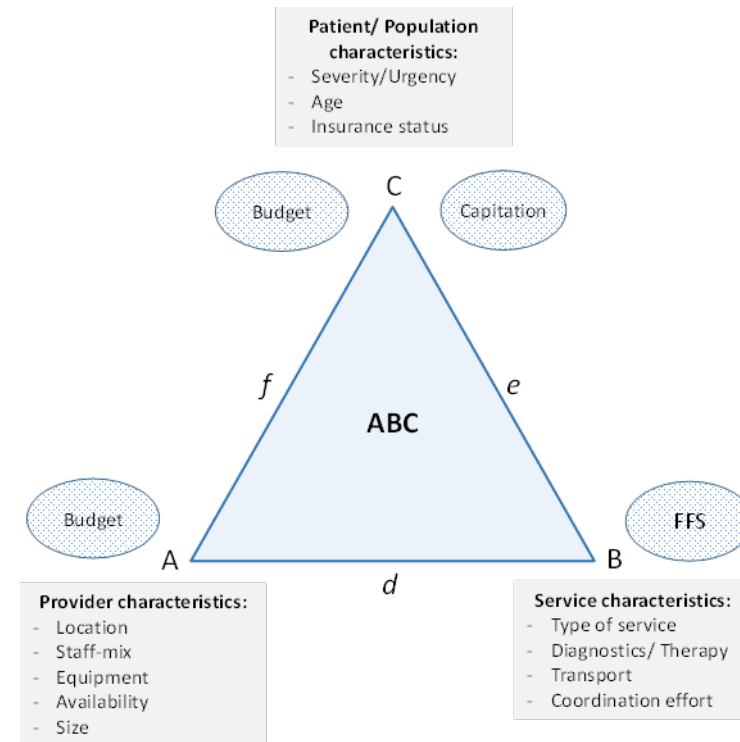


Financial context

Providers engaged in emergency care can be paid based on different methodologies. Payment systems in a given country often include a variety of different payment mechanisms; and each payment mechanism has different incentives depending on the type of information that is used to determine payment. Figure 2 illustrates that payment mechanisms can, in theory, be based either on information about provider (A), service (B) and/or patient/population characteristics (C). For example ED budgets may depend on provider characteristics such as: size, location, staff-mix, equipment or 24-hour availability. Alternatively, service characteristics can be taken into account especially if payments for providers are based on FFS. Moreover, the population and patient characteristics may influence provider payment, e.g. if ED budgets are adjusted depending on severity or urgency of treated patients.

In practice, payment mechanisms often combine different types of information to determine payment. For example, FFS payments may be adjusted for staff-mix or availability (d). ED budgets could be based on both population size and services delivered (e); or they could be based on population size and availability of staff and equipment (f). Finally, payment systems combining all types of information are conceivable, where budgets are determined on the basis of provider, patient and service characteristics (ABC).

Figure 2 – Framework for analysing provider payment mechanisms





5.2.3 Questionnaire

(Please simply enter your answers below the questions and use the track changes function or a different font colour to highlight your answers)

Section I. Background

1. National/ regional definition(s) of emergency cases:
 - Are there different definitions for different types of providers or specialties (e.g. EMS vs. ED) or is there a common definition?
 - If yes, defined by whom?
 - What is (are) the definition(s)?
2. Planning of emergency infrastructure:
 - Which institution(s) is (are) responsible for planning of the different emergency providers outlined in figure 1?
 - Is the planning of different providers coordinated (e.g. are primary care out-of-office providers taken into account in the planning of EDs)?
 - Does each hospital have an emergency department (see also table below)?
 - If not, how are EDs allocated throughout the country/region (e.g. considering travel time)?
 - Is there a differentiation between EDs, e.g. between basic and specialised emergency departments?
3. Health professionals and education:
 - Is emergency medicine a recognized medical speciality?
 - Are there other specialised health professionals working in emergency care and what are their qualification requirements?
4. Data collection:
 - Is there any data on emergency care, which is possibly part of a general (freely available) healthcare database? If yes, please provide the URL.
 - Is there a common dataset for emergency care spanning different providers, e.g. an emergency register?

Table 4 – Indicators of availability and use

	Total	Per 100 000 population
Number of hospitals with ED		
- <i>If applicable distinguished by basic and specialised ED</i>		
Total number of hospitals		
Number of ambulatory emergency contacts		
- <i>If applicable distinguished by type of provider (ED, primary care out-of-hours provider, etc.)</i>		
Number of emergency inpatient admissions		

Section II: Organisation of emergency care

1. Types of providers:
 - Which providers are available in your country/region?
 - Please answer for each provider in Figure 1 the following questions (taking into account the points outlined in the figure):
 - How can they be accessed?
 - Where are they located?
 - What is their range of activity?
 - Who is working at the provider (skill mix)?
2. Legal requirements:
 - What are the legal requirements for running basic or specialised EDs (e.g. staff qualifications/availability, specialties and technical composition)?
 - Are there legal requirements for primary care (out-of-hours) centres (e.g. opening hours, skill-mix, specialties and availability)?
3. Triage and coordination:



- Is there a system for guiding the patient to the most appropriate provider? (*possibly independent from triage steering mechanisms*)
- Which providers perform a triage assessment? And is there a national standard for triage assessment (at different providers)?
- Does this assessment influence the pathway of the patient?
- Are electronic medical records used by and across emergency providers?
 - Is there a common interface and/ or minimum data set for data exchange among providers
 - Is this emergency data integrated into patient's individual electronic health record?
- 4. Patient perspective:
 - Please describe an emergency patient pathway taking into account the different opportunities for patients to access emergency providers listed under a)
 - Do patients understand the system?
 - Do user charges exist in the case of emergency care? Do they differ depending on the accessed provider?

Section III: Payment system in emergency care

1. Payment of providers:
 - Please describe for each provider the different payment mechanisms, taking into account the type of information that is used to determine the payment (see Figure 2):
 - Provider characteristics, e.g. determining budgets for emergency availability
 - Service characteristics, e.g. basic fee plus additional fees for complex treatments or home visits
 - Patient characteristics, e.g. for adjusting budgets in relation to case-mix or severity of treated patients
 - Please explain how hospitals are paid (1) if patients are admitted as inpatients after treatment at the ED and (2) if patients are not admitted.
2. Payment of health professionals:

- Please describe the payment system of physicians working at different providers
 - FFS, e.g. different by setting
 - Salary, e.g. different by seniority/specialty
 - Capitation, e.g. different by type of patient or by setting

Section IV: Main challenges, current debates and recent reforms

Please state if there is any literature supporting your arguments. For reforms please also provide information regarding reasons and available evaluations.

1. Main challenges:
 - Please describe the most important challenges and debates concerning emergency care in your country. For example:
 - Do patients have to wait a long time when visiting the ED?
 - Is there a shortage of emergency specialists?
 - Are there regional differences in access to emergency care?
 - Are there any unintended incentives of the payment mechanisms of providers and professionals?
 - Have costs of emergency care (EDs, primary care out-of-hours, etc.) increased more strongly than total health expenditures? Is this a reason for concern?
 - Is there a high proportion of inappropriate ED contacts (e.g. patients with pathology that can be treated by a GP or can be considered as elective care)? Are there any studies?
2. Reforms (recent, ongoing and planned):
 - Please describe organisation reforms of emergency care provision. For example:
 - Have there been structural reforms to reduce the number of hospitals with ED? If yes, please provide some detail (e.g. planning approach, measuring the need for emergency care).
 - Have there been reforms and/or campaigns aiming to reduce the number of patients accessing the emergency department (e.g. possibly including differentiated user charges)? If yes, please provide some detail.



- Have there been reforms focusing on coordination of primary care (out-of-hours) and hospital based emergency care services?
- Please describe reforms concerning the payment of emergency providers. For example:
 - Harmonization of payment of primary care (out-of-hours) and emergency departments
 - Introduction of pay for quality (P4Q) initiatives, e.g. based on process indicators such as door to needle and waiting time.



6 ANNEX TO CHAPTER 10

6.1 Search strategy

Database: Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations and Ovid MEDLINE(R) <1946 to Present>

Search Strategy:

- 1 Triage/ (8674)
- 2 ((emergency or "ED") adj3 triage).ti,ab. (967)
- 3 ("ED" adj2 (care or healthcare or department? or unit or units or room? or crowding or overcrowding)).ti,ab. (13751)
- 4 (emergency adj2 (care or healthcare or department? or unit or units or room? or crowding or overcrowding)).ti,ab. (78513)
- 5 Emergencies/ (35613)
- 6 Emergency Medical Services/ (34582)
- 7 Crowding/ (2484)
- 8 "Utilization Review"/ (7393)
- 9 (emergency adj2 (utilisation or "use" or utilization or visit? or attendance? or admission? or readmission?)).ti,ab. (12995)
- 10 (urgent adj2 (utilisation or "use" or utilization or visit? or attendance? or admission? or readmission?)).ti,ab. (696)
- 11 (unscheduled adj3 (utilisation or "use" or utilization or visit? or attendance? or admission? or readmission?)).ti,ab. (726)
- 12 (unplanned adj3 (utilisation or "use" or utilization or visit? or attendance? or admission? or readmission?)).ti,ab. (1284)
- 13 ("ED" adj3 (utilisation or "use" or utilization or visit? or attendance? or admission? or readmission?)).ti,ab. (5886)
- 14 ("ED" adj3 (utilisation or "use" or utilization or visit? or attendance? or admission? or readmission?)).ti,ab. (5886)
- 15 meta analysis.mp,pt. or review.pt. or search:.tw. (2280380)
- 16 1 or 2 or 3 or 4 or 5 or 6 or 7 (144180)
- 17 8 or 9 or 10 or 11 or 12 or 13 or 14 (26742)
- 18 16 and 17 (14572)
- 19 15 and 18 (1117)
- 20 limit 19 to (yr="2005 -Current" and (dutch or english or flemish or french)) (729)



Nbr	Database: EMBASE
773	#25 #24 AND [2005-2015]/py
1,140	#24 #22 AND ([dutch]/lim OR [french]/lim OR [english]/lim) AND ([dutch]/lim OR [english]/lim OR [french]/lim)
1,186	#22 #15 AND [review]/lim
20,188	#15 #13 AND #14
29,636	#14 #8 OR #9 OR #10 OR #11 OR #12
150,879	#13 #2 OR #3 OR #4 OR #5 OR #6
10,097	#12 (ed NEAR/3 (utilisation OR 'use' OR utilization OR visit OR visits OR attendance OR attendances OR admission OR admissions OR readmission OR readmissions)):ab,ti
2,115	#11 (unplanned NEAR/3 (utilisation OR 'use' OR utilization OR visit OR visits OR attendance OR attendances OR admission OR admissions OR readmission OR readmissions)):ab,ti
1,124	#11 (unplanned NEAR/3 (utilisation OR 'use' OR utilization OR visit OR visits OR attendance OR attendances OR admission OR admissions OR readmission OR readmissions)):ab,ti
1,085	#10 (unscheduled NEAR/3 (utilisation OR 'use' OR utilization OR visit OR visits OR attendance OR attendances OR admission OR admissions OR readmission OR readmissions)):ab,ti
18,179	#10 (unscheduled NEAR/3 (utilisation OR 'use' OR utilization OR visit OR visits OR attendance OR attendances OR admission OR admissions OR readmission OR readmissions)):ab,ti
16,343	#9 (urgent NEAR/2 (utilisation OR 'use' OR utilization OR visit OR visits OR attendance OR attendances OR admission OR admissions OR readmission OR readmissions)):ab,ti
10,953	#9 (urgent NEAR/2 (utilisation OR 'use' OR utilization OR visit OR visits OR attendance OR attendances OR admission OR admissions OR readmission OR readmissions)):ab,ti
21,614	#8 (emergency NEAR/2 (utilisation OR 'use' OR utilization OR visit OR visits OR attendance OR attendances OR admission OR admissions OR readmission OR readmissions)):ab,ti
110,901	#8 (emergency NEAR/2 (utilisation OR 'use' OR utilization OR visit OR visits OR attendance OR attendances OR admission OR admissions OR readmission OR readmissions)):ab,ti
33,032	#6 'triage'
	#5 crowding
	#4 (ed NEAR/2 (care OR healthcare OR department OR departments OR unit OR units OR room OR rooms OR crowding OR overcrowding)):ab,ti
	#3 (emergency NEAR/2 (care OR healthcare OR department OR departments OR unit OR units OR room OR rooms OR crowding OR overcrowding)):ab,ti
	#2 'emergency health service' AND [embase]/lim

The Cochrane Library for systematic reviews was searched for 'emergency departments', 'emergency room'.



6.2 Full AMSTAR evaluation

Table 5 – Evaluation of studies according to the AMSTAR instrument

Author	ams1	ams2	ams3	ams4	ams5	ams6	ams7	ams8	ams9	ams10	ams11	AMS_TOT
	A priori design	Duplicate selection and extraction	Comprehensive	Publication status	Study list	Study characteristics	Quality assessment	Quality reporting	Combining findings	Publication bias	Conflict of interest	Sum score
Althaus et al. (2011) ²⁸	Green	Green	Green	Green	Red	Green	Green	Green	Green	Red	Red	8
Bahr et al. (2014) ²⁹	Red	Green	Green	Red	Red	Green	Green	Green	Green	Red	Red	6
Crocker et al. (2012) ³⁰	Red	Green	Green	Red	Red	Green	Green	Green	Green	Green	Red	7
Fan et al. (2014) ³¹	Red	Red	Green	Green	Red	Green	Green	Green	Green	Red	Red	6
Flores-Mateo et al. (2012) ³²	Green	Green	Green	Green	Red	Green	Green	Green	Green	Red	Red	8
Franek et al. (2013) ³³	Green	Red	Green	Green	Red	Green	Green	Green	Green	Red	Red	8
Health Quality Ontario (2013) ³⁴	Red	Red	Green	Green	Red	Green	Green	Green	Green	Red	Red	6
Health Quality Ontario (2014) ³⁵	Red	Red	Green	Green	Red	Green	Green	Green	Green	Red	Red	6
Huntley et al. (2014) ³⁶	Green	Green	Green	Green	Red	Green	Green	Green	Green	Red	Red	8
Ismail et al. (2013) ³⁷	Red	Green	Green	Green	Red	Green	Green	Green	Green	Red	Red	7
Jackson et al. (2013) ³⁸	Green	Green	Green	Red	Red	Green	Green	Green	Green	Red	Red	8
Karam et al. (2015) ³⁹	Red	Green	Green	Green	Red	Green	Green	Red	Green	Red	Red	6
Katz et al. (2012) ⁴⁰	Red	Green	Green	Red	Red	Green	Green	Green	Green	Red	Red	6
Kumar et al. (2012) ⁴¹	Green	Green	Green	Red	Red	Green	Green	Red	Green	Red	Red	6
Lidal et al. (2013) ²⁶	Green	Green	Green	Green	Green	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Lohwthian et al. (2015) ⁴²	Red	Green	Green	Green	Red	Green	Green	Green	Green	Red	Red	8



6.3 Extraction tables

Table 6 – Summary of systematic reviews (1)

Study	Sources searched	Years searched	Number of studies included (if not all included studies evaluated ED-use, the number of studies including this primary outcome is given + if several large interventions were included study designs are given per type of intervention)	Countries included in the review
Althaus et al. (2011)²⁸	MEDLINE; EMBASE, CINAHL; PsychINFO, the Cochrane Library and ISI Web of Science	Inception to June 2010	<ul style="list-style-type: none"> General: 11 (3 RCT; 2 controlled pre-post studies; 6 non-controlled pre-post studies) 	US (5); UK; Australia; Canada; Sweden (3)
Bahr et al. (2014)²⁹	MEDLINE, CINAHL, Cochrane Review	Inception to February 2013	<ul style="list-style-type: none"> General: 19 (10 RCT; 4 controlled; 5 observational) Primary outcome: 3 RCT; 1 controlled. 	No information included
Crocker et al. (2012)³⁰	MEDLINE; CINAHL; PsychINFO; EBM review; EMBASE	Inception to December 2011	<ul style="list-style-type: none"> General: 3 RCT Primary outcome: 2 RCT 	No information included
Fan et al. (2014)³¹	Pubmed; CINAHL; EMBASE; Web of Science; EBSCO	Inception to January 2014	<ul style="list-style-type: none"> General: 36 (20 RCT; 5 controlled; 11 observational) Community based interventions: 16 (11 RCT; 1 controlled; 4 observational) Hospital-based interventions: 20 (9 RCT; 4 controlled; 7 observational) 	US (15); Australia (9); Canada (8); UK; France; Italy; and Singapore
Flores-Mateo et al. (2012)³²	PubMed; Cochrane Library	January 1985- February 2012	<ul style="list-style-type: none"> General: 48 (10 RCT; 16 controlled; 22 observational) Primary care supply: 10 (1 RCT; controlled (3); observational (6)) Out-of-hours access: 10 (controlled (4); observational (6)) Education: 6 (RCT (3); controlled (1); observational (2)) Gate-keeping: 5 (RCT (1); observational (4)); Cost-sharing: 12 (RCT (1); controlled (6); observational (5)) 	<ul style="list-style-type: none"> General: US (26); Canada (2); Spain (4); Sweden (1); Brazil (1) ; Belgium (1); The Netherlands (1); Australia (2); Ireland (1); UK (8); Denmark (1) Primary care supply: US (5); Canada (2); Spain (1); Sweden (1); Brazil (1) Out-of-hours access: US (1); Spain (3); UK (4); Belgium (1); the Netherlands (1) Education: US (4); Australia (2) Gate-keeping: US (5) Cost-sharing: US (11); Ireland (1) Telephone triage: US (1); UK (4); Denmark (1)



Study	Sources searched	Years searched	Number of studies included (if not all included studies evaluated ED-use, the number of studies including this primary outcome is given + if several large interventions were included study designs are given per type of intervention)	Countries included in the review
			<ul style="list-style-type: none"> Telephone triage: 6 (4 RCT; 2 observational) 	
Franek et al. (2013) ³³	MEDLINE; EMBASE; CINAHL; COCHRANE; CRD	January 2000-15 January 2012	11 (1 systematic review; 10 RCT of which 9 focus on Stanford Chronic Disease Self-Management Program)	US (5); UK (2); Netherlands; China; Australia ED visits: US (3) China
Health Quality Ontario (2013) ³⁴	MEDLINE; EMBASE; CINAHL; COCHRANE; CRD	Inception to April 2012	<ul style="list-style-type: none"> General: 11 (4 RCT; 7 observational) ED visits: 1 RCT 	<ul style="list-style-type: none"> General: US (8); UK; Australia; The Netherlands; ED visits: US
Health Quality Ontario (2014) ³⁵	MEDLINE; EMBASE; CINAHL; COCHRANE; CRD	January 2002-December 2011	<ul style="list-style-type: none"> 23 (8 systematic reviews; 15 observational) Studies in patients with any condition: 5 studies in which three ED visits is an outcome of interest (observational: n=5) Studies in patients with diabetes: 8 observational studies with 3 with ED visits as outcome of interest Studies in patients with COPD: 1 observational 	<ul style="list-style-type: none"> Studies in patients with any condition: <ul style="list-style-type: none"> General: 2 Taiwan; 3 Canada ED: 1 Taiwan; 2 Canada Studies in patients with diabetes: <ul style="list-style-type: none"> General: 1 Taiwan; 1 Korea; 4 USA; 2 Canada ED: Taiwan; Korea; USA Studies in patients with COPD: <ul style="list-style-type: none"> General: 1 Korea ED: Korea
Huntley et al. (2014) ³⁶	EMBASE; MEDLINE; CINAHL; PsychINFO; Cochrane	Inception to October 2012	<ul style="list-style-type: none"> 48 observational studies ED-visits: 24 studies Emergency hospital admissions: 22 studies 	<ul style="list-style-type: none"> ED-visits: Australia; Canada (3); UK (4); US (12); Spain; Israel; The Netherlands; Denmark. Emergency hospital admissions: UK (11); US (6); Spain; Canada; Ireland; Italy.
Ismail et al. (2013) ³⁷	Pubmed; Cochrane collaboration; NHS economic evaluation database; HTA databases	1 January 1986-August 2011	<ul style="list-style-type: none"> 34 studies (6 reviews; 1 controlled; 27 observational) Out-of-hours: 11 (1 controlled; 10 observational) Telephone triage: 11 (2 systematic reviews; 9 observational) Various: 12 (4 systematic reviews; 8 observational) 	<ul style="list-style-type: none"> General: UK (11); Australia (3); New Zealand; Denmark; US (2); Ireland (3); Belgium; The Netherlands (4); Canada Out-of-hours: Ireland (3); UK (2); Belgium (1); Denmark (1); The Netherlands (4) Telephone triage: UK (5); Various (3); Australia (1); New Zealand (1); Denmark (1) Various: walk-in: UK (2); Community centres: US (2); Emergency nurse practitioner in residential care: Australia (1)



Study	Sources searched	Years searched	Number of studies included (if not all included studies evaluated ED-use, the number of studies including this primary outcome is given + if several large interventions were included study designs are given per type of intervention)	Countries included in the review
Jackson et al. (2013) ³⁸	MEDLINE; CINAHL; COCHRANE	Inception to 29 June 2012	<ul style="list-style-type: none"> General: 19 studies: 9 RCT; 10 observational ED visits: 3 RCT; 3 observational 	<ul style="list-style-type: none"> US (18); Canada (1)
Karam et al. (2015) ³⁹	Medline; CINAHL; EMBASE; Web of science	Inception to June 2012	<ul style="list-style-type: none"> General: 3 RCT; 6 controlled 	<ul style="list-style-type: none"> Australia (4); US (2); Canada (2); Italy
Katz et al. (2012) ⁴⁰	MEDLINE; CINAHL; Web of Science; Cochrane Controlled Trials Register, and Scopus	1946-2010	<ul style="list-style-type: none"> General: 13 studies (14 RCT; 9 controlled) ED visits: 5 RCT; 6 controlled 	<ul style="list-style-type: none"> Canada (3); US (3); Australia (2); Hong-Kong (not reported)
Kumar et al. (2012) ⁴¹	Medline; Embase	1990 to April 2011	<ul style="list-style-type: none"> 12 studies (2 RCT; 8 controlled; 2 observational) 	No data reported
Lidal et al. (2013) ²⁶	MEDLINE; Cinahl; EMBASE, PsyclINFO; Cochrane Database of Systematic Reviews; Cochrane Central Register of Controlled Trials (CENTRAL); British nursing index (BNI), DARE via CRD and HTA via CRD	Until June 2012	/	/
Lohwthian et al. (2015) ⁴²	OVID Medline; and Cochrane Library CINAHL	1946 to December 2013	<ul style="list-style-type: none"> 9 studies (4 RCT; 1 controlled trial; 4 observational) 	<ul style="list-style-type: none"> Australia (2); Canada (4); USA (2); Scotland (1); Hong Kong (1) and Singapore (1)
Morgan et al. (2013) ⁴³	MEDLINE; Cochrane; OAlster; Scopus.	1966 to January 2013	<ul style="list-style-type: none"> 39 studies: (4 RCT; 4 controlled; 31 observational) 7 observational studies on increased access hours (1 out-of-hours GP clinic, other change in scheduling) 	<ul style="list-style-type: none"> General: US (32); Belgium; Canada; Netherlands; Ireland (2); UK (2) Access hours: US (3); Belgium; Canada; Netherlands; Ireland Pre-hospital diversion: UK (1); US (1)



Study	Sources searched	Years searched	Number of studies included (if not all included studies evaluated ED-use, the number of studies including this primary outcome is given + if several large interventions were included study designs are given per type of intervention)	Countries included in the review
			<ul style="list-style-type: none"> • Pre-hospital diversion: 2 studies (1 RCT; 1 observational) • Extending alternatives: 3 observational • Education: 1 RCT; 1 controlled; 3 observational • Barrier: <ul style="list-style-type: none"> ○ 5 gatekeeping; 1 RCT, 4 observational ○ Capitation: 1 controlled, 6 observational; • Cost-sharing: RCT (1); controlled (2); observational (7) 	<ul style="list-style-type: none"> • Extending alternatives: England (2); (US) • Education: US (5) • Barrier: <ul style="list-style-type: none"> ○ Gatekeeping: US (4); Ireland (1) ○ Capitation: Canada (1), US (6) • Cost-sharing: US (10)
Rennke et al. (2013)⁴⁴	MEDLINE; Cinahl; EMBASE; Cochrane	1990 - September 2012	<ul style="list-style-type: none"> • 28 RCT; 29 controlled. 	
Sinha et al. (2011)⁴⁵	MEDLINE ; CINAHL	1966-2010	<ul style="list-style-type: none"> • General: 18 studies (7 RCT, 8 controlled trials, 3 observational) 	<ul style="list-style-type: none"> • General: Australia (6); Canada (7); US (4); UK • ED as outcome: Australia (5); Canada (4); US (3); UK
Soril et al. (2015)⁴⁶	EMBASE; MEDLINE ; Pubmed; Cochrane	1950-January 2015	<ul style="list-style-type: none"> • General : 17 studies (4 RCT ; 13 observational) • Case-management : 2 RCT; 10 observational • Individual care plan : 1 RCT; 2 observational • Information sharing : 1 RCT; 1 observational 	<ul style="list-style-type: none"> • General: US (8); Australia (3); New-Zeeland; Sweden (2); Canada; Scotland; Taiwan • Case-management: US (5); Australia (2); New-Zeeland; Sweden; Canada; Scotland; Taiwan • Individual care plan : US (2); Australia • Information sharing: US; Sweden
Stall et al. (2014)⁴⁷	Cochrane; MEDLINE; PUBMED	March 2014	<ul style="list-style-type: none"> • 9 studies: 1 RCT; 8 observational. 	<ul style="list-style-type: none"> • US (8); Canada (1)
Tohira et al. (2014)⁴⁸	Medline; Embase; Cinahl; Austhealth	2002-October 2012 (third week)	<ul style="list-style-type: none"> • 13 studies: 1 RCT (4 papers); 2 controlled; 10 observational 	<ul style="list-style-type: none"> • New Zealand (3); Canada; UK (9)
Tricco et al. (2014)⁴⁹	MEDLINE; Embase; Cochrane	Inception to May 2014	<ul style="list-style-type: none"> • RCT (36); controlled trials (14) 	<ul style="list-style-type: none"> • North-America (24); Europe (8); Australia (2); Israel (1); South Africa (1)



Table 7 – Summary of systematic reviews (2)

Study	Research Question	Target population	Interventions	Outcomes	Authors' conclusion
Althaus et al. (2011)²⁸	What is the effectiveness of interventions to reduce the number of emergency department (ED) visits by frequent users?	Adult (<16 years of age) frequent users of hospital EDs	<ul style="list-style-type: none"> Case-management (coordination of health services on behalf of the patient by a multidisciplinary team composed of nurses, social work & physicians) mostly not limited to the hospital: n=7 Case-management light (e.g. individual care planning): n=4 	<ul style="list-style-type: none"> ED use Costs or cost-effectiveness Clinical outcomes Social outcomes Health care use (other than ED) Patient/staff satisfaction 	<i>“Our systematic review suggests that interventions targeting frequent users of hospital ED may be effective at reducing ED use. Case management, the most-described intervention, could reduce ED costs and may also improve social and some clinical outcomes. Case management is therefore worth implementing in hospital EDs in the framework of a proper local evaluation setting with a clear definition of frequent users (i.e., more than 4 ED visits in 12 months) and collecting standardized measures of frequency of ED use. Such local evaluations and analysis of influence will be essential to confirm the beneficial effect of case management or similar interventions for frequent users.”</i>
Bahr et al. (2014)²⁹	Is there adequate evidence to support the use of post-discharge phone calls with respect to readmission, ED use, and patient satisfaction?	Adult hospitalised patients (≤ 18 years; hospital stay ≥ 24 hours)	<ul style="list-style-type: none"> Post-discharge telephone call: a call to a person discharged from the hospital to “determine how they were doing.” Including some, but not necessarily all, of the following components: answering patient questions, asking about symptoms, clarifying areas of patient education, reviewing medications, assessment of coping, and ensuring the adequacy of supplies and equipment. 	<ul style="list-style-type: none"> ED use Readmission Patient satisfaction 	<i>“The findings from this review were inconclusive about the effect of post-discharge telephone calls as there were positive and negative findings for most outcomes (readmission, ED use, patient satisfaction, scheduled and unscheduled follow-up, and physical and emotional well-being). Evidence from a few studies found post-discharge telephone calls were associated with higher rates of follow-up, but the intervention in these studies generally included a reminder of a scheduled appointment in addition to the other components of the call. Studies conducted using interventions delivered by a pharmacist and limited to medication had better outcomes than studies where medications were one of several areas of concern. An inadequate amount of evidence exists to make any conclusion about undesirable events, patient knowledge, anxiety reduction, self-efficacy enhancement, quality of life, or physical well-being.”</i>
Crocker et al. (2012)³⁰	What is the strength of telephone follow-up as an effective primary care-based	Adults (general)	<ul style="list-style-type: none"> Telephone follow-up provided by primary care (e.g. telephone calls by a nurse to review care needs, 	<ul style="list-style-type: none"> ED visit rate Hospital readmission rate 	<i>“Hospitalization often creates discontinuity of care, which can lead to adverse events, including increased hospital readmission and unnecessary resource use. Although there may be a perceived role for primary</i>



Study	Research Question	Target population	Interventions	Outcomes	Authors' conclusion
	intervention in improving quality outcomes for the post-discharge period?		reconcile medications, assist in scheduling outpatient appointments and rescheduling missed appointments, and assess barriers to keeping appointments)	<ul style="list-style-type: none"> Post-discharge primary care contact (e.g. primary care contacts) 	<p><i>care-based telephone follow-up, our review found an alarming paucity of published trials addressing primary care-based telephone and no demonstrable effectiveness in reducing post-hospitalization readmissions or emergency department visits, but it did show improved ability to engage patients in follow-up with their primary care providers. High-quality studies are still needed to evaluate the effect of a primary care-based telephone follow-up intervention. Considering the high costs of adverse post-discharge events, even a small reduction in emergency department visits or hospital readmission rates through use of this relatively low-cost tool could yield considerable savings and improve post-discharge health quality. With the advent of the medical home, primary care teams are poised to contribute to the study and development of effective transitional care strategies for patients in the post-discharge period."</i></p>
Fan et al. (2014)³¹	What is the effectiveness of interventions targeting the elderly population in reducing ED utilisation?	General elderly population (excluding studies on single conditions)	<ul style="list-style-type: none"> Hospital-based interventions (e.g. case-management; geriatric assessment and intervention in ED observation unit; ED based nurse discharge coordinator; risk screening and coordination) Community-based interventions (usually with a focus on preventing the older residents from illnesses or functional decline: e.g. case-management with preventive home visits by a nurse, comprehensive assessment, care planning, etc.; case-management by a 	<ul style="list-style-type: none"> ED visits 	<p><i>"Studies investigating interventions targeting the elderly population have mixed results regarding their effectiveness in reducing ED utilisation. A qualitative appraisal of the nature and effect of these interventions helps to extract a number of factors to be considered when formulating an effective geriatric intervention. Our findings suggest the hospital-based interventions have relatively poorer effects, which need to be designed in a more thorough manner and be better connected to the community based strategies. Interventions seem to achieve the most success with integration of multi-layered elements, especially when key elements such as a nurse-led multidisciplinary team, integrated social care, and strong linkages to the longer-term primary and community care services are incorporated. However, given that methodological issues have limited our ability to generalise the results and to make definite recommendations, findings from the review need to be interpreted and applied carefully by ED clinicians and policy-makers, warranting</i></p>



Study	Research Question	Target population	Interventions	Outcomes	Authors' conclusion
Flores-Mateo et al. (2012) ³²	What is the effectiveness of organizational interventions intended to reduce ED utilization in the general population?	General adult population. (excluding single study populations)	<ul style="list-style-type: none"> • geriatric evaluation unit and general practitioners. • Primary care supply: increasing number of primary care centers or primary care physicians. • Out-of-hours availability (e.g. General Practitioners from different practices forming a non-profit organization to provide care for their own patients out-of-hours); • Telephone triage and advice services (the use of telephone consultation for primary care patients seeking medical help out-of-hours) • Educational interventions (e.g. monthly group meetings with educational components; teaching patients how to use the health care system and providing counselling in social/emotional issues; self-management support). • Gate-keeping: Health maintenance organization/ managed care; pre-authorization payment for ED by primary care physician. • Cost-sharing is defined as any kind of out-of-pocket 	<ul style="list-style-type: none"> • ED (re-)visits • Safety measures 	<p><i>consideration of the organisation priority in each practice setting, appropriate adjustment of interventions, and local evaluation to monitor intervention outcomes.</i></p> <p><i>“Assessing the potential effect of organizational interventions on decreased ED utilization is complicated by the subjectivity in the interpretation of results due to the high number of interventions evaluated, as well as the manner of results/outcomes measurement and the different populations or acute care system delivery systems in developed countries. These variations make comparison between studies difficult and meta-analysis almost impossible. In sum, the evidence suggests that interventions aimed at increasing primary care accessibility and ED cost-sharing are effective in reducing ED use. However, the rest of the interventions aimed at decreasing ED utilization showed contradictory results. Changes in health care policies require rigorous evaluation before being implemented since these can have a high impact on individual health and use of health care resources.”</i></p> <p><i>Implications of the review for practice and research</i></p> <p><i>Practice: The authors stated that effective utilisation of emergency services while preventing overload required integrated interventions. Interventions would need to be specific for each country and be implemented as a function of the coverage and funding of the country’s healthcare system.</i></p> <p><i>Research: The authors stated that safety of interventions was important and future research needed to evaluate patient health, morbidity and mortality. Safety needed to be evaluated before policy implementation.</i></p>



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			<p>payment for health care services. Co-payments (patients pay a flat fee for each medical service sought or product purchased), co-insurance (patients pay a fixed percentage of the cost of care), deductibles (the amount one must pay out of pocket annually before insurance coverage begins to pay).</p>		
<p>Franek et al. (2013)³³</p>	<p>What is the clinical effectiveness of self-management support interventions for persons with chronic diseases?</p>	<p>Adults with general chronic conditions</p>	<ul style="list-style-type: none"> • Self-management support: any intervention that promoted the development of 3 or more of the 5 skills described in Wagner's Chronic Care Model (problem solving, decision making, resource utilization, patient-provider relationship, and/or taking action) or 3 or more of the 5 client outcomes as described in the Flinders Model (know their condition and various treatment options, negotiate a plan of care, engage in activities that protect and promote health, monitor and manage the symptoms and signs of the condition(s), and manage the impact of the condition on physical functioning, emotions and interpersonal relationships) 	<ul style="list-style-type: none"> • ED visits • Other healthcare utilization measures • Health status outcome • Health behaviour • Self-efficacy 	<p><i>"The Stanford Chronic Disease Self-Management Program (Stanford CDSMP) led to statistically significant, albeit clinically minimal, short-term improvements across a number of health status measures (including some measures of health-related quality of life), healthy behaviours, and self-efficacy compared to usual care. However, there was no evidence to suggest that the CDSMP improved health care utilization. More research is needed to explore longer-term outcomes, the impact of self-management on clinical outcomes, and to better identify responders and non-responders."</i></p>



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Health Quality Ontario (2013)³⁴	<p>What is the impact of eTools for health information exchange on patient outcomes and health services utilization when used to improve the care coordination of adults with chronic disease?</p> <p>What specifications of eTools contribute to their effectiveness?</p>	Adults with general chronic conditions	<p>was considered a self-management support intervention.</p> <ul style="list-style-type: none"> The Stanford Chronic Disease Self-Management Program (CDSMP) is a community-based self-management support program based on social cognitive theory that states that successful behaviour change requires confidence in one's ability to carry out an action (i.e., self-efficacy) and the expectation that a specific goal will be achieved (i.e., outcome expectancy). Tools and systems for electronic health information exchange that facilitate provider-provider communication in the outpatient community setting (including but not limited to referrals, prescribing, computerized physician order entries, and intra-team communication) 	<ul style="list-style-type: none"> Health services utilization (hospitalizations; readmissions; length of stay; ED use; mortality; health-related quality of life; patient satisfaction) Disease-specific clinical outcomes (e.g. total cholesterol) Process of care (e.g. rate of conducting eye examinations among patients with diabetes) Efficiency measures (e.g. time) 	<p><i>“There is evidence that the right eTools in the right environment and context can significantly impact health services utilization. However, the findings from this evidence-based analysis raise doubts about the ability of eTools with care-coordination capabilities to independently improve the quality of outpatient care. While eTools may be able to support and sustain processes, inefficiencies embedded in the health care system may require more than automation alone to resolve.”</i></p>



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Health Quality Ontario (2014) ³⁵	Is higher continuity of care effective at reducing health resource utilization and improving patient outcomes?	Adults with general chronic conditions	<ul style="list-style-type: none"> Continuity of care interventions: informational, management and relational. Relational continuity is the main focus of this review. Relational continuity refers to the ongoing relationship between the care provider and the patient. 	<ul style="list-style-type: none"> Health resource utilization (hospitalizations, ED visits) Mortality Disease-specific outcomes Quality of life Patient satisfaction 	<p><i>"There is low quality evidence that:</i></p> <ul style="list-style-type: none"> <i>Higher continuity of care is associated with decreased health service utilization. There is insufficient evidence on the relationship of continuity of care with disease-specific outcomes.</i> <i>There is an association between high continuity of care and patient satisfaction, particularly among patients with chronic diseases."</i>
Huntley et al. (2014) ³⁶	What is the impact of interventions at primary care practice level on levels of utilisation of unscheduled secondary care?	People from any age, any sex living in OECD countries with any health condition.	<ul style="list-style-type: none"> Physician density; Increasing out-of-hours access. Regular GP or regular specialist practitioner; Close distance primary care; Continuity of care 	<ul style="list-style-type: none"> Utilisation of unscheduled secondary care: ED attendance; emergency hospital admission 	<p><i>"The majority of research was from different healthcare systems and limited in the extent to which it can inform policy. However, there is evidence that continuity of care is associated with reduced emergency department attendance and emergency hospital admissions.</i></p> <p><i>While the expected associations with increased ED use were seen for patient level factors that are associated with greater prevalence of acute illness (increasing age, indices of low socioeconomic status, chronic disease), there were few clear overall associations across the published evidence for primary care practice or healthcare system factors. This is likely to be due to the importance of the background healthcare context such as insurance based systems without universal health coverage or healthcare with free access at the point of use. Therefore, the policy implications of studies will only be relevant to countries that utilise the healthcare model under study. Given these caveats, there are some interesting findings of relevance to clinicians and policymakers. Looking at healthcare systems, better access to primary care is associated with lower rates of ED use and EHA in the USA, but this effect is not demonstrated in the UK and other European countries. The geographical location of services is important, with proximity to a general practice reducing unscheduled secondary care use</i></p>



Study	Research Question	Target population	Interventions	Outcomes	Authors' conclusion
Ismail et al. (2013) ³⁷	What is the effectiveness of primary care service interventions to reduce inappropriate emergency department attendances?	General population	<p>Primary care interventions: out-of-hospital care or integrated care interventions to which patients have direct access (that is, without prior gatekeeping), including:</p> <ul style="list-style-type: none"> • Out-of-hours; • Telephone triage; • Various: walk-in (nurse-led services handling low acuity presentations in the UK); • Community centres (serving medically uninsured or rural populations with limited primary care access in the US); • Emergency nurse practitioner in residential care. 	<ul style="list-style-type: none"> • ED attendance • Clinical outcome • Patient satisfaction • Intervention cost 	<p><i>and proximity to ED increasing usage. Convenience for patients therefore appears to be important, a finding.</i></p> <p><i>“This review found no evidence of a reduction in inappropriate ED attendance following the introduction of a variety of interventions designed to improve access to primary care; the sole exception was US communities that have poor coverage of primary care services. Limited international evidence on available urgent care providers in community settings (for example, emergency nurse practitioners in residential care homes) suggests there may be some benefit from using these interventions to reduce referral rates to ED, but further, robust evaluation of the ‘real-world’ efficacy of such interventions is needed.</i></p> <p><i>Although actual, or perceived, absence of primary care does result in increased emergency attendances, findings from this review support the notion that increasing access points for urgent care may unmask latent demand that is more likely to be inappropriate for ED. Cost savings across the urgent care sector as a whole may be negated by the additional cost of providing new services; in addition, there is a risk of service duplication with disruption to continuity of care because of provider proliferation.”</i></p>
Jackson et al. (2013) ³⁸	What is the evidence for effects of primary care medical homes on patient and staff experiences, process of care, and clinical and economic outcomes?	Patient populations representing multiple diseases (not restricted to single disease studies)	<ul style="list-style-type: none"> • Patient Centered Medical Home (PCMH): 1) team-based care, 2) having at least 2 of 4 elements focused on how to improve the entire organization of care (enhanced access, coordinated care, comprehensiveness, systems-based approach to improving quality and safety), 3) a sustained partnership, and 4) having an intervention that involves 	<ul style="list-style-type: none"> • Quality of patient and staff experiences with care • Clinical quality (that is, provision of evidence-based care and health outcomes) • Economic effect of PCMH initiatives 	<p><i>“The patient centered medical home (PCMH) holds promise for improving the experiences of patients and staff and potentially for improving care processes, but current evidence is insufficient to determine effects on clinical and most economic outcomes.</i></p> <p><i>Does PCMH work? There is some evidence that PCMH may improve care experiences for both patients and staff. There is some evidence that PCMH may improve care processes, especially for preventive services. There is some evidence that PCMH may be associated with reduced emergency department admissions for older adults.</i></p>



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			structural changes to the traditional practice. Interventions that did not use the term "medical home" but that met this definition were categorized as "functional PCMH" interventions.		<p><i>Evidence is not yet sufficient to comment on evidence related to 1) chronic illness care processes, 2) clinical outcomes, 3) effect on hospital admissions, and 4) effect on costs of care.</i></p> <p><i>Bottom line PCMH is a promising model for organizing primary care. However, there are open questions about its effect on patients and health care organizations."</i></p>
Karam et al. (2015)³⁹	What is the evidence the effect of ED-based interventions on reductions in ED re-visits, hospitalizations, nursing home admissions and deaths among older adults?	Older patients with an ambulatory ED contact.	Interventions on the ED to reduce ED revisits among older adults. Classified by: intensity of the intervention design and type of strategy used to identify eligible study participants. Each intervention was assigned to one of three mutually exclusive categories based on the intensity of the intervention; <ul style="list-style-type: none"> • Referral (n=5): an assessment of the patient by a care provider (usually a nurse or social worker) in the ED, followed by recommendations to community based agencies or referral for follow up with the regular physician • Program (n=3): consisted of on-going support or care for the patient after discharge from the index ED visit. (e.g. comprehensive assessment, care plan development and care plan implementation by a coordinated team; an at-home monitoring device). 	<ul style="list-style-type: none"> • ED re-visits • Hospitalizations • Nursing home admissions • Death 	<p><i>"Of the few studies that met the inclusion criteria, there was a lack of consistency and clarity in study designs and evaluative outcomes. Despite this, more intensive interventions that followed patients beyond a referral and the use of a clinical risk prediction tool appeared to be associated with improved outcomes. The dearth of rigorous evaluations with standardized methodologies precludes further recommendations."</i></p>



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			<ul style="list-style-type: none"> Integrated (n=1): those in which a care facilitator was embedded into the patient's individual care plans. 		
Katz et al. (2012) ⁴⁰	What is the evidence on the effectiveness of ED-based interventions for care coordination with outpatient providers, with the goal of identifying common themes about which interventions are more or less effective in improving quality by reducing return visits to the ED and increasing follow-up visits with primary care providers?	ED patients (general)	ED-based care coordination included interventions that did any of the following: <ul style="list-style-type: none"> Ensured incorporation of information from previous health care visits into the current ED visit; Provided ED-based educational services on continuing care needs after discharge (1 study); Developed a post-ED treatment plan and next steps for obtaining appropriate aftercare (12 studies); Transferred information about the current ED visit to continuing care providers 	<ul style="list-style-type: none"> ED revisits; Hospitalizations; Follow-up with an outpatient clinician after the ED visit 	<i>"We found that care coordination interventions that have been implemented in the ED have variable effectiveness. The majority have been implemented in single centers, which makes generalizing the results of studies with positive results difficult. Because care coordination is a major goal of health care reform, future studies to better understand which interventions are most effective will be needed. Even identical care coordination interventions could have markedly different effects, depending on external factors such as the structure of the health care market, characteristics of the community, or the availability of external resources. making follow-up appointments from the ED may have variable effectiveness in communities in which there are fewer primary care providers or physicians who are unwilling to participate in an ED-based program."</i>
Kumar et al. (2012) ⁴¹	What is the effectiveness of the case-management model in the frequent ED user patient population (primary outcome of interest was ED utilization)?	Patients >18 years of age that were designated as frequent users of the ED without specific limitations on medical condition, reason for ED utilization, or complaint.	<ul style="list-style-type: none"> Case-management: "collaborative process of assessment, planning, facilitation, and advocacy for options and services to meet an individual's health needs through communication and available resources to promote quality cost-effective outcomes". In this approach, case managers identify appropriate providers and services for individual patients while 	<ul style="list-style-type: none"> ED utilization Inpatient admission rates Cost Psychosocial outcomes 	<i>"From our review, case-management (CM) seems to be successful in improving both clinical and social outcomes among frequent ED users. Reductions in ED visitation and ED costs are supported with the strongest evidence.</i> <i>The breadth of resources and intensity of intervention seems to correlate with better outcomes. Although the current literature supports the benefits of CM interventions, additional investigation is needed to determine what specific aspects of CM are most successful and cost effective. In addition, studies targeting especially challenging populations of high utilizers, including patients with substance abuse and</i>



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			simultaneously ensuring that available resources are being used in a timely and cost-effective manner.		<p>psychiatric disorders and those with the highest frequency of ED use, are needed.</p> <p><i>Pertinent aspects of the CM intervention that seemed to correlate with improved outcomes include frequency of follow-up with case managers after the initial interview, availability of psychosocial services such as substance abuse counseling, assistance with attainment of financial entitlements, and the aggressiveness of outreach to participants.</i></p>
Lidal et al. (2013) ²⁶	<p>Are triage systems, used in the pre-hospital setting, effective?</p> <p>Is one triage system more effective than others?</p> <p>Is it effective to use the same triage system in two or more settings of the acute chain?</p>	Patients of all age ages in the need for acute care (acutely ill or seriously injured somatic or psychiatric patients)	<ul style="list-style-type: none"> • Patient prioritizing by the use of a validated triage system in the pre-hospital setting; face-to-face or telephone triage-assessment. 	<ul style="list-style-type: none"> • Health outcomes (mortality, morbidity) • Patient safety (for example under-triage) • Patient satisfaction • Job-satisfaction with the triage systems among health workers • Resources use (for example over-triage) • To what degree triage was completed (goal achievement) • The quality of the information exchange between the different settings of the EMS (for example the quality of documentation) 	<p><i>“From this systematic review, we conclude that there is a lack of scientific evidence about the effects of validated pre-hospital triage systems and about the effects of using the same triage system in two or more settings of the EMS. The fact that there is no robust evidence on the effect of pre-hospital triage systems does not mean that such systems are ineffective. It means that we do not know whether the systems are effective, nor can we suggest the size of a potential effect. When introducing a new assessment tool in the EMS, it is timely to conduct a study. In the case of a pre-hospital triage system, we emphasize the importance of well-planned studies aimed to assess effect, such as RCTs, cluster RCTs, controlled before and- after studies or interrupted time series analysis with three observations before and after the triage-intervention.”</i></p>
Lohwthi an et al. (2015) ⁴²	What is the effectiveness of ED community transition strategies (ED-CTS) to reduce ED	ED patients aged ≥65 years who were discharged home (excluding	<ul style="list-style-type: none"> • Community transition strategies including <i>geriatric assessment</i> but with differing delivery by nurses, allied health professionals or 	<ul style="list-style-type: none"> • ED re-presentation • Hospitalisation • Functional decline in activities of daily living (ADL) 	<p><i>“There is limited high-quality data to guide confident recommendations about optimal ED community transition strategies, highlighting a need to encourage better integration of researchers and clinicians in the design and evaluation process, and increased</i></p>



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	<p>utilisation and other outcomes among the elderly?</p>	<p>studies on single disease management models such as fracture, falls, delirium).</p>	<p>trained health visitors. <i>Post-discharge interventions</i> focussed on community-based referral, with some providing telephone follow-up, GP liaison and/or direct linkage and/or short-term outreach assistance until community-based services became available.</p>	<ul style="list-style-type: none"> Nursing-care home admission and mortality in older people discharged home from ED 	<p><i>reporting, including appropriate robust evaluation of efficacy and effectiveness of these innovative models of care."</i></p>
<p>Morgan et al. (2013)⁴³</p>	<p>What is the effectiveness of interventions based outside the ED aimed at reducing ED use?</p>	<p>General</p>	<ul style="list-style-type: none"> Patient education on medical conditions and appropriate medical care use for low-acuity conditions; Creation of additional capacity in non-ED settings (e.g., expanded hours or same-day access); Managed care (e.g., primary care physician capitation or gatekeeping); Prehospital diversion; Patient financial incentives (e.g., co-payments or deductibles). 	<ul style="list-style-type: none"> ED-use 	<p><i>"Many studies have explored interventions based outside the ED to reduce ED use in various populations, with mixed evidence. Approximately two-thirds identified here showed reductions in ED use. The interventions with the greatest number of studies showing reductions in ED use include patient financial incentives and managed care, while the greatest magnitude of reductions were found in patient education.</i></p> <p><i>Our findings, taken along with prior reviews, are promising that non-ED interventions designed to reduce ED visits may be successful; however, it is clear that more study is needed to understand the most effective ways to reduce ED use.</i></p> <p><i>When organizations decide that reducing ED visits is a priority, the choice must be made which interventions should be implemented. We think that the choice should be made based on organization priorities and considering the profile of pros and cons for each intervention. For example, education is simple, can be inexpensive, and has an added benefit of improving health literacy; however, it is difficult to standardize. On the other hand, managed care and patient financial incentives are powerful tools but may have unintended consequences, like deferring needed care or limiting patient choice. In addition, adding capacity may have the opposite effect as desired. However, we can conclude that reducing ED use will require broad,</i></p>



Study	Research Question	Target population	Interventions	Outcomes	Authors' conclusion
Rennke et al. (2013) ⁴⁴	What is the effectiveness of hospital-initiated care transition interventions on reducing AEs, ED visits, and readmissions after discharge in general medical patients?	Undifferentiated population of adult general patients	<ul style="list-style-type: none"> Pre-discharge interventions: assessment of risk for adverse events or readmissions. Patient engagement (e.g., patient or caregiver education). Creation of an individualized patient record (customized document in lay language containing clinical and educational information for patients' use after discharge). Facilitation of communication with outpatient providers. Multidisciplinary discharge planning team. Dedicated transition provider (who has in-person or telephone contact with patient before and after discharge). Medication reconciliation. Post-discharge interventions: Outreach to patients (including follow-up telephone calls, patient-activated hotlines, and home visits). Facilitation of 	<ul style="list-style-type: none"> Adverse events ED visits Readmissions after discharge 	<p><i>organizational changes. Change could include a careful multilayered approach integrating several interventions along with a feedback mechanism to monitor outcomes and adverse events."</i></p> <p><i>"In summary, we found that only a limited number of bridging interventions involving a dedicated transition provider seems to reduce readmissions and ED visits after hospital discharge to home. Among these, only the Care Transitions Intervention (CTI) has been implemented in multiple settings and patient populations. Few studies specifically targeted AEs after discharge, and the studies we identified provided little information about implementation factors, contextual factors, or cost. Although hospitals are now being penalized for excessive readmission rates, the strategies that an individual hospital can implement to improve transitional care remain largely undefined."</i></p>



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			<p>clinical follow-up (including facilitated ambulatory provider follow-up). Medication reconciliation after discharge.</p> <ul style="list-style-type: none"> Bridging interventions: Inclusion of at least 1 pre-discharge component and at least 1 post-discharge component. 		
Sinha et al. (2011) ⁴⁵	What is the evidence for emergency department (ED)-based case management models designed to improve the health, social, and health service utilization outcomes for non-institutionalized older patients within the context of an index ED visit?	Non-institutionalized older	<p>Case-management with 8 distinct model characteristic components:</p> <ul style="list-style-type: none"> Having an evidence-based practice model; Nursing clinical involvement or leadership; High-risk screening processes; Focused geriatric assessments; Initiation of care and disposition planning in the ED; Inter-professional and capacity-building work practices; Post-ED discharge follow-up with patients; Evaluation and monitoring processes. 	<ul style="list-style-type: none"> Health (e.g. mortality; ADL functional decline rates) Social (e.g. home caregiver burden) Health service utilization outcomes (e.g. ED revisitation rates; time to first ED revisitation; subsequent hospital admission) 	<p><i>“Successful models of ED-based case management models for older adults share certain key characteristics. This study builds on the emerging literature in this area and leverages the differences in these models and their associated outcomes to support the development of an evidence-based normative and effective geriatric emergency management practice model designed to address the special care needs and thereby improve the health and health service utilization outcomes of older patients. The geriatric emergency management practice model we propose offers an evidence-based, nursing-led, inter-professional approach and philosophy of care that aims to improve all aspects of the emergency care that older patients receive.”</i></p>
Soril et al. (2015) ⁴⁶	What is the effectiveness of interventions to reduce frequent	General adult frequent ED user population. (e.g. threshold of 3 to	<ul style="list-style-type: none"> Case management (CM): comprehensive, interdisciplinary approach taken to assess, plan, 	<ul style="list-style-type: none"> ED visits; Costs. 	<p><i>“Based on the literature evaluated in the present systematic review, three types of interventions have been evaluated: case management, individualized care plans and information sharing.</i></p>



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	<p>emergency department (ED) use among a general adult high ED-use population?</p>	<p>10 ED visits within the 12 months prior to the study period)</p>	<p>personalize, and guide an individual's health services to promote improved patient and health system outcomes. A single point of contact (e.g. an individual described as either a case manager, care manager, or ED consultant) is assigned to a frequent ED user and is tasked with brokering access and guiding the patient through their customized care process, which may extend beyond the normal continuum of the ED and in-patient care, into the community.</p> <ul style="list-style-type: none"> • Individualized care plans employ interdisciplinary strategies, including cross-departmental care plan meetings and coordinated access to primary care resources. However in contrast to the CM approach, individualized care plans were described as less comprehensive in their design, limited in the number of health services and, importantly, implemented without a designated case manager or equivalent. • 'Information sharing': approaches related to the sharing of patient 		<p><i>The impact of the three types of frequent ED user interventions was variable, but modest at best. Case management had the most rigorous evidence base, yielded moderate cost savings, but with variable reductions in frequent ED use. The most clinically beneficial and cost-effective intervention to deter frequent ED use remains unclear given the overall variability in reported outcome and cost data. Considering the significant costs and resources required for implementation, the present evidence suggests that none of the examined interventions are likely to yield substantial, overall cost savings for the healthcare system. Findings from the present review further indicate that prior to implementing any given intervention, thorough identification of prevalent risk factors of frequent ED use, among ED populations, must first be conducted to determine inefficiencies or gaps in the delivery of health services and the resultant appropriateness of interventions. Such personalizing and tailoring of interventions and models of care, rather than standardization of care, may prove to be most effective at reducing high ED utilization."</i></p>



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<p>Stall et al. (2014)⁴⁷</p>	<p>What is the effect of home-based primary care for homebound older adults on individual, caregiver, and systems outcomes?</p>	<p>Community-dwelling older adults (aged ≥65) (Home-bound).</p>	<p>information (clinical and/or demographic information) amongst health care providers.</p> <ul style="list-style-type: none"> Home-based primary care (HBPC) programs provided by a house call visitor who is the ongoing primary care provider. (e.g. involvement of a fully integrated interprofessional care team comprising a variety of professionals, including geriatricians, general practitioners, nurse practitioners; holding regular inter-professional care meetings; availability of an afterhours urgent telephone service.) 	<ul style="list-style-type: none"> Hospitalizations Hospital bed days of care Emergency department visits Long-term care admissions and long-term care bed days of care Functional status Individual and caregiver satisfaction Cost analyses 	<p><i>“This systematic review has demonstrated that specifically designed home-based primary care (HBPC) programs for homebound older adults can reduce hospitalizations and long-term care admissions while improving individual and caregiver quality of life and satisfaction with care. This has been recognized elsewhere, with the most recent U.S. health-care reform legislation, the Patient Protection and Affordable Care Act of 2010, including a provision to test a remuneration incentive and operational model for HBPC, known as the Independence at Home program. The current review has also highlighted how much of the evidence supporting HBPC is observational and that there is a pressing need for further well-controlled studies of home-based primary care. In spite of this, policy-makers grappling with the needs of a rapidly aging population should recognize that HBPC could help maintain quality of life and function in older adults, as well as the overall sustainability of healthcare systems.”</i></p>
<p>Tohira et al. (2014)⁴⁸</p>	<p>What is the impact of new prehospital practitioners (NPPs), including emergency care practitioners (EmCPs), paramedic practitioners and extended care paramedics (ECPs), on ambulance transportation to the emergency department (ED)?</p>	<p>General population (calling for ambulance transport)</p>	<ul style="list-style-type: none"> Prehospital practitioners providing care at the scene and/or referring a patient to an alternative healthcare service. New prehospital practitioners (NPPs), including emergency care practitioners (EmCPs) and paramedic practitioners (PPs). The aim of NPPs is to provide pathways other than the default transport to the ED for patients who suffer from minor illness or injury. 	<ul style="list-style-type: none"> Number of patients discharged at the scene Number of patients conveyed to the ED Subsequent ED attendance Appropriateness of care provided/decisions made 	<p><i>“The implementation of new pre-hospital practitioners (NPP) schemes reduced patient conveyance to the ED and may reduce unnecessary transportation of patients by providing care at the place where a patient resides. However, rigorous evidence about the appropriateness of decisions made by NPPs and the safety of patients is lacking. This information is crucial for policy makers and other stakeholders to inform decision making and ensure patient safety. Standardisation of methods to evaluate the appropriateness of decisions is needed.”</i></p>



Study	Research Question	Target population	Interventions	Outcomes	Authors' conclusion
			<p>NPPs are similar to paramedics but their role differs in that they have an expanded scope of clinical practice in patient assessment and treatment options. NPPs, they are all able to provide care at the scene and discharge patients on site without referral to other clinicians</p>		
<p>Tricco et al. (2014)⁴⁹</p>	<p>What is the effectiveness of interventions to improve the coordination of care to reduce health care utilization in a patient group of frequent users of health care services?</p>	<p>Adult frequent users of the healthcare system (e.g. ≥ 5 contacts with the health care system in the past year)</p>	<p>Strategies were used to improve care coordination:</p> <ul style="list-style-type: none"> • Case management (coordination of patient care, including diagnosis, treatment and ongoing patient management by an individual other than the primary care clinician. • Team changes (Changes to the primary health care team and how it functions, including routine patient visits with personnel other than the primary care physician, use of multidisciplinary teams and the expansion or revision of team members' professional role); • Self-management (Providing equipment such as home glucometers for patients with diabetes or access to resources such as electronic systems for 	<ul style="list-style-type: none"> • Health utilization outcomes, specifically emergency department visits, hospital admissions or clinic visits 	<p><i>"We found that quality improvement strategies focused on the coordination of care reduced hospital admissions among patients with chronic conditions other than mental illness and reduced emergency department visits among older patients. Novel strategies are required for patients with mental health conditions. Researchers who are developing and implementing interventions targeted to frequent users should consider specific strategies, such as team changes, case management and promotion of self-management, because these approaches appear to be more effective than other quality improvement strategies in reducing health care utilization. Further research is needed to determine how to optimize care coordination strategies for specific patient subgroups and settings."</i></p>



Study	Research Question	Target population	Interventions	Outcomes	Authors' conclusion
			<p>transferring glucose measurements for patients and establishing joint goals to empower patients to manage their disease on their own);</p> <ul style="list-style-type: none">• Clinical information systems (A quality improvement strategy encompassing numerous systems performing a wide variety of functions; distinguished from administrative information systems by the requirement for data entry or data retrieval by clinicians at the point of care).		



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