

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



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

KOEN VAN DEN HEEDE, CÉCILE DUBOIS, STEPHAN DEVRIESE, NATALIE BAIER, OLIVIER CAMALY, EVELINE DEPUIJDT, ALEXANDER GEISSLER,
ANNELIES GHESQUIERE, SARAH MISPLON, WILM QUENTIN, CHRISTOPHE VAN LOON, CARINE VAN DE VOORDE



COLOPHON

Title:

Organisation and payment of emergency care services in Belgium: current situation and options for reform

Authors:

Koen Van den Heede (KCE), Cécile Dubois (KCE), Stephan Devriese (KCE), Natalie Baier (Technische Universität Berlin, Germany), Olivier Camaly (Möbius), Eveline Depuijt (FOD Volksgezondheid – SPF Santé Publique), Alexander Geissler (Technische Universität Berlin, Germany), Annelies Ghesquiere (FOD Volksgezondheid – SPF Santé Publique), Sarah Mislon (Möbius), Wilm Quentin (Technische Universität Berlin, Germany), Christophe Van Loon (RIZIV – INAMI), Carine Van de Voorde (KCE)

Project coordinator:

Nathalie Swartenbroekx (KCE)

External experts:

Paul Gemmel (UGent), Alexandre Ghysen (CHU Liège), Jean-Bernard Gillet (Vivalia), Hilde Philips (UAntwerpen), Marc Sabbe (UZ Leuven), Koen Schoonjans (FOD Volksgezondheid – SPF Santé Publique), Walter Sermeus (KU Leuven), Didier Thillaye du Boullay (UC Louvain)

Stakeholders:

Nele Beeckman (GasthuisZusters Antwerpen), Jo De Cock (RIZIV – INAMI), Jan De Lepeleire (KU Leuven), Hilde De Nutte (Zorgnet-Icuro), Jacques de Toeuf (Association Belge des Syndicats Médicaux, ABSYM), Christiaan Decoster (FOD Volksgezondheid – SPF Santé Publique), Guy Delrée (Forum des Associations de Généralistes), Micky Fierens (La Ligue des Usagers des Services de Santé, LUSS), Anne Gillet (Kartel ASGB-GBO), Elfi Goesaert (Domus Medica), Diego Gouwy (FOD Volksgezondheid – SPF Santé Publique), Adeline Higuet (Collège Qualité des Urgences), Aline Hotterbeex (Fédération des Institutions Hospitalières asbl, FIH), Said Hachimi Idrissi (Belgian Society of Emergency and Disaster Medicine, BeSEDIM), Johan Kips (Zorgnet-Icuro), Jean-Marc Laasman (Union Nationale des Mutualités Socialistes, UNMS), Michel Mahaux (Santhea), David Lefebvre (Fédération Nationale des Associations Médico-Sociales, FNAMS), Frank Lippens (Nationale Raad voor Ziekenhuisvoorzieningen), Luc Maroy (RIZIV – INAMI), Guillaume Mathot (Société Scientifique de Médecine Générale, SSMG), Dirk Ramaekers (voormalig Landsbond der Christelijke Mutualiteiten, LCM), Roger Renders (Wachtposten Vlaanderen), Bart Rens (Beroepsorganisatie voor verpleegkundigen, NVKV – werkgroep spoedgevallenverzorging en intensieve zorg), Koen Steel (Domus Medica), Jan Stroobants (Belgian College of Emergency Physicians), Fabienne Van Sloten (Landsbond der Christelijke Mutualiteiten, LCM), Marc Vranckx (Belgian Society of Emergency and Disaster Medicine, BeSEDIM), Etienne Wauters (GasthuisZusters Antwerpen), Ilse Weegmans (Vlaams Patiëntenplatform, VPP)

External validators:

Jeroen Trybou (UGent), Michael van den Berg (Rijksinstituut voor Volksgezondheid en Milieu, the Netherlands), Youri Yordanov (Assistance Publique-Hôpitaux de Paris, France)

Acknowledgements:

We explicitly want to thank the many people at the FOD Volksgezondheid – SPF Santé Publique and RIZIV – INAMI for their constructive collaboration on this report.



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.

Publication date:

29 March 2016

Domain:

Health Services Research (HSR)

MeSH:

Emergency Medical Services; Emergency Service, Hospital; Health Care Reform; After-Hours Care

NLM Classification:

WX 215

Language:

English

Format:

Adobe® PDF™ (A4)

Legal depot:

D/2016/10.273/24

ISSN:

2466-6459

Copyright:

KCE reports are published under a "by/nc/nd" Creative Commons Licence
<http://kce.fgov.be/content/about-copyrights-for-kce-reports>.



How to refer to this document?

Van den Heede K, Dubois C, Devriese S, Baier N, Camaly O, Depuijt E, Geissler A, Ghesquiere A, Misplon S, Quentin W, Van Loon C, Van de Voorde C. Organisation and payment of emergency care services in Belgium:



current situation and options for reform. Health Services Research (HSR) Brussels: Belgian Health Care Knowledge Centre (KCE). 2016. KCE Reports 263. D/2016/10.273/24.

This document is available on the website of the Belgian Health Care Knowledge Centre.



■ TABLE OF CONTENTS

1	INTRODUCTION AND SCOPE	13
1.1	WHAT ARE EMERGENCY CARE SERVICES?.....	13
1.2	WHY THIS REPORT?.....	15
1.2.1	Objective of the study.....	15
1.2.2	Scope of the study	15
1.3	ORGANISATION OF THE REPORT.....	16
2	SCOPE AND METHODS.....	17
2.1	INTRODUCTION	17
2.2	METHODS.....	17
2.2.1	Legal documents and text books	17
2.2.2	Belgian data	17
2.2.3	Literature	18
2.2.4	Review of the literature and Belgian reports.....	18
2.2.5	Qualitative study design.....	18
3	BELGIAN EMERGENCY DEPARTMENTS: ORGANISATION AND ACTIVITY.....	20
3.1	EMERGENCY DEPARTMENTS IN BELGIUM: PROFILE AND ACTIVITY.....	20
3.1.1	Specialised and non-specialised emergency departments.....	20
3.1.2	Geographical distribution	21
3.1.3	Activity profile	22
3.2	CRITICAL APPRAISAL: A RELATIVELY HIGH NUMBER OF EMERGENCY DEPARTMENTS WITH LARGE DIFFERENCES BETWEEN URBAN AND RURAL AREAS	37
3.2.1	Current capacity is a consequence of (not always harmonized) policy measures: programming, recognition, financing	37
3.2.2	Advantages and disadvantages of the current ED capacity	38
3.3	CRITICAL APPRAISAL: ARE EMERGENCY DEPARTMENTS THE MOST APPROPRIATE ORGANISATIONAL LEVEL FOR ALL CURRENT ACTIVITY?	39



3.3.1	Not all emergency department visits are urgent, but are they inappropriate? A uniform definition is lacking	39
3.3.2	Throughput and outflow problems are also burdening emergency departments	44
3.4	SOLUTION ELEMENTS.....	45
3.4.1	Planning of the required number of emergency departments in the larger spectrum of acute care services	45
3.4.2	Reduction of emergency department capacity	47
3.4.3	Concentration of highly-specialised services in reference centres.....	51
4	EMERGENCY DEPARTMENT WORKFORCE	55
4.1	PHYSICIANS AND NURSES SPECIALISED IN EMERGENCY CARE	55
4.1.1	Physicians working in Belgian emergency departments.....	55
4.1.2	Nurses with a special title in intensive and emergency care	59
4.2	CRITICAL APPRAISAL: THE ED IS A DEMANDING WORKPLACE AND STAFFING SHORTAGES ARE REPORTED	60
4.2.1	Emergency physician shortage: need for evaluation in larger policy context	60
4.2.2	A stressful work environment with high levels of burnout for physicians and nurses.....	61
4.2.3	Are the current policy measures sufficient to tackle the shortage?	63
4.3	SOLUTION ELEMENTS.....	66
4.3.1	Focus on emergency care	66
4.3.2	Adequate remuneration	66
4.3.3	New roles and workforce innovations in the emergency department	66
5	OUT-OF-HOURS SERVICES FOR ACUTE CARE: THE ROLE OF PRIMARY CARE SERVICES ..	69
5.1	OUT-OF-HOURS PRIMARY CARE SERVICES.....	69
5.1.1	The context of primary care and out-of-hours services in Belgium	69
5.1.2	Payment system for general practitioners	74
5.2	CRITICAL APPRAISAL OF ORGANISED DUTY CENTRES	78
5.2.1	Rationale for ODC implementation: isolated focus on better working conditions for GPs or part of a larger vision?	78
5.2.2	Implementation of ODCs: increased use of out-of-hours GP services did not result in a decreased use of ED attendances	80
5.2.3	ODCs are geographically well dispersed but is their location well chosen?	91

5.2.4	Paying for ODCs: are the budgets covering investments and operational costs and the fee-for-service payments for GPs well-balanced?.....	97
5.3	SOLUTION ELEMENTS.....	99
5.3.1	Integration of EDs and ODCs	99
5.3.2	Payment and organisation of acute care requires one general approach.....	102
5.3.3	The role of primary care services during office hours in acute care	103
6	TELEPHONE TRIAGE FOR PATIENTS WITH NON-EMERGENCY MEDICAL CONDITIONS	106
6.1	ACCESS TO THE EMERGENCY CARE SYSTEM: REFERRALS, SELF-REFERRALS OR CONTACTING THE EMERGENCY CALL CENTRE	106
6.2	CRITICAL ANALYSIS.....	107
6.3	SOLUTION ELEMENTS.....	109
7	THE ROLE OF PATIENT COST SHARING IN PROVIDER CHOICE	115
7.1	PATIENT COST SHARING FOR GP AND EMERGENCY DEPARTMENT SERVICES.....	116
7.1.1	Patient cost sharing for emergency department services.....	116
7.1.2	Patient cost sharing for GP services.....	117
7.1.3	Direct payment versus third-party payer system	119
7.2	CRITICAL APPRAISAL OF THE ROLE OF PATIENT COST SHARING IN THE CHOICE BETWEEN GP AND EMERGENCY DEPARTMENT SERVICES	120
7.3	SOLUTION ELEMENTS.....	121
8	PAYMENT MODELS FOR THE EMERGENCY DEPARTMENT AND ITS WORKFORCE	123
8.1	THE BUDGET OF FINANCIAL MEANS.....	123
8.1.1	Components of the closed-end hospital budget	123
8.1.2	Calculation of the B2-budget for clinical costs	124
8.1.3	The B2-budget for the emergency department	127
8.2	THE REMUNERATION SYSTEM OF MEDICAL SPECIALISTS PROVIDING SERVICES IN AN EMERGENCY DEPARTMENT	139
8.2.1	How are physician fees determined?.....	139
8.2.2	The fee schedule for emergency physicians and other medical specialists providing services at the emergency department	140
8.2.3	Fees for physicians providing services in the ED: evolution of reimbursements and cases	142
8.2.4	Combination of one A-fee and one or more C-fees per emergency department visit	142



8.3	8.2.5 A-fees by type of emergency physician	142
8.3	PERFORMANCE MEASUREMENT AND PAY FOR PERFORMANCE.....	147
8.3.1	Quality of care in emergency departments traditionally relies on a policy of recognition norms	147
8.4	CRITICAL APPRAISAL OF THE OLD CALCULATION METHOD OF THE B2 BUDGET FOR THE EMERGENCY DEPARTMENT	147
8.4.1	The B2 budget is not sufficient to guarantee minimum staffing ratios	147
8.4.2	Distribution of the budget among hospitals: parameters are insufficiently related to ED activity and favour large hospitals	148
8.4.3	The old emergency department payment system better reflected the case-mix of the hospital	149
8.4.4	Hospital responses.....	149
8.5	CRITICAL APPRAISAL OF THE NEW CALCULATION METHOD OF THE B2 BUDGET FOR THE EMERGENCY DEPARTMENT	150
8.5.1	New rules did not solve the structural underpayment but only changed the distribution of the closed-end budget.....	150
8.5.2	Emergency department caseload and workload is better reflected.....	150
8.5.3	The pros and cons of a patient classification system for emergency department payments	150
8.5.4	Hospital responses.....	151
8.6	CRITICAL APPRAISAL OF THE REMUNERATION SYSTEM OF MEDICAL SPECIALISTS PROVIDING SERVICES AT THE EMERGENCY DEPARTMENT	151
8.6.1	A fee-for-service payment system contributes to a productive workforce but incentivizes the quantity of services a physician provides	151
8.6.2	The fee schedule helps us to keep track of what happens within the system	152
8.6.3	The fee schedule for physicians working in the ED: amount of the fee	153
8.6.4	Large differences between hospitals in the share of ED visits for which a C-fee is charged	155
8.6.5	A system of salaried emergency physicians: less appropriate for a flexible workforce and more expensive for society.....	156
8.6.6	The fee schedule of emergency physicians: redundant or too restricted?	156
8.6.7	The size of the hospital determines the budget available for physicians on duty in the ED.	157
8.7	CRITICAL APPRAISAL OF THE DEVELOPMENT AND IMPLEMENTATION OF QUALITY INDICATORS FOR EMERGENCY CARE	158



8.8	SOLUTION ELEMENTS.....	159
8.8.1	The ED budget should be sufficient to cover minimum staffing levels	159
8.8.2	The new calculation method for the ED budget should be evaluated regularly	159
8.8.3	A mix of fixed and variable payments	160
8.8.4	Variable payments reflecting the ED caseload and patient case-mix.....	162
8.8.5	Funding for sparsely populated and remote areas	163
8.8.6	A payment system to support the development of an emergency care network.....	163
9	ORGANISATION AND PAYMENT OF EMERGENCY CARE SERVICES IN SELECTED COUNTRIES	165
9.1	INTRODUCTION.....	165
9.1.1	Background	165
9.1.2	Methodology.....	165
9.1.3	Overview of emergency care services across countries.....	167
9.2	ORGANISATION OF EMERGENCY CARE SERVICES	170
9.2.1	Framework	170
9.2.2	Organisation and planning	172
9.3	PAYMENT OF EMERGENCY CARE SERVICES	185
9.3.1	Framework	185
9.3.2	Payment of Providers.....	187
9.4	REFORMS AND DEBATES	194
9.4.1	Overview	194
9.4.2	Improved availability of urgent primary care services and better coordination with emergency care	194
9.4.3	Rationalizing and concentrating emergency care.....	197
9.5	CONCLUSIONS	200
9.5.1	Guiding patients through the system	200
9.5.2	Reconfiguring urgent primary and emergency care.....	201
9.5.3	Supporting integrated emergency and urgent care structures through payment	201
10	INTERVENTIONS TO REDUCE EMERGENCY DEPARTMENT UTILIZATION	204
10.1	OBJECTIVE.....	204



10.2	METHOD	204
10.3	RESULTS	206
10.3.1	Search and inclusion.....	206
10.3.2	Methodological assessment.....	207
10.3.3	Type of target populations included in systematic reviews.....	212
10.3.4	Type of interventions and scope of reviews.....	212
10.4	DISCUSSION AND CONCLUSION	223

LIST OF FIGURES

Figure 1 – Conceptual model of the input-throughput-output of emergency departments.....	16
Figure 2 – Mixed-method study design to describe the Belgian emergency care system	17
Figure 3 – Specialised and non-specialised emergency departments in Belgium (2015).....	22
Figure 4 – Number of emergency visits by disposition type and proportion of emergency visits by region (2009-2012).....	24
Figure 5 – Variation in disposition type between hospital sites with a specialised emergency department, by region (2012).....	26
Figure 6 – Distribution of ED visits among age groups and gender, by disposition type (2012).....	27
Figure 7 – Reason for attending the emergency department, by disposition type (2012).....	28
Figure 8 – Entrance gate in emergency department by disposition type and age category (2012).....	29
Figure 9 – Variation in self-referral rate between hospital sites with a specialised emergency department, by region (2012).....	30
Figure 10 – Percentage of ED contacts according to arrival time in the emergency department, by disposition type (2012).....	30
Figure 11 – Percentage of ED contacts per arrival month and per day of the week, by disposition type (2012).....	31
Figure 12 – Cumulative percentage by length of stay in the emergency department (2012).....	32
Figure 13 – Distribution of ED contacts with a length of stay < 4h among hospital sites with a specialised emergency department (2012)	33
Figure 14 – Distribution of number of contacts in hospital sites with a specialised emergency department, 24-hour and night period (2012).....	34
Figure 15 – Distribution of number of contacts in hospital sites with a specialised emergency department, 24-hour and night period (2012).....	36
Figure 16 – Density per 10 000 inhabitants of physicians active in emergency medicine	61



Figure 17 – Relation between nursing staff and number of contacts per year in the emergency department...	62
Figure 18 – Comparison objective occupancy and number of patients per nurse in 13 emergency departments	63
Figure 19 – Association between ED use and general practitioner services during out-of-hours by members of the Christian sickness funds (2013).....	73
Figure 20 – Number of emergency department attendances per year based on billing records RIZIV-INAMI (2008-2013).....	81
Figure 21 – Number of ODCs per number of hours of consultations and home visits during the weekend (Friday 7 PM until Monday 8 AM)	83
Figure 22 – Number of contacts per type of contact and per day for 33 ODCs	87
Figure 23 – Optimal location of organised duty centres, results of one scenario.....	91
Figure 24 – Catchment area and location of ODC projects per opening year.....	94
Figure 25 – Location of ODCs and EDs in Belgium, 2015	96
Figure 26 – Number of emergency department contacts and justified beds, by hospital type (2012)	129
Figure 27 – Number of emergency department contacts and deciles, by hospital type (2012)	130
Figure 28 – Number of justified beds and deciles, by hospital type (2012).....	130
Figure 29 – Ratio of supplementary emergency units to basic emergency units, by hospital (2013 and 2014)134	
Figure 30 – B2-points per hospital (2014)	135
Figure 31 – Difference in B2-points for EDs between 2012 and 2014, ranked by size of the hospital	136
Figure 32 – Caseload in specialised emergency departments by disposition and semester (2010-2104)	137
Figure 33 – Percentage change in caseload of specialised emergency departments, by hospital (2010-2104)138	
Figure 34 – RIZIV – INAMI reimbursements (€) for fees of physicians providing services in the emergency department (2008-2013)	143
Figure 35 – A-fees and C-fees: number of cases (2008-2013)	144
Figure 36 – Number of C-fees per A-fee per hospital with hospitals ranked according to the number of A-fees (2013).....	145
Figure 37 – A-fees by type of emergency physician per hospital with hospitals ranked according to the number of A-fees (2013)	146
Figure 38 – Framework for analysing different emergency service providers and the flow of patients	171
Figure 39 – Framework for analysing provider payment mechanisms.....	186
Figure 40 – Flow chart of study selection process	206



LIST OF TABLES

Table 1 – Distribution of ED arrivals during the night (12 PM – 7:59 AM) in hospital sites with a specialised emergency department (2012)	35
Table 2 – Major differences between Level I and II Trauma Centres.....	52
Table 3 – Number of physicians in emergency medicine, in acute medicine or with a special title in emergency medicine according to the RIZIV – INAMI competency codes (2012).....	57
Table 4 – Physicians following specialist training on 31/12/2012, by language and year when training started (2004-2012)	58
Table 5 – Minimum quotas for acute care and emergency physicians (2008-2013), by region.....	65
Table 6 – Costs eligible for ODC funding: maximum amounts per category and share of total ODC costs, year 2015	77
Table 7 – Number (%) of GPs with periods on call during night hours (from 12 PM to 6 AM), by type of area .	79
Table 8 – Distribution of the number of GPs on call per hour for 70 ODCs and ODC satellites	84
Table 9 – Comparison characteristics ODCs included in the sample versus all 70 ODCs (2015).....	86
Table 10 – Simulation results for optimal organised duty centre (ODC) spots	92
Table 11 – Number of inhabitants, catchment area and number of GPs participating in ODCs, per province ..	93
Table 12 – Distance between ODCs and EDs	95
Table 13 – Patient cost sharing for emergency physician services (2015)	117
Table 14 – Co-payments for GP consultations during office hours and out-of-hours (2015)	117
Table 15 – Determining factors of patient cost sharing for GP home visits	118
Table 16 – Patient cost sharing for GP home visits for selected patient groups and for patients entitled to increased reimbursement.....	119
Table 17 – Components of the Budget of Financial Means for acute hospitals, in absolute amounts and as a % of the hospital budget (July 2015).....	125
Table 18 – Points for selected components of the national B2-budget and monetary value of a point, 2010-2014	127
Table 19 – Gradual implementation of new calculation rules for the B2-part for emergency departments	131
Table 20 – Additional emergency units in the new calculation rules for the B2-budget for emergency departments	132
Table 21 – Fees for emergency physicians (2015)	140
Table 22 – Fees for medical specialists called in consultation in the ED (2015)	141
Table 23 – Selected countries, simplified health system characteristics and specialist payment models	166



Table 24 – Availability of emergency departments in Australia, Denmark, England, France, and the Netherlands	168
Table 25 – Indicators of emergency department use in Australia, Denmark, England, France, and the Netherlands	169
Table 26 – Qualifications of emergency staff in selected countries	170
Table 27 – Emergency and primary care in Australia.....	173
Table 28 – Emergency and primary care in Denmark	176
Table 29 – Emergency and primary care in England	179
Table 30 – Emergency and primary care in France	181
Table 31 – Emergency and primary care: Netherlands	184
Table 32 – Payment of emergency departments.....	189
Table 33 – Payment of primary care out-of-hours services.....	193
Table 34 – Inclusion and exclusion criteria.....	205
Table 35 – Number of hits per database	206
Table 36 – Summary of included systematic reviews.....	208



LIST OF ABBREVIATIONS

ABBREVIATION	DESCRIPTION
A & E	Accident and Emergency
ACEM	Australasian College of Medicine
ADC	Ambulance Dispatch Centre
APR-DRG	All Patient Refined Diagnosis Related Group
ATS	Australian Triage Scale
BFM	Budget of Financial Means
CCGs	Clinical Commissioning Groups
CHU	Centre Hospitalier Universitaire
CMBS	Commonwealth Medical Benefits Schedule
CT	Computed Tomography
DAGS	Danish Ambulatory Grouping System
DAR	Danish Association of Regions
DBC	Diagnostic Treatment Combination
DEPT	Danish Emergency Process Triage
DGSIE – ADSEI	Statistics Belgium
DRG	Diagnosis Related Group
ED	Emergency department
EM	Emergency medicine
EMC	Emergency medical condition
EMR	Electronic Medical Records
EMS	Emergency Medical Service
EPR	Electronic patient record
EU	European Union
FAU	Annual Budget for Emergency Availability
FFS	Fee-for-service system
FOD – SPF	Federal Public Service
FTE	Full-time equivalent
GMD – DMG	Global medical record



GP	General practitioner
HDS	Huisartsenstellenstructuren (GP structures)
HIT	Health system in Transition
HPA	Hospital Pricing Authority
HRG	Healthcare Resource Group
ICU	Intensive care unit
IOM	Institute of Medicine
JAW	Joint Acute Wards
KCE	Belgian Healthcare Knowledge Centre
MIGAC	Missions d'intérêt général et à l'aide à la contractualisation
MIU	Minor Injury Unit
MRI	Magnetic Resonance Imaging
MUG – SMUR	Medical Urgency Group
MZG – RHM	Hospital discharge dataset
NBH	National Board of Health
NHI	National Health Insurance
NHS	National Health Service
NP	Nurse practitioner
NPP	New prehospital practitioner
OCMW – CPAS	Local community social service
ODC	Organised duty centre
OECD	Organisation for Economic Co-operation and Development
PCC	Primary Care Centre
PIT	Paramedical Intervention Team
RD	Royal Decree
RHAs	Regional Health Authorities
RIZIV – INAMI	National Institute for Health and Disability Insurance
ROAZ	Regionaal overleg acute zorg (Regional consultation acute care)
SAMU	Service d'Aide Médicale d'Urgence



SHAs	Strategic Health Authorities
SHI	Social Health Insurance
STEMI	ST Segment Elevation Myocardial Infarction
UCC	Urgent Care Centre
UEC	Urgent and emergency care
URG	Urgency Related Group
US	United States
WHO	World Health Organization
WIC	Walk-in Centre



■ SCIENTIFIC REPORT

1 INTRODUCTION AND SCOPE

1.1 What are emergency care services?

The primary aim of emergency care services is to provide care to patients with an 'emergency medical condition' (EMC). There is no international consensus on this concept but the acute onset of symptoms and the need for immediate specialised care are recurrent factors in definitions of an EMC. In the United States, for instance, an emergency medical condition is defined as "*a condition manifesting itself by acute symptoms of sufficient severity (including severe pain) such that the absence of immediate medical attention could reasonably be expected to result in placing the individual's health [or the health of an unborn child] in serious jeopardy, serious impairment to bodily functions, or serious dysfunction of bodily organs.*"¹

Emergency care services are services that are needed to evaluate or stabilize an emergency medical condition including out-of-hospital as well as in-hospital services (emergency departments). In addition, given that emergency departments operate on the cutting edge of ambulatory and hospital care, there is obviously a strong organisational connection with primary care services. The aggregate of both systems (i.e. emergency care system and primary care system for urgent non-emergency conditions) could be best described as urgent and emergency care services. However, for simplicity we use 'emergency care system' throughout the report, with the following classification of types of emergency care services.

- Out-of-hospital emergency care services: call centres and transport
- Out-of-hospital emergency services, also known as pre-hospital emergency medical services, are those emergency services that are remote from the medical facility. Emergency care begins with activation of the system (e.g. the European emergency number 112; self-referrals; referral by the general practitioner (GP)). A call centre collects the request for medical assistance by telephone handling and organises the response by dispatching (dispatch centre) the available and most suitable resources and personnel (e.g. a vehicle that is able to transport medical staff and equipment, or alternatively a vehicle that can adequately transport the patient to a healthcare facility).² In some cases, the call centre also provides medical advice to the caller. Until



recently, two main models of emergency transport could be identified in Europe:³

- In the Anglo-American or 'load and go' model emergency care services are mainly performed within the hospital setting. After evaluation, resuscitation (if needed), and treatment, the focus in this model is on bringing patients as quickly as possible to the most appropriate hospital setting.⁴ This model has great reliance on 'paramedics' during the 'load' phase.
- The Franco-German or 'stay and stabilise' model has greater reliance on physicians since advanced medical care is provided during the pre-hospital phase. The triage, the care, and if needed, resuscitation happen on site, and then a decision on the follow-up pathway is taken (e.g. the patient is directly brought to an operating room, a medical ward, or even a catheterisation suite).⁴

Nowadays, this distinction is not so clear anymore, due to technological changes and population health trends. Most European countries have elements of both organisational models within their emergency care system.³

In-hospital emergency care services: emergency departments

In all European countries emergency departments (ED) exist as part of acute care hospitals. Emergency departments can be described as dedicated hospital-based facilities specifically designed and staffed to provide emergency care (often on a 24/7 availability basis). An emergency department cannot operate in isolation and must be part of an integrated health delivery system within a hospital, both operationally and structurally.⁵

Although emergency medicine (EM)⁶ was already recognised as a separate discipline in the United Kingdom, Scotland and Ireland some decades ago, it is not yet a recognised specialty in all European Union (EU) countries.⁴ Also the educational level and role of emergency care nurses is highly variable in Europe. Although in at least 14 EU countries emergency care nursing certification programmes exist, the role, competencies and educational requirements of these nurses are substantially different across countries.⁷

Primary care services: an important role during out-of-hours periods

An important portion of patients (see section 3.2) who attend EDs present with health problems that can be dealt with by primary care services. These

patients do not have an 'emergency medical condition' and can be divided in two groups:

- Urgent care patients: patients with acute symptoms and complaints that do not qualify as an emergency medical condition for which they are seeking care or are being referred because there is inadequate capacity in other parts of the healthcare care system (e.g. out-of-hours care alternatives are unavailable or their healthcare provider cannot treat them quickly enough for an acute problem).^{8, 9} In practice, however, there is not a strict delineation between primary care and emergency care and only a small part of the ED workload is devoted to patients with an emergency medical condition.³
- Non-urgent care patients: patients presenting with conditions for which a delay of several hours would not increase the likelihood of an adverse outcome (e.g. because they cannot judge the level of urgency of their problem or because they do not know the care alternatives). Hence, these patient contacts can be postponed to, for instance, elective primary care.

The reduction of ED attendances by these urgent and non-urgent patient groups is a priority for many healthcare systems since primary care services are considered as a potentially efficient and cost-effective alternative for the ED.¹⁰ The access to and organisation of primary care services, during out-of-hours in particular, is an important topic in this respect. Internationally different models for the organisation of out-of-hours primary care exist.¹¹ These models vary from individual GP practices to large-scale primary care cooperatives but most models are a mixture of approaches.¹² Often several different organisational models are used within one country.¹¹ Yet, during the last decade an evolution from local rotation systems towards larger-scale primary care practices can be observed in an increasing number of developed countries.¹¹

Triage

Triage is an inherent element in the organisation of care for unscheduled care problems. It is the complex process of determining the level of urgency and type of healthcare required to provide care in a safe, efficient and timely way.^{13, 14} Via a triage system it is aimed to achieve an efficient use of available resources (e.g. personnel, equipment, means of transportation). Triage can take place at different places (e.g. call centre, hospital front door,

at the scene) and by different types of professionals (e.g. staff of the call centre; ambulance staff; nurse, physician working at the ED).

1.2 Why this report?

1.2.1 Objective of the study

The yearly increase in ED use (and budget) has received attention from Belgian policymakers. In addition, in the build up to the current study, stakeholders in the field have suggested that a large proportion of ED attendances concern cases that can also be dealt with in other care settings.^{15, 16} Some stakeholders have reported that the recent reform (2013) of the payment system for EDs will further spur ED use by patients with non-emergency medical conditions and consider this as inefficient use of resources. At the same time, stakeholders praised the high (24/7) accessibility of EDs and describe it as the safeguard of our healthcare system providing access to high-quality care, especially on moments when no alternatives are readily available. Emergency care services also have a ‘warning signal function’ for larger system problems of the healthcare system (e.g. shortcomings in the organisation of primary care, long-term care for the elderly, financial barriers).

In this context, KCE was asked by the National Institute for Health and Disability Insurance (RIZIV – INAMI) to examine the organisation and payment system of EDs in acute hospitals within the broader context of emergency and primary care services in Belgium. The KCE was asked to explore the strengths, limitations and future challenges and recommend strategies for a more efficient organisation and payment system of emergency departments while access towards high-quality services is maintained. This study can, however, also be used as input for several ongoing policy initiatives within the field of emergency care. The Minister of Public Health mentions this study as one of the building blocks in her plan of reform of Belgian emergency care services, which is an important element in the general plan of reform of the hospital landscape and payment system.¹⁷

The **main objective** of the current study is an analysis of the Belgian organisation and payment system of emergency care in light of international evolutions and best-available evidence to draw lessons for a future more efficient emergency care system.

1.2.2 Scope of the study

Emergency departments are highly visible, high profile components of modern healthcare systems and often form the frontline for patients facing difficult circumstances.^{3, 18, 19} In recent years the number of ED attendances has increased in Belgium as in many other western countries, which poses questions about the efficient use of ED resources.

Drivers of emergency department use

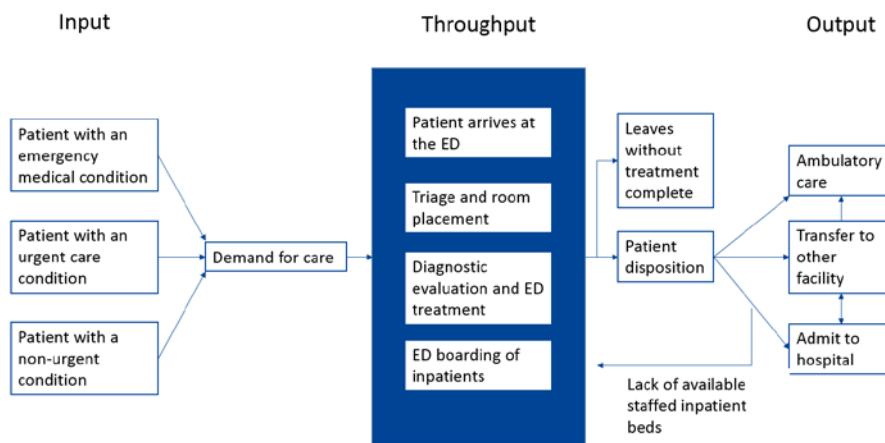
The main supply-side factors affecting ED use are a lack of access to primary or non-ED secondary care and a shortage of out-of-hours services.^{3, 18} On the demand side, ED use is influenced by individual preferences (e.g. an ED provides convenient out-of-hours care), perceived severity (e.g. an ED gives patients immediate reassurance about their medical conditions) and knowledge and beliefs of alternatives, previous experiences, health needs (e.g. population ageing and increased prevalence of chronic conditions), socioeconomic factors (e.g. no regular GP, lack of social support).^{18, 20, 21}

Input factors emergency department use

The main focus of this study is on the input component of EDs (i.e. the increasing inflow) as well as on measures to prevent ED use or divert ED use to care alternatives. As such, the study focuses on EDs and the relationship with out-of-hours primary care services (mainly GP-services). We did not zoom in on other parts of the emergency care system such as emergency care transport and call centres. Nor did we zoom in on the throughput and output components. Indeed, adequate functioning of ED services is also related to the management of patients throughout the care trajectory (throughput component) and to output factors (see Figure 1).²⁰ A well-known problem is the so-called ‘access block’ problem. This is a complex problem which can be described as the situation where patients who have been attending an ED and need a hospital bed are delayed from leaving the ED because of lack of inpatient bed capacity (ED boarding).²²



Figure 1 – Conceptual model of the input-throughput-output of emergency departments



Adapted from the ED crowding model in Asplin et al. (2003)⁸

1.3 Organisation of the report

How to use this document?

This scientific report is not intended to be read as a stand-alone document, but as a complement to the short report of this study. It gives a detailed account of the methods and results of each of the scientific building blocks underpinning the messages rendered in the short report. The discussion of the results and the conclusions are to be found in the short report. The short report is published as a separate document on our website. It can be accessed from the same referral page as the current document. In addition a synthesis in Dutch and French is published on our website.

This scientific report includes three main parts:

- In Part I we describe general facts and figures on emergency departments in Belgium and aim at collecting information on the current strengths and problems as well as on solution elements for a more efficient system. Although the primary focus is on emergency departments, the broader context of emergency care services is taken into account with a focus on the organisation and payment of out-of-hours primary care services.
- In Part II an international perspective on the organisation and payment system of emergency care services is given by a detailed description of emergency care services in five countries. The international comparison is based on a review of peer-reviewed and grey literature and a survey of key informants.
- In Part III a narrative review of systematic reviews on interventions to reduce ED use is conducted.

Although the chapters are written as stand-alone documents, cross-referencing to the other chapters completes the content of each separate chapter. Some overlap between chapters could not be avoided.



2 SCOPE AND METHODS

2.1 Introduction

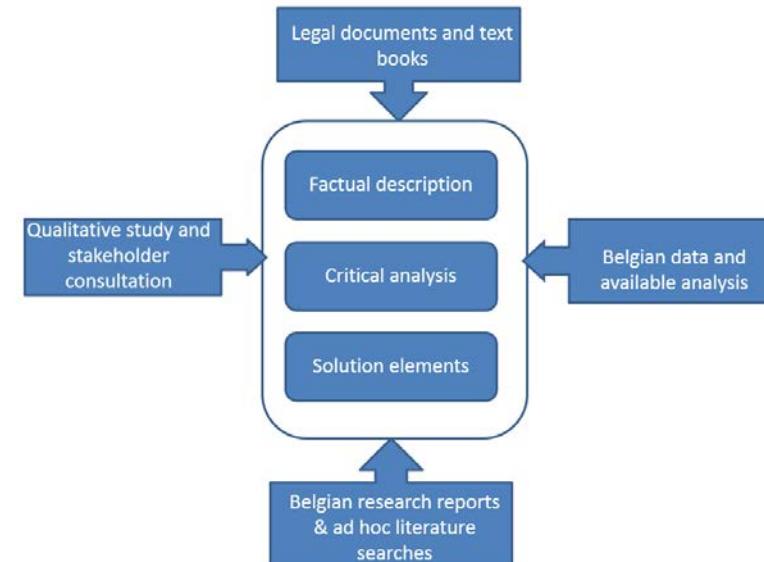
Part I of the scientific report focuses on the organisation and payment system of emergency departments in Belgian hospitals in the broader context of Belgian emergency care services. In the next chapters we explore specific topics and for each chapter we include:

- A factual description explaining briefly the current Belgian system (based on an analysis of legal documents and text books) and illustrating the current system with facts and figures (in case data were readily available in national databases);
- A critical appraisal of the strengths and weaknesses of the current system (based on a qualitative study and an analysis of Belgian research reports);
- Solution elements emerging from the qualitative study as well as from the analysis of previous research about the Belgian system of emergency care services. In addition, these solution elements were confronted with the available research evidence;
- Key points resulting from the factual description, critical appraisal and solution elements.

2.2 Methods

The chapters included in Part I of this report make use of a mixed-method study approach (see Figure 2) for which we further detail the methods used in this chapter.

Figure 2 – Mixed-method study design to describe the Belgian emergency care system



2.2.1 Legal documents and text books

The factual description of the current Belgian system heavily relies on legal documents and text books that were searched to capture recent changes and updates in the rules and regulations in a targeted way.

2.2.2 Belgian data

For each topic we searched for (un-)published data analysis via a screening of websites (Federal Public Service (FOD – SPF) Public Health and the National Institute for Health and Disability Insurance (RIZIV – INAMI), sickness funds) and contact with key informants from these organisations. In addition, we used readily available data sources from FOD – SPF and RIZIV – INAMI. The data sources are described more in detail in the respective chapters.



2.2.3 Literature

For some topics that were discussed during the stakeholder interviews (especially when statements about specific solution elements were made) we could make use of the evidence that is reviewed in Parts II and III of this report. For other topics evidence was retrieved via ad-hoc searches for systematic reviews. For these topic searches (i.e. workforce innovations in the emergency department; definition and prevalence inappropriate ED use; quality and performance indicators for EDs; access block; safety telephone triage; professional background hospital front door triage) Medline was systematically screened for systematic reviews without conducting a full systematic review (no assessment methodological quality, no systematic data extraction). When systematic reviews were unavailable or outdated the results of these initial searches were complemented with primary studies (e.g. impact ED closures, economies of scale).

2.2.4 Review of the literature and Belgian reports

In addition to opinions of key informants (see 2.2.5), we searched the peer-reviewed and grey literature for relevant Belgian studies and reports. The cited literature is not a result of a systematic literature review. Conducting a full systematic review for each of the topics was beyond the scope of this study. The referenced literature is mainly based on:

- A systematic screening of existing KCE reports;
- Identification of reports of the FOD – SPF, RIZIV – INAMI published since 2005 (or previous years if no fundamental policy changes have taken place) via web-searches;
- A web-search;
- A Medline search for peer-reviewed articles from Belgian key authors;
- Ad-hoc searches (e.g. Belgian academic institutions, study centres of sickness funds, international organisations such as the OECD or the WHO) to retrieve information about or relevant to the Belgian emergency care system and to identify interesting international initiatives or best practices.

In the analysis we made a distinction between facts and opinions about the current situation (critical appraisal) and solution elements for a future more efficient emergency care system.

2.2.5 Qualitative study design

Field map

We conducted a qualitative research using a purposive sampling design to recruit people who are likely to provide the most relevant information in function of the research questions.²³ In order to build a balanced purposive sample, a field map was made. Field mapping consists of identifying the key players who have a certain interest in the problem under study and represent all possible perspectives. Since we are interested in covering all variability around the issue of the emergency care system, we created a field map that consisted of:

- Hospital management (chief executive officers; chief medical officers);
- Scientific and professional organisations of healthcare professionals (general practitioners and emergency physicians);
- Physician unions;
- Public authorities (federal authorities);
- Representatives from patient organisations;
- Sickness funds.

Based on desk research and punctual information collected from our existing network we compiled a long-list of relevant key informants. These are individuals who have considerable political influence or are experts/professionals who are known to have a very outspoken view on the current emergency care system and are likely to have an important influence on their peers (opinion leaders). Out of this list, people were invited for in-depth interviews.

Recruitment and data-collection process

Out of the long-list, people were invited to the in-depth interviews. All face-to-face interviews were conducted between 1 February 2015 and 31 March 2015, and all sixteen invited stakeholders agreed to participate (Dutch language: 9; French language: 7). The in-depth interviews lasted between 1 and 2 hours and the location was chosen by the interviewee. All interviews were audio-recorded and transcribed verbatim. Before starting the interviews the objective was explained, confidentiality of the discussion was assured and permission to audio-record the discussion was requested.



Interviews were conducted by two members (1 Dutch-speaking; 1 French-speaking) from the consulting firm Möbius (<http://www.mobius.eu/en/>).

Data-collection tools

An interview guide was developed for the in-depth interviews (see annex to Chapter 2). The research team based the questions on previous experience with the research topic, discussions during informal contacts with stakeholders and content experts. The general themes addressed were the strengths, problems and potential solution elements of the current supply of services (emergency care departments, out-of-hours services provided by general practitioners, etc.), the current (and previous) calculation system in the hospital budget (Budget of financial means: BFM – BMF) for emergency departments and the remuneration system of medical specialists working in emergency departments.

The interview guides were tested during two test interviews (with one Dutch-speaking and one French-speaking interviewee). Based on the test interviews the interview guides were only slightly adapted. Given the fact that adaptations to the interview guide were only very minor, the data collected during the test interviews were included in the analysis.

Analysis

The transcripts of the in-depth interviews were coded in QSR NVivo 9.²⁴ A basic node structure was created by one researcher, by doing the open coding of four transcripts. Interviews from respondents with different profiles were chosen to capture as many ideas as possible in this preliminary node structure. Next, two researchers continued the open coding of the other transcripts. The node structure was further developed as the coding process evolved. The initial node structure was also discussed with and validated within the research team.

In a next step one researcher did the axial coding, hence generated overarching themes and relationships between nodes. This structure was discussed and supplemented within the research team. The final step of selective coding, which means linking concepts together, was part of the reflection necessary to write first drafts of the chapters. Results emerging from the interviews were supported by a selection of the original text fragments (in Dutch/French). Not all statements were supported by quotes in the final chapter to increase the readability of the text. They are, however, available upon request.

Disclaimer. The reader should be aware that parts of Chapters 3 to 8 are based on the opinions of the consulted stakeholders. Hence, statements without a reference to research reports or data sources are solely based on stakeholders opinions stated during the interviews and not on verified facts.



3 BELGIAN EMERGENCY DEPARTMENTS: ORGANISATION AND ACTIVITY

Chapter authors: Koen Van den Heede, Cécile Dubois, Stephan Devriese, Annelies Ghesquiere, Eveline Depuijdt, Carine Van de Voorde

In all high-income countries emergency departments (EDs) play a pivotal role in the delivery of acute ambulatory and inpatient care.²⁵ However, the rising demand for emergency care services is straining services and creates inefficiencies in service delivery worldwide. As a consequence, policymakers around the world are experimenting with new organisational models to achieve a more efficient use of resources. The aim of this chapter is to describe (section 3.1) the current state of emergency department landscape and its activity in Belgium and make a critical appraisal (sections 3.2 and 3.3). This is important as input for the discussion on the need for reform and enables to place Belgium in the context of international reform efforts (Chapter 9). At the end of the chapter potential solutions (section 3.4) are discussed.

Disclaimer. The critical appraisal and solution elements are based on stakeholder consultation, literature and available Belgian data. Critical appraisal and solution elements without a reference were proposed by stakeholders during face-to-face interviews. The cited literature mainly concerns literature about the Belgian context which is mainly based on ad-hoc searches and specific author searches. For this topic ad-hoc searches for peer-reviewed literature were carried out (see annex to Chapter 3). Solution elements resulting from these searches were integrated in this chapter together with the solution elements that emerged from the stakeholder interviews. In addition, a specific systematic review was carried out to gather evidence about solution elements to decrease the number of emergency department visits (see Chapter 10).

3.1 Emergency departments in Belgium: profile and activity

3.1.1 Specialised and non-specialised emergency departments

In Belgium there are two types of emergency departments (EDs): **specialised** and **non-specialised** EDs.

Specialised emergency departments ('gespecialiseerde spoedgevallenzorg'/'soins urgents spécialisés') should be able to "secure, stabilize and restore the vital functions" and are "responsible for the care of anyone who presents himself or is brought to the service with a health condition that can or may require immediate care".²⁶ This includes: reception; first aid and, if required, the safeguarding, stabilization and restoration of vital functions; first diagnostic and therapeutic guidance/orientation; if required, a first observation period (less than 24 hours) with the aim of the diagnostic and therapeutic guidance; required actions to preserve the continuity of care to patients whether they are admitted to the hospital or not.²⁶

- Staffing requirements:

The medical chief of the specialised ED has to be a specialist in emergency medicine ('artsen-specialisten houders van de bijzondere beroepstitel in de urgentiegeneeskunde'/'médecins spécialistes porteurs du titre professionnel particulier en médecine d'urgence', 'artsen-specialisten in de urgentiegeneeskunde'/'des médecins spécialistes en médecine d'urgence') full-time affiliated with the hospital and spending at least 50% of his working time at the specialised ED. This function can be combined with that of medical chief of the Medical Urgency Group (MUG – SMUR).

A specialised ED has a dedicated nursing staff team that is led by a head nurse who has a special nursing title in intensive and emergency care^a ('bijzondere beroepstitel in de intensieve zorg en spoedgevallenzorg'/'titre professionnel particuliers d'infirmier spécialisé en soins intensifs et d'urgence').²⁷

^a Exception for head nurses who had at least five years of experience as a head nurse in emergency care at the time of the publication of this Royal Decree (i.e. head nurse before December 1, 1993).

A 24/7 hour service must be provided by at least two nurses (with at least one nurse with a special title in intensive and emergency care or equal) and one physician.²⁷ The physician should be:

- a medical specialist in emergency medicine;
- a medical specialist in training for the title specialist in emergency medicine;
- a medical specialist in acute medicine ('artsen-specialisten in de acute geneeskunde'/'des médecins spécialistes en médecine aiguë');
- a physician with a certificate in acute medicine ('brevet acute geneeskunde'/'brevet de médecine aiguë').

There is a transitional measure (until 31 December 2016) which allows a medical specialist or a medical specialist in training (with at least two years of training completed) in one of the following disciplines to be on duty: anaesthesiology, internal medicine, cardiology, gastroenterology, pneumology, rheumatology, surgery, neurosurgery, urology, orthopaedic surgery, plastic surgery, paediatrics, neurology and geriatrics (Royal Decree (RD) of 27 April 1998, art. 13 modified by RD of 11 February 2013; Ministerial Decree of 14 February 2005).^{28, 29}

The number of nursing and medical staff has to be adapted to the intensity of activities in the specialised ED (including medical specialists and medical specialists in training who completed two years of their training). Specialists in emergency care should also be able to call for assistance from other medical specialists (e.g. surgeon, paediatrician, and psychiatrist) organised within an out-of-hours service. An accumulation of being on duty for the MUG – SMUR and the specialised ED is possible on the condition that when a MUG – SMUR leaves the hospital, a physician with the required competencies can be called to take over the on duty service in the ED in less than 15 minutes.

Besides providing medical care, the medical and nursing staff is also responsible for providing continuous training in resuscitation techniques to the staff of the entire hospital.

In addition to staffing requirements, several other requirements (e.g. infrastructure and functional norms) should be met to classify as a specialised emergency department. EDs, for instance, should at any time be able to make an appeal to at least three beds in intensive care, a

polyvalent operating wing, a laboratory for clinical biological tests, a medical imaging service (with a mobile radiological device and a transversal axial tomography device), a stock of red blood cells or supply from a hospital blood bank and access to the archives of medical files (with 24-hour accessibility).^{30, 26}

Non-specialised emergency departments deal with the first care and treatment of patients with an acute pathology ('eerste opvang van spoedgevallen'/'première prise en charge des urgences'). The recognition standards for **non-specialised EDs** are less severe (e.g. nursing staff is not required to have a special title in emergency and intensive care; one nurse instead of two; medical 24/7 service provided by physician on call for the entire hospital).

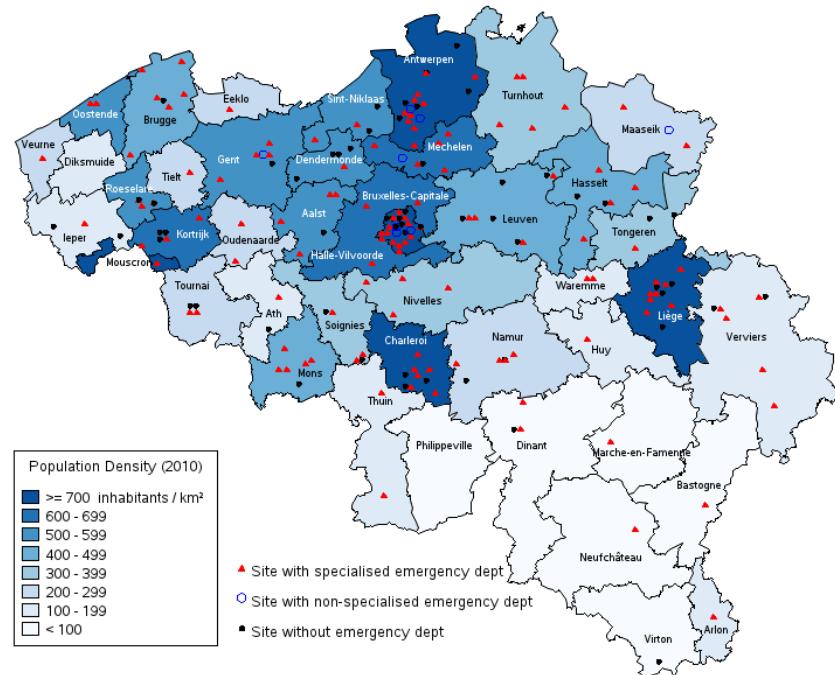
The legislator wanted to make a distinction between 'basic emergency services' and emergency services that could handle the more complex cases, such as major trauma or stroke. Although specialised EDs meet the legal requirements, they do not always have the specialised expertise or infrastructure for highly complex cases, as is the case for specialised EDs abroad.

3.1.2 Geographical distribution

Belgium has (anno 2015) 102 acute hospitals with 197 different hospital sites (see Figure 3). In 2015, most acute Belgian hospitals (101 out of 102 acute hospitals) have at least one site with a **specialised emergency department**.²⁷ Acute hospitals without a specialised ED are obliged to have a non-specialised ED.²⁶ There are 139 sites (71.2%) with an emergency structure (131 sites have a specialised ED and 8 sites have a non-specialised ED) and 58 (28.8%) sites have no ED. A high number of specialised EDs at a small but densely populated area can be observed (see Figure 3) in the large cities like Antwerp, Brussels, Liège and Ghent.



Figure 3 – Specialised and non-specialised emergency departments in Belgium (2015)



Source: Density data 2010 from *Algemene Directie Statistiek en Economische Informatie (ADSEI)* - Direction Générale Statistique et Information Economique (DGSIE) and characteristics of hospitals/sites from FOD – SPF, data September 2015

3.1.3 Activity profile

In this section we describe the activity profile of Belgian emergency departments. This description is based on data from the Belgian hospital discharge data set ('Minimale Ziekenhuisgegevens – MZG'/'Résumé Hospitalier Minimal – RHM'). This is a national dataset with standardized data collection including information about each hospitalised patient. It is mandatory for all Belgian general non-psychiatric hospitals. This dataset contains, since 2008, a module with information about each ED visit (ambulatory ED visits and ED visits resulting in a day care or inpatient stay). Visits are considered in this section as any attendance to the emergency department (whether ambulatory or not). National feedback on emergency department activity in acute hospitals is available from 2009 up to 2012 (at the time of this report) on the website of the FOD – SPF^b. The description of the activity profile of Belgian EDs in this section is based on this national feedback. Additionally, data were requested from the FOD – SPF based on the same definition of ED visit but at the hospital site level in order to evaluate the variability between hospital sites.

It should be noted that the MZG – RHM as well as the additional data that were requested include all patient contacts, irrespective of the insurance status of the patient, whereas billing data from RIZIV – INAMI is limited to patients insured by the compulsory insurance system. Hence, patients without insurance, with only private insurance, with a non-Belgian insurance or for whom the costs are reimbursed by the public social welfare centre (OCMW – CPAS), by the Fund for Occupational Accidents, etc. are included in the MZG – RHM data set but not in the billing data of RIZIV – INAMI. Around 90% of ED contacts are contacts of patients covered by compulsory health insurance.

b

[http://www.health.belgium.be/eportal/Healthcare/Healthcarefacilities/Registrationsystems/MHD\(MinimumHospitalData\)/Publications/testnewpage/index.htm?fodnlang=nl](http://www.health.belgium.be/eportal/Healthcare/Healthcarefacilities/Registrationsystems/MHD(MinimumHospitalData)/Publications/testnewpage/index.htm?fodnlang=nl)



Number of ED contacts

From 2009 to 2012 the number of ED visits increased from 3 006 321 to 3 195 897^c (i.e. from 280 ED visits per 1000 population to 290 ED visits per 1000 population - Figure 4). This increase between 2009 and 2012 seems to coincide with a rising number of ED visits resulting in day care (from 20 to 25 ED visits per 1000 population) and ambulatory care visits (from 193 to 198 ED visits per 1000 population). The number of ED visits resulting in inpatient stays remained stable over the years (i.e. 67 per 1000 population). However, the definition of day-care cases should be interpreted with caution (see Box 1).

In Figure 4 it is shown that in Flanders ED contacts represent about 38% of all hospital attendances with a MZG – RHM registration (ED contacts or hospital admission). This percentage is higher in Brussels and in Wallonia (about 52 and 55%, respectively).

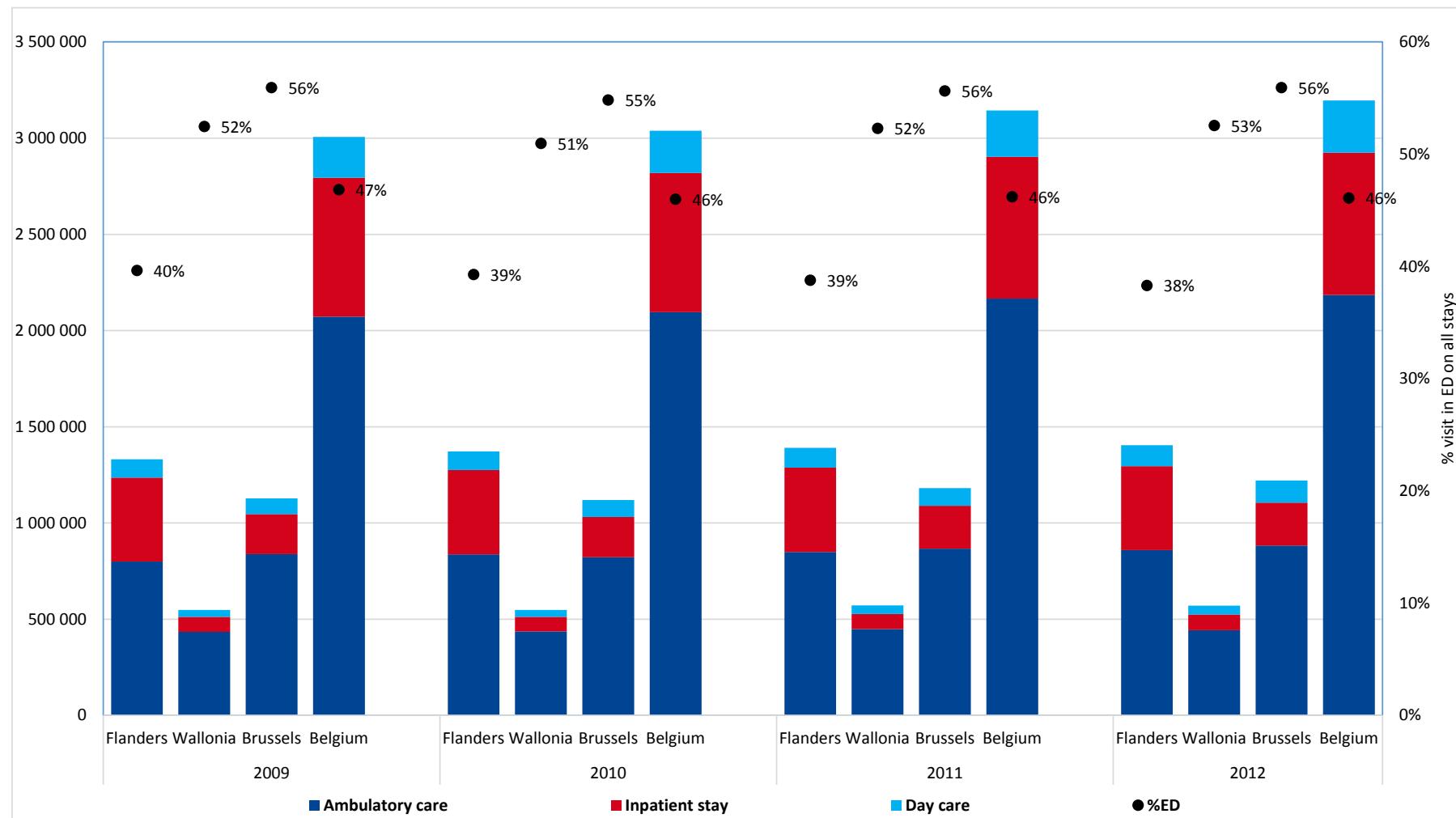
Box 1 – ED visits labelled as day care: a cautionary note

It should be noted that ED visits labelled as 'day care' also contain ED visits for which a mini lump sum was charged. In 2012, this concerned 91% of ED visits that were labelled as day care. To be in line with the national feedback of EDs³¹ we report them as day-care cases unless otherwise mentioned. From 2014 onwards these mini lump sums are included in the hospital budget resulting in an increase in the portion of patients that were labelled in the MZG – RHM as 'ambulatory ED visits'.

^c In 2012, 32 500 ED contacts or 1.02% of all ED contacts occurred in one of the eight non-specialised EDs.



Figure 4 – Number of emergency visits by disposition type and proportion of emergency visits by region (2009-2012)



Source: National feedback on emergency department activity in acute hospitals (2009 - 2012)



The majority of ED attendances are ambulatory care contacts

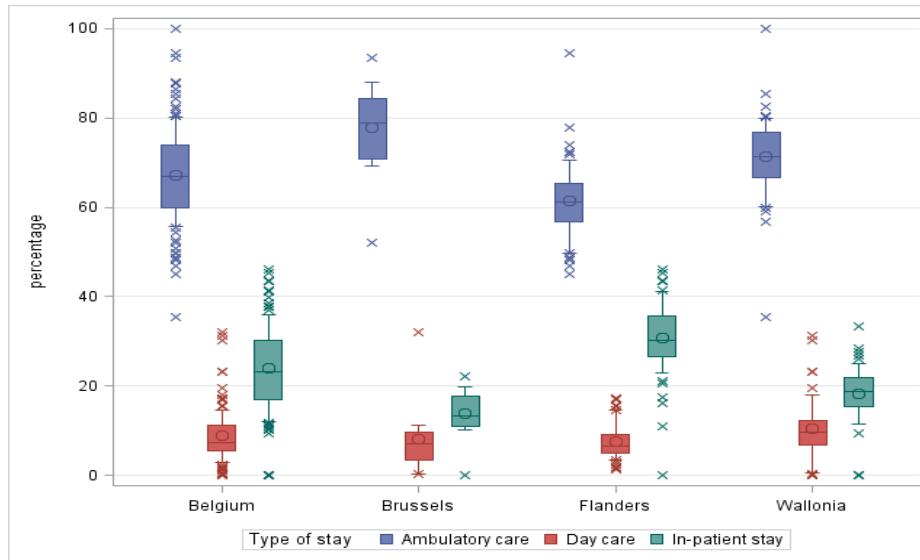
Only 23.1% and 8.5% of ED visits are followed by an inpatient stay and day care, respectively (see Figure 4). There are regional differences: around 60% of the ED visits were for ambulatory care in Flanders compared to around 79% and 74% for Brussels and Wallonia, respectively. The trend was the same throughout the period 2009 to 2012.

As shown in Figure 5, these figures vary across hospital sites. In Brussels, for 3 sites out of 4, ambulatory contacts represent more than 70% of the total number of ED contacts (similar results are seen in Wallonia) but in Flanders only for 1 site out of 4 more than 65% of their ED contacts are ambulatory contacts. Inversely, for the hospital sites in Flanders, the proportion of ED contacts followed by an inpatient stay is generally higher than in Brussels or Wallonia. In Flanders, for half of the hospital sites, more than 30% of ED visits was followed by an inpatient stay.

Patient characteristics

From Figure 6 it can be observed that adults between 20-29 years old form the largest portion of ED users and that in each age category up to 70 years males have more ED contacts than females. From the age of 70 onwards, the reverse picture might probably be explained by the difference in life expectancy between males and females. The percentage of ED visits followed by an inpatient stay is much higher for older patients (67.5% of the cases for patients 80 years of age and older). The percentage of ED visits that are labelled as ambulatory care contacts is around 85% for patients between 1 and 20 years. This percentage decreases as age increases to reach 26% of ED visits for the elderly (80 years of age and older). For children below 1 year, the picture is somewhat different with 75% of cases treated in ambulatory care and 25% directed to day care or an inpatient stay.

Figure 5 – Variation in disposition type between hospital sites with a specialised emergency department, by region (2012)

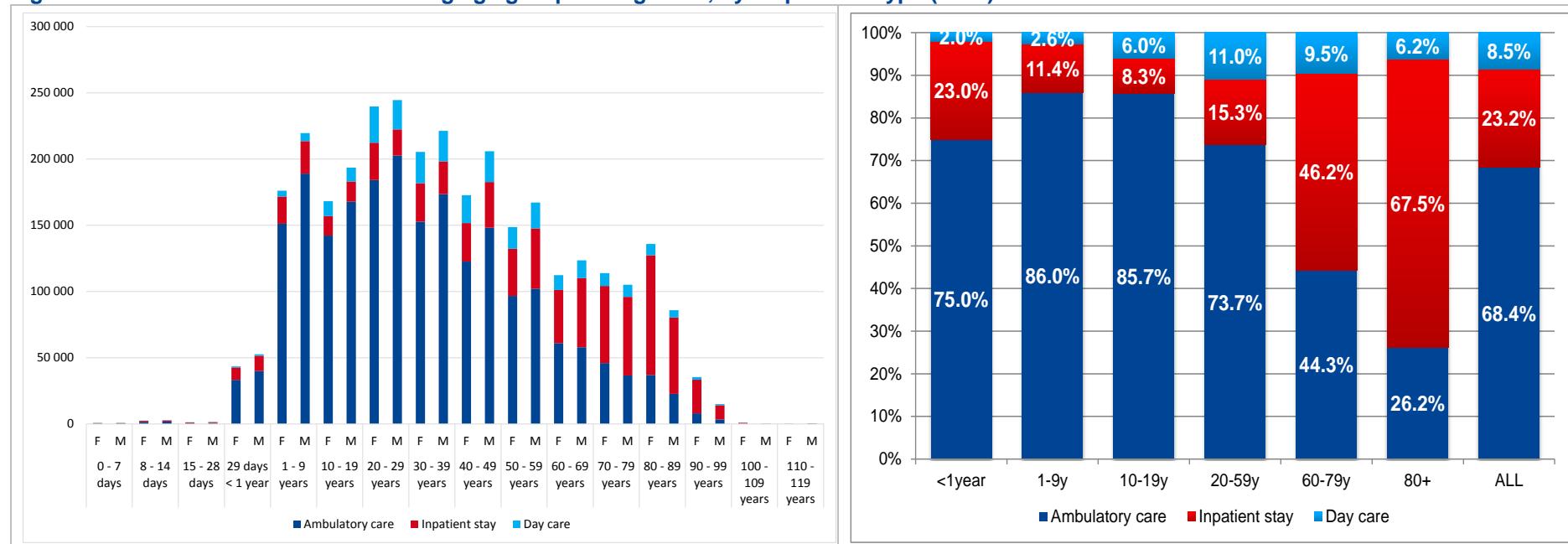


Type of stay	Stat	Belgium	Brussels	Flanders	Wallonia
Ambulatory care	n	131	16	65	50
	Median (Q1-Q3)	66.9 (59.8 - 74.0)	79.6 (71.5 - 87.1)	61.3 (56.8 - 65.4)	71.7 (66.7 - 76.9)
	Min-max	35.5 - 99.9	52.0 - 93.5	45.0 - 94.4	35.5 - 99.9
Day care	n	131	16	65	50
	Median (Q1-Q3)	7.4 (5.6 - 11.3)	7.1 (4.4 - 9.9)	6.5 (5.0 - 9.1)	9.9 (6.8 - 12.2)
	Min-max	0.1 - 32.0	0.2 - 32.0	1.4 - 17.2	0.1 - 31.2
Inpatient stay	n	131	16	65	50
	Median (Q1-Q3)	23.2 (17.0 - 30.3)	12.6 (10.6 - 18.6)	30.3 (26.6 - 35.6)	18.8 (15.5 - 22.0)
	Min-max	0.0 - 46.2	0.0 - 22.0	0.0 - 46.2	0.0 - 33.3

Source: FOD – SPF data on emergency contacts in acute hospitals (2012) - Region of the hospital site.

Boxplot interpretation: **mean** = circle; **median** = line within the box; **Q1 – Q3** values delimit the box; **P10 – P90** values delimit tails; data outside P10 – P90 = x.

Figure 6 – Distribution of ED visits among age groups and gender, by disposition type (2012)



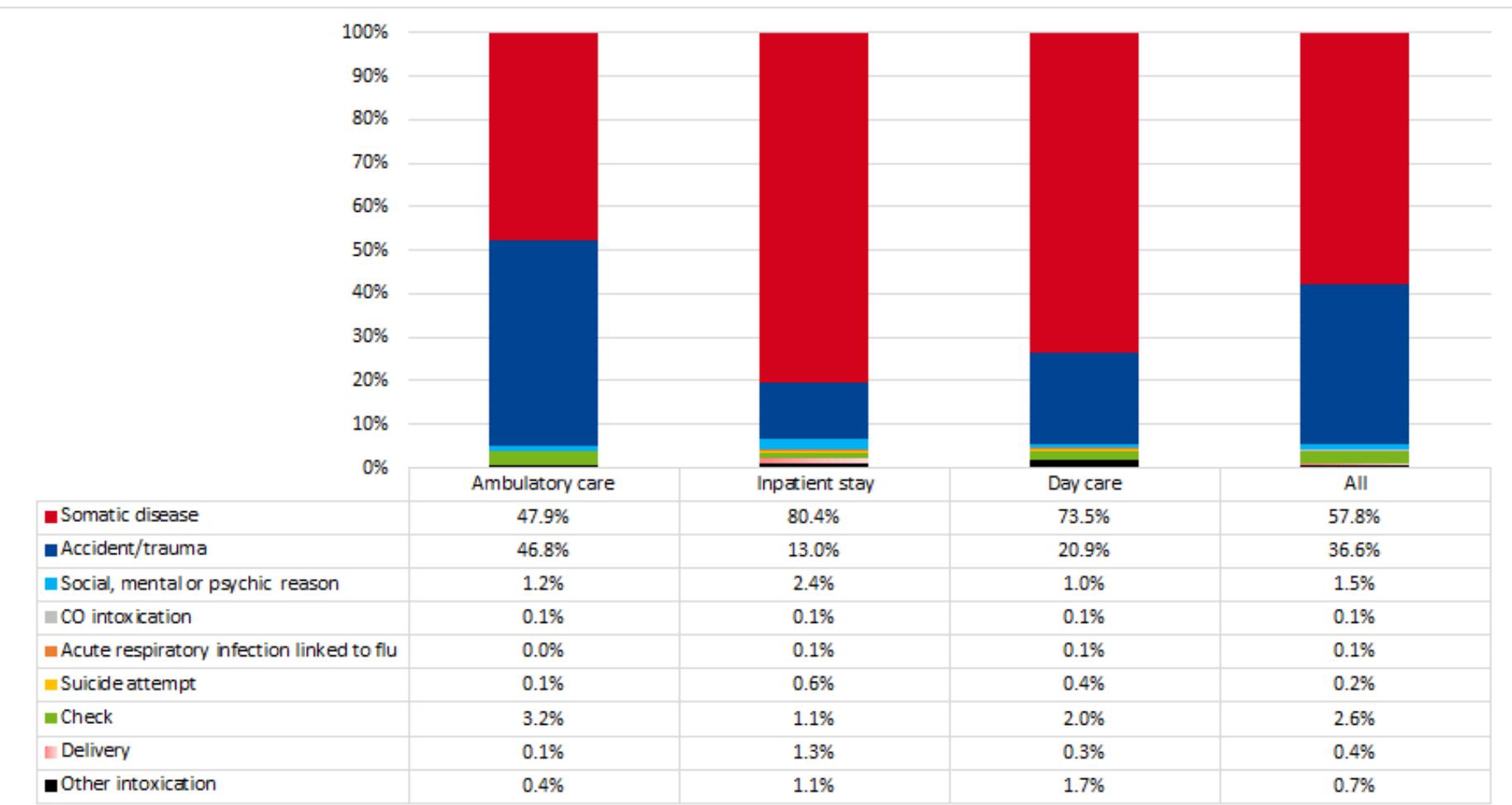
Source: National feedback on emergency department activity in acute hospitals (2012)

Reason for ED visit

The majority of ED visits are due to a somatic disease (57.8%) or trauma (36.6%) (see Figure 7). Social, mental or psychological reasons are present among 1.5% of the ED visits. This repartition varies according to the type of ED visit. As expected, in ambulatory care we found more trauma/accidents (47%) than in other type of ED visits for which somatic disease was the main reason for attending the ED (around 74% or 80% of ED visits resulting in a day-care and inpatient stays, respectively).



Figure 7 – Reason for attending the emergency department, by disposition type (2012)



Source: National feedback on emergency department activity in acute hospitals (2012)

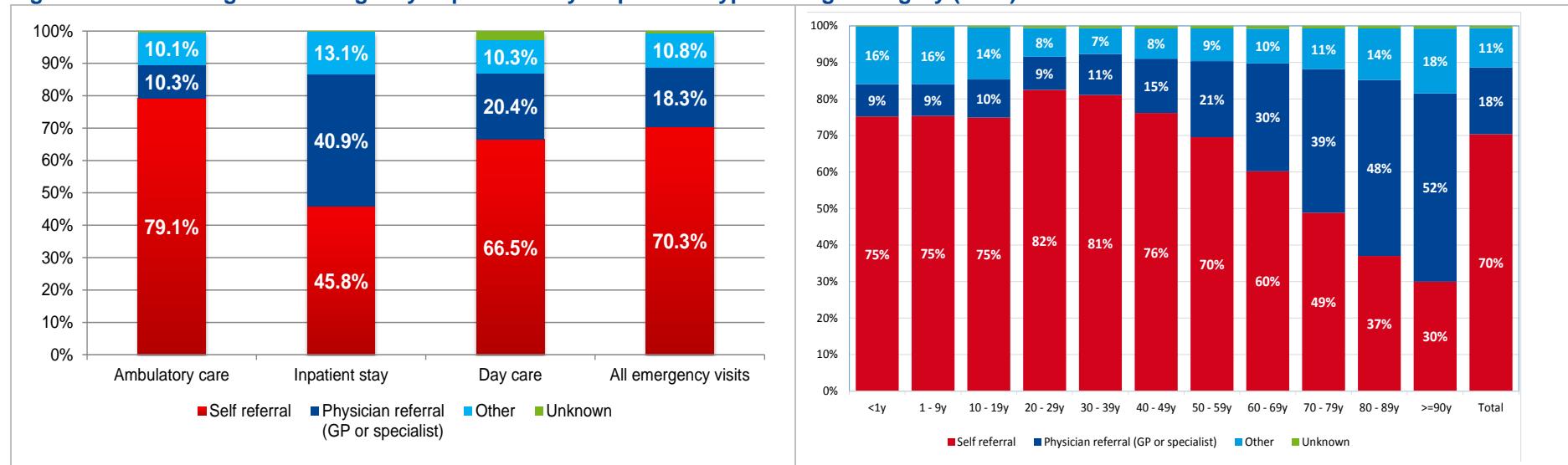
Most patients attend the ED on their own initiative

The majority of ED visits are self-referrals (70.3% in 2012). The percentage of self-referrals is highest for ambulatory ED contacts (79.1% in 2012) and ED visits followed by day care (66.5% in 2012). For ED visits followed by an inpatient stay the percentage of self-referrals is much lower (45.8% in 2012). There are differences between age categories. As shown in Figure 8 self-referral is high in the low age categories (around 75% of the ED visits by patients below 20 years), reaching a peak of 80% or more for adults between

20 and 40 years and decreasing afterwards with older age. This inverse relationship between age and percentage of self-referred patients is also reported in the international literature.³²

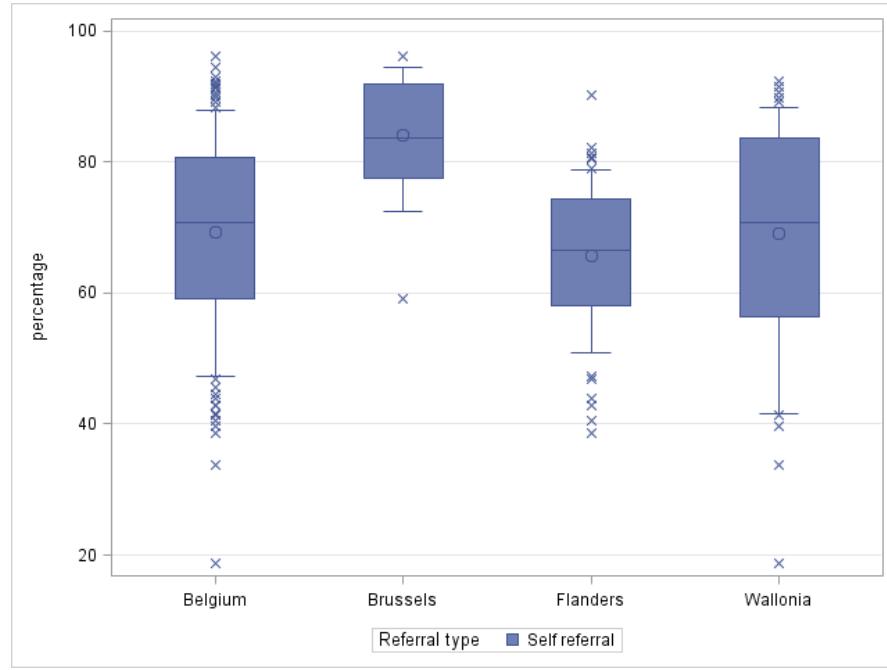
As shown in Figure 9 there exists a high **variation between hospital sites** in the percentage of self-referrals. Higher self-referral rates are observed for sites in Brussels than for sites in Flanders or Wallonia. We can see that for 9 out of 10 sites in Brussels, the percentage of self-referrals is 72% or more

Figure 8 – Entrance gate in emergency department by disposition type and age category (2012)



Source: National feedback on emergency department activity in acute hospitals (2012) and FOD – SPF data on emergency contacts in acute hospitals (2012)

Figure 9 – Variation in self-referral rate between hospital sites with a specialised emergency department, by region (2012)



Stat	Belgium	Brussels	Flanders	Wallonia
Number of sites	131	16	65	50
Median (Q1-Q3)	70.9 (59.2-80.8)	84.3 (78.3-92.0)	66.7 (58.1-74.3)	71.7 (56.4-83.7)
P10-P90	47.4-88.0	72.6-94.5	50.9-78.7	42.2-88.8
Min-max	18.7-96.2	59.2-96.2	38.6-90.2	18.7-92.5

Source: FOD – SPF data on emergency contacts in acute hospitals (2012) - Region of the hospital site

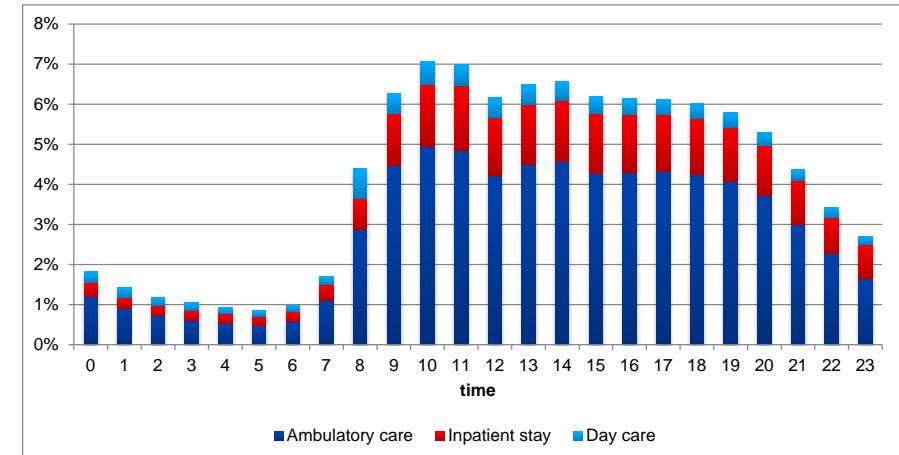
Boxplot interpretation: **mean** = circle; **median** = line within the box; **Q1 – Q3** values delimit the box; **P10 – P90** values delimit tails; data outside P10 – P90 = x.

The number of ED visits peaks during daytime

Activity patterns peak during daytime but activity during the night is not negligible. The peak moments of ED visits are situated at daytime between 8 AM and 9 PM (see Figure 10). It is remarkable that for day care only, a peak in the number of admissions is observed at 8 AM.

It should be noted that despite these peaks during daytime, there are still a considerable number of ED contacts arriving in the late evening (i.e. 10.5% has a time of arrival at the ED from 9 PM to 11:59 PM) and during night hours (i.e. 10% has a time of arrival at the ED from 12 PM to 7:59 AM).³¹

Figure 10 – Percentage of ED contacts according to arrival time in the emergency department, by disposition type (2012)



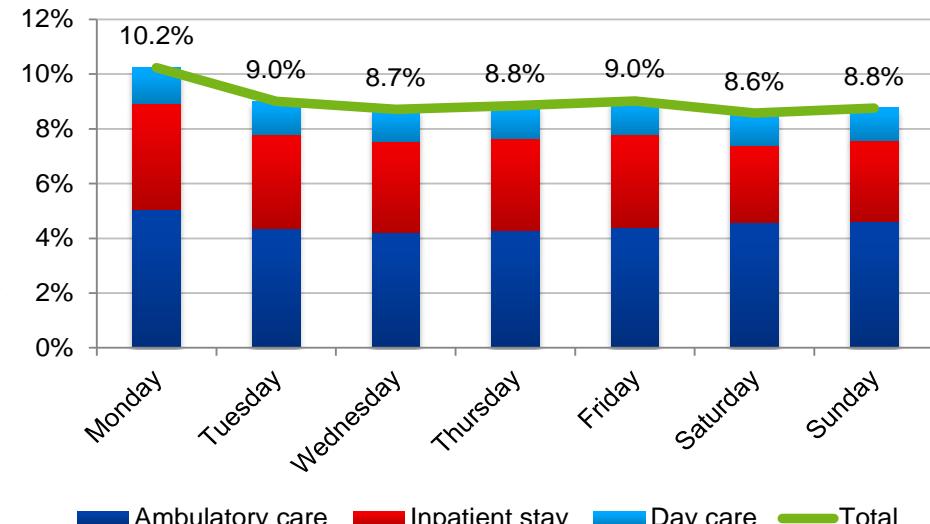
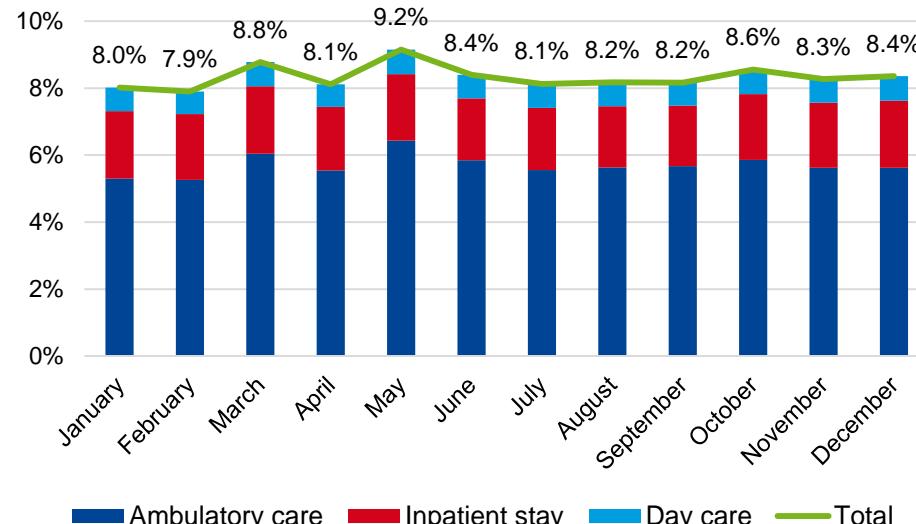
Source: National feedback on emergency department activity in acute hospitals (2012)

No pronounced peaks in number of ED contacts for months or days of the week

The number of ED visits are relatively well balanced over the seven days of the week with a small peak on Mondays (due to a peak in ED visits from

8 AM – 11.59 AM). In addition, despite the yearly reports in the media about peaks in the number of ED visits during the winter periods, this cannot be observed from the data where the number of ED visits is relatively stable across the months of the year (see Figure 11). For 2012, we observed a peak in the number of ED visits in March and May.

Figure 11 – Percentage of ED contacts per arrival month and per day of the week, by disposition type (2012)



Source: National feedback on emergency department activity in acute hospitals (2012)

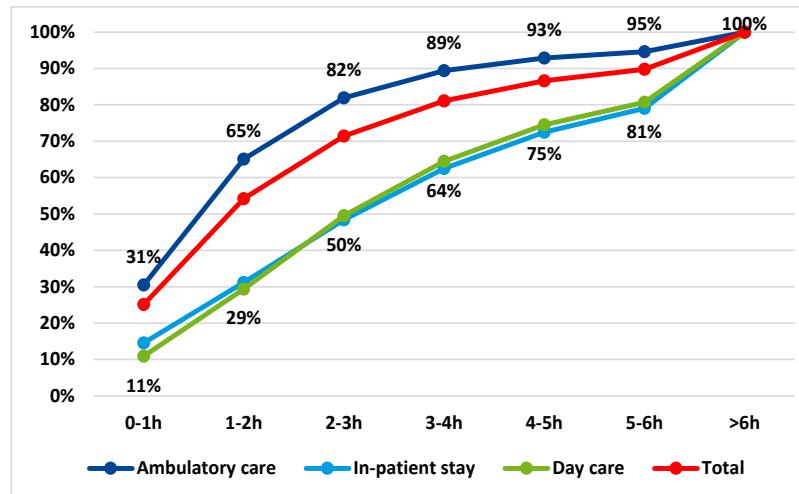
Length of stay in the emergency department

From Figure 12 it can be observed that about 81% of all ED attendances meet the internationally used 4 hours target (i.e. patients should not stay longer than 4 hours at the ED). Differences exist between disposition types. In 2012, the ambulatory patients leave the ED on average 2.3 hours after arrival, while this is 4.1 and 4.9 hours for ED contacts followed by a day-care

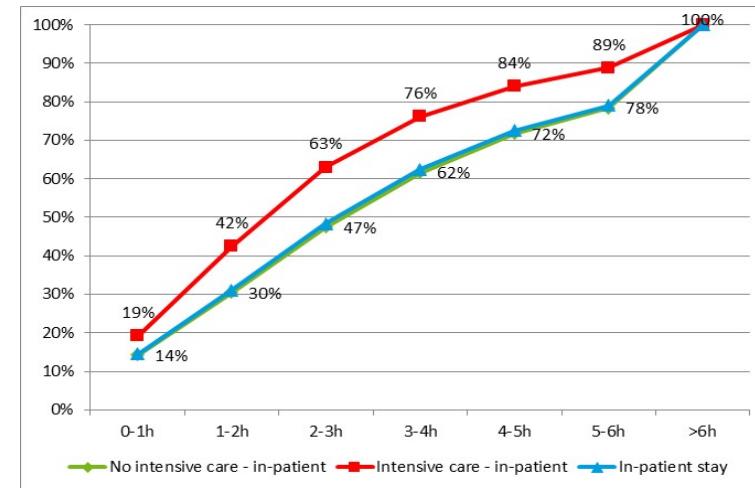
or inpatient stay, respectively. ED visits followed by an inpatient admission during the evening hours (from 8 PM to midnight) show the longest ED length of stays (≥ 5.3 hours).³³ From the right-hand side of Figure 12, it can be observed that ED patients without an intensive care ward as disposition, stay in general longer in the ED compared with patients that go to an intensive care ward. Hence, the more serious cases are redirected to an appropriate department earlier.

Figure 12 – Cumulative percentage by length of stay in the emergency department (2012)

Type of ED contact



ED contacts followed by an inpatient stay: intensive care ward or not

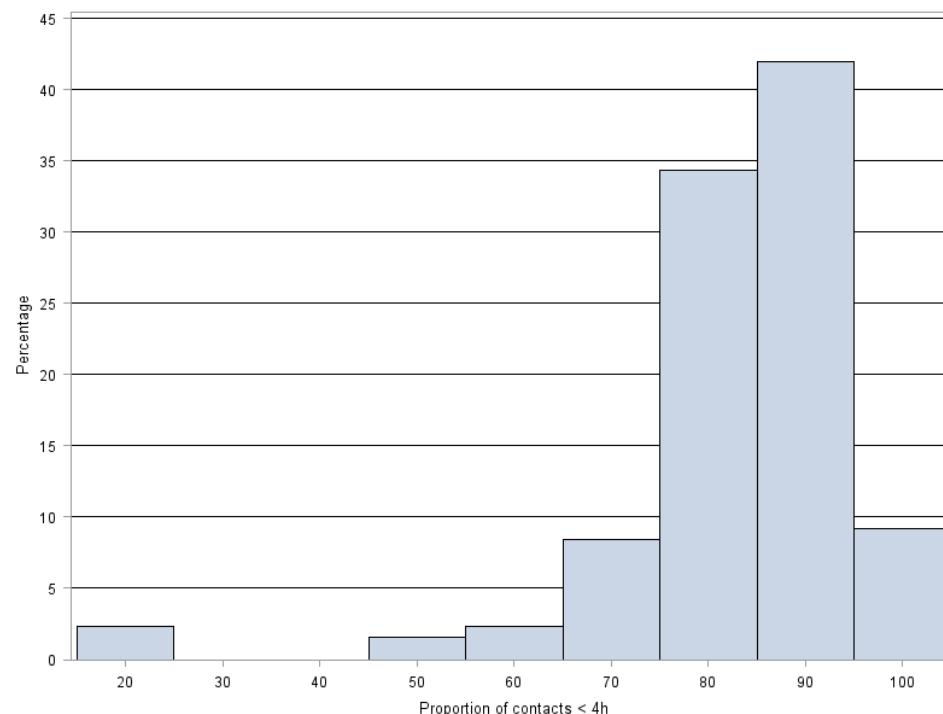


Source: FOD – SPF data on emergency contacts in acute hospitals (2012)

From Figure 13 some variability between hospital sites can be observed. However, for 9 out of 10 sites, at least 70% of the ED contacts are meeting the 4 hour target. Moreover, in half of the sites, more than 85% of the ED contacts meet the 4 hour target. This is still far below the targets set abroad (e.g. 98% in Scotland³⁴; 98% in England until 2005 which was in 2010 relaxed to 95%³⁵).



Figure 13 – Distribution of ED contacts with a length of stay < 4h among hospital sites with a specialised emergency department (2012)



Number of sites	min	p10	p25	p50	p75	p90	max
131	17%	73%	80%	85%	90%	93%	99%

Source: FOD – SPF data on emergency contacts in acute hospitals (2012)

ED contacts per hospital site: large variations and small numbers observed in some hospital sites, especially during night

In Figure 14 (left-hand side) the distribution of the number of ED contacts per ED is depicted for hospital sites with a specialised ED. A large variability between hospital sites can be observed. For 2012, the number of ED contacts varies from 4697 to 83 930 contacts with a median value of 20 066

contacts. In other words, half of the hospital sites have on average 55 ED contacts per 24 hours. Also in the Netherlands³⁶ large variations in ED contacts between hospital sites were reported ranging from 7000 to 50 000 contacts with a mean of 22 800 visits.

On the right-hand side of Figure 14 the number of ED contacts during the night (12 PM to 7:59 AM) is shown. Half of the hospitals have no more than

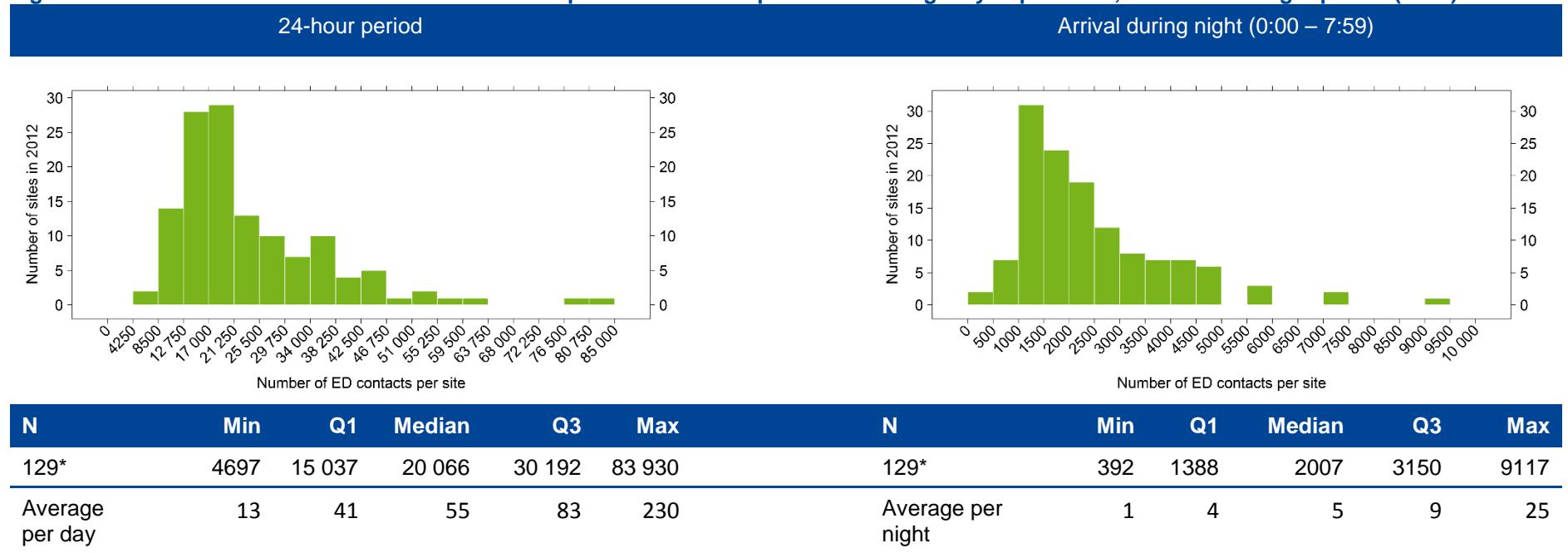


2007 ED visits during the night per year (or on average ≤ 5 ED arrivals per night). The number of ED contacts during the night is, on average, slightly higher in the weekend.

It should be noted that the above results do not represent the activity on sites between midnight and 8:00 AM but only the new arrivals during this

period. If we add up the patients still on site and the new arrivals within this period of time, we see that for half of the sites, there are at least 9 patients per night on site. For one fourth of the sites, the activity during this period is between 15 to 88 patients per night (figures not shown in Table 1).

Figure 14 – Distribution of number of contacts in hospital sites with a specialised emergency department, 24-hour and night period (2012)



Source: FOD – SPF data on emergency contacts in acute hospitals (2012)

* Two hospital sites that were closed/opened during 2012 were omitted

**Table 1 – Distribution of ED arrivals during the night (12 PM – 7:59 AM) in hospital sites with a specialised emergency department (2012)**

		N (number of sites)	Min	Q1	Median	Q3	Max
Nights	Year 2012	129*	392	1388	2007	3150	9117
	Average per night	129	1	4	5	9	25
Nights during weekdays	Year 2012	129	271	900	1308	2029	5789
	Average per night	129	1	4	5	8	23
Nights during weekend	Year 2012	129	109	506	703	1090	3328
	Average per night	129	1	5	7	10	32

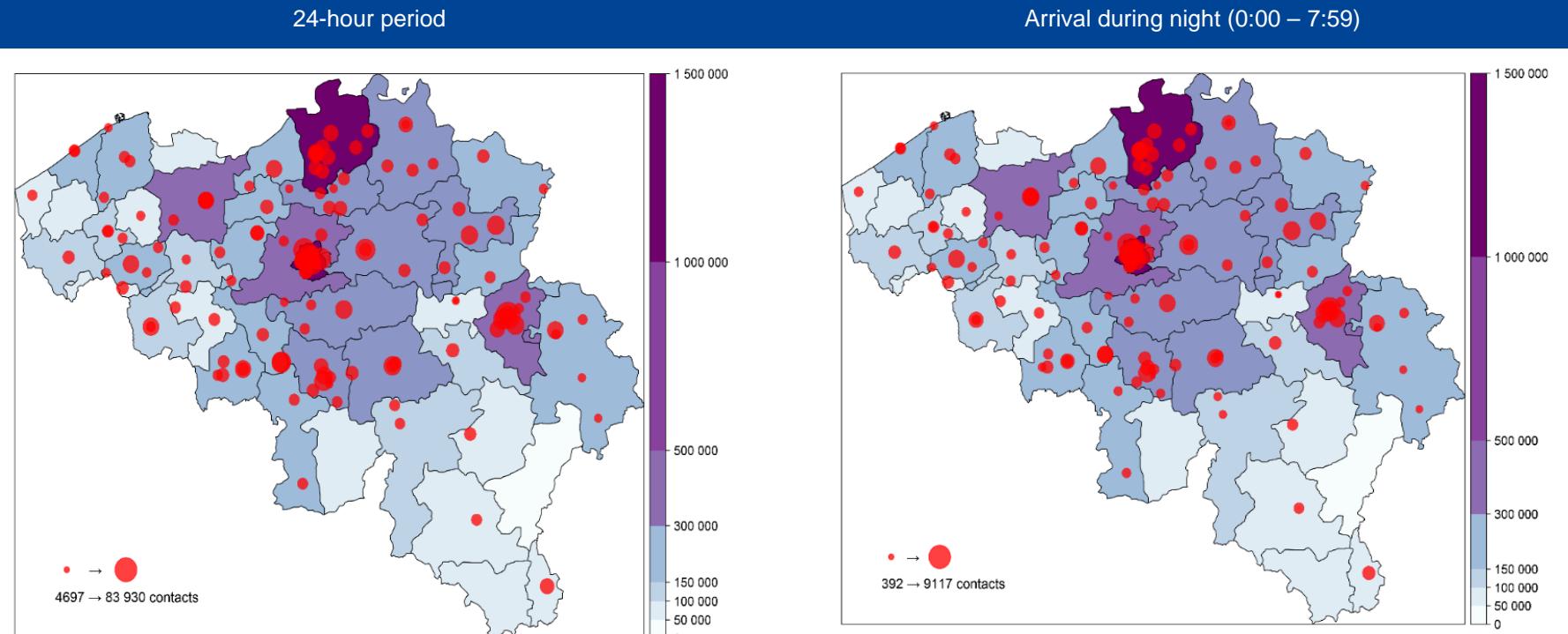
Source: FOD – SPF data on emergency contacts in acute hospitals (2012)

* Two hospital sites that were closed/opened during 2012 were omitted

The caseload per specialised ED expressed as the number of contacts per 24 hours or as the number of new arrivals to the ED during the night (midnight to 7:59 AM) is also shown on the map of Belgium (see Figure 15) with different colours per arrondissement according to the population density. It can be observed that some specialised EDs with a relatively small caseload are located at close distance of other specialised EDs.



Figure 15 – Distribution of number of contacts in hospital sites with a specialised emergency department, 24-hour and night period (2012)



Source: FOD – SPF data on emergency contacts in acute hospitals (2012). Two hospital sites that were closed/opened during 2012 were omitted

Specific user groups

There are special groups for whom the 'appropriateness of ED use' might require attention. A well-known group is that of the frequent ED users. Although different thresholds for defining frequent ED users exist in the literature (e.g. threshold of 3 to 10 ED visits within a period of 12 months), it is estimated that between 1 to 5% of the overall ED population are frequent users.³⁷ Despite being a marginal proportion of total ED patient population, it is well described in the international literature that frequent ED users have complex healthcare needs (e.g. exacerbations of patients with chronic

conditions, frail elderly, substance abusers, nursing home residents) that are not optimally managed within the context of the ED healthcare setting. In Belgium, 3.26% of total ED patient population (year 2012) can be labelled as frequent ED users (i.e. ≥ 3 ED visits per year; based on data from the FOD – SPF).

3.2 Critical appraisal: a relatively high number of emergency departments with large differences between urban and rural areas

3.2.1 Current capacity is a consequence of (not always harmonized) policy measures: programming, recognition, financing

The number of emergency departments is relatively high. Yet, large differences exist between urban and rural areas. Since the density of acute hospitals is high in (large) cities and EDs are an important entrance gate for hospitals (in fact vital for hospitals to survive economically), the density of EDs in cities is high. In many cities there are EDs at close distance from each other (see for instance on Figure 15 where a large number of specialised EDs are located in large cities such as Antwerp, Liège, Brussels and Ghent). Yet, in some rural areas distances (and travel times) are much larger (e.g. province of Luxembourg). There are, however, no data on the required number and location of EDs. Moreover, such estimates based on population needs are dependent on the availability and role of other services (e.g. role of primary care services in acute care, availability of out-of-hours GP and dentist services).

“Ja, het is in elk geval een overaanbod, ten eerste. Ten tweede, een zeer ongelijke spreiding. Dus de stedelijke omgeving... de grote steden zijn ‘overbespoed’, zou ik zeggen. En in landelijke gebieden zijn er tekorten. Bijvoorbeeld... Om een voorbeeld te geven: Antwerpen heeft zeven spoeddiensten voor een populatie van ongeveer een 500 000 inwoners. Dat betekent meer dan één spoeddienst per 100 000 inwoners. Dus dat is eigenlijk te veel van het goede.”

(Over-)capacity is a result of restricted (closed-end) macro budgets combined with a proliferation of recognised emergency departments

Stakeholders indicated that the current (over-)capacity of EDs results from errors in the initial designing and implementation of the payment and organisation system. Initially policymakers envisaged to develop a differentiated Belgian hospital landscape with two levels of emergency departments: specialised EDs and non-specialised EDs.³⁸⁻⁴⁰ The recognition requirements (e.g. on call availability) were set much higher for the specialised EDs (see section 3.1.1). The budget for EDs was also calculated

with this differentiation in mind. Moreover, some stakeholders stated that this differentiation can result in quality problems if it is not made clear for which problems patients should attend a specialised or non-specialised ED. After all, the majority of ED attendances are still self-referrals.

Yet, the interplay between the recognition standards and the payment system resulted in a struggle to survive and a proliferation of specialised EDs. Stakeholders indicated that, originally, about 50 specialised EDs were envisaged at the start. However, today with 131 hospital sites (101 hospitals) with a specialised ED and only 8 non-specialised EDs these policy intentions turned out differently and in practice there is no differentiation in the EDs.⁴⁰ Hospitals made great efforts to comply with the recognition standards of specialised EDs since they all wanted to have this important entrance gate to the hospital. In fact, according to stakeholders, many hospitals want to keep their loss-making EDs open to ensure a sufficient number of hospital admissions and hospital activity (e.g. outpatient follow-up by hospital-based specialists). After all, the ED entrance gate is perceived as indispensable in the economic survival of acute hospitals, to attract a sufficient number of patients in a highly competitive and dense hospital landscape.

Furthermore, the complex interactions between recognition standards (e.g. having an ED is a prerequisite to obtain a recognition for an MRI) are an extra reason for hospitals to want to keep their specialised ED. As a result of these evolutions, the closed-end budget for EDs had to be divided across more hospitals. This could have been prevented if the number of EDs had been programmed as was the case for MUGs – SMURs.

“Waarom is een spoed zo interessant? Eén, om de MUG te krijgen, maar vaak ook om andere programma's en diensten te hebben. Bijvoorbeeld, wanneer we het oncologieprogramma of het cardiologieprogramma, of NMR's hebben toegewezen, dan was dat vaak in relatie tot de spoed. In welke mate heeft dat een impact gehad op het groot aantal spoeddiensten? Dus het verbinden van voordelen aan het hebben van een spoed? Dus dat is toch niet onbelangrijk. Oncologie, NMR's, zware apparatuur, cardiologie. Cardiologie ook, hé. Cardiologie is verbonden geweest aan de spoed. Er zijn verbanden die een stukje inflatoir hebben gewerkt.”

With the 6th State reform, the policy instruments that have an impact on the number of specialised EDs (programming, recognition and financing) are



further divided between the federal and federated authorities. Although the federal level remains competent for financing and programming, the federated entities are now not only responsible for attributing recognitions, they also have the competency to set the recognition standards (as long as the federal healthcare budget is not affected: see Van de Voorde et al. 2014⁴¹ for more details).

Other stakeholders disputed the fact that there is an overcapacity (mainly emergency physicians). They stated that they do not prescribe ED admissions and stressed the high number of self-referrals (see section 3.1.3). The demand for ED services increases in all industrialised countries (e.g. ambulatory consultations) and some stakeholders indicated that it is not supply-induced. It is potentially related to the absence of alternatives (e.g. primary care services).

“Énorme connerie dire qu'il y a trop de services d'urgences c'est cette histoire universelle de l'offre et la demande. Il y a beaucoup de services d'urgences, il y a beaucoup d'offres et c'est ça qui génère la demande de soins. Couillonade infinie ça. Il y a beaucoup de médecins généralistes, est-ce que c'est ça qui génère la demande de soins en médecine générale ? Là on peut peut-être discuter... Effectivement on a de plus en plus de gens qui consultent aux urgences dans tous les pays d'Europe. ... Donc c'est pas l'offre des services d'urgences qui crée la demande. J'ai d'ailleurs une preuve indirecte, c'est que depuis 10 ans maintenant on ferme des services d'urgences. ... Ça, cela n'a pas atteint son but. Pourquoi ? Parce que les hôpitaux ont dit “ si je ferme mon service d'urgence que se passe-t-il ? Je vais perdre des sous sur les urgences ? » Si on ferme le service d'urgence .., on ferme l'hôpital. Pour ça, financièrement le service d'urgence était déficitaire. Donc on avait tout intérêt, l'hôpital en tant que gestionnaire, a tout intérêt à fermer son service d'urgence. Sur le financement propre spécifique des urgences. Sauf que fermer les urgences ferme l'activité hospitalière. Il n'y a pas trop de services d'urgences. On ne génère pas une offre de soins par les services d'urgences. La preuve c'est que depuis dix ans, justement les hôpitaux se sont restructurés parce qu'on leur a coupé les vivres en financement hospitalier. Il y a plein de services d'urgences qui ont fermé. Je serai curieux de prendre des chiffres de la région montoise, il y avait un service d'urgence à Frameries, il a été fermé, enfin non, il est d'abord devenu PPCU. Ça a

duré pendant une paire d'années. Et puis on a fermé l'hôpital parce que l'hôpital s'est restructuré. Est-ce que pour autant sur l'ensemble de la région montoise il y a moins de consultations aux urgences ? Je suis certain que non. Je n'ai pas les datas. Les datas elles sont au SPF et à l'INAMI... Je suis certain qu'il n'y a pas de diminution. ..Donc ça, dire on ferme un service, donc on va diminuer l'offre et donc diminuer la demande ce n'est pas vrai.”

3.2.2 Advantages and disadvantages of the current ED capacity

High accessibility

As is evidenced by the large number of patient contacts (i.e. 3.2 million patient contacts in 2012; 24% of the Belgian population had at least one contact with an ED in 2012), the emergency departments are highly accessible on a 24/7 basis. Yet, it should be noted that this accessibility may be lower in rural areas where distances and travel times to EDs are longer.

Easily accessible entry to hospitals and specialised medical services

Some stakeholders indicated that there is also a downside to the highly accessible emergency departments. The easy entrance gate to specialised care (e.g. diagnostic tests) could result in a higher use of these specialised services. Other stakeholders disputed the fact that closing EDs will result in less ED attendances. They referred to the yearly increases in ED attendances despite a decrease in the number of EDs in certain regions (e.g. by hospital mergers). Stakeholders also referred to the United States where a drastic reduction of EDs did not result in a decrease in ED attendances, on the contrary (see empirical evidence in section 3.4.2). Nevertheless, a concentration of EDs could, besides a reduction of fixed costs, also have other benefits such as higher nurse staffing ratios or differentiated practice. After all, the larger pool of patients will allow the employment of different levels of care providers (e.g. nurse practitioners, GPs, emergency physicians) all having sufficient caseload to be profitable (see also Chapter 4 on ED workforce).

“En we hebben daar ook de voorbeelden uit Amerika. Dus de laatste tien jaar... Ik heb gisteren trouwens nog de tabellen eens bekeken, waar men ziet dat het aantal spoedgevallendiensten drastisch verminderd is... In Amerika. Maar dat het aantal aanbiedingen via spoed drastisch verhoogd is. Dus denken dat men door het aantal



toegangen te gaan verminderen, dat men daardoor minder spoedgevallenpatiënten heeft, dat is niet waar. Dat is gelijk als denken dat men door het aantal vluchtelingenkampen in te korten, dat men daardoor minder vluchtelingen gaat krijgen. Dus dat is gewoonweg een absurde redenering. Dat neemt niet weg dat ik daar wel iets voor vind om die beweging te kunnen volgen en te kunnen rationaliseren van spoedgevallendiensten. Waarom? Om juist door de grote case-mix die er is, de aangepaste competentie te kunnen plaatsen binnen een grote dienst. Ja? De competentie die nodig is.”

Buffer capacity to deal with peaking ED admissions

The capacity allows to deal with sudden peaks in the number of ED attendances (e.g. flue epidemics in winter: from the data presented in Figure 11 it is not really clear that such peak is manifestly present during winter). Yet, also other alternatives can be considered such as a real-time monitoring system of the ED, acute hospital use and available capacity across hospitals. This would not only allow referrals between hospitals but could also help to free up hospital capacity by postponing elective procedures. With the UREG-registration a step towards that policy option was taken by the Belgian government.⁴²

“Wel, dus, om nog eens een voorbeeld te geven. Dus je zit met die pieken naar beneden en die pieken naar boven, maar je zit... Vorige winter, was het relatief geen winter, en is er geen winterpiek of zo geweest. En wij dachten... Dat is zo typisch, de overlijdens bij bejaarden. Dat zie je heel goed. Nu massaal. Dus bijvoorbeeld voor vorig jaar zou je kunnen zeggen: “We pakken de statistieken en we doen er 2000 bedden af. En die hadden we niet nodig.” En inderdaad, we hadden die misschien niet nodig, globaal uitgedrukt... Enzovoort. Van de jaar ontspoort gans de zaak. Dat is één. Twee, de vergrijzing die op ons af komt, hé. Dus ik zeg: “Denk misschien toch wel een keer na voordat je veel sluit.”. Ik zeg: “Je gaat er misschien een ander karakter aan geven. Dus je gaat uw capaciteit meer voor basiszorg misschien nodig hebben.”

Dispersion of expertise

The large number of EDs has also an impact on the available expertise of other disciplines. Since it is not possible to staff all medical disciplines in hospitals on a 24/7 basis, it sometimes takes some time to receive a consultation of a medical specialist even when time is crucial (e.g. cardiovascular problems). Concentration of EDs would also enable concentration of other (on-call) services and despite some prolonged travel times even shorten the time to be seen by the most appropriate medical specialist resulting in quality gains.

“Ah, dat is concentratie van expertise natuurlijk, hé. Ja, het grootste voordeel. Ten tweede, organisatorisch, dat er dan inderdaad mensen kunnen echt van wacht zijn. Oké, goed... Ik zal een voorbeeld geven. Als nu iemand met een acuut vasculair probleem naar de spoed gaat, dan moet die vasculair chirurg ook nog opgeroepen worden van thuis uit om naar spoed te gaan. Ja, dan gaat er ook tijd verloren. Eigenlijk, een spoed zou moeten zijn, zoals het woord zegt, behandeling binnen het half uur. Dat is nu zeker en vast niet het geval. Dus dat is alleen maar mogelijk door inderdaad schaalvergroting, dat men toch redelijk heel wat mensen ziet, dat die chirurg ook zijn werk heeft natuurlijk, hé. Bij wijze van voorbeeld natuurlijk, hé.”

3.3 Critical appraisal: are emergency departments the most appropriate organisational level for all current activity?

3.3.1 Not all emergency department visits are urgent, but are they inappropriate? A uniform definition is lacking

The inappropriate use of ED services is a commonly reported problem in various countries with different healthcare systems.¹⁸ Also Belgian studies report high proportions (e.g. 40-56%) of such ED-visits (see Box 2).^{15, 43} Since inappropriate use has been studied for more than two decades, we scanned the literature for systematic reviews reporting the definition and prevalence rates of inappropriate ED use (see annex to Chapter 10 for search strategy).



Definition and measurement of inappropriate ED use

The studies included in the reviews of Durand et al. (2011)⁴⁴ and Carret et al. (2009)¹⁶ used a wide range of criteria and measurement methods to identify 'inappropriate ED visits'. Consensus about identifying and defining inappropriate ED visits seems to be absent in the international literature.

Besides the ED use by patients that can be treated at other care levels such as the GP, stakeholders also indicated that persistent treatment and lack of 'end of life care plans' result in inappropriate ED use (e.g. a frail elderly with multi-morbidity who has a cardiac arrest in a nursing home is transported to an ED while it may have been more appropriate to have decided, together with patient and family, to include a 'do not resuscitate' decision in the care plan). The frequent use of EDs by cancer patients at the end of life stage is also seen as an indicator of poor quality. Yet, the evidence about the incidence of ED use by patients in need of palliative care⁴⁵ and evidence about palliative care interventions aiming to reduce ED visits is not strongly substantiated yet.⁴⁶ It is also suggested by stakeholders as well as by some international study reports that nursing home residents make too often use of limited acute care resources and use services that could be directed towards patients likely to obtain greater benefit.⁴⁷ In this section, we focus mainly on ED visits by patients that could have been seen by a GP.

A first important distinction between the methods used is the prospective or retrospective character. Durand et al. (2011)⁴⁴ identified 51 different methods of categorization of 'inappropriate ED use'. Only 17 methods (33.3%) were prospective methods in the triage area (15 by triage nurses and 2 by emergency physicians). Patients present to the ED with chief complaints, symptoms and signs but not with a discharge diagnosis. Thus, the prospectively classification of ED visits as (in-)appropriate in the triage area (triage nurses using formal guidelines) relies on complaints, signs and symptoms. The objectives of such an initial triage is to optimize the length of stay in the ED and to redirect non-urgent patients outside the ED to primary care structures.⁴⁴ The limited correspondence between prospective and retrospective measurement methods⁴⁸ can be considered as a limitation to reorient patients towards other care alternatives outside the ED. Indeed, the risk of misclassification entails ethical, legal and safety problems. Yet, some stakeholders indicated that a medically-staffed telephone triage (with experience in emergency care) could reduce the number of 'false positive' ED visits.

"Et je préfère voir mille douleurs thoraciques pour rien et sauver une vie du millième et le ratio n'est même pas celui-là... c'est le ratio beaucoup plus important de vrai positif dans la gestion. Il n'y a vraiment aucun souci et..."

A second distinction is the use of explicit or implicit criteria. Among the 51 methods of categorizations, 36 used only explicit criteria; 5 only implicit criteria and 10 a combination of both.⁴⁴ The explicit criteria most commonly used focused on the chief complaint, the duration of the complaint, vital signs, the type of referral, diagnostic tests, treatment performed in the ED, and hospitalization.⁴⁴ Each of these items also varied greatly. For example, the list of tests considered in the definition of urgencies varied for each criterion.¹⁶ It has been shown that expert opinions based on implicit criteria corresponded best in studies that evaluated the correspondence between different measurement methods.⁴⁴

This lack of consensus about measurement criteria is related to confusion about terminology. Various authors make no distinction between the terms 'inappropriate' and 'non-urgent' to describe ED misuse. Nevertheless, the term 'non-urgent' mainly concerns the level of severity of the medical problem (such as vital signs, being hospitalized or not, etc.) while the term 'inappropriate' also covers the social and psychological contexts of patients, visiting hours (during working hours or not), and availability of healthcare outside the ED.⁴⁴ In addition, the concept of 'non-urgency' is often defined in opposition to the concept of 'vital urgency' which is very restrictive and could lead to classifying traumatic pathologies as 'non-urgent' or 'inappropriate'.⁴⁴

A third distinction is the assessor (e.g. self-perceived medical emergency by patient or relative versus assessment by a healthcare professional: nurse, physician).⁴⁴ The correspondence between the views of patients and professionals on the urgency level of an ED visit is very low.⁴⁹ This is a limitation in the identification of 'inappropriate ED visits' since most patients are self-referred (70% in 2012) and emergency physicians have no impact on this. Furthermore, some of the interviewed stakeholders stated that it is an unrealistic expectation to give patients the responsibility to perform the triage themselves (to decide if they have to go to an ED or GP) since it is difficult for them to assess the emergency or severity of their complaints, signs and symptoms. On the other hand, it is indicated by stakeholders that citizens are not released from all responsibilities. Citizens are often too

inpatient and if they, for instance, have to wait two hours for an appointment with their GP, they decide to attend an ED.

"Wij laten die patiënt niet terug bij ons komen, wij doen niet aan autoprescriptie. De huisarts waarschijnlijk wel. En ik hoop dat dat mag. Dat moet ook trouwens. Dat lijkt mij heel belangrijk."

"Als burger kan je niet altijd zelf oordelen hoe ernstig het is. Als nu jezelf zou laten leiden door een incentive om naar de huisarts of het ziekenhuis te gaan, dan geeft men een verantwoordelijkheid aan de patiënt of de voogd of het familielid wat eigenlijk niet zijn verantwoordelijkheid is. Dus vind ik het eigenlijk niet zo eenvoudig van te zeggen: "Ik geef een incentive." Het komt erop aan om zo objectief mogelijk te kunnen oordelen wat met wie moet gebeuren."

This shortcoming of a clear definition also causes difficulties in the discussions, resulting in impasses:

- The emergency physicians used this lack of clarity about the concept of 'inappropriate use of EDs' to argue that there is virtually no inappropriate use. Some emergency physicians, for instance, stated that most patients attending the ED have a clinical biology test or medical imaging (services not typically provided by GP practices), justifying the ED visit. Yet, they did not mention whether these tests are appropriate or not.

"Et c'est pour ça que c'est difficile pour les hôpitaux, les gestionnaires d'hôpitaux de lâcher les urgences et d'accepter un tri, j'ai été dégoûté, les urgentistes disent "on a fait une étude pour voir un peu si c'était justifié ou pas que les patients viennent consulter". À 97 % je ne sais plus si c'est 95 ou 97, à 97 % on a pu démontrer que les gens qui viennent spontanément aux urgences avaient eu raison de venir alors qui a dit "oui la preuve" son argumentaire c'était de dire que le critère s'il y avait eu un examen complémentaire ou pas puisque les généralistes n'ont pas de radio ou de biologie chez eux évidemment les patients qui ont eu un examen médical ils n'auraient pas pu avoir ce service chez le traitant et donc c'est ça le critère pour voir si c'est justifié ou pas, et comme évidemment 95 ou 97 % des gens ont soit une radio ou une imagerie médicale ou une prise de sang eh bien alors évidemment on va trouver que c'est justifié."

- But the same holds for policymakers and payers. They used this lack of clarity to force or justify policy decisions. The study by the socialist sickness funds¹⁵, for instance, is criticised by emergency physicians because they used hospital admissions to classify ED visits as appropriate. Yet, a discharge to home is perfectly possible for patients requiring emergency care while not all ED visits resulting in a hospital admission required emergency care (e.g. caused by an associated social problem).⁴⁴

"Les mutualités socialistes nous disent : "Regardez, c'est la preuve que les gens ont abusés des urgences. 70, 80, 90 % rentrent chez eux. » C'est complètement absurde comme raisonnement. Dire que parce qu'on est rentré chez soi ce n'était pas urgent, c'est fou. Il y a des gens pour lesquels on a envoyé le SMUR, il y a eu des gestes de réanimation, et qui sortent aujourd'hui le jour même parce qu'on est sur une médecine ou on n'est plus un mois à l'hôpital. ... Il y a des infarctus qui le lendemain sont chez eux parce qu'on les prend en charge précocement, on les dilate, ils rentrent chez eux. Donc, dire, les gens qui viennent aux urgences et qui rentrent chez eux derrière c'est la preuve que ce n'était pas urgent, c'est une ineptie ça."

Magnitude of the problem

Despite a lack of consensus on the appropriateness of ED visits, the published (inter-)national studies^{16, 44} and reports¹⁸ illustrate that indeed many ED visits could have been treated appropriately at other care levels. The reported prevalence levels vary from 4.8% to 90% of ED visits^{16, 44}, with all extreme values (both high and low) based on retrospective reviews.⁴⁴ Another way to summarize the prevalence rates is by reporting the overall median of 32.1%⁴⁴ or by stating that nearly half of the studies varied from 24 to 40%.¹⁶

Also results for the Belgian situation are available (i.e. 40% for paediatric patients and 56% for members of the socialist sickness fund¹⁵). The same limitations (e.g. lack of consensus on measurement methods) observed in the international literature apply to these Belgian studies. However, the study results indicate that also in Belgium a large portion of ED visits could have been managed by other care settings outside the ED. Furthermore, large differences between hospitals may exist as can be suspected by large variations in the number of self-referred and ambulatory ED visits. Also



regional differences are observed in the proportion of ED visits that were labelled as appropriate: Flanders (52%), Wallonia (42%) and Brussels (34%).¹⁵

The factors associated with ED visits labelled as inappropriate in the Belgian context were in line with those reported in the international literature:

- An inverse relationship between ‘inappropriate ED visits’ and age is observed with a high proportion of inappropriate ED visits in the youngest age categories.^{15, 16} Stakeholders indicated that parents bypass their GP when their (young) children are sick and go directly to the paediatrician. When there is no paediatrician on call or when there is no ‘without appointment consultation system’, parents directly go to the ED with their sick child.

“Le problème de la garde pédiatrique....qu’effectivement je pense que les gens ne pensent pas passer chez leur médecin généraliste quand ils ont un problème avec un jeune enfant parce que c’est le pédiatre, la première ligne, c’est le pédiatre, c’est pas le médecin généraliste. Et là il y a peut-être... Sur ce point-là en particulier il y a peut-être aussi, bon, une forme de sensibilisation à faire. Moi, je pense que le généraliste peut certainement régler 90% si pas plus des problèmes, mais voilà, il se fait qu’en première ligne, il y a aussi le pédiatre et qu’il n’y a pas de garde pédiatrique et que dès lors les gens vont souvent... visiblement consultent beaucoup les urgences dans ces cas-là bien particuliers.”

- In addition, accessibility of primary care and the relationship with a primary care physician were reported to be associated with the (in-) appropriateness of ED visits.¹⁶ In the Belgian context such an association is also suggested by the observed relationship between the appropriateness of ED visits and the global medical record (GMD – DMG) registration (which can be considered as a proxy).¹⁵ Moreover, differences in the organisation of primary care are seen as one of the factors that can explain the large regional differences in ED visits labelled as inappropriate.

Stakeholders repeatedly indicated that the lack of having a reference GP contributes to inappropriate ED use. Therefore they support the use of the GMD – DMG as a policy tool to strengthen the relationship between patients and GPs. Stakeholders also mentioned the existence of a generalized third-party payer system as one of the reasons why

patients prefer EDs above primary care. Therefore, patients may have the wrong perception that the ED is cheaper than the GP (while the contrary can be true: see Chapter 8). Another problem discussed during the stakeholder interviews was the fact that GPs refer patients (too) fast to the ED because of a ‘defensive medicine culture’.

“Certains de ces patients, n’ont pas de médecin traitant ou l’utilisent mal donc il faut promouvoir l’usage d’un médecin traitant promouvoir les DMG aussi voilà, ensuite on peut dire qu’il faut éduquer c’est toujours bien de dire ça c’est vrai, mais ça ne sera pas suffisant ce ne sera vraiment pas suffisant, je pense qu’il faut un incitant financier.”

- The association with socioeconomic variables was not clear-cut in the Belgian context¹⁵, nor in the international literature.¹⁶ Nevertheless, stakeholders pointed out that socioeconomic factors can influence the use of EDs.

“Als je in Gentse ziekenhuizen komt, zoals Sint-Lucas of Palfijn, daar komen ganse families naar de spoed. Dus dat is ook een gans ander fenomeen. Maar je zou dan denken: “Is het alleen dat?” Het is niet alleen dat. Uit studiemateriaal blijkt dat die burger vaak kiest op basis van vroegere ervaringen... Dus de ganse attitude van de burger. Dus enerzijds zijn opleiding, anderzijds zijn socio-economische factoren. Dus het is evident als Brussel zo’n hoog cijfer heeft, dat is omdat er veel armoede is. En dus arm maakt ziek en ziek maakt arm. Maar de toegankelijkheid voor de zorg is dus voor die mensen heel moeilijk.”

Patients find it convenient to attend the ED where they have access to a full range of services (e.g. medication, laboratory tests, medical imaging, consultation medical specialists) at any time, 24/7.^{16, 18} Also a healthcare system without any form of strict gatekeeping was pointed out as an important driver of inappropriate ED use in Belgium.

Box 2 – Belgian studies on the ‘inappropriate’ use of emergency departments

Despite the lack of a uniform (inter-)national definition of the non-urgent use of emergency departments (let alone a definition of inappropriate ED use) several authors report on non-urgent or inappropriate use of emergency departments in the Belgian context:

- A small-scale study (year 2004) conducted in one general hospital by Wens et al. (2005)⁵⁰ labelled ED visits as appropriate if the medical specialist on duty in the ED was of the opinion that a general practitioner (GP) in primary care could not have treated the patient properly. During 14 consecutive weeks a 12-item questionnaire was completed by patients or their relatives for all ED visits (n=5379). After dealing with each case the medical specialist filled out a short questionnaire and assessed whether a patient could have been treated by a GP. Only 56.6% of cases were related to recent onset problems (i.e. lasting less than 24h) while 25% of cases to complaints of longer than 48h and only 19.3% of cases were referred by a GP. Most frequent reasons for self-referrals were patients' expectations for the need of technicality (46%) and their expectations on the availability of medical specialists (46%); 15.9% felt waiting for a GP would be too time consuming. The medical specialist on duty reported that 80% of self-referrals could have been seen (triaged or treated) by a GP. Prior GP consultation and non-trauma related complaints were associated with more appropriate visits.⁵⁰
- Benahmed et al. (2012)⁴³ evaluated non-urgent ED admissions among children aged <15 years attending the ED in 12 Belgian hospitals (convenience sample, geographically balanced: 6 in Flanders, 2 in Brussels and 4 in Wallonia) during 2 weeks in autumn 2010. In Belgium, parents decide themselves whether they consult a paediatrician or a GP as primary caregiver (with a slightly higher co-payment for paediatricians). Especially for (very) young children the paediatrician is more often consulted than the GP (e.g. 75% of outpatient consultations for <1 year olds are performed by paediatricians, 63% 1-year olds; 51% 2-year olds). The on-call services of paediatrician practices are less systematically organised compared to GPs. As such, it is possible that parents consult the ED if they do not have access to their paediatrician.

The study sample included 3117 patients with a median age of 3.3 years (2 days to 14.8 years). Most patients were self-referred (63.3%) and discharged to home (84%). The median length of stay in the ED was 65 minutes. The authors labelled ED visits as appropriate (n=1873 or 60.1%, 39.9% were labelled as inappropriate) when at least one of the following criteria was met: referral by doctor or police or brought by ambulance (29%); in need of technical examination (e.g. X-ray, blood testing, etc.) or inpatient admission (48.5%); receiving a cast (4.1%); or death (n=1). Factors associated with inappropriate use were: age of child, distance to ED, having a registered GP, out-of-hours visits (weekdays from 6 PM to 8 AM, weekend days, public holidays) and geographic region (Flanders: 31.5%; Wallonia: 44.9% and Brussels: 45.3%).⁴³

- The socialist sickness fund analysed the data of their members for the year 2008 (n=713 836 ED visits; 17% of their members had at least one ED visit in 2008). They labelled an ED visit as appropriate when one of the following criteria was met: ED visit followed by a hospital admission or temporary admission; patient was referred by a GP; patient was brought in by a MUG – SMUR or ambulance; ED visit with casting (plastering); patient died at the day of the ED visit; consultation of a psychiatrist at the ED; delivery within 3 months. The authors acknowledge that this list of criteria is not exhaustive to define the medical appropriateness of an ED visit, but argue that they followed a pragmatic approach where appropriateness is determined on the basis of criteria that could be operationalised with the data on hand (e.g. no pathology data available). Based on this evaluation 44% of the ED visits were labelled as appropriate. The most frequent criterion to identify an ED visit as appropriate was a 'hospital admission (70%)'. 64% of the ED visits labelled as appropriate were referred by a GP (or emergency care transport). The third most frequent criterion among ED visits labelled as appropriate was ED visits with casting (14%). The proportion of ED visits labelled as 'appropriate' increased (almost linearly) with age from 25% in the age-group 1-4 years towards 92% in the age-group of 90 years and above. An important observation is that among patients <15 years with an 'inappropriate ED visit' only 1.3% had a contact with a paediatrician on the day of the ED visit, indicating that the ED was used as primary care contact among this patient group. For some vulnerable



socioeconomic groups (people with financial support from the public social welfare system (OCMW – CPAS); people with a minimum guaranteed income) a higher proportion of inappropriate ED visits was observed, potentially related to a lack of a reference GP. This higher proportion of inappropriate ED visits was not found for other socioeconomic groups such as the unemployed, people with an OMNIO-status and those entitled to social maximum billing. Patients with a higher dependency level, more specifically patients with a lump sum payment for nursing care at home and elderly living in a nursing home, have a higher proportion of ED visits that are labelled as appropriate: 73% and 78% respectively. This result can be explained by existing relationships with GPs within these patient groups as well as by the higher dependency level (and need for transport). Also patients with a GMD – DMG have a higher proportion of ED visits labelled as appropriate. The proportion of ED visits labelled as appropriate differs per region: Flanders (52%), Wallonia (42%) and Brussels (34%) with also large differences between provinces of the same region. There seems to be no link between the number of ED visits and the proportion of appropriate ED visits. The authors further analysed the impact of being referred by a physician on appropriateness (based on the other five criteria) of ED visits and found that 57% of patients that were referred by a physician (or emergency care transport) fulfilled one or more of the five other criteria; for the self-referrals this was only 22%.¹⁵

ED visits by patients that can be treated at another care level: why is it a problem?

Although all stakeholders admitted that a proportion of ED patients can be safely seen by care alternatives, not all of them are convinced that the current situation is problematic. Other stakeholders stressed that ‘the inappropriate use of EDs’ is problematic since it burdens emergency care needlessly. Nevertheless, also internationally the inappropriate use of EDs is a cause of concern for several reasons.¹⁸ It is argued that inappropriate ED visits result in the use of resources (health professionals and equipment) otherwise available for more severe cases. It results in ED waiting lists, overcrowding and, as a result of overcrowding, in increased length of stay.⁵¹ It also impacts the well-being of health professionals and can trigger violent patient behaviour, such as verbal abuse and physical assault.¹⁸ It also limits

the potential of primary care where patients would receive not only treatment to relieve their immediate symptoms, but also health education or on-going care in order to prevent complications and new illnesses.

It also increases healthcare consumption and costs.¹⁸ Indeed, patients frequently go to the emergency department to obtain immediate attention in order to perform tests and administer medication to relieve symptoms.¹⁶ Although this may appear appropriate from the patient’s perspective (given existing limitations in other levels of healthcare), this type of use places a burden on the health system and increases the demand on the ED for care that could be managed better at other levels. Stakeholders indicated that ‘inappropriate ED visits’ trigger more prescriptions for tests and examinations and follow-up appointments with specialised care (compared to similar patients seen by GPs, who rely more on clinical assessment). While this was not yet thoroughly evaluated in the Belgian context some anecdotic evaluations seem to support these statements. A consumer organisation tested the use of radiography in case of ankle sprains. They visited 36 Belgian EDs with a simulated ankle sprain. In 34 out of 36 EDs a radiography was taken while this was medically not indicated.⁵²

3.3.2 Throughput and outflow problems are also burdening emergency departments

The crowding of EDs is not only related to the inflow of patients. It is also related to the management of patients throughout the care trajectory and to output factors.⁵³ For those patients with minor problems a fast track system⁵³ can help to discharge them quickly from the ED. Also bed blocking is causing problems in the ED. Other cited reasons for overcrowding and long waiting times are waiting on lab results, shortcomings in the electronic patient record (EPR) and communication problems between physicians.

“Lange wachttijden voor patiënten. Meerdere facetten spelen hierin een rol: doorstroomproblemen naar het beddenhuis, veel te veel banale problematiek, communicatieproblemen tussen artsen , ontbreken EPD en trage labo en RX resultaten. Er werd ook aangegeven dat het inzetten van een workflow-programma (ecare) een beter zicht gaf op de wachttijden.”

3.4 Solution elements

In this section we describe the solution elements that were discussed during stakeholder consultations. We performed ad-hoc searches (see annex to Chapter 3) for some of the mentioned solution elements, namely for economies of scale and for the impact of a reduction in the number of emergency departments. For the solution elements that focus on decreasing the number of ED visits by other care alternatives or increased co-payments, the literature is described in Chapter 10. In general, the solution elements mentioned by the stakeholders are largely inspired by reform efforts and policy discussions in other countries. The US Institute of Medicine (IOM), for instance, published a series of reports^{54, 55} with policy guidance on emergency care reforms. It includes elements such as regionalisation, networking, concentration of specialised services (e.g. trauma care) and ED capacity planning based on population needs. It is beyond the scope of this report to include a comprehensive overview of the evidence on each of these subtopics. Yet, we have included ad-hoc-references towards literature describing these reforms, refer to the chapter with the international comparison where relevant or refer to forthcoming KCE studies (e.g. major trauma centres) when a full KCE study on the subtopic is planned.

3.4.1 Planning of the required number of emergency departments in the larger spectrum of acute care services

Programming of EDs based on population needs

The required number of EDs for the Belgian territory is not comprehensively studied yet, while this was recommended by several stakeholders. Such a study could base this number on objective parameters such as population density, travel times, demographic factors or socioeconomic background of the attrition population of a hospital. It is not that such a study should start from scratch. Belgian studies were, for instance, already undertaken in the context of the policy advice about Paramedic Intervention Teams (PITs).⁵⁶ Yet, this could be further developed by including (different levels of) EDs, organised duty centres (ODCs) etc. It will also require the definition of minimal travel time standards. In the Netherlands there is a 45 minutes standard: including call-handling and dispatch time, ambulance driving time, and the time it takes to transfer the patient into the ambulance and to deliver the patient to the nearest ED⁵⁷ which will also impact on the desirable number of geographical acute care regions (i.e. geographical entities that

are used to plan acute care services). Indeed, within the scope of emergency care, a subset of conditions are extremely responsive to timely interventions, also referred to as time-critical conditions⁵⁸ or the first hour quintet (i.e. cardiac arrest, chest pain, breathing difficulty, stroke or severe trauma).

Carr et al. (2010)⁵⁹ suggest to use these time-critical conditions as a starting point to identify geographical regions because there is a fundamental tie between geography and access to emergency care. Next, regional outcomes for time-critical conditions such as STEMI or stroke could provide a unique perspective on system-level performance (rather than the performance of individual facilities). Such an evaluation could be used to incentivize cooperation and system designs.⁵⁹ Such exercises should not only describe the systems as they currently exist but should also include suggestions to redesign the currently mal-distributed capacity by linking the distribution of healthcare resources with population needs.

Based on the required number of EDs (and the corresponding required resources: e.g. medical and nursing staff starting from the existing norms or starting from the available evidence about what are safe-staffing levels⁶⁰) budgets can be calculated and allocated to regions/networks.

"Eigenlijk zou het goed zijn van ook te kijken naar: "Wat is de behoefte aan spoeds? Hoeveel moet je er hebben?" Niet altijd vanuit de financiering te kijken, ook naar de behoefte. En dan moet je natuurlijk de mankracht ook bij onderzoeken."

"Oui, une question de répartition géographique de, oui... géographique, enfin, en tenant compte du... Enfin, durée d'accès... Un moyen suffisant pour que voilà la permanence soit accessible rapidement évidemment ça c'est aussi une question de santé publique... et dans des délais... Je crois qu'il y a des délais qui sont fixés pour les prises en charge pour des AVC."

Integrate redesigning of emergency departments in a larger reform of healthcare services

The redesigning of the emergency departments landscape should be included in a larger reform of the healthcare landscape. In fact, the high number of ED attendances indicate a high need for unscheduled acute care services. It is possible that it is more efficient to manage a large share of



these patients at other care levels, but if this alternative capacity is insufficient or absent a reform of EDs will not solve this issue.

"Inderdaad, de spoeddienst een poort, een grote poort langs waar men inderdaad patiënten voor een stukje kan aantrekken. Is er te veel aanbod? Ja, daar is ook wel grote nood, want als twee miljoen mensen zich aanmelden met een probleem ergens, ofwel ga je die naar de huisarts, ofwel... Of daar is wel een vraag naar opvang. Of dat inderdaad op de spoeddienst moet zijn, dat is dan een totaal andere vraag, hé. En misschien is het aanbod te groot natuurlijk als je geen alternatief hebt... Dus stel dat men zegt: "Oké, het verblijf in het ziekenhuis moet verkorten, maar je hebt geen thuiszorg..." Ja, dan ga je daar eigenlijk niet veel mee... Dus het is een globale visie: hoe ga je om met eerste opvang van een acuut probleem dat misschien niet zo ernstig is?"

Acute hospitals without EDs are considered by many stakeholders as a theoretical option only. After all, the immense (financial) importance to keep this entrance gate in combination with the desire of citizens to have EDs close to their place of residence make this an unfeasible option. Closing emergency departments is by many stakeholders regarded as equal to closing hospitals. As such, if there is no differentiation and task distribution between hospitals, it will be difficult to set a reform of EDs in place.

"Parce que chaque site à son Bourgmestre qui est justement un petit peu influant politique. Donc, commencer à demander à fermer les urgences parce que simplement les politiques eux n'ont pas le courage de leurs propres décisions, c'est un peu dégueulasse quoi."

The impact of other reform efforts on EDs should be taken into account. If there is, for instance, a net reduction of hospital capacity it is possible that the strain on EDs will rise (see Box 3). There is an interaction between emergency care and elective care. If it is financially not rewarding to admit emergency care patients in hospital beds there is a risk that preference will be given to admit elective care patients resulting in overcrowded EDs. A buffer capacity is required but insufficient. The resources intended for emergency care are also used for elective care. A prominent example are the 'emergency operation theatres' that are used for elective care patients which causes delays in the throughput of acute care patients. A same kind of interaction is reported by stakeholders between EDs and intensive care

units (ICUs). Some patients have to stay too long in the ED since ICUs are reluctant to admit them (sometimes inspired by financial motives). However, this statement cannot be confirmed by the data as observed in Figure 12.

"Als spoedgevallen zijn wij een stressor op een ziekenhuis voor planbare zorg. ... Wat gaan de managers van het ziekenhuis doen? Ja, die gaan elk bed optimaal proberen te benutten. En 'optimaal benutten' is niet 'een bed vrijlaten dat mogelijk ingevuld wordt of niet'. En mogelijk ingevuld wordt met interessante pathologie of niet-interessante pathologie. Dat maakt dat de druk op de spoedgevallen alleen maar vergroot. Omdat de vraag voor het vrijgekomen bed groot is. Dus 1, is er een bed vrij? En 2, welk type patiënt is dat? En dat zien we bijvoorbeeld ook bij intensieve zorgen. Ze laten een patiënt gewoon op de spoed liggen, maar als het er ene is die interessant kan zijn voor hen, dat heeft dikwijls ook met financiering te maken, dan gaan ze die pakken. Of er liggen er 2, dan pakken ze de interessantste en de rest moet je maar zorgen dat je hem ergens anders kwijtraakt, of je moet er zelf wat mee doen. Dat is echt dramatisch."

Each reform should take into account disaster planning. When a reform includes a reduction in ED capacity, plans should be made to free up capacity in case of disasters (surge capacity).

Box 3 – Access block and bed occupancy rates

Access block is a complex problem that can be somewhat simplistically described as "*the situation where patients who have been admitted and need a hospital bed are delayed from leaving the Emergency Department (ED) because of lack of inpatient bed capacity*".²² It is almost always associated with emergency department crowding.²² The possible causes of access block are multifactorial (e.g. Forero et al.⁶¹ listed 27 factors) but the main groups are (1) the disinclination for clinicians to discharge patients, (2) inefficient flow in the discharge process, and (3) genuinely insufficient bed capacity.²²

Several strategies can be used to deal with access blocks and overcrowding.^{22, 62} Yet, in general an increase in or optimisation of the current bed capacity is aimed for. Indeed, there are indications in the literature that when occupancy rates exceed a certain threshold access block problems occur. Although a literature search on this topic was beyond

the scope of the current study we describe this topic briefly based on an ad-hoc search and the use of citation searches. Based on a simulation study of a 'hypothetical English hospital' it was indeed shown that occupancy rates above 85% are associated with regular bed shortages and periodic bed crises are to be expected; if the 90% level is exceeded access block crises are routinely expected.⁶³ These figures still circulate in the literature⁶¹ and they were also cited by the interviewed Belgian stakeholders. Nevertheless, it seems important for hospitals to have some spare bed capacity. This is confirmed by recent studies. A recently published Danish study suggests that (too) high occupancy rates are also associated with poorer patient outcomes.⁶⁴ In addition, Boden et al. (2015)⁶⁵ showed that a reduction in the occupancy rates from 93.7% to 90.2% in an English hospital was associated with improved ED performance (in terms of waiting times) and a drop of 4.5% in risk-adjusted mortality. It should be pointed out, however, that increasing the bed capacity can result in less seriously patients being treated as inpatients (e.g. inappropriate hospital admissions).⁶⁶ The underlying mechanisms of this association should be further studied.

Increased capacity can be achieved by different types of interventions.^{22, 62} One such strategy to deal with access blocks is the establishment of ED observation units. There are indications that ED observation units can help to alleviate access blocks in EDs. Obviously, when these observation units are set up as 'short-stay wards' their effect on access block alleviating can be chiefly attributed towards an increase in the number of beds rather than a streamlining of management.^{22, 62} Yet, a recent review⁶⁷ points out that there is insufficient evidence to make conclusions about the effectiveness and safety of observation units, compared with inpatient care.

Access blocks are manifest on days when 'discharge peaks' lag behind the peak in inpatient admissions. Therefore, another strategy is to focus on early discharges and improvement of patient flows. In that case, the risk of premature discharges should be monitored (e.g. unplanned readmissions). Another measure to create capacity is the cancellation of elective care (but this may have negative implications for the wider hospital). It is also an option to not admit elective patients during known ED peak moments.²²

3.4.2 Reduction of emergency department capacity

Networks

Several stakeholders suggested to pool the available resources for acute care (including resources for emergency departments, emergency transport and ODCs) via loco-regional networks. This will require a funding of acute care at the network level. EDs can be organised in the local hospitals that participate in a larger network. Specialised services (e.g. trauma, cathlabs) can be located in the regional or supra-regional hospitals. The number of EDs should be programmed based on population needs corrected for population density (e.g. to ensure safe travel times in rural areas) and other parameters (see section 3.4.1). In Denmark, for example, one ED is planned per 200 000-400 000 population, depending on the geographical location (see Chapter 9).

A network will require agreements about referral and back-referral. A concentration of specialised services will also require that these centres refer patients to local hospitals. After all, today much of the capacity in specialised centres (e.g. academic hospitals) is taken by patients not requiring specialised care. This sometimes results in waiting times for referrals from local hospitals to reference centres. Local hospitals will have to refer patients who require specialised care to the regional or supra-regional hospitals while regional and supra-regional hospitals will have to refer patients with basic care needs to local hospitals (to free up capacity for specialised care).

This concept of emergency care networks is not new. Also the US Institute of Medicine recommended 'regionalised, coordinated and accountable networks or emergency care systems'.^{54, 55} These networks should solve the failure of bringing the existing skilled care to the patients who need it in a timely fashion. Although these loco-regional networks are conceptually pretty straightforward and there are good evidence-based arguments (e.g. volume-outcome relationship, door-to-needle time) to establish them, also in other countries such as the US it seems anything but straightforward to implement them.⁵⁵ Several challenges were identified in the US to implement such networks:



- “Information flow (both concerning individual patients as systemic issues such as monitoring bed availability);
- Patient/family satisfaction (e.g. not all services will be available in a local area);
- Social support (e.g. care periods further away from home, away from normal social support system);
- Reduced availability of services in some care settings;
- Quality management of a system versus a facility;
- Continuity of care in the community;
- Financial consequences;
- Status and image issues;
- *Political and community impact considerations.*⁶⁵

Networks will also require more investments in inter-hospital transport to ensure safe and timely transport of patients from one hospital to another.

Networks for acute care will not only require a differentiation between hospital-based EDs, it will also require a closer collaboration with ODCs (see Chapter 5). This collaboration could include the integration of an ODC in an ED in some areas (e.g. cities). While in more rural areas without hospital sites extra investments in stand-alone ODCs may be needed such that these ODCs are staffed and equipped to deal with patients not requiring specialised care. Networks could also help to solve overcrowding problems of EDs by dynamic cross hospital bed management.

“Ik pleit er in hoofdzaak voor om naar regionale samenwerkingsverbanden te gaan, waarbij men eigenlijk naar een totale organisatie gaat en waar men niet meer het onderscheid maakt tussen eerste en gespecialiseerde spoeddiensten, maar waar men dus regio's afbakt en waar de ziekenhuizen binnen die regio een eenheid van organisatie moeten maken. Dat wil zeggen dat het niet meer ‘mijn MUG’ en ‘mijn PIT’ is en ‘mijn gespecialiseerde’ en ‘uw eerste opvang’, nee. We maken locoregionale netwerken. maar dat veronderstelt een totaal andere samenwerking tussen de ziekenhuizen, hé. Dat gaat zeer ver, hé. Zolang die financiering niet transparant is en gemeenschappelijk is in een netwerk, is er een concurrentiemodel. ...dan zou ik ook alle middelen, MUG , PIT en ambulances, op dat

platform zetten, want nu is het die discussie: “Van wie is die MUG? Is het die van mij of die van u?” Terwijl, als men alles door een platform laat beheren, dan is de MUG van iedereen.”

One single ED at a central location (independently located from hospital sites) in large cities

In large cities (e.g. Antwerp) with many EDs it is, according to several stakeholders, probably cost-effective to reduce the number of EDs. Given the high importance of having an ED no single hospital is willing to close its ED. Therefore, some stakeholders suggested the ‘somewhat utopian alternative’ to develop an ED at an autonomous and central location in the city. This ED can be staffed by personnel of the surrounding hospitals and patients are referred to the different hospitals based on patients’ choice (or if no preference based on a rotation system). It will reduce the number of medical teams that have to be on call. The teams that are on call (with a rotation system between hospitals) operate at the central ED site. Physicians are much more flexible than is currently the case to work in different hospital sites especially when they see the benefits such as being less frequently on call. Furthermore, such a site can also include an ODC operated by GPs to handle patients with problems that can be treated at that level. It should be examined first (in a theoretical way) which are the implications of such a scenario and which prerequisites should be met to make it realistic (e.g. changes in the Hospital Law, willingness to collaborate between hospitals).

“Haal de spoeddiensten weg van de ziekenhuizen [in grote steden] en maak aparte kleine ziekenhuisjes, centraal gelegen tussen [XX] ziekenhuizen en dat is de spoeddiensten van X en X en De spoeddiensten worden bemann door de [Xx] ziekenhuizen en de patiënt mag kiezen waar hij erna opgenomen wordt. Als het voor de patiënt niet uitmaakt, dan moet er verdeeld worden tussen ziekenhuizen. Is misschien niet haalbaar, maar financieel beter: minder personeel. Ook de helicopter kan daar toekomen”

Closure of EDs during low-activity periods

Based on an analysis of the activity profiles of ED visits it can be decided to close EDs during off-peak periods (e.g. nights, weekends) to save on fixed costs (e.g. medical and nursing staff on call). After all, data illustrate (Figure 14) that during nights the activity in EDs can be very low. These closures

can be organised analogue to the rotation systems of MUGs – SMURs but will require agreements between hospitals as well as a clear communication to the concerned citizens.

"Er is nog steeds een overaanbod van spoeddiensten. Als je het overaanbod aan spoedgevallen laat bestaan, dan betalen we ons blauw. De nomenclatuur van de spoedartsen kost ook veel geld. Acute ziekenhuizen zonder spoeddiensten gaan we niet zien, is politiek ook niet haalbaar. Heel veel spoeddiensten hebben ook een MUG. Het aantal keer dat MUG uitrijdt, is heel beperkt. ...'s nachts staan ze stil. Wat je kan implementeren is dat je in functie van de nood (weet je uit de 100 registraties) vanaf 10u 's avonds het aantal MUGs en spoeddiensten verplicht halveert. Gemeenschappen zijn ook betrokken want is zorgstrategisch. Dit wil zeggen: 's nachts heb je nog de helft van de MUGs en betaalde urgenteartsen en verpleegkundigen. Ik weet niet of je al eens 's nachts op een spoed rondgelopen hebt? Wel het is daar 's nachts erg rustig op spoed, het aantal spoeddiensten kan verplicht gereduceerd worden. Maar praktisch is dat niet zo eenvoudig. Neem in [xx]: we sluiten in de week tussen 22h en 6u een aantal spoeddiensten: wie van de spoeddiensten gaan we sluiten? Elk om beurt is naar de bevolking toe ook niet evident."

Empirical evidence for economies of scale and scope but ED closures will not necessarily result in large cost savings

The number and scale of emergency departments is part of the policy debate. Several aspects underlie these discussions such as quality of care (by concentration of specialised services), accessibility (e.g. geographically balanced services offer) and economies of scale. In this section we discuss the empirical evidence on economies of scale (is there an optimal scale of emergency departments in economic terms?) and on the consequences of emergency department closures (e.g. impact on the activity of other emergency departments, impact on quality of care).

For the first part (economies of scale), we rely on a recent review from Blank et al. (2013).³⁶ This review includes five studies on economies of scale for

emergency departments and one study on economies of scale specifically for trauma units.³⁶ The studies included in the review evaluated the marginal costs of ED visits. When these marginal costs are lower than the average cost, there is an economy of scale (i.e. extra ED visits will reduce the average costs). All included studies are relatively old (the most recent study included data from 1998-2004) and were conducted in the United States which limits the generalisation of study results. An update of the search did not yield additional results (see annex to Chapter 3). Yet, the review of Banks et al. (2013)³⁶ also includes an evaluation of economies of scale for EDs in the Dutch context. Except one of the included studies⁶⁸ (with lack of transparency in the reported methods), all other studies reported economies of scale.³⁶ Marginal costs were lower than the average costs with a mean number of about 20 000 ED visits. Economies of scale decreased with the number of ED visits. In addition, also 'diseconomies of scope' were found: hospitals with a large number of beds have relatively more costs per ED visit (e.g. because of a more complex case-mix or more overhead costs due to coordination activities).³⁶ In addition, Blank et al. (2013)³⁶ performed an analysis for the Dutch hospital sector. They reported a variation from about 7000 ED visits per year in the smallest EDs to about 50 000 ED visits in the largest EDs (mean: 22 800 ED visits/year). The performed simulations^d also confirmed economies of scale for EDs in the Netherlands.

Yet, according to the authors these results have to be placed in perspective in light of the Dutch context. The authors question the fact that ED closures will result in large cost savings. Firstly, they state that despite the economic importance of EDs for hospitals (i.e. important gateway to the hospital), EDs only account for a small part of the hospital resources (e.g. two percent of the entire hospital staff works in the ED; only two percent of the floor area of the hospital).³⁶ Secondly, the economies of scale can be offset by higher costs in the care pathway downstream the ED (e.g. more coordination for hospital admissions, follow-up outpatient appointments). Thirdly, the closure of emergency departments entails the closure of an important entrance gate to the hospital. As such, the number of hospital admissions in hospitals with ED closures is expected to decrease, but not to the same extent for all

^d In a simple simulation it was assumed that 50 percent of the smallest emergency departments are closed, and that their production moves to the

remaining emergency departments. The simulation result showed a cost reduction of 10 percent of the emergency room costs. Related to the total costs of hospital care the savings are about 0.5 percent.³⁶



medical specialties. This second order effect of ED closure will result in financial problems for hospitals with an ED closure while hospitals with an ED will experience increases in the number of ED visits, hospital admissions and outpatient visits. This will potentially lead to capacity problems within the Dutch context.³⁶

Limited empirical evidence about the impact of closing emergency departments on remaining capacity and patient outcomes

Debates about closing EDs or actual ED closures are on the policy table in many industrialised countries.⁶⁹⁻⁷¹ Yet, there is hardly empirical evidence on the impact of these ED closures.

We scanned the peer-reviewed literature (see annex to Chapter 3) and found only seven studies, all conducted in the United States (US) (see also Chapter 9 for more details about Denmark). The results of these studies should be interpreted with caution especially since the healthcare landscape in the US is much more market-driven compared to most European countries. Nevertheless, we present the results in this section (and more detailed in the annex to Chapter 3) to depict potential pitfalls as well as benefits of such policy options.

In the United States emergency departments are often described as the 'safety net' for patients without or with limited access to regular care.⁷² In fact, it is regulated by law that EDs have to care for all patients that come to the ED.⁷²

But studies show that communities with higher proportions of vulnerable residents (e.g. lower-income groups, racial or ethnic minority groups, uninsured or under-insured such as Medicaid enrollees) are disproportionately more affected by ED closures.^{73, 74}

In addition, it is shown that hospitals characterised as 'for-profit', 'having negative profit margins', 'being located in a highly competitive market' are more prone to ED closure.^{73, 74} In addition, also safety-net hospitals, which have difficulties to find emergency physicians on call because of the large portion of uninsured in these hospitals, seem to be more affected by ED closures.⁷³ Hsia et al. (2011) conclude that ED closures are mostly market driven.⁷³ These study findings indicate that ED closures in the US may widen disparities by further reducing access to care in communities that are already characterised by having vulnerable patients and underpaid hospitals.

Closure of EDs have also been associated with temporary (4 months) increased ambulance diversion to surrounding hospitals, an indication of overcrowding.⁷⁵ Indeed, Lee et al. (2015)⁷⁶ found an increased ED volume in EDs in nearby hospitals (more pronounced in tertiary referral centres). An interesting finding is that ED closures did not result in a 100%-shift of ED visits from closed EDs to other EDs. Only 80% of the predicted number of patients actually searched for care in nearby EDs. This can signify delaying of care but also the use of alternative care settings (e.g. primary care).⁷⁶

A study by Hsia et al. (2012)⁷⁷ evaluated whether for patients living in areas affected by ED closures, this resulted in increased distances to the nearest ED and in a higher risk of mortality for time-sensitive conditions. The authors found increased (but limited: on average 1.4 miles) distances to the nearest ED only affecting a minority (2%) of patients (mostly from vulnerable groups).⁷⁷ These increased distances were not associated with increases in risk of mortality. Also Shen et al. (2012)⁷⁸ found that only a minority of patients (0.2%) with acute myocardial infarct experienced substantial increases in travel times which were associated with temporary increases in in-hospital mortality. Based on these study results one can conclude that, in a certain context (e.g. closing smaller EDs in an area with sufficient ED capacity) ED closures do not have a detrimental effect on quality. Yet, another study by Liu et al. (2014)⁷⁹ could not confirm these results. They showed that emergency patients who are admitted to the hospital are at greater risk of dying if another ED at a hospital nearby has closed. This is especially true for non-elderly adult patients (18-64 years) and patients with stroke, acute myocardial infarction and sepsis (all known to be time-sensitive conditions). The study design did not allow to unravel the underlying mechanisms causing this association (e.g. increased travel times, wait times, ED crowding, delaying care). Anyhow, both studies stress the importance of taking sufficient preparatory measures in case EDs close to ensure timely access to the most appropriate level of care for all citizens. Also in the Netherlands⁵⁷, the potential impact of closures was evaluated by labelling hospitals as 'sensitive'. Closing a sensitive hospital will increase the number of people (current supply of EDs covers 98% of the population) that cannot be transported to an ED within 45 minutes.



3.4.3 Concentration of highly-specialised services in reference centres

Concentration of services is an integral part of the network logic. In this section we zoom in on some of the arguments that were discussed during the stakeholder interviews. The main condition discussed was multiple trauma but also other conditions such as stroke or STEMI were given as examples. Many stakeholders supported the idea to concentrate services for these conditions. Others stated that there is no need to differentiate EDs but to differentiate hospitals downstream the ED (e.g. reference centres in stroke). According to them, ED services should stay general. It is, however, advisable to professionalise the pre-hospital care to ensure that patients are transferred to a (general) ED of a hospital that can accommodate the respective patient.

"Dus ik pleit er eerder voor om financiering per pathologie in spoedgevallendiensten weg te laten, om die selectie niet te doen voor de spoedgevallendiensten, maar vanaf het moment dat ze op de spoedgevallendienst zijn de doorverwijzing te gaan organiseren. Er zijn bepaalde groepen waar dat nu al gebeurt, hé. Bijvoorbeeld, brandwonden, kinderen... Dat gebeurt nu ook al. Nee, niet naar een gespecialiseerde spoed, naar een spoed die verbonden is aan een ziekenhuis waar men die zorg kan bieden. Dus zo zit het eigenlijk in elkaar....en ik geloof ook niet in dat concept van nog eens een keer onderverdeling van spoedgevallendiensten. Spoedgevallen is gewoonweg de plaats waar men met alle acute zaken moet terechtkunnen. Hoe dat verder gaat behandeld worden, dat is nog een andere affaire. Maar voor alles wat men op voorhand kan definiëren prehospitaal van "dit type heeft in dat ziekenhuis weinig kansen om te overleven", is het evident dat die gebracht worden naar een gespecialiseerd ziekenhuis."

It was stressed several times by opponents and proponents that concentration of these conditions only concerns a minority of the patients treated at the ED. The main burden on EDs is caused by other patient groups than these that require highly specialised services.

"Een echte hype vandaag is 'traumacentra...' Dat is inderdaad vaak allemaal onverantwoord dat dat nog in de periferie behandeld wordt... Maar daar gaat het volgens mij niet over (hier gaat het (traumathologie)

slechts over 3 of 5 procent van de gevallen). Het gaat ook over capaciteit, hé. Je moet het ook kunnen verwerken, hé."

Major trauma centres

Belgium has, compared to other EU countries, a high mortality from road accidents.⁸⁰ The reasons for these differences are unclear. Some suggest that differences in the organisation of trauma services potentially contribute to these differences. In countries with trauma centres, such as England, the introduction of trauma centres resulted in decreased mortality rates. Literature on the effectiveness of major trauma centres suggests that in areas where major trauma systems have been introduced, in-hospital mortality reduced.⁸¹ The issue of patient volume and trauma centres is still under debate.⁸²

The largest difference between trauma centres and the actual situation in Belgium is that trauma centres have 24/7 medical and nursing teams on call and operating theatres available to deal with these poly-trauma patients (see an example from abroad in Table 2).⁸³

**Table 2 – Major differences between Level I and II Trauma Centres**

	Level I	Level II
General surgery residency program	E	D
Advanced trauma life support (provide/participate)	E	D
Extramural educational presentation	E	D
Cardiac surgery	E	D
Microvascular/replant surgery	E	D
Trauma admissions $\geq 1200/\text{year}$ with ≥ 240 patients with injury severity score >15 or 35 patients/surgeon with injury severity score >15	E	–
Operating room and personnel immediately available 24h/d	E	D
Surgically directed and staffed intensive care unit	E	D
In-house computed tomography technician	E	D
Magnetic resonance imaging	E	D
Acute hemodialysis	E	D

Source: Demetriades et al. (2005)⁸³

E = Essential; D = Desirable.

The positive results of trauma centres abroad⁸¹ do not imply that such a system should be automatically implemented in Belgium. First, the outcome of trauma care in Belgium should be investigated and compared with the outcome of trauma care in countries with trauma centres. In addition, the prevalence and geographical distribution of poly-trauma patients and the share of paediatric poly-trauma patients will have to be calculated as well as the (cost-)effectiveness of alternatives reducing travel times (e.g. increasing

the number of helicopters). Also the scope of trauma centres can be different than abroad. For instance, burn care centres may be considered out of scope in Belgium while it is often included in international trauma centres.

If policymakers eventually would decide to implement the trauma centres concept in Belgium, stakeholders stressed the importance to accompany such a measure with a thorough evaluation with predefined end-points. Stakeholders criticized this lack of proper evaluation of pilot projects and new policy initiatives more in general. They named it as a major shortcoming in Belgian healthcare policy with many examples in the acute care field (e.g. ODCs, MUG – SMUR, PIT).

The evaluation of the evidence on the effectiveness of major trauma centres, their configuration as well as the required number of such centres in Belgium (if evidence for effectiveness exists) is subject of a separate planned KCE study and out of scope of this study.

"Et le problème c'est qu'en gestion des urgences, les politiques, chaque fois que l'on a fait les changements, on les a faits parce qu'on croyait sans jamais vérifier que l'on savait. L'expérience PIT ... On a appelé ça expérience. Le terme officiel sur le site du SPF c'est expérience PIT. Moi on m'a toujours appris comme scientifique à la médecine, quand on fait une expérience de prise en charge différente de soins, 1. théoriquement cela doit passer par un comité d'éthique, un protocole qui est correctement écrit, et surtout des critères d'évaluations de l'expérience. Un comité d'adverse event. Des évaluations statistiques rigoureuses, qui regardent si cette nouvelle modalité de prise en charge améliore des end point prédéfinis en termes de morbidités , de mortalités, de délais, appellons cela comme on veut, mais il y a des end point qui doivent être prédéfinis."



Key points

Type and number of EDs in Belgium:

- There are two types of emergency departments (EDs) with different recognition standards:
 - Specialised emergency department: at least two specialised ED nurses and one medical specialist in emergency medicine on site
 - Non-specialised emergency department: one nurse (without specific specialised title) and 24/7 medical service provided by physician on call for the entire hospital
- Although at the start policymakers envisaged to differentiate between specialised and non-specialised EDs, today nearly all emergency departments are recognised as 'specialised' (i.e. 131 out of 139 hospital sites with an emergency care structure).
- EDs are an important entrance gate to the hospital. Hospitals want to keep their (sometimes loss-making) EDs open to attract a sufficient number of patients in a highly competitive and dense hospital landscape.
- The large number of EDs results on one hand in high and easy access to specialised services but on the other hand also in a dispersion of scarce expertise and resources.
- A programming of EDs can be based on a comparison of the current situation with the desirable situation. This necessitates a calculation of the required number of EDs based on objective parameters such as population density, travel times and demographic factors of the attrition population of a hospital.
- Belgium can draw lessons from international examples when considering a reform. Redesigning EDs can be included in a larger reform of the healthcare landscape and payment system for acute care services. Although loco-regional networks are a straightforward concept to undertake such a reform and there are good evidence-based arguments (e.g. volume-outcome relationship, door-to-needle time) to establish them, also in other countries such as the US it seems anything but straightforward to implement them (e.g. patient satisfaction; social support during

care periods further away from home; financial consequences; status and image issues; quality management at network level; inter-hospital transport).

- Another reform option proposed by interviewed stakeholders was to reduce ED capacity ranging from a net reduction in number of EDs, a closure during off-peak periods (e.g. EDs with very low activity at night when other EDs are close by) to enhanced collaboration between EDs in large cities with many EDs.
- Yet, empirical evidence illustrates that economies of scale and scope of ED closures will not necessarily result in large cost savings. Empirical evidence on the impact of closing EDs on remaining capacity (e.g. overcrowding) and patient outcomes (e.g. delaying care, longer travel times with a higher risk of mortality for time-sensitive conditions) is limited but should be estimated in advance of every reform effort (and predefined endpoints should be monitored in case a reform is undertaken).

ED activity is on the rise:

- Between 2009 and 2012 the number of ED visits increased from 3 006 321 (279.6 ED visits per 1000 population) to 3 195 897 (289.6 ED visits per 1000 population)
- The largest share of ED visits are self-referred (70%) and ambulatory care (68%) ED visits

Many specialised EDs with low caseloads:

- 50% of specialised EDs have a caseload of on average ≤ 55 contacts per 24 hours
- 50% of specialised EDs have a caseload of on average ≤ 6 contacts during night

Peak moments in EDs:

- Activity patterns peak during daytime but activity during the night is not negligible
- ED visits are well balanced over the months (no winter peaks) and over the seven days with a small peak on Mondays



Many patients attending an ED could have been treated appropriately at other care levels but this does not necessarily make these visits inappropriate ED visits:

- The inappropriate use of ED services is a commonly reported problem in many countries (between 24 to 40%) with different healthcare systems. Also Belgian studies report high prevalence rates (e.g. 40-56%) of ED visits.
- There is no consensus in international literature to identify and define an ED visit as appropriate/inappropriate:
 - Several criteria are not uniformly used.
 - Prospective versus retrospective measurement. In reality patients present to the ED with chief complaints, symptoms and signs but not with a discharge diagnosis.
 - The low correspondence between the views of patients and professionals on the urgency level hinders to label ED visits as inappropriate since most ED visits are self-referrals outside the influence of emergency physicians.
 - Despite a lack of consensus on the appropriateness of ED visits, the available evidence illustrates that many patients attending an ED could have been treated appropriately at other care levels.
- The factors associated with inappropriate ED visits are: age (youngest age categories); accessibility of primary care and the relationship with a primary care physician; socioeconomic variables.
- Measures to achieve less ‘inappropriate ED visits’ are considered as necessary: to decrease overcrowding (and its consequences: increased length of stay; the well-being of health professionals; aggressive patient behaviour); to support the role of primary care (e.g. prevention and self-management support); to prevent unnecessary healthcare consumption and costs.



4 EMERGENCY DEPARTMENT WORKFORCE

In order to ensure the delivery of timely, high-quality emergency care to the entire population a well-trained workforce efficiently distributed across the territory is critical. In this chapter we describe the current state of the emergency department workforce (section 4.1), provide a critical appraisal (section 4.2) and potential solutions for current problems (section 4.3). We focus on emergency physicians and nurses working in emergency departments. Also other disciplines within the healthcare workforce are involved in the organisation of unscheduled urgent and emergency care but are not included in this chapter (e.g. general practitioners: see Chapter 5).

Disclaimer. The critical appraisal and solution elements are based on stakeholder consultation, literature and available Belgian data. Critical appraisal and solution elements without a reference were stated by stakeholders during face-to-face interviews. The cited literature mainly concerns literature about the Belgian context which is particularly based on ad-hoc searches and specific author searches. Additionally, an ad-hoc search for systematic reviews was carried out (see annex to Chapter 4). The solution elements resulting from this review are integrated with the solution elements that emerged from the stakeholder interviews.

4.1 Physicians and nurses specialised in emergency care

Although emergency medicine (EM) was already recognised as a separate discipline in the United Kingdom, Scotland and Ireland some decades ago, it is not yet a recognised specialty in all European Union (EU) countries.⁴ In 2012, some countries recognised it as a conjoint or supra-specialty but only 15 EU countries recognised EM as a primary specialty. Consequently, staffing emergency departments (EDs) with emergency physicians is not the standard policy in all EU countries. In the past, patients arriving at the ED might even be met by an unsupervised junior trainee. Over time, an increasing number of countries staffed EDs with more senior physicians. In the majority of EU countries, trainees in many different specialties may rotate to the ED with supervision undertaken by non-EM specialists located elsewhere in the hospital.⁴ Also the educational level and role of emergency care nurses is highly variable in Europe. Although in at least 14 EU countries emergency care nursing certification programmes exist, the role, competencies and educational requirements of these nurses are

substantially different across countries.⁷ In this section we describe the current state in Belgium.

4.1.1 *Physicians working in Belgian emergency departments*

The medical discipline of emergency physicians is not a homogeneous group. Medical on duty services in specialised EDs have to be provided by one of the following types of physician (Royal Decree (RD) of 27 April 1998, art. 9, §1):²⁶

- **Physicians with a medical specialty in emergency medicine** include two groups:
 - Physicians with a previous specialisation in a limited list of 13 disciplines (e.g. anaesthesiology, internal medicine, surgery, cardiology) can also obtain (from one year of the obtainment of their main specialty onwards) a special title in emergency medicine ('arts-specialist met bijzondere beroepstitel in de urgentiegeneeskunde'/'médecin spécialiste porteur du titre professionnel particulier en médecine d'urgence'), if a two-year, full-time, clinical education is followed in a recognised training centre for emergency medicine and if the education includes a clinical placement for at least six months in an intensive care unit (RD of 14 February 2005, art.2,1° and 2).²⁸
 - Physicians can obtain the title of 'emergency physician' ('arts-specialist in de urgentiegeneeskunde'/'médecin spécialiste en médecine d'urgence') when an education in emergency medicine of six years (full-time) is completed, in one or more recognised training centres for emergency medicine, including 12 months of clinical placement in an intensive care unit (RD of 14 February 2005, art.2,2).²⁸
- **Physicians with a medical specialty in acute medicine** ('arts-specialist in de acute geneeskunde'/'médecin spécialiste en médecine aiguë') are physicians who followed a full-time education of at least three years in several training centres of which at least 18 months in recognised training centres for emergency medicine and at least 18 months in recognised training centres for the following disciplines: anaesthesiology, intensive care, internal medicine, surgery and paediatrics (RD of 14 February 2005, art.2,3°).²⁸



- **Physicians with a certificate in acute medicine** ('arts, houder van het brevet in de acute geneeskunde'/'médecin titulaire du brevet de médecine aiguë visée') (RD of 14 February 2005, art. 6,3,2°).²⁸ These are physicians with the title 'arts'/docteur en médecine', who followed a theoretical and practical education of at least 120 hours organised by a university hospital and 240 hours of clinical placement in a recognised service over a period of 24 months with at least 10 pre-hospital interventions with a vital character. From 1 January 2008 onwards, this certification is no longer awarded, except for :
 - Recognised general practitioners (GPs);
 - Physicians not recognised as a GP, but who started the training before 1 January 2008.
- **Physicians following the training to obtain the title of specialist in acute medicine or emergency medicine**, but who are already a specialist in one of the 13 medical disciplines which are specified in art. 2,1° of the RD 14 February 2005 (e.g. anaesthesiology, internal medicine, surgery, cardiology), or who have finished one year of such training.²⁸

There is a transitional measure (until 31 December 2016) which allows a medical specialist or a medical specialist in training (with at least two years of training completed) in one of the following disciplines to be on duty: anaesthesiology, internal medicine, cardiology, gastroenterology, pneumology, rheumatology, surgery, neurosurgery, urology, orthopaedic

surgery, plastic surgery, paediatrics, neurology and geriatrics (RD of 27 April 1998, art. 13 modified by RD of 11 February 2013; Ministerial Decree of 14 February 2005).²⁸

Physician workforce numbers

In 2012, the register of physicians counted 41 emergency physicians of whom 35 practising (i.e. billed RIZIV – INAMI nomenclature codes in the ED). In addition, there were 432 medical specialists of another medical discipline with a special title in emergency medicine, 289 acute care specialists and nine medical specialists^e without a special title in emergency medicine billing activities. Thirty acute care specialists and 47 medical specialists of other specialisms were not billing activities in 2012 (Table 3). For each RIZIV – INAMI competence code, the corresponding recognised specialty at the FOD – SPF is given. Finally, there were 147 emergency physicians and 45 acute medicine specialists in training on 31 December 2012 (Table 4). It should be noted that physicians with a certificate in acute medicine (1210 certificates over the course of years) are not listed in the data presented. This group concerns physicians with a medical specialty in emergency medicine or acute medicine (26.3%, these are represented in the figures), general practitioners (28.8%), physicians from another discipline (41.6%) or without a medical specialisation (3.3%). However, the register does not allow to distinguish the part of activities they performed in the ED.

^e Anaesthetists (n=4), internal medicine (n=3), pneumologist (n=1), cardiologist (n=1)



Table 3 – Number of physicians in emergency medicine, in acute medicine or with a special title in emergency medicine according to the RIZIV – INAMI competency codes (2012)

RIZIV – INAMI competency code		FOD – SPF Public Health		
CODE	Definition competency code	Recognised specialty	N	%
100	Anaesthesiology – reanimation	Anaesthesiology – reanimation	4	0.47
109	Anaesthesiology – reanimation with a special title in emergency medicine	Anaesthesiology – reanimation	174	20.52
149	Surgery with a special title in emergency medicine	Surgery	85	10.02
489	Orthopaedic surgery with a special title in emergency medicine	Surgery	1	0.12
		Orthopaedic surgery	25	2.95
580	Internal medicine	Internal medicine	3	0.35
589	Internal medicine with a special title in emergency medicine	Cardiology	1	0.12
		Internal medicine	97	11.44
620	Pneumology	Pneumology	1	0.12
628	Pneumology with a special title in emergency medicine	Pneumology	4	0.47
659	Gastroenterology with a special title in emergency medicine	Gastroenterology	14	1.65
699	Paediatrics with a special title in emergency medicine	Paediatrics	10	1.18
730	Cardiology	Cardiology	1	0.12
739	Cardiology with a special title in emergency medicine	Cardiology	20	2.36
779	Neurology with a special title in emergency medicine	Neurology	1	0.12
800	Acute medicine	General practitioner	5	0.59
		Acute medicine	283	33.37
		Without specialty or recognition	1	0.12
900	Emergency medicine	Emergency medicine	35	4.13
-	No RIZIV – INAMI activities in 2012	Anaesthesiology – reanimation	22	2.59



RIZIV – INAMI competency code	FOD – SPF Public Health		
	Surgery	15	1.77
	Orthopaedic surgery	3	0.35
	Paediatrics	1	0.12
	Internal medicine	6	0.71
	Emergency medicine	6	0.71
	Acute medicine	30	3.54
Total		848	100

Source: PlanCad (FOD – SPF)⁸⁴

RIZIV – INAMI: National Institute for Health and Disability Insurance; FOD – SPF: Federal Public Service

Table 4 – Physicians following specialist training on 31/12/2012, by language and year when training started (2004-2012)

		<2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
Emergency medicine	French-speaking	2		5	4	12	17	15	15	15	85
	Dutch-speaking		4	3	6	6	8	8	9	18	62
	Subtotal	2	4	8	10	18	25	23	24	33	147
Acute medicine	French-speaking	3				2	5	3	3	4	20
	Dutch-speaking					2	4	6	6	7	25
	Subtotal	3				4	9	9	9	11	45

Source: PlanCad (FOD – SPF)^{85, 86}

4.1.2 Nurses with a special title in intensive and emergency care

In Belgium several educational pathways exist to become a nurse. The two educational levels that enable access to the profession are the bachelor's degree and the diploma degree. In addition to the basic degree, nurses can obtain postgraduate, master and doctoral degrees. Since 2010, a system of extra bonuses exists to reward nurses with a special title in several domains. One of these domains is 'emergency and intensive care'. Nurses with a bachelor's degree can obtain a special nursing title in intensive and emergency care^f ('bijzondere beroepstitels in de intensieve zorg en spoedgevallenverzorging'/'titre professionnel particuliers d'infirmier spécialisé en soins intensifs et d'urgence') if they follow additional training within the field (at least 450 hours theory and 450 hours practice of which at least 200 hours in an intensive care unit (ICU) and at least 200 hours in an ED). To keep this title, nurses have to follow continuous education (60h/4 years) and have to stay active in the field of ICU and/or emergency care (at least 1500h/4 years).⁸⁷

In 2014, there were 9955 nurses with a recognised title in intensive and emergency care.⁸⁸ It is, however, unclear how many of these nurses (and at what employment status, i.e. part-time or full-time) work in EDs. From the feedback reports of the Belgian Nursing Minimum Dataset we know that the educational level in EDs is higher than in general hospital units. In EDs the vast majority of nurses have at least a bachelor's degree level.⁸⁹

Box 4 – Medical and nursing profession: regulation by 'Royal Decree 78'

The medical and nursing profession are regulated by the Royal Decree on the Practice of the Healthcare Professions, also known as 'RD 78'.⁹⁰ Within this legal framework both the entry into the profession and scope of practice are strictly regulated. In this text box we shortly describe the nursing profession as an example:

^f There is an exception for head nurses who had at least five years of experience as a head nurse in emergency care at the time of the publication of this Royal Decree (i.e. head nurse before 1 December 1993).

The nursing profession is restricted to persons holding the diploma degree or bachelor of nursing degree after a minimum of three years study.

The Royal Decree limits the scope of practice of nurses by dividing nursing activities in three categories:

- A-category nursing interventions, which can be independently performed by nurses: assessment, planning, intervention, and evaluation.
- B-category nursing interventions which include a list of technical nursing interventions. These can be based on standard care plans or procedures (B1-category nursing interventions), or directly prescribed by a physician (B2-category nursing interventions). These interventions relate to treatments, administration of food and liquids, mobility, hygiene, physical protection, activities with regard to the medical diagnosis and treatment, and assistance in medical procedures.
- C-category nursing interventions that can be delegated by a physician. Examples include the preparation and administration of chemotherapeutic drugs and isotopes, the preparation and administration of vaccines, and arterial puncture phlebotomy.

For nurses holding an advanced professional title in intensive care and emergency care and working in that setting, additional B-category (e.g. cardiopulmonary resuscitation by invasive means) and C-category labelled (e.g. intraosseous catheterization) nursing interventions are listed.

The adaptation of this legislation is included as one of the action points in the governmental declaration to allow better to work according to the subsidiarity principle (i.e. allocation of tasks to healthcare professionals that can perform the task in the most efficient and qualitative way).⁹¹ After all, the current legislation is assessed as not flexible enough anymore to adapt the practice of current healthcare professionals to the current care needs.



4.2 Critical appraisal: the ED is a demanding workplace and staffing shortages are reported

4.2.1 Emergency physician shortage: need for evaluation in larger policy context

Too few emergency physicians but maybe too many emergency departments?

Stakeholders, hospital organisations⁹², mass media^{93, 94} and employment agencies⁹⁵ reported difficulties to fill emergency physician vacancies. It is, however, important to evaluate this shortage of emergency physicians in a larger perspective. First, it should be determined what the required capacity of emergency departments in Belgium is. After all, several stakeholders noticed that there might be (too) many EDs all requiring 24/7 availability. If it would be possible to concentrate EDs across less hospital sites, fewer physicians would be needed to provide this 24/7 availability. In addition it is mentioned that emergency physicians perform many activities for which they are overqualified, as is the case for other medical specialists but also for GPs in Belgium. A better organisation of the available services (e.g. enhanced collaboration between EDs and organised duty centres (ODCs) or an integration of ODCs in EDs; task differentiation between the medical and nursing profession⁹⁶) which is successful in guiding patients to the most appropriate level of care could decrease the perceived shortage of emergency physicians.

“Maintenant on n'en revient à la discussion effectivement fondamentale de tout à l'heure, c'est voilà quels sont les besoins, est-ce qu'il n'y a pas trop de services d'urgences par rapport aux besoins. Donc voilà, ça, c'est la première question peut-être qu'il faut se poser avant, mais visiblement compte tenu de l'offre, enfin, des infrastructures existantes en termes de services d'urgences ah bien visiblement il y a des problèmes pour les staffer, ça c'est la réalité, mais est-ce que cette offre correspond au besoin, ça, ça reste une question....”

Are there regional differences in physician shortages?

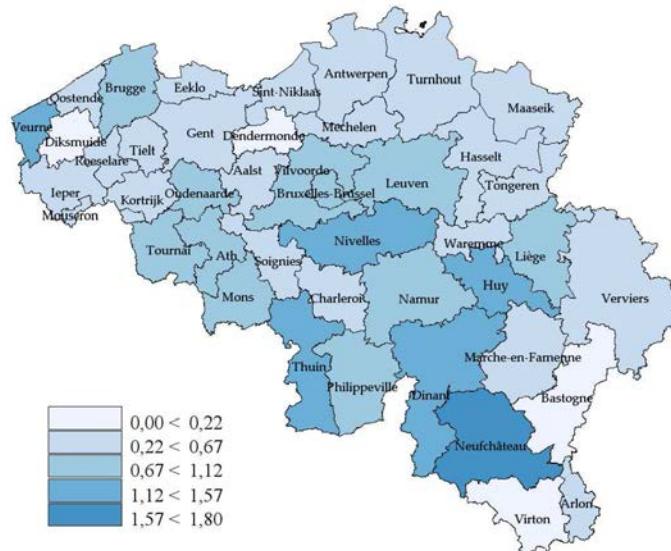
As is the case in other countries⁹⁷ stakeholders mentioned that this shortage is more pronounced in rural areas. One of the potential explanations is that hospitals in rural areas have more difficulties to recruit emergency

physicians because of the low caseloads which result, due to the fee-for-service payment system, in lower income for physicians (see Chapter 8). This shortage results in competition for emergency physicians between hospitals, putting the physicians in a strong negotiation position.

“A [région rurale] ils n'arrivent pas à recruter des urgentistes, donc pourquoi, probablement parce que est-ce que le travail n'est pas intéressant c'est possible, mais surtout parce qu'ils n'arrivent pas à générer un volume suffisant pour avoir des honoraires attractifs, ils ne sont pas compétitifs, donc le financement actuel des services d'urgence c'est qu'il faut faire des actes et ils ne sont pas compétitifs.... Je pense moi, mon discours il est constant là dedans, je pense qu'il doit y avoir une hétérogénéité de la densité médicale et je suppose sans connaître vraiment le domaine que cela doit être pareil chez les urgentistes, allez poser la question à [région rurale], vous avez des spécialistes, des anesthésistes, des cardiologues, des internistes qui refont des sorties SMUR parce qu'ils ne trouvent pas assez d'urgentistes que pour remplir leur grille.”

It should be noted that there are indeed geographical variations in the density of active emergency physicians (physicians who billed at least two RIZIV – INAMI activities). Yet, the available figures concern the place of residence of the physician and not the place of the hospital in which the emergency physician works. At first sight, this geographical distribution contains areas with a higher and a lower density but not to the extent that this would play a dominant role in the shortage of emergency physicians as distances between the various density areas remain low (Figure 16). Yet, these data should be used with caution since the threshold to classify emergency physicians as being active is low (i.e. two activities billed per year).

Figure 16 – Density per 10 000 inhabitants of physicians active in emergency medicine



Source: PlanCad (FOD – SPF)⁸⁴

4.2.2 A stressful work environment with high levels of burnout for physicians and nurses

Physicians operate in a stressful environment

Although data about burnout prevalence rates among Belgian emergency physicians are lacking, stakeholders report high levels of burnout potentially due to the high mental (e.g. acute life-threatening conditions) and physical (e.g. many on call duties to provide 24/7 availability) load and the bad working conditions at some EDs. Other medical disciplines might be more attractive both in terms of working conditions (e.g. fewer on-call duties, possibility to work in private practices) as financially (e.g. higher income due to better tariffs or possibility to charge supplements). The average gross income of hospital specialists (after deductions and without supplements)

was studied in KCE Report 178.⁹⁸ Emergency physicians were ranked on the 15th place of 25 different medical specialties.

Also in the international literature^{99, 100} high levels of burnout are reported among emergency physicians. It has been shown that these burnout levels are related to (beside personality characteristics and coping strategies) environmental factors such as workload, staffing shortages, uncontrollable environment, violence, trauma, and stressful situations such as the death of a patient.¹⁰⁰

“Dus je ziet dat velen beginnen, maar velen haken ook af. Je mag dat niet onderschatten, dat is een zeer zware belasting. Dus dat is ook typisch burnoutfenomenen. Plus dat is een markt van hoger bod.”

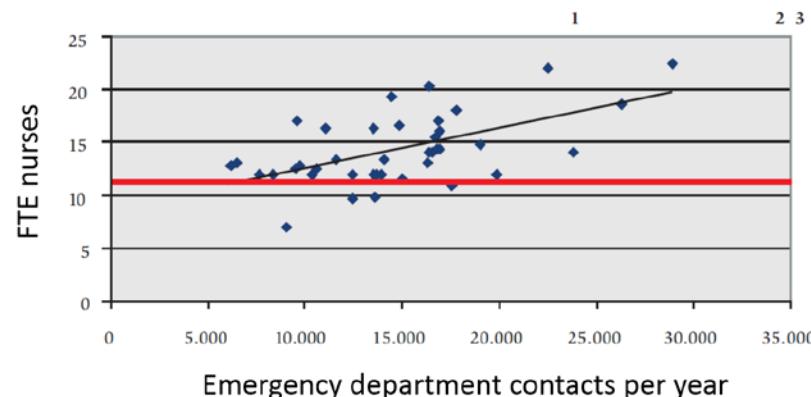
Also nurses report problems in the working environment with a clear link to staffing issues

Also for nurses the ED seems to be a stressful environment both in the international¹⁰¹ as well as in the national context¹⁰². In a Belgian study conducted in 15 hospitals, it was found that nurses working in EDs (n=254) report higher job demands and less decision authority than nurses (n=669) working in general hospital units.¹⁰² Although this finding may not come as a surprise since nurses in EDs are particularly exposed to stressful work-related events and unpredictable working conditions, this remains an important finding because of its association with psychosomatic complaints and fatigue.¹⁰² A more recent study surveyed nurses (n=291; response rate of 69%) from 11 Flemish EDs and found that about 51% of the respondents indicated that the work environment of the ED did not meet their expectations. Although the working relationships between physicians and nurses and the professional development opportunities were rated as positive, nurses perceived the staffing adequacy as well as the physical burden of the job as poor.¹⁰³

The adequacy of staffing ratios in Belgian EDs has been questioned before. Cattoor et al. (2008)¹⁰⁴ found, for instance, that nurse staffing ratios in EDs do not fluctuate much with the activity level in the respective EDs (see Figure 17). The recognition standards for specialised EDs (see Chapter 3) require a 24h availability of at least two nurses (of which one with a special nursing title in intensive and emergency care). Assuming that one full-time equivalent (FTE) nurse works 220 days (1762 hours) per year at least 10.46 FTE nurses are required to meet this recognition standard (for EDs with a

MUG – SMUR a minimum of 15.69 FTE is required).¹⁰⁴ Cattoor et al. (2008)¹⁰⁴ collected data from 37 hospitals⁹ (70 hospital sites) and found that the median nurse staffing level was 13.13 FTE (Q1=12; Q3=14.3) and 14 FTE (Q1=12; Q3=18.15) in EDs without and with a MUG – SMUR, respectively. From Figure 17, it is clear that three EDs do not meet the minimal number of FTEs (i.e. 10.46 FTE) that are required to meet the minimal staffing norms. This is problematic in light of a recent evidence review that illustrated that, although evidence is weak, lower levels of nurse staffing in the ED are associated with more patients leaving the ED without being seen, increased ED care time and worsened patient satisfaction.¹⁰⁵

Figure 17 – Relation between nursing staff and number of contacts per year in the emergency department



Source: Cattoor et al. (2008)¹⁰⁴

Available data: n = 42; Outliers: 1 = (23.97); 2 = (40.00); 3 = (48.35)

Empirical evidence also illustrates that many ED contacts have a low acuity profile and that staffing patterns do not follow the activity peaks in EDs:

- A nursing workload study carried out in 13 Belgian EDs¹⁰⁶, including data from 340 nurses and 6875 patients, showed that the majority of ED patients are categorised as low (63%; range: 47-75%) or medium (31%, range: 20-45%) dependent according to the Jones Dependency Tool (see Box 5). Only 6% (range 4%-9%) of ED patients are labelled as high or totally dependent. The average nursing time spent on direct care activities per patient increases per dependency category: from 29 minutes for a low-dependent patient to 177 minutes for a totally dependent patient. It was also shown that nurses spend more time on indirect care activities such as patients' administration, communication, material management and transport (i.e. median of 46 minutes per patient) than on direct care activities (i.e. median of 32 minutes per patient), yet with high variability between hospitals.¹⁰⁶ In another study¹⁰⁷ including data from 689 ED patients in one hospital, a median time of 13 minutes per patient was found. The nursing time at the ED was higher for patients who were admitted in the hospital (intensive care, general, paediatric or geriatric unit) or for geriatric patients. For patients not treated by a physician, nursing time per patient was also lower than average.¹⁰⁷

⁹ Data from three EDs labelled as outliers (both in terms of staffing and patient activity) were excluded from the calculations.

Box 5 – Jones Dependency Tool

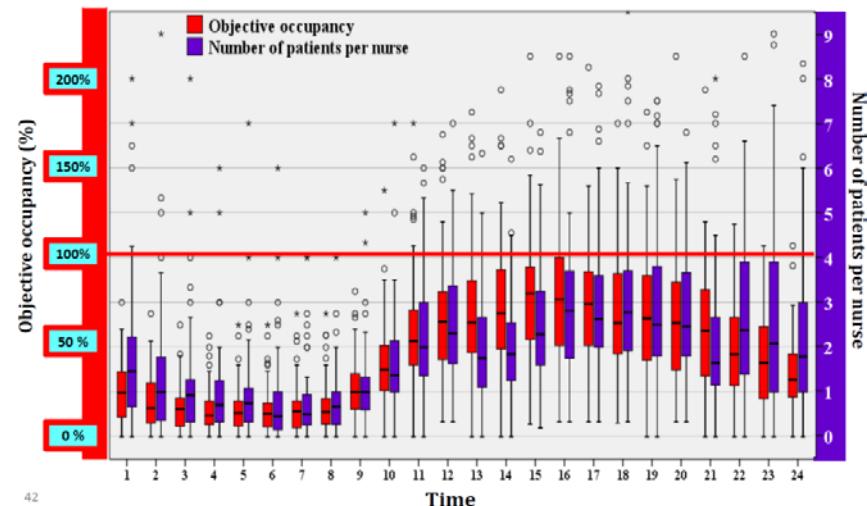
The Jones Dependency Tool has six domains: (1) communication; (2) airway, breathing and circulation; (3) mobility; (4) eating, drinking, elimination and personal care; (5) environment, safety, health and social needs; and (6) triage category. Each domain is rated on a three-point scale: 1 (not present) to 3 (fully present). The criteria for scoring from present to fully present in each of these domains are particularly relevant for factors that may contribute to increased patient severity.

The summation of a patient's score on each of these dimensions results in a total score classifying the patient into one of four dependency levels:

- Low (6-7): Requires minimal nursing intervention;
- Moderate (8-12): Requires regular nursing intervention, but encouraged to become independent;
- High (13-15): Requires skilled frequent nursing interventions and regular observation;
- Total (16-18): Requires one to one nursing advanced care, constant observation and 15 minute interventions.¹⁰⁸

The study of Jordache et al. (2014) also illustrated that, in a Belgian setting, the number of patients per nurse increased at busy moments of the day (see Figure 18). In other words, the staffing patterns do not increase according to the number of ED attendances. The peak moments are situated during the late shifts (between 2 PM and 10 PM).^{106, 109}

Figure 18 – Comparison objective occupancy and number of patients per nurse in 13 emergency departments



Source Jordache et al. (2014)¹⁰⁶

4.2.3 Are the current policy measures sufficient to tackle the shortage?

Several policy measures have been taken to deal with the physician shortage. The commission responsible for planning the physician workforce, for instance, imposed minimum quotas for new emergency physicians and acute care specialists starting their education (see Table 5). Yet, these quota are not met. Compared to the minimum quotas, an extra 89 physicians started with emergency medicine between 2008 and 2013 while for acute medicine the opposite situation was found: 33 physicians less than the minimum quota started with an acute medicine specialisation.¹¹⁰ Although this difference was found in both Flanders and Wallonia, it was more pronounced in Wallonia.¹¹⁰

Stakeholders considered imposing minimum quotas as insufficient and claimed that it can only have some impact on the influx in the profession. They warned that the impact of such a measure should not be overestimated (e.g. doubling of the minimum quotas in 2010 did not result in twice as many



physicians in both disciplines). It should also be noted that, since the 6th State reform, the federal authorities are no longer authorized to impose medical discipline specific quotas. This could hamper general policymaking within the field of emergency care since programming of EDs stays at the federal competency level: a change in planning of ED capacity will have an impact on the required number of emergency physicians.

In addition, the long study duration (i.e. six years) might deter young physicians to choose for this medical discipline. Moreover, the career of emergency physicians is a flat career with little options for job differentiation. However, not all stakeholders were pessimistic and many reported that the current number of physicians in training is sufficient to catch up with the shortage.

Another (temporary) measure is that physicians of other medical disciplines can also work at the emergency department (see section 4.1.1). This measure and the existence of different qualification levels also allow a differentiation of tasks at EDs. Physicians with a certificate in acute medicine can do the triage and the less severe cases. It is, however, unknown if such a differentiated practice is commonly applied in all hospitals. After all, many stakeholders pointed to the potential quality problems related to the variable educational level of emergency physicians (see also Chapter 6: role of senior physicians in triage).

“Mais vous avez... Enfin, il y a des mesures qui ont été prises pour justement déceler les spécialisations en médecine aiguë, allez, les mesures transitoires parce qu'il n'y avait pas assez d'urgentistes on a gonflé les services avec les titres de BMA (Brevet medicin aigue)...Ça vous paraît une bonne chose, cette mesure-là ? C'est la question qui se pose, hein, savoir effectivement quelle fonction doit-on privilégier au niveau des services d'urgences ? Le BMA peut en tout cas assurer ce rôle de tri. Et la prise en charge de toutes les urgences plus légères, ça a l'air quand même d'être... De régler les problèmes dans une série d'hôpitaux.”

According to the interviewed stakeholders, some hospitals have recruited foreign emergency physicians to deal with the staffing shortages and often they insufficiently speak the language. Stakeholders feared that this could not only jeopardize the quality of care but it also decreases the attractiveness of the working environment for nurses and other physicians. Nevertheless, this seems a marginal phenomenon with only few physicians coming from abroad, in most cases from neighbouring countries.⁸⁴



Table 5 – Minimum quotas for acute care and emergency physicians (2008-2013), by region

			2008	2009	2010	2011	2012	2013	Cumulative total 2004-2013
Acute medicine	Flanders	Minimum quota	6	6	12	12	12	12	
		Reality	8	6	8	6	8	13	
		Difference	2	0	-4	-6	-4	1	-11
	Wallonia	Minimum quota	4	4	8	8	8	8	
		Reality	5	5	2	1	4	1	
		Difference	1	1	-6	-7	-4	-7	-22
	Belgium	Minimum quota	10	10	20	20	20	20	
		Reality	13	11	10	7	12	14	
		Difference	3	1	-10	-13	-8	-6	-33
Emergency medicine	Flanders	Minimum quota	3	3	6	6	6	6	
		Reality	7	6	9	5	19	19	
		Difference	4	3	3	-1	13	13	35
	Wallonia	Minimum quota	2	2	4	4	4	4	
		Reality	5	8	15	16	15	15	
		Difference	3	6	11	12	11	11	54
	Belgium	Minimum quota	5	5	10	10	10	10	
		Reality	12	14	24	21	34	34	
		Difference	7	9	14	11	24	24	89

Source: FOD – SPF¹¹⁰



4.3 Solution elements

4.3.1 Focus on emergency care

The attractiveness of the profession could be enhanced by shifting tasks (e.g. care for low-severity patients) away from the ED. After all, many emergency physicians choose this discipline to treat 'real emergency cases'. Therefore, support for a sort of soft gatekeeping system for unscheduled acute care cases seems to grow, despite the resistance to install a generalised gatekeeping system in Belgian healthcare. Such a soft gatekeeping could be introduced during out-of-hours periods by means of (telephone) triage. This will of course require investments in primary care since it is well-known that also the GP profession struggles with shortages (see Chapter 5).

"On veut que les gens puissent aller directement en troisième ligne pour une otite. Ça c'est une revendication qui reste encore très ancrée dans la profession ou dans certaines visées syndicalistes. Heu... mais donc pour la garde, l'échelonnement des soins est quand-même quelque chose qui est très, très proné aujourd'hui. Mon... Ma crainte : est-ce qu'on aura encore assez de main d'œuvre généraliste pour assumer cet échelonnement des soins maintenant ?"

4.3.2 Adequate remuneration

Many interviewed emergency physicians feel they are not sufficiently rewarded for the work they do compared to other medical disciplines. Examples are the stabilisation of patients during the critical care period and the relatively long stay at the ED before patients are transferred to the ICU (because of bed blocking in the ICU). Furthermore, while an ED physician is no longer able to charge resuscitation nomenclature, an ICU physician still is. Yet, such problems cannot be tackled discipline per discipline but a much broader reform of the physician payment system is required.⁴¹

4.3.3 New roles and workforce innovations in the emergency department

Although also mentioned by the interviewed stakeholders, possible solutions for the emergency medicine workforce shortage found in literature (see annex to Chapter 4) mainly focus on new roles and workforce innovations.

Below we describe the introduction of the following roles in EDs: general practitioners, nurse practitioners and new pre-hospital practitioners. A review of Hoskins et al. (2011) included also an evaluation of extended scope physiotherapists. These physiotherapists have, as nurse practitioners, additional skills in assessment, diagnosis and management. However, the scope of their practice is mostly limited to patients with soft tissue injuries and non-complex fractures. We do not further elaborate on this role given the paucity of published evidence.

GPs in emergency departments

A Cochrane review¹⁰ evaluated the effects of introducing general practitioners in EDs to provide care for patients presenting with less urgent problems. The review included three primary studies. In all studies GPs were supernumerary to emergency physicians. The review did not include data on the effect on waiting times or length of stay (which were two primary outcomes of the review). Weak evidence was found suggesting that GPs used less resources compared to emergency physicians in the treatment of non-urgent cases: GPs ordered fewer tests and X-rays, admitted fewer patients and made fewer referrals in two of the included studies but no differences were found in the third study. A potential explanation for these inconsistent results are the differences in the organisation of the initial triage process. In the two studies with beneficial effects the initial triage process was carried out by trained nurses while in the study with no reported differences this was done by a receptionist. Despite this weak evidence for beneficial effects on resource use, the effects on patient outcomes remain unknown.¹⁰

Nurse practitioners

Although initially established (about 40 years ago in Canada and the United States) to deal with shortages in primary care, nurse practitioner (NP) roles have developed over the years in many areas including emergency care. Emergency nurse practitioners are internationally a rapidly evolving role for nurses. NPs undertake many activities traditionally carried out by physicians, however, with highly variable scope of practices. The NP role was evaluated in the systematic reviews of Wilson et al. (2009)¹¹¹ and Carter and Chochinov (2007)¹¹². The literature review of Wilson et al. (2009)¹¹¹, including 55 primary studies, showed no significant differences in the clinical effectiveness (e.g. no difference in significant errors) of nurse practitioners

in the management of minor injuries in comparison with conventional treatment provided by (junior) physicians. Patient surveys indicated high levels of acceptance of treatment by a nurse practitioner and satisfaction with the treatment received. Furthermore, evidence suggests reduced waiting times and length of stay in the ED.¹¹¹ Yet, evidence was derived from studies with low overall quality. A narrative synthesis of the literature including 59 studies by Carter and Chochinov (2007)¹¹² suggested that nurse practitioners provide equal quality of care (e.g. appropriateness interpretation X-rays) compared to physicians. In addition, it was shown that although patient satisfaction was high for both physicians and NPs, it was often higher for NPs. Finally, Carter and Chochinov (2007) reported reduced ED waiting times when NPs are added. However, this measure was not evaluated compared with other alternative solution elements (e.g. more residents, another attending physician).

A recent literature review¹¹³ updated these reviews and included, besides these two reviews^{111, 112}, twelve primary studies published between 2006–2013. Only one of the included studies evaluated the cost of NPs in comparison with physicians and extended scope physiotherapists in the management of soft tissue injuries. Although the methodological limitations do not allow generalisation of study results, they found that the cost was equal between physicians, NPs and extended scope physiotherapists.¹¹³ Quality of care was evaluated in several studies. However, the outcomes were poorly defined with only one well-conducted study where patients were randomised to either a physician or NP in the fast-track unit. The overall rating of quality of care (composite measure based on adverse events, patient satisfaction and follow-up health status) was significantly higher for patients managed by NPs.¹¹³ As illustrated in the two previous reviews, in general, patients seem to be satisfied by the care received by emergency NPs. Also the waiting times seem to be similar or lower compared to conventional care.

The review of Hoskins et al. (2011)¹¹⁴ added information by focusing on the acceptance of new roles, such as the NP-role, by other healthcare providers.¹¹⁴ They included nine studies on this topic and found high level confidence from other emergency medical professionals. In addition, they showed that despite the general positive impact on patient satisfaction there is a small but significant percentage of patients not agreeing to be treated

by a NP.¹¹⁴ Yet, these results are not generalizable given the small scale of most studies.

Given the many methodological limitations of the published studies, the impact of NPs on ED patient care should be further evaluated by robust studies to provide more solid evidence in order to enable more firm policy conclusions.

New prehospital practitioners

New prehospital practitioners (NPPs) are nurses or paramedics with extended scope of practice (e.g. initial assessment patient status and decision about whether to deliver simple treatments or initiate referral to an appropriate clinical team) in pre-hospital care.¹¹⁵ This role exists in countries such as Canada, New Zealand and Australia but is most prominently used (and evaluated) in England where it was introduced in 2003 in a context of increasing ED admissions and a reduction in working hours of junior doctors with at the same time an introduction of waiting time targets in EDs.¹¹⁵

The empirical evidence about the impact of NPPs has been evaluated in several reviews.^{113, 115, 116} Yet, in the reviews by Jennings et al. (2015)¹¹³ and Hill et al (2014)¹¹⁵, the evidence for NPPs was included in a larger evaluation of the introduction of the role of nurse practitioners (see above). Therefore, we focus here on the review of Tohira et al. (2014)¹¹⁶ which included thirteen studies (and over 163 000 patients) on this innovative prehospital practitioner role.

All included studies found that NPPs were less likely than conventional ambulance staff to transfer patients to the emergency department (but with high variations in effect sizes) and more likely to discharge patients at the scene. These favourable results should be interpreted with caution for several reasons. First, except for one clustered randomised trial and one quasi-experimental study, all other studies used an observational design. Most studies did not allow to control for potential confounding factors such as differences in age or severity between patients seen by NPPs and conventional ambulance crews. Furthermore, the appropriateness of care provided by NPPs was only evaluated in a limited way with equivocal results. The same is true for subsequent ED use.¹¹⁶ In conclusion, this review suggests that the NPPs are likely to reduce patient transport to the emergency department with uncertainty of the magnitude of these effects



and the impact on the appropriateness of these decisions and patient safety.¹¹⁶

Key points

- Physicians working in emergency departments are not a homogeneous group, but consist of emergency physicians (n=35 in 2012), specialists with a medical specialty in emergency medicine (n=432 in 2012), physicians with a medical specialty in acute medicine (n=289 in 2012) and physicians with a certificate in acute medicine (no exact figures available in the physician register). In addition, there were 147 emergency physicians and 45 acute medicine specialists in training on 31/12/2012. The vast majority of nurses working in emergency departments are educated at a bachelor's degree level and many of them (exact figures unknown) have a special title in intensive and emergency care.
- Reports of a shortage of emergency physicians should be evaluated in a larger policy context (e.g. task distribution, required number of emergency departments). In any case, emergency physicians report that their profession is stressful and undervalued.
- Nurses report shortcomings in their work environment with staffing adequacy as a major concern. Indeed, empirical evidence confirms that staffing in EDs is insufficiently adapted to the activity level of EDs (e.g. limited link between number of FTE nurses per ED and number of ED visits per year; ED staffing allocation relatively constant during the day but ED visits peak during the day). In addition, it has been shown that many ED visits have a very low acuity level (and can potentially be better treated elsewhere and as such relieve the workload of EDs).
- In Belgium policy measures are currently restricted to imposing minimal quotas for graduating emergency physicians. These measures are perceived as insufficient especially when assessed in an international context where more far-reaching policy measures are taken to ensure that ED patients are seen by the most appropriate care level (e.g. workforce innovations such as GPs and nursing practitioners working in EDs). Although the

empirical evidence has methodological limitations and is not conclusive on all domains, these evolutions seem not to threaten patient safety and quality of care and in some instances improve patient satisfaction and efficiency (e.g. GPs working in EDs do not order as many tests compared to emergency physicians).

5 OUT-OF-HOURS SERVICES FOR ACUTE CARE: THE ROLE OF PRIMARY CARE SERVICES

Chapter authors: Koen Van den Heede, Christophe Van Loon, Cécile Dubois, Carine Van de Voorde

An important portion of patients who attend a hospital emergency department (ED) present with health problems that can be dealt with by primary care services (see Chapter 3). The reduction of ED attendances in these patient groups is a priority for many healthcare systems since primary care services are considered as a potentially efficient and cost-effective alternative for the ED.¹⁰ The access to and organisation of primary care services, during out-of-hours in particular, is an important topic in this respect. Internationally different models for the organisation of out-of-hours primary care exist. These models vary from individual general practitioner (GP) practices to large-scale primary care cooperatives but most models are a mixture of approaches.¹² Often several different organisational models are used within one country. Yet, during the last decade an evolution from local rotation systems towards large-scale primary care practices can be observed in an increasing number of developed countries.¹¹

In this chapter we first describe existing initiatives in and legislation of the organisation of out-of-hours primary care services in Belgium (section 5.1). Next, we describe the strengths and weaknesses of the current system as perceived by stakeholders and supplemented with information found in literature (Belgian studies) and facts and figures available in Belgian databases (section 5.2) as well as possible solution elements for weaknesses in the current system as suggested by stakeholders (section 5.3). We refer to the disclaimer below for the critical appraisal and solution elements.

Disclaimer. The critical appraisal and solution elements are based on stakeholder consultation, literature and available Belgian data. Critical appraisal and solution elements without a reference were proposed by stakeholders during face-to-face interviews. The cited literature mainly concerns literature about the Belgian context which is particularly based on ad-hoc searches and specific author searches. The topic of expanding out-of-hours services was included within the scope of a systematic review of reviews (see Chapter 10) as well as in the international comparison (see Chapter 9). The solution elements resulting from this review and best-practice examples abroad are not integrated in the current chapter. We refer the reader to the short report, accompanying the scientific report, where all relevant elements from the different chapters are integrated.

5.1 Out-of-hours primary care services

5.1.1 *The context of primary care and out-of-hours services in Belgium*

The ageing GP profession is predominantly organised in solo or small group practices

In Belgium there are 12 483 (year 2013) active GPs^h corresponding to a density of 11.2/10 000 inhabitants.¹¹⁷ Large differences exist in the activity level of GPs (number of patients and patient contacts per GP) across the Belgian territory with generally a higher activity level in the north compared to the south. In particular in the province of Luxembourg GPs have less patients and a lower number of patient contacts.¹¹⁸

There is an unequal spread of general practitioners on the Belgian territory. The National Institute for Health and Disability Insurance (RIZIV – INAMI) has an incentive programme, called IMPULSEO I, which awards € 20 000 to GPs who settle in areas with identified shortages.¹¹⁹ The RIZIV – INAMI calculates the GP density per ‘GP zone’, consisting of multiple municipalities. GP zones are identified as having low ‘GP-to-population ratios’ in case there are less than 90 GPs per 100 000 inhabitants or otherwise less than 120 GPs per 100 000 inhabitants and less than 125 inhabitants per km². Although the calculation of GP-per-population ratio

^h GPs billing at least 500 National Institute for Health and Disability Insurance (RIZIV – INAMI) activities in the year of analysis for an employment rate of at least 0.1 full-time equivalent in the social security records.



(per GP zone) is simple and offers a readily understandable measure of GP accessibility, it entails the risk of under- or overestimating underserved geographical areas.¹²⁰ Indeed, the aggregation of these ratios on the level of GP zones risks to hide geographical areas with shortages or vice versa.¹²⁰ More sophisticated methods including more parameters (e.g. travel distances) and allowing more flexibility (e.g. not limited to administrative zones) are described elsewhere (see Dewulf et al. 2013¹²⁰).

One of the factors contributing to the GP shortage is the ageing of the profession. The mean age of GPs (in 2013) is 52.8 years and 9.9% of the active GPs are aged 65 years or above.¹¹⁷ In addition, the cohort from 55–64 years who are near to retirement age represent 40% of GP activity (year 2013).¹²¹ Despite several policy measures which aimed to increase the attraction power of the GP profession, the 28% of medical graduates choosing GP as their medical discipline will be insufficient to replace this high number of GPs who are close to retirement age.¹²¹ The resulting GP shortage will be reinforced by more GPs seeking a better work-life balance leading them to choose a part-time employment. This will especially be the case amongst female practitioners, who make up an increasing part of the profession (active GPs in 2012: 66% females in the age group younger than 35 years compared to 17.7% females in the age groups 55–65 yearsⁱ), and the younger generation in general.¹²²

The vast majority of GPs still work in solo practices or small group practices and are self-employed.¹²³ They frequently run their practices with a medical secretary as the only form of supporting staff. Although the share of lump sum payments for GPs (e.g. practice allowance for electronic patient record, allowance for the management of a patient-related global medical record ('globaal medisch dossier' (GMD)/'dossier medical global' (DMG)) has increased, the predominant payment system remains the fee-for-service system (FFS). Group practices can choose for a fee-for-service payment system like other physicians, but can also opt for a capitation system. These group practices are often called medical houses^j

('wijkgezondheidscentra'/'maisons médicales') with 139 medical houses using a capitation system in 2014, covering about 2.7% of the population^k.

No gatekeeping role for GPs

Belgian healthcare is characterized by free access to primary, secondary and tertiary care facilities. There is no gatekeeping role for GPs and no need for a referral to see a medical specialist.^{9, 123} The GMD – DMG was introduced in 2001 to increase care coordination and continuity of care. Patients who choose for this system allow one GP to manage their medical information in return for a lower co-payment. The proportion of insured citizens with a GMD – DMG has increased since its inception in 2002.¹²⁴ In 2013, 62% of patients with at least one GP contact over a three-year period had a GMD – DMG.¹²¹

Out-of-hours primary care services: a shift from local rotation systems to larger GP cooperatives

GPs have a legal obligation to ensure 24/7 continuity of care for their patients.⁹⁰ For decades GPs were permanently on call for their patients. Later on, local GP organisations, called 'GP circles', started to organise out-of-hours services (evenings, nights, weekends and bank holidays) via rotation systems. In the majority of cases they use a phone number that immediately leads to the out-of-hours care facility. GP circles are responsible for organising an on call system for the inhabitants of a specific geographical area. In turn, GPs related to a GP circle are on call for the patient population of that particular area (at least 1 GP per 100 000 inhabitants between 8 AM and 11 PM and 1 GP per 300 000 inhabitants between 11 PM and 8 AM).¹²⁵ They can work from their private practices during these out-of-hours periods.¹²⁶

GP circles ('huisartsenkring'/'cercle des médecins') are the official organisations for recognised GPs from a specific geographical area which are, among other tasks, responsible for the organisation of the on call system for GPs in the area. In Belgium there are 147 GP circles (year 2014).

i Own calculations based on Table 8 in Miermans et al. (2015)¹²²

j Not all GP practices that are paid via the capitation system are medical houses.

k Source: RIZIV – INAMI calculations based on the number of beneficiaries inscribed in a medical house in June 2014, registered in the database of the IMA – AIM ('InterMutualistisch Agentschap'/'Agence InterMutualiste').

After the 6th State reform the federated entities became responsible for the organisation and payment of the GP circles.

In 2003, the RIZIV – INAMI started to finance larger GP cooperatives to organise the on-call duties in ‘organised duty centres’ (ODC; ‘wachtposten’/“postes de gardes”). These ODCs are well-equipped practices in specific geographical areas. The first ODC (year 2003) was located in Deurne-Borgerhout (Antwerp). The number of ODCs has gradually increased up to 70 in 2015 (32 in Flanders; 34 in Wallonia; 4 in Brussels) covering about 68% of total Belgian population (for more details see section 5.2.3). However, since all ODCs were initiated bottom-up without a clear national guidance, there is no obvious logic in how they are distributed across the Belgian territory and there is high variability in how they operate (e.g. variable opening hours, for more details see section 5.2.2).^{123, 127}

The current healthcare system allows the patient, in general, to choose between the following care providers during out-of-hours periods:³⁰

- Contacting the GP on call for a home visit or consultation (ODC or private practice);
- Consultation in an emergency department;
- Call to the emergency medical assistance ‘112/100’.

The Federal Public Service for Health, Food Chain Safety and Environment (FOD – SPF) aimed to introduce a unique telephone number (i.e. 1733) with triage function to guide patients to the most appropriate level of care during out-of-hours periods (see Chapter 6). Yet, to date this 1733-number is only operational in a limited number of geographic areas as pilot projects. In anticipation of the national deployment of the 1733 telephone number, the CHU Liège (Centre Hospitalier Universitaire de Liège) provides a government subsidized local triage alternative to 13 GP circles, four of which also benefit from an ODC.

Box 6 – How are out-of-hours defined?

There is no unique definition of out-of-hours for GP services, neither in literature nor in (Belgian) legislation or registration systems (e.g. billing records, hospital discharge data set MZG – RHM). As a general description of out-of-hours services, we refer to services provided during evenings, nights, weekends and bank holidays. Due to these data limitations we had to use different definitions to describe out-of-hours time periods which were mentioned between brackets throughout the report.

Out-of-hours activities: small portion of GP activity but with a potential impact on ED use

Cautionary note. The data presented in this paragraph are based on the billing records of RIZIV – INAMI. Consequently, ED contacts not covered by the national health insurance are not included. This explains the large differences with the figures presented in Chapter 3 which are based on the MZG – RHM data that include all ED contacts.

GPs in Belgium have about 46.25 million contacts per year (data year 2012) of which 1.19 million contacts or 2.6% are performed during out-of-hours periods (evenings, nights, weekends and bank holidays). When limiting out-of-hours to the late evenings and nights (from 9 PM until 8 AM), the number of contacts further decreases to 197 812 contacts or 0.4% of total GP activity. ED activity shows a different picture. Despite the relatively low portion of GP activity performed during out-of-hours periods, in absolute numbers, GPs accommodate a substantial number of contacts. Small changes in the GP organisation (e.g. disappearance of ODCs) can potentially have a large impact on ED activity.

Moreover, there are indications that the use of out-of-hours primary care services (and ambulatory out-of-hours contacts with medical specialists) is associated with out-of-hours ED use. The Christian sickness funds analysed GP services (and ambulatory medical specialist contacts) use during out-of-

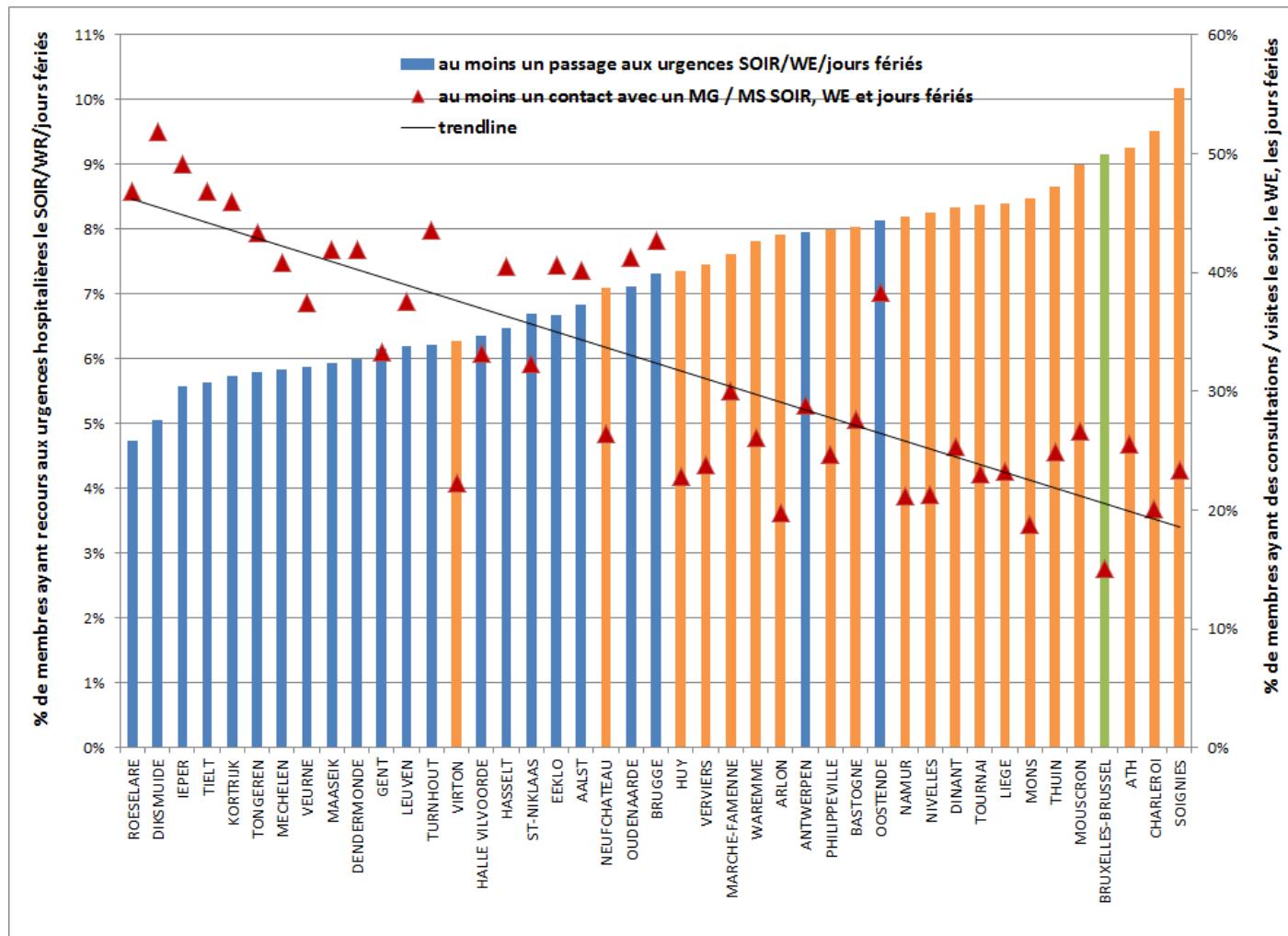


hours periods¹ among its members (representing 41.3% of all beneficiaries)¹²⁸. Large differences in results were found concerning the percentage of members that used GP (and ambulatory medical specialist contacts) out-of-hours services when analysed per region: Flanders (38.6%), Wallonia (23.1%) and Brussels (15.1%). The ED use during out-of-hours periods showed another picture: 6.5% in Flanders, 8.3% in Wallonia and 9.2% in Brussels. Although more sophisticated analyses at the patient-level are needed, the results at the level of arrondissements (Figure 19) indicate a negative relationship between primary care (and ambulatory medical specialist contacts) use and ED services use during out-of-hours periods (Pearson's correlation coefficient, $r=-0.81$): the lower the use of primary care services, the higher the use of EDs. Other associations with ED use such as physician density (GPs and medical specialists) and density of hospital capacity (beds and sites) were studied, but no statistically significant associations were found.¹²⁹ These results suggest that the availability rather than the density impact ED use during out-of-hour periods.

¹ On the basis of billing of supplementary fees (evening consultations in the context of organised out-of-hours services) or additional fees for

consultations during evenings/weekends/bank holidays. Attention, the activity of ODCs is not taken into account (no billing data).

Figure 19 – Association between ED use and general practitioner services during out-of-hours by members of the Christian sickness funds (2013)



Source: Mutualité Chrétienne¹²⁹

Legend: Blue=Flanders; Orange=Wallonia; Green=Brussels



5.1.2 Payment system for general practitioners

Fee-for-service payment with increased tariff for out-of-hours periods

GPs are predominantly paid via a fee-for-service system. They receive a fixed amount per service provided (e.g. consultation, home visit during the day or the night, technical procedures). For all ambulatory care, patients pay the complete fee to the providers and they are reimbursed partly by their sickness fund on submission of the bill. An exception is made for specific vulnerable patient groups eligible for the social third-party payer system. All possible acts with the corresponding fees for the healthcare professionals and the patient cost-sharing tariffs are mentioned in the national fee schedule, called nomenclature (an example for GP consultations is given in Box 7). Higher fees exist for out-of-hours consultations and visits such as home visits during the night (9 PM until 8 AM) and consultations/visits during weekends or bank holidays (8 AM until 9 PM).

In addition to the normal and out-of-hours fees, a supplementary fee of € 4.06 can be charged by a GP for consultations between 6 PM and 9 PM (code 101113: 'permanentietoeslag'/'supplément de permanence') when the GP is on call for his or her own patients, provided that this service is coordinated with the on call duty organised by the GP circle to which he or she is affiliated. The same supplementary fee can be charged by a GP participating in the on call duty directed at the general population (organised by the GP circle) for consultations between 7 PM and 9 PM (code 101091: 'wachttoeslag'/'supplément de garde') when he or she is effectively on call. These supplementary fees cannot be cumulated.

Box 7 – Some examples of out-of-hours payments for GPs

Example 1: At 7 PM on a Tuesday, a patient who is not eligible for the social third-party payer system, consults his GP who manages his global medical record. The GP is a member of the local GP circle and participates in the rota system during the week and in guard duties at the ODC during the weekends. On this Tuesday evening however, the consultation for this patient is not coordinated with the on call duty organised by the GP circle. The GP has no accreditation.^m

Tariff: € 20.92; Reimbursement: € 16.92; Code 101032 (consultation GP, access to global medical record)

Example 2: At 7 PM on a Tuesday, a patient who is not eligible for the social third-party payer system, consults his GP who manages his global medical record. The GP is a member of the local GP circle and participates in the rota system during the week and in guard duties at the ODC during the weekends. The consultations for his own patients on this evening are coordinated with the on call duty organised by the GP circle. The GP has no accreditation.

Tariff: € 20.92; Reimbursement: € 16.92; Code 101032 (consultation GP, access to global medical record) +

Tariff: € 4.06; Reimbursement: € 4.06; Code 101113 ('permanentietoeslag'/'supplément de permanence')

Example 3: At 7 PM on a Tuesday, a patient who is not eligible for the social third-party payer system, consults the GP on guard duty. This GP has no access to the global medical record of this patient. The GP is a member of the local GP circle and participates in the rota system during the week and in guard duties at the ODC during the weekends. The GP has no accreditation.

Tariff: € 20.92; Reimbursement: € 14.92; Code 101032 (consultation GP, no access to global medical record) +

^m National system that promotes and monitors permanent training and participation in peer reviewed 'local quality groups' or 'lokale kwaliteitskringen (LOK)"/groupes locaux d'évaluation médicales (GLEM)'.

Tariff: € 4.06; **Reimbursement:** € 4.06; **Code** 101091 ('wachttoeslag'/'supplément de garde')

Example 4: At 11 PM on a Tuesday, a patient who is not eligible for the social third-party payer system, consults the GP on guard duty. This GP has no access to the global medical record of this patient. The GP is a member of the local GP circle and participates in the rota system during the week and in guard duties at the ODC during the weekends. The GP has no accreditation.

Tariff: € 20.92; **Reimbursement:** € 14.92; **Code** 101032 (consultation GP, no access to global medical record) +

Tariff: € 24.49; **Reimbursement:** € 24.49; **Code** 102432 (supplement, consultation GP at night between 9 PM and 8 AM) +

Tariff: € 4.06; **Reimbursement:** € 4.06; **Code** 101091 ('wachttoeslag'/'supplément de garde')

Availability fees

GPs participating in an organised on-call system (via a rotation system or ODC) organised by the GP circles are entitled to an 'availability fee'. The fee corresponds to a fixed amount of € 6.15 per hour (2015 tariff) during which the GP is effectively on call. It concerns only the organised on-call duties targeting the population of a specified geographical area (and not the out-of-hours services organised exclusively for a GP's own patients) during one of the following time frames:

- Weekend (maximum 48h);
- Bank holiday (maximum 24h);
- Evening/night weekday (from 7 PM until 8 AM).¹²⁶

ⁿ The reported budgets only concern the budgets for the agreed ODC contracts.

^o GP circles without an ODC benefiting from RIZIV – INAMI subsidized participation in the alternative triage system provided by CHU Liège (see section 5.1.1).

- The RIZIV – INAMI pays GPs their availability fees for the hours registered via the MEDEGA-portal which is operated by the FOD – SPF.¹³⁰

ODC budgets

The yearly RIZIV – INAMI budgetⁿ spent to support ODCs has increased from € 332 858 for 3 ODCs in 2003 to € 16 984 292 for 70 ODCs and 9 alternative projects^o in September 2015. The global budget of € 23 265 000^p available for ODC projects in 2015 is part of the annual budget reserved for physician fees other than those defined by the nomenclature. The global budget of € 23 million also served to finance two regional coordinators (€ 266 666 in 2015), charged with the tasks of providing strategic information about local developments in primary care OOH organisation and developing a regional master plan aimed at scaling up existing and candidate ODCs, creating synergies between ODCs and thus promoting cost-effectiveness, facilitating the process of reorganisation at the level of GP circles and promoting homogeneity in the way ODCs organise themselves in terms of opening hours, staffing, IT etc.

In the last quarter of 2015, the Belgian government decided to put the further development of ODCs on hold. A sum of € 4.95 million out of the global budget of € 23 million has been put in reserve, pending a revision of the existing funding principles which are detailed below.

The individual ODC budgets are based on the ODC's application with a detailed overview of expenses. Every application is evaluated by the National Commission of Sickness Funds and Providers (the so-called 'Medico-Mut'). In case of a positive evaluation, a contract is concluded between the applying organisation and the Insurance Committee ('Verzekeringscomité'/'Comité de l'assurance') of RIZIV-INAMI.

In the application, a distinction is made between investment and recurring costs. Investment costs consist of one-time investments such as construction/renovation, coordination and equipment to set up and launch

^p This is the entire budget that, besides the ODC contracts, also includes a budget for coordination of ODCs, budgeted amounts for new ODCs, etc.



new projects and smaller investments to improve existing projects. Recurring costs include rent, transport costs, staff, etc. needed for daily operations of the ODC.

Between 2009-2015 total investment costs per project ranged from € 128 up to € 848 400, with an average cost of € 133 427 ($sd=€ 57\,540$). The large differences in investments can partly be explained by the aforementioned small investments of existing ODCs. When only taking into account the costs involved in the launch of new projects, differences can be explained by the scale of the project and local opportunities. Some ODCs are made up of prefabricated units limited to one cabinet, while others are located in larger buildings providing up to three or four cabinets, sleeping accommodations, a conference room, etc. Still other projects include multiple central ODCs and ODC satellites. ODC satellites are smaller entities with limited opening hours managed by a central ODC, sharing the same catchment area. The budget needed for renovation, equipment, furnishing, visibility of the ODC (e.g. signposts) and so on also depend on the local availability of real estate, potential beneficial partnerships with hospitals, pharmaceutical companies or local government (e.g. public municipal welfare centres or 'Openbaar Centrum voor Maatschappelijk Welzijn (OCMW)"/Centre Public d'Action Sociale (CPAS)'), the catchment area and the number of inhabitants one tries to reach.

In 2015 recurring costs ranged from € 22 236 up to € 686 061 per ODC^q, with an average cost of € 255 712 ($sd= 132\,828$). Again, the variation in recurring costs is explained by the scale of the projects and the way they are organised. This includes the number of staff (receptionists, coordination and administrative personnel, drivers), working hours and qualification of the employees, the number of cars commissioned for home visits, in-company

human resources or outsourcing, and other choices that influence operational costs (IT, rent, cleaning, accountancy, etc.).

In an attempt to limit the variation of recurring costs among ODCs, a set of funding principles have been developed and applied since 2012. Recurring costs are classified in five large categories, subdivided in smaller subcategories which are detailed in Table 6. For each category a maximum amount has been fixed above which no funding is possible. Some of these amounts are fixed, others vary according to objective characteristics of the project. For example, if all doctor fees for out-of-hours activities are collected in a centralised way by the ODC, higher maximum amounts are applied for office supplies, accountancy and coordination/administration. Other characteristics that may impact maximum amounts are the number of hours an ODC is open to the public, the surface of the catchment area, the number of inhabitants and the average number of home visits during daytime in the weekend.

The yearly budget of every ODC is based on the comparison between the maximum amounts per category and the costs estimated by the ODC. If estimated costs are below the maximum amount, the estimated costs are retained in the budget. If the estimated costs for a particular category exceed the maximum amount, the maximum amount is retained in the individual budget.

Individual ODC budgets are paid in parts: 4/12 at the beginning of the year, 4/12 at the end of April, 3/12 at the end of August. The last part is reserved until after the inspection and approval of the yearly financial account. Depending on the results of this inspection, either a part or all of the remaining budget is paid or a partial chargeback is imposed.

^q Budgets on a yearly basis, excluding projects without an ODC which only use the triage system operated by CHU Liège. For those projects that consist of

multiple ODCs or ODC satellites, the total budget of the project was distributed equally among the number of entities for this exercise.



Table 6 – Costs eligible for ODC funding: maximum amounts per category and share of total ODC costs, year 2015

Category	Maximum amount 2015	Share of total ODC costs	Comment
Operational costs			
IT maintenance	€ 16 000.00	3.6 %	
IT provision	€ 1 500.00	0.6 %	
Office supplies	€ 1 500.00	0.6 %	Centralised collection of out-of-hours doctor fees: € 2 500
Insurance	€ 641.20	0.2 %	Other than building and staffing insurance
Accounting	€ 2 124.00	0.9 %	Centralised collection of out-of-hours doctor fees: € 4 000
Point-of-sale terminal	€ 2 000.00	0.5 %	
Sensitization	€ 1 500.00	0.4 %	
Telephone, fax, internet	€ 3 846.24	1.1 %	
Other	€ 5 000.00	1.3 %	For example: surveillance and security system costs
Payroll processing service	€ 3 500.00	0.8 %	
Training	€ 2 500.00	0.6 %	
Social liability	€ 5 000.00	1.5 %	
Rent, electricity, water, heating	€ 28 980.00	8.2 %	Depends on ODC's location and number of inhabitants
Cleaning, maintenance	€ 10 143.00	2.4 %	Equal to 35% of the previous category
Coordination – administration	€ 53 320.55	17.0 %	Proportional to ODC's opening hours (default: 61h) Centralised collection of out-of-hours doctor fees: € 76 725.54 Third-party payer system for all patients: € 86 091.57
Reception	€ 109 097.41	27.9 %	Depends on number of working hours
Transport	€ 113 928.47	32.6 %	Catchment area ≥ 600 km ² or an average of 20 home visits or more during daytime in the weekend: € 15 8752.79

Source: RIZIV – INAMI



Additional financial support

In addition to the abovementioned measures several others exist that support the continuity of care of GP (out-of-hours) services, such as:

- In 2014, a practice allowance of €1 672.94 (+ €500 for GPs who signed the national convention tariffs)¹¹⁹ has been provided for GPs, participating in the out-of-hours services organised by the GP circle, who have declared at least one availability fee.
- In 2014, a SUMEHR (Summarized Electronic Health Records) bonus of € 500 has been made available for GPs who submit at least 100 SUMEHR records per year.
- The IMPULSEO fund aims to support GP practices in areas with a low GP density, young GPs, etc. The federated entities became responsible for IMPULSEO after the 6th State reform (see section 5.1.1).
- Financial support has been made available for the circles (based on the number of inhabitants) with extra funding in case they use a unique call number for GP out-of-hours services or in case of a low population density.

5.2 Critical appraisal of organised duty centres

In this section we will concentrate on the organisation of out-of-hours primary care services and ODCs in particular. The role of GPs in acute care (also subject of debate) during normal office hours is not the main focus of this chapter.

5.2.1 Rationale for ODC implementation: isolated focus on better working conditions for GPs or part of a larger vision?

Better working conditions for GPs with a potential to strengthen primary care services

The main driver of policymakers to financially support ODCs in Belgium was the improvement of working conditions of GPs. After all, the GP profession was considered to be in a crisis, which manifested itself by the low attraction rates of new graduates, a high proportion of GPs who never work as a GP or who leave the profession, estimates of high levels of burnout (no exact figures on the prevalence are available).^{131, 132}

One of the key policy measures to increase the attractiveness of the profession was the financial support of ODCs, which are initiated bottom-up. Several benefits were attributed to the concentration of an on-call shift in ODCs: lower workload by a decrease in the number of days on call per GP, improved safety (e.g. driver during home visits), lower administrative burden (e.g. administrative support; sharing of common IT infrastructure or telephonists).¹²³ Now, 12 years after the first ODCs were implemented, the interviewed stakeholders confirmed that these benefits indeed are realised. Stakeholders stated that the development of ODCs resulted in an increase in the number of GPs participating in organised on-call services, both in younger and older age categories. They also claimed that the presence of an ODC is a determinant factor for young GPs in their choice of location.

“De gebieden waar wachtposten zijn, dat die meer hajo’s aantrekken en dat daar meer jonge huisartsen mee instappen. Dus zeer dikwijls is voor jonge huisartsen het feit van een wachtpost te hebben een argument om zich daar te vestigen. Dat zien we meer en meer. Dus het beantwoordt volledig aan de behoefte van de eerste lijn. ... We zien, sinds het invoeren van het wachtpostsysteem, een shift, dat ... oudere collega’s, 65, er zijn zelfs collega’s tot 70 jaar, die graag in de wachtpost komen zitten omdat ze zeggen: ‘Ja, het is daar allemaal geprepareerd. En we hebben ondertussen ook veel werk en eigenlijk ook een mooie verdienste.’”

An evaluation of the workload of GPs during out-of-hours periods illustrated that for the year 2009 large geographical differences existed. The median number of hours on call per GP was 630h/GP in rural areas, 326h/GP in semi-rural areas and 226h/GP in urban areas. In addition, a high variability in the number of nights (i.e. period of duty including hours from midnight until 6 AM) was observed (see

Table 7). Especially for Neufchateau, Bastogne and Virton a high number of nights per GP was observed (i.e. more than 50% of GPs had performed more than 40 night duties equalling 3 to 4 nights per month).¹²³ Five years

later^r and with the implementation of 38 ODCs (including in Neufchateau, Bastogne) the workload during out-of-hours periods per GP has slightly improved in both rural and urban areas. However, the large geographical differences observed in 2009 remain in 2015 as the median number of hours on call per GP was 587h/GP in rural areas, 324h/GP in semi-rural areas and

198h/GP in urban areas. As can be seen in Table 7 the proportion of GPs on call for more than 50 nights per year has dropped in rural areas, while the proportion of GPs on call between 10 and 29 nights per year has increased. In urban areas a small shift seems to have taken place from GPs on call for 1 or 2 nights per year to not being on call at all.

Table 7 – Number (%) of GPs with periods on call during night hours (from 12 PM to 6 AM), by type of area

Number of nights on call	2009			2014		
	Type of area			Type of area		
	Rural (Number of GPs = 470)	Semi-rural (Number of GPs = 3983)	Urban (Number of GPs = 4758)	Rural (Number of GPs = 451)	Semi-rural (Number of GPs = 4003)	Urban (Number of GPs = 4687)
0 night per year	0	26 (0.7%)	95 (2.0%)	6 (1.3%)	106 (2.6%)	378 (8.1%)
1-2 nights per year	4 (0.9%)	85 (2.1%)	241 (5.1%)	7 (1.6%)	112 (2.8%)	175 (3.7%)
3-10 nights per year	42 (8.9%)	412 (10.3%)	1133 (23.8%)	26 (5.8%)	407 (10.2%)	1116 (23.8%)
10-29 nights per year	106 (22.6%)	2535 (63.6%)	2787 (58.6%)	152 (33.7%)	2463 (61.5%)	2521 (53.8%)
30-49 nights per year	192 (40.9%)	769 (19.3%)	403 (8.5%)	178 (39.5%)	778 (19.4%)	405 (8.6%)
> 50 nights per year	126 (26.8%)	156 (3.9%)	99 (2.1%)	82 (18.2%)	137 (3.4%)	92 (2.0%)

Source: MEDEGA database (2015)^s

The proponents of ODCs also see the ODCs as a step in the direction of larger and more multidisciplinary group practices and in strengthening primary care services in general. They advocate to expand the ODCs with nursing staff and pharmacists. Interviewees stated that via the activity of the ODCs, GPs get to know one another better and discover the benefits of collaboration. Furthermore, ODCs are considered by some as a clear and

visible access point for the population emphasizing the important role of primary care services. Yet, others stated that ODCs are still insufficiently known (e.g. opening hours, type of patient problems they deal with) among patients. Other benefits attributed to ODCs are shorter waiting times for acute care (compared to EDs).

^r Updated results based on MEDEGA database (2015). Fees registered up to 16 September 2015 included.

^s Results for 2009 updated as compared to KCE report 171 (2011)¹²³, using data registered up to 16/09/2015. There is a slight underestimation for 2014 due to registration rules (estimated completeness of 94%).



“Wij stellen vast in de praktijk dat eigenlijk mensen niet weten: wanneer is een wachtpost toegankelijk, wanneer kan men daarnaartoe enzovoort. Dus de bekendmaking daarvan en weten: wat doen die of wat kunnen die doen, wat kunnen die niet doen, kan ik met een gebroken been naar een huisartsenwachtpost of niet? Ja, wellicht niet. Maar met wat dan wel?”

But lack of a general policy vision and integrated policy approach

The ODCs were mainly developed to increase the attraction power of the GP profession by improving the working conditions. However, this policy measure has been criticised as being one that is too isolated from the general policy on acute care. ODCs are not part of a larger plan for the organisation of acute care services. Many initiatives have emerged bottom-up without being fit into a larger policy plan (let alone an evaluation of what works and what not), resulting in a fragmented supply of services for patients with acute care problems. The large investments that were made and the far-developed rollout of ODCs (mostly independent from EDs – see section 5.3.1) make them to some extent indisputable, at least in the short run. This does not prevent local ODCs or GPs to make agreements with an ED (e.g. to cover the deep nights some GP circles divert patients to the ED since there are insufficient GPs). Yet, in order to be successful in guiding patients to the most appropriate level of care, a more generalised and coordinated approach is required. There are, for instance, some preconditions to make ODCs successful in diverting patients away from EDs such as a telephonic triage system (see Chapter 6) which guides the patients towards the most appropriate level of care and a triage system at the hospital door in case patients fail to use this telephonic triage system. This will also require an adaptation of current legislation.

In the ‘Medico-Mut’ agreement¹³³ of 2015, compulsory agreements between GP circles, ODCs and EDs have been announced in an attempt to decrease the ‘inappropriate’ use of EDs. Policy makers failed to produce a framework for such agreements in 2015 (e.g. the type of patients that are targeted by ODCs versus EDs). The ‘Medico-Mut agreement’ of 2016-2017 therefore

conveys this task to a special taskforce which is expected to produce results ultimately at the end of March 2016. From 2016 onwards, such an agreement will be a condition to receive funding for the involved parties (ODCs and EDs). These agreements do not only aim to enhance collaboration between GPs and EDs, they also aim to enhance the clarity of the most appropriate level of care to the citizens. To date (i.e. 05/02/2016) it is, however, unclear what the content of these agreements should be. This lack of clarity risks to increase fragmentation on the field. Although a one-size-fits-all solution is probably not realistic nor desirable, a national policy framework will be needed to guide these local agreements.

“Parce qu'il y a pas mal d'initiatives qui ont été prises, de mesures qui ont été prises un petit peu disparate, il y a les postes de garde effectivement, le numéro de téléphone... il y a aussi des hôpitaux qui ont installé un tri et ça va un petit peu dans tous les sens, mais on manque vraiment d'une évaluation de toutes ces initiatives.”

5.2.2 Implementation of ODCs: increased use of out-of-hours GP services did not result in a decreased use of ED attendances

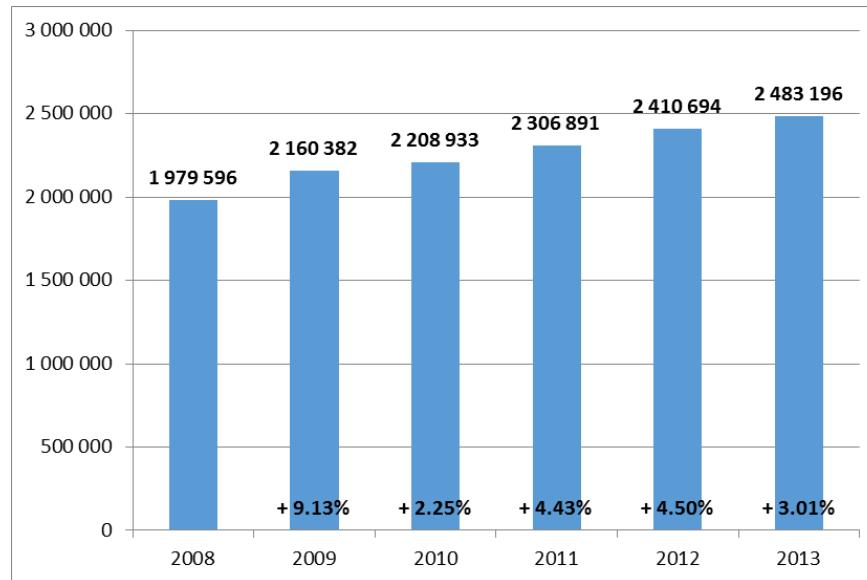
Increasing trend of ED attendances

Despite the introduction of ODCs in 2003 in the Belgian healthcare landscape and the availability of 70 ODCs in 2015, an increasing trend of ED attendances can be observed. In general, there were about 2.5 million ED attendances in 2013. From Figure 20 it is clear that ED attendances have increased year by year (i.e. on average 4.6% per year for the period 2008-2013). This increasing trend of ED attendances^t is not unique in Belgium, yet the increase is steeper than in most OECD-countries.¹⁸

^t The data presented in this section include billing data. These data are different from the data presented in Chapter 3 that were based on the MZG-

RHM. The MZG-RHM include all ED attendances while the RIZIV-INAMI data only include the billing records for the ED attendances that were reimbursed by the national health insurance system.

Figure 20 – Number of emergency department attendances per year based on billing records RIZIV-INAMI (2008-2013)



Source: RIZIV – INAMI

Note 1: Results based on the nomenclature codes 590516, 590531, 590553, 590575, 590634, 590656, 590671, 590693, 590752, 590774, 590796 and 590811 effected per year (as opposed to booked) in the period 2008-2013. Note 2: There is a slight underestimation for 2013 due to invoicing rules (24 months instead of a full period of 36 months).

Stakeholders brought up several explanations (sometimes backed-up with Belgian empirical evidence) for this increasing trend in ED use while investments in ODC were made. An in-depth study of possible explanations is beyond the scope of this study but we discuss the most prominent explanatory factors (according to the interviewed stakeholders and Belgian studies on this topic) below (i.e. patient-related factors; high accessibility of ED services; limited opening hours and capacity of ODCs to deal with emergency care cases; different patient populations attending EDs versus ODCs).

Patient motives influence the choice for ED versus ODC

A number of Belgian studies have analysed patient factors and motives as possible determinants of the choice of ED versus ODC attendance (see Box 8 for study approaches).

Box 8 – Short description of study approaches in Belgian studies on patient factors and motives determining choice of ED versus ODC

Lippens et al. (2011)¹³⁴ examined the motivation of patients to choose an ED or an ODC during out-of-hours.¹³⁴ In first instance, an instrument was developed (based on a literature review and semi-structured interviews with field experts) to measure patient motives for choosing a particular care setting (self-referred adult patients at an ED, n=26 and patients at an ODC, n=21).¹³⁴

Philips et al. (2010) studied consumer preferences via the Theory of Reasoned Actions. This theory states that the decision to adopt a particular kind of behaviour (intention to choose a service: ED or ODC) depends on a person's behavioural belief (specific attitude towards that choice) and his or her normative beliefs (subjective norm or how reference groups would advise to act). The researchers studied consumer preferences in a specific group of the population (i.e. people with young children) by sampling respondents in the offices of Kind & Gezin (reaching 97% of people with new-borns, and thus also including vulnerable and minority groups which are otherwise more difficult to recruit for study purposes). A total of 350 questionnaires were completed (49.5% non-response with language problems as main reason).

Philips et al. (2013)¹³⁵ evaluated the patient perspectives on co-payments for ED use.¹³⁵ To promote more efficient use of out-of-hours services an increased co-payment for self-referrals was introduced in Belgium. With such a policy measure holding patients (to a certain extent) responsible, the question arises whether they are able to assess the degree of urgency of their medical problem and choose the appropriate care. The authors included a survey of a 48-hour sample at the GP out-of-hours service (n=337) as well as at the ED (n=450) in two urban regions. In addition, they interviewed 21 patients more in-depth (ED: n=9; GP: n=12).



Bakelandt et al. (2009)¹³⁶ assessed the association between socioeconomic profile and use of emergency departments. They conducted a retrospective observational study (September 2008-April 2009) including data from self-referrals during 16 weekend days and 2 bank holidays (randomly selected), collected in 4 EDs and 2 ODCs from the same region. They collected variables such as socioeconomic profile, reason for encounter, having a GP, etc.

First and foremost, self-referred patients attending the ED perceive their problem as severe and urgent enough to attend the ED (even if it concerns a minor or mild problem) or they expect that medical imaging will be required.^{134, 137} In the latter case, they immediately go to the emergency department to avoid a referral (and extra transport) from the ODC towards the ED.

In addition, patients tend to choose ED services based on their previous experiences (e.g. satisfied with explanation received by the physician, confidence in competency and experience level of medical staff), the easy access and because they like a technical environment.^{135, 138}

Yet, ODCs are far less known to the general public compared to EDs.^{134, 138} Only 1.4% did not know the ED while this was 18.3% for the organised GP practice.¹³⁸ Patients attending the ODC indicate that knowledge of the existence of the ODC is often influenced by information received from family and friends and not by information received from their own GP.

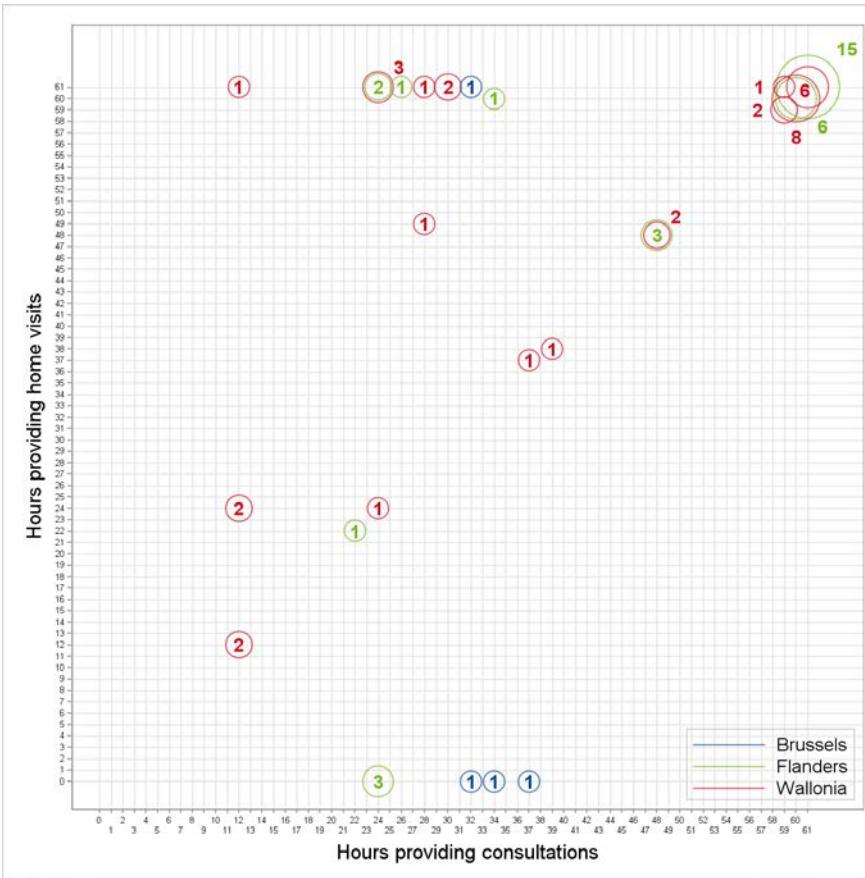
The impact of the increased co-payment for self-referred patients attending the ED is negligible. The system of increased co-payments is hardly known and seems to be of no importance in patient choice of provider.^{134, 135} Only 11.1% of the surveyed patients made a correct estimate of the co-payment amount and for all of the respondents of the in-depth interviews the increased co-payment did not influence their choice.¹³⁵ The role of other financial factors is less clear. In the study of Lippens et al. (2011) financial reasons were never mentioned as a reason to choose for the ED while interviewed stakeholders pointed out that the third-party payer system in EDs plays an important role in patient choice of provider. In addition, it was also found as an important factor in the study on patient preferences by Philips et al. (2010).¹³⁸

Finally, the results indicated that inhabitants from deprived areas (measured at the level of a district or street within a municipality) had about four times more chance to choose for an emergency department compared to inhabitants from non-deprived areas. In addition, it was shown that the proportion of patients choosing for an ED was higher during night.¹³⁶ One explanation for the divergent choice of care provider according to socioeconomic profile is that inhabitants of deprived areas typically do not have a regular GP.¹³⁶

Patients continue to attend EDs due to limited opening hours of ODCs

As detailed in section 5.1.2, ODCs are primarily funded to open during weekend-days and bank holidays. Only 7 ODCs are open during evenings on weekdays (4 in Brussels; 1 in Charleroi, 1 in Namur, 1 in Liège), of which the one in Namur is also open during the night. In addition, ODCs are not required to open during the entire weekend. ODCs are allowed to organise themselves as they see fit, which has led to large variations in opening hours and availability of GPs during those hours (Figure 21).

Figure 21 – Number of ODCs per number of hours of consultations and home visits during the weekend (Friday 7 PM until Monday 8 AM)



Source: RIZIV – INAMI

Note: only ODCs are depicted, projects limited to the alternative triage system provided by CHU Liège are not included.

Figure 21 shows that 38 ODCs provide consultations and home visits from Friday evening to Monday morning (between 59 and 61 hours per weekend). Although these ODCs occupy the same quadrant in Figure 21, they are not necessarily organised in the same way in terms of the number of GPs available per hour or the ODC's accessibility. Sixteen ODCs out of these 38 have one or more GPs offering consultations at the ODC and at least one GP doing home visits during the entire weekend. For the other 22 ODCs some parts of the weekend (mostly during night hours) are covered by one GP taking care of both consultations and home visits at the same time.

Twelve ODCs out of 13 that provide less than 37 hours of home visits during weekends are in fact ODC satellites. As described in section 5.1.2, they are part of projects where one catchment area is covered by one or two larger central ODCs and one or more smaller ODC satellites. Home visits for the entire catchment area are centralised in the larger ODCs for the entire weekend or during night hours when activity is low. The central ODCs in these projects are mostly open from Friday evening to Monday morning, while their satellites offer limited opening hours and are most often closed during weekend nights.

At some ODCs patients can walk in freely at any time of day or night, where one or two receptionists are always available to admit patients and take calls. In other ODCs patients are only admitted after making an appointment, one or two receptionists are only available during day time and at night calls are diverted to an external call-taking service, to the driver who drives the GP during home visits or directly to the GP on call.

The number of GPs on call is adapted to the time of day and expected patient flow. This planning is entirely left up to the individual ODCs. There is no centralised, national planning. Even though the law establishes the minimum number of GPs on call (1 per 100 000 inhabitants between 8 AM and 11 PM, 1 per 300 000 inhabitants between 11 PM and 8 AM), there are no rules as to the maximum number of GPs on call in the ODCs or classic rota systems, nor any binding rules on the number of GPs providing consultations versus home visits in the ODCs. Table 8 shows the distribution of the number of GPs on call per hour for all ODCs in 2015.



Table 8 – Distribution of the number of GPs on call per hour for 70 ODCs and ODC satellites

Type of contact	8 AM – 11 PM					11 PM – 8 AM				
	Min	Q1	Q2	Q3	Max	Min	Q1	Q2	Q3	Max
Consultation	0.5	1	1	2	3	0.5	0.5	0.5	1	2
Home visit	0.5	1	1	2	10.5	0	0.5	1	1	10.5

Note: 0.5 stands for one GP providing both consultations at the ODC and home visits at the same time

Source: RIZIV – INAMI

Stakeholders gave several explanations for these limited (and variable) opening hours:

- GP shortage (at least in some regions). There are too few GPs to staff all out-of-hours periods. Therefore, in some regions, GP circles make arrangements with EDs to provide continuity of care (especially during the 'deep nights') to the population.

“Les généralistes eux-mêmes qui ont arrêté de dire : “ Nous en nuit noire ça nous pose un souci, on est plus assez nombreux, on a du mal à assurer des gardes. » ... Mais si aujourd’hui ces postes de garde de médecine générale mis en place par des cercles ne sont pas staffés par les médecins généralistes eux-mêmes qui font partie de ces cercles, parce que ces cercles eux-mêmes, ils le disent, en dehors de Bruxelles, on a tous plus de 50 ans, on est plus que 3 ou 4 médecins pour toute une région et même comme cela on y arrive pas et ces maisons de garde de médecine générale sont staffées par des gardistes, des gens qui ont un titre de médecin généraliste, qui ne font que des gardes et de poste de garde en poste de garde, on perd l’essence même de cette notion de continuité par la médecine générale de la médecine générale. L’organisation d’un service d’urgence parallèle, non hospitalier, staffée par des médecins gardistes qui ne sont pas forts différents finalement que des médecins généralistes titulaires d’un brevet de médecine aiguë qui travaillent dans un service d’urgence. ... C’est complètement paradoxal qu’il y ait un discours syndical qui dit d’un côté la première ligne avant tout et que la réalité de terrain qui montre qu’en dehors d’endroits spécifiques... Sur Bruxelles, les généralistes qui sortent qui doivent faire un certain nombre de gardes pendant leurs stages ont du

mal à les faire. Il n’y a pas assez de gardes. Et puis j’entends ... qu’en province ils pleurent pour avoir des stagiaires et ils ne les ont pas. Il y a un vrai souci. Un poste de garde de médecine générale en face d’un hôpital, est-ce que ça a du sens de payer un service de secrétariat, des locaux.”

- A good work-life balance has gained importance among GPs. Many GPs are reluctant to participate in out-of-hours duties.

“... des généralistes qui étaient à six heures du matin sur les routes et rentraient chez eux à 23 h. Aujourd’hui ce n’est plus le cas. Ils ont bien raison ces généralistes que j’ai vu travailler de 6 h du matin à 23 h et être à plat toutes les nuits. Ce n’est plus la volonté des médecins aujourd’hui ... On est dans une société où chacun veut privilégier son temps de loisirs par rapport à son temps de travail quelle que soit la profession.”

- Financially not rewarding for GPs. Especially in rural areas the caseload during nights can be too low to result in a proper income. Yet, this comment should be placed in perspective because activity during nights is only a fraction of all GP activity (and income). Some stakeholders considered being on call during the night as the professional duty of each GP.

Some stakeholders complained that ODCs entail large, recurring government investments, partly because of considerable fixed costs (see section 5.1.2), for limited opening hours. Consequently, they pleaded to extend the opening hours of ODCs in an attempt to strengthen their position in the healthcare landscape (e.g. better reputation, better visibility) with the

aim of attracting more acute care patients and reduce the number of ED attendances.

"Bij de invoer toen was er een probleem: er waren toen al huisartsenkringen, maar ze waren niet goed georganiseerd en er was een overaanbod aan spoedgevallendiensten. Nu is het beleidsmatig veel eenvoudiger. ... Op niveau van het RIZIV is er massaal geïnvesteerd in de implementatie van huisartsenwachtposten. Die zijn enkel in de weekends beschikbaar. Die zouden ook 24/7 open moeten zijn, ook tijdens de week. Daarnaast moeten er campagnes komen en er is nu ook een uniek nummer. Iedereen die denkt dat hij een arts moet zien, kan naar de huisartsenwachtpost ... Overdag moet je naar de huisarts gaan, vanaf een bepaald uur naar de huisartsenwachtpost."

Sample of 33 ODCs: representative for the 70 ODCs?

The sample includes data about 33 from the 70 ODCs. This is a convenience sample implying that representativeness is an issue. The sample, for instance, does not include data about the ODCs that are located in Brussels. Nevertheless, if we compare some characteristics of the 70 ODCs with those of the 33 ODCs included in the sample there are no large deviations (see Table 9).

It is, however, unclear whether an extension of the opening hours will result in a higher caseload for ODCs. An evaluation of five ODCs made in 2009 showed that ODCs that are open at night, have low caseloads (too low to be profitable).¹²³ Using data on the number of consultations and home visits of 33 ODCs in 2014 we re-evaluated the caseloads during the weekend (see Table 9 for information about representativeness of the sample). Indeed, Figure 22 confirms a low caseload in terms of consultations as well as home visits, especially between 12 AM and 6:59 AM. The average number of contacts at night (from 12 AM until 6:59 AM) ranged from 1 ($sd=0$) to 3.5 ($sd=1.8$) home visits and 1 ($sd=0$) to 4.1 ($sd=2.7$) consultations per ODC. The average number of contacts at night per 100 000 inhabitants ranged from 1.1 ($sd=0.6$) to 5.2 ($sd=4.6$) home visits and 1.2 ($sd=0.8$) to 3 ($sd=1.9$) consultations per 100 000 inhabitants per ODC. If the number of ED attendances is not reduced and ODC attendances at night remain low (potentially due to a lack of other measures such as triage, media campaign, coordination of ED and ODC activities), investments to keep ODCs open at night can also be considered as inefficient.

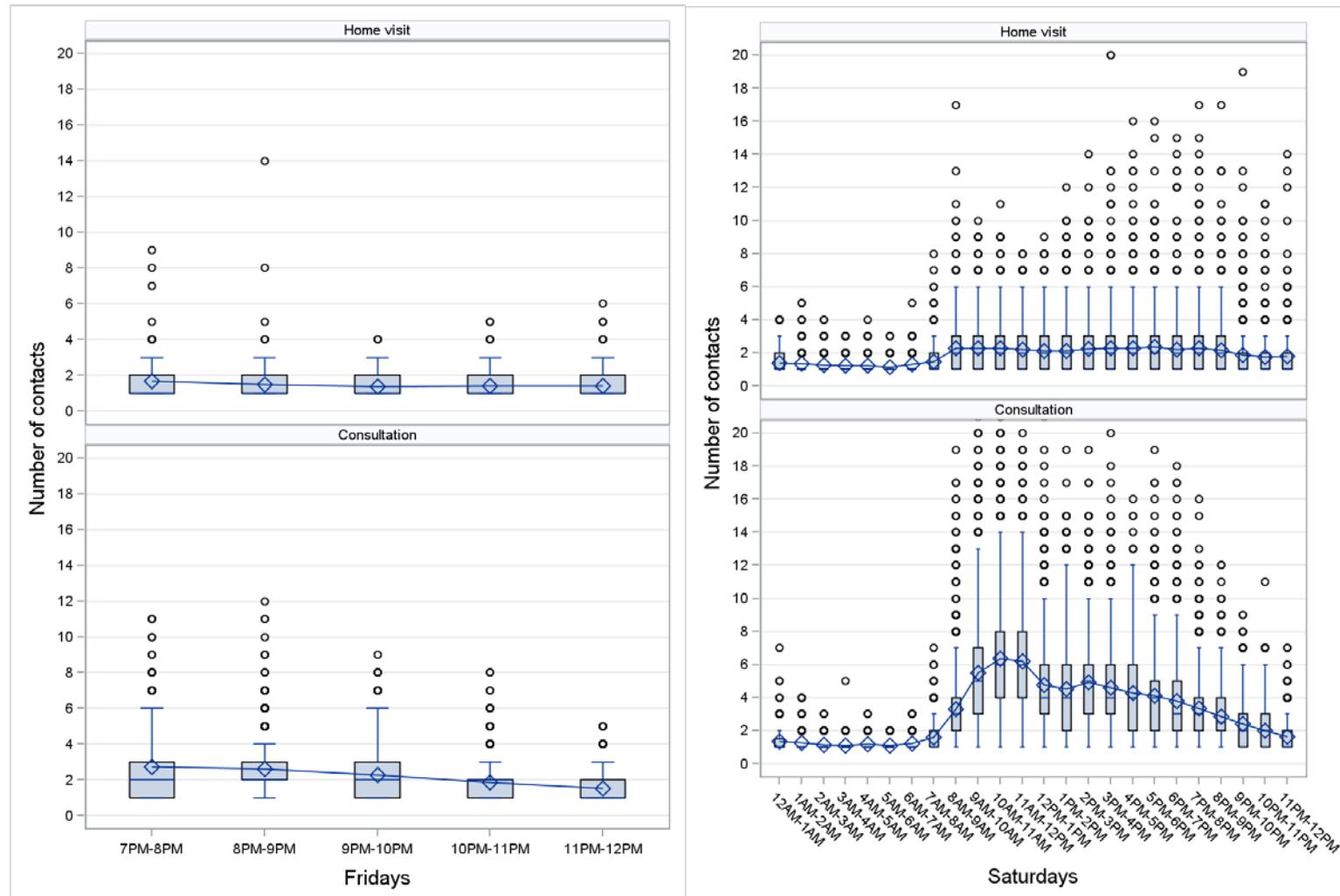


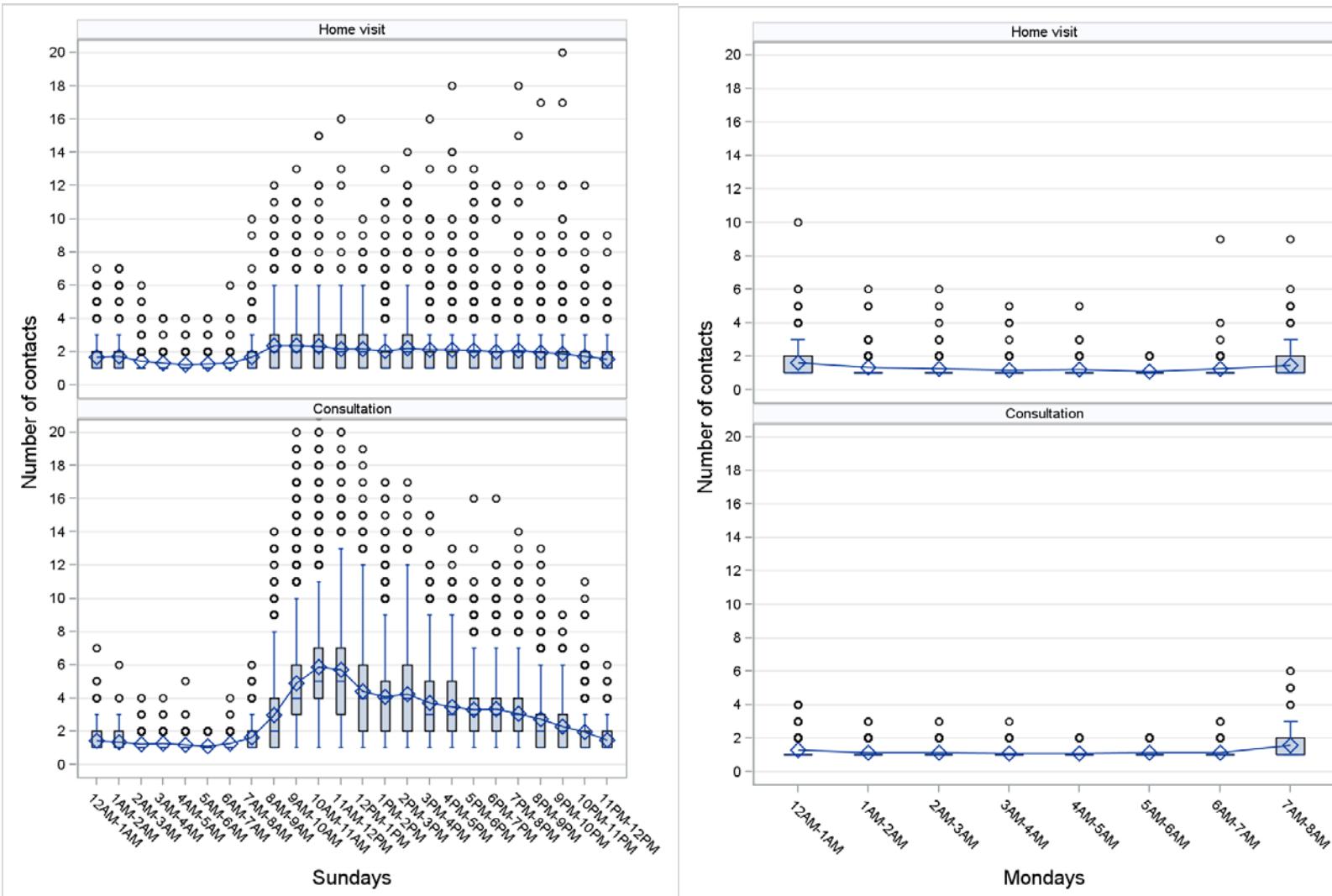
Table 9 – Comparison characteristics ODCs included in the sample versus all 70 ODCs (2015)

	Budget (in €, 2015)	Surface covered in km ²	Inhabitants covered	Number of physicians affiliated with the ODC	Number of consultations weekend	Number of home visits weekend	Opening hours (weekend)
Sample	Mean	285 018.04	364.30	91 749	76.24	6 588.39	1 893.03
	STD	82 59448	351.78	38 857	31.96	3 080.31	978.45
	P25	211 158.19	136.74	58 905	47	4.721	1 189
	P50	307 783.75	205.92	88 181	78	6.455	1 810
	P75	344 332.59	467.28	121 824	98	7.496	2 328
All ODCs	Mean	240 426.29	296.85	105 566	78.74	5 777.32	2 038.36
	STD	117 879.41	279.70	75 363	51.54	3 085.09	2 056.44
	P25	139 746.86	136.74	58 905	46	3 384	1 130
	P50	237 238.37	215.76	86 993	72	5 533	1 569
	P75	317 604.00	339.21	127 142	98	7 257	2 328

Note: Budgets on a yearly basis. Projects without an ODC which only use the triage system operated by CHU Liège were excluded. For those projects that consist of multiple ODCs or ODC satellites, the total budget of the project and in some cases the catchment area's surface, inhabitants, number of affiliated physicians, number of consultations and number of home visits were distributed equally among the number of entities when detailed information per entity was not available.

Figure 22 – Number of contacts per type of contact and per day for 33 ODCs





Source: RIZIV – INAMI



ODCs are not well-equipped to deal with urgent cases

Stakeholders suggested that GPs do not dispose of the necessary equipment to diagnose relatively simple acute problems and are, therefore, obliged to refer patients to EDs. Yet, this concerns only a small proportion of patients (based on calculations with the 'Permanent Sample' data from the year 2013, 3% of the contacts with a GP during out-of-hours also consulted an ED service the same day or the day after). The majority of patients currently attending the ED can be dealt with at the ODC. However, it has been shown that patients choose to attend the ED if they think they will need medical imaging or specialised treatment.^{9, 134}

For real emergency cases, GPs are insufficiently trained. GPs have good knowledge about medical conditions such as 'superficial wounds', 'cerebrovascular disorders', 'epilepsy', 'luxation', 'distortions', 'burns', 'hyperventilation' while their knowledge of medical conditions such as 'poisoning', 'electrocution', 'CO poisoning', 'penetrating wounds' is poor.¹³⁹ Stakeholders considered lack of GP knowledge for certain conditions as an argument to locate ODCs close to or at hospital sites to enable an immediate transfer to the ED when required.

"Dat die huisarts van wacht, die de patiënt ziet, op de kortste keren foto's nodig heeft, labo nodig heeft, en alle soorten diagnostische middelen, waardoor ofwel die daar ook gaan geïnstalleerd worden, waardoor je nog een keer overlapping krijgt. Ofwel ja, op de kortste keren gaat die dan toch naar de spoed gestuurd worden die patiënt, en dan zegt die patiënt: "Ja, volgende keer ga ik rechtstreeks, want als het orthopedie is, moeten ze toch een foto hebben en kom ik in dat ziekenhuis terecht."

"Au quotidien, je dois gérer des situations en ayant mon stéthoscope et mon tensiomètre comme instruments. Donc ça fait partie de mon travail. Après, je dois évaluer le degré d'urgence ou de gravité et à partir de ce moment-là, celui-là, je vais le réorienter vers les urgences ou si c'est pas si urgent on fera une radio ou ce qu'il faut avec le temps, mais ça ne.....Alors que je vais voir une entorse, je vais l'évaluer, j'ai mes critères d'Ottawa, je me dis : " O.K., on fait comme ça. Si ça ne va pas vous me recontactez. » Et on a évité quand même la radio, j'ai peut-être fait un taping si j'ai le temps, mais voilà, j'ai pas couru tout de suite

aux urgences. Si c'est là, je pense que c'est plus tentant pour le médecin et c'est peut-être aussi plus tentant pour le patient."

ODCs attract other patient groups than EDs

Stakeholders indicated that ODCs attract another patient population than EDs which explains the phenomenon that patients increasingly turn to an ODC while, at the same time, the number of patient contacts at EDs remain stable or even grow.¹⁴⁰ More specifically, patients present themselves to an ODC during the weekend instead of going to their GP during weekdays to avoid taking off from work.

"Het nadeel vind ik wel ... dat door de bekendheid van de wachtpost er meer en meer patiënten, net zoals zij spontaan aanmelden aan de spoedgevallen, zich nu spontaan aanmelden aan de wachtpost. En dat geeft soms problemen. Wij maken ons sterk via de oproepsystemen dat je zegt: "Kom maar naar de wachtpost." Ze krijgen zelfs via de telefoon een afspraak: "Kom tegen 11 u, tegen kwart na 11 ben je buiten." Nu, soms moeten ze al een uur wachten in de wachtpost omdat het daar te druk is door de spontane aanmelders."

"N'y a-t-il pas des cas de médecine générale qui arrivent dans les postes de garde parce que c'est le samedi, qu'on a le temps et que consulter en pleine semaine alors qu'on travaille tous, heu, c'est difficile. D'autant plus que les médecins maintenant rechignent à travailler très tard."

Two studies in the province of Antwerp support the statement that ODCs attract another patient population than EDs:

- In a first study the ED and GP use after implementation of an ODC (intervention) was evaluated via a pre-post comparison (in 2007, after one year of ODC implementation) as well as via a comparison with two regions without ODCs.¹⁴¹ In the intervention region (i.e. Turnhout, a region characterised by tight boundaries: 98% of the referrals by physicians in this region are made to two hospitals located in the city centre) all of the 100 GPs previously organising out-of-hours services via a rotation system decided to centralise the location for out-of-hours primary health care in one centrally located practice independently from a hospital site. The ODC was open from Saturday 8 AM until Monday 8 AM and on bank holidays, but not during weekdays. It was equipped to



deal with urgent medical problems but was also able to handle wound care and minor trauma. GPs on call had to report data of all patient contacts to the local GP organisation. Two control regions (Ghent and Antwerp) without an ODC were chosen. In these regions, GPs still worked on an individual base, out of their own practice in a rotation system.

The number of patient contacts at the ODC significantly increased compared to the contacts with the GP on-call rotation system prior to ODC implementation (both including consultations and home visits) while there were no significant changes in patient contacts at the emergency department. Also in the control regions the number of GP contacts increased, yet the difference was significantly larger in the intervention region.

In addition, the implementation of the ODC seemed to be associated with a decrease in the number of GP home visits and a shift from 'trauma-related complaints' from the ED to the ODC was found. Furthermore, the number of ED patients referred by a physician increased while the number of self-referrals remained the same. This suggests that patients who want to seek help at the ED without a referral, do not change their behaviour because of the presence of an ODC. On the other hand, there was a significant decrease in the number of patients who came to the ED by ambulance which possibly can be explained by a more efficient use of ambulances after the introduction of an accessible and recognizable ODC.¹⁴¹

- In a second study in the Antwerp region an ODC was installed next to the hospital.¹⁴² The effect of this ODC on ED use was evaluated via a prospective pre-post evaluation with data collection in the intervention region (ODC located next to the hospital replaces a GP on-call rotation system) and the control region (area where an ODC exists but at a certain distance from the hospital). The results indicate that patients increasingly use the ODC (increase of 19% in out-of-hours GP contacts in the intervention group), while the number of patient contacts on EDs remained stable. The number of out-of-hours contacts in the control group remained stable both for the ODC and the ED.

There was no decrease in the number of contacts in EDs at night time in the intervention group. The analysis made clear that EDs are busier at night compared with the ODCs. At 7 AM the ED of the intervention

group already reached 11.9% of its 24h-activity while this was only 3.7% for the ODC. Furthermore, there was no change in the type of medical problems treated at the ODC. The three main categories remained 'respiratory problems', 'gastrointestinal problems', and 'general not specified problems'. Finally, the level of urgency seemed not to have changed in the intervention group. In both measurements there were no life-threatening or emergency care patient contacts at the ODC. Yet, this also concerned the minority of patients in the ED (3.2% in the pre- and 6.2% in the post-measurement).¹⁴²

A sub-analysis of different age categories showed deviating results for the age-group 0-5 years. For this age-group there was a steep increase in the number of contacts in the ODC of the intervention group and a decrease in the number of contacts at the ED. Also in the ODC of the control group the proportion of this age group was high in both pre- and post-measurement. This indicates that parents of young children are rather attracted by the ODC compared to the ED.¹⁴²

5.2.3 ODCs are geographically well dispersed but is their location well chosen?

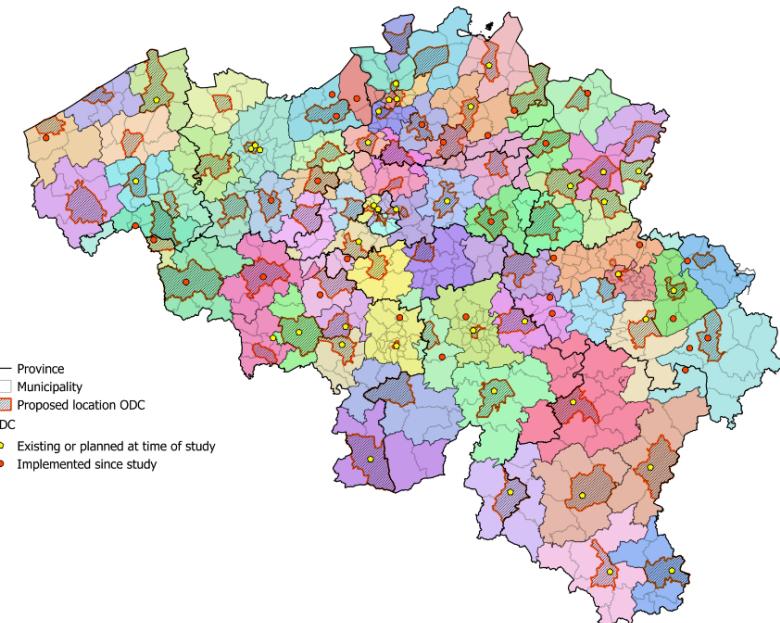
5.2.3.1 ODCs are geographically well dispersed, but the entire population is not covered yet

From local initiatives to geographical planning at the national level?

During the first years ODCs were set up on the request of GPs seeking an answer to their local problems without taking into account the needs at the national level.¹²³ The RIZIV-INAMI therefore initiated a study¹⁴³ to identify the optimal spots where to locate ODCs throughout the country. At the start of the study (18 September 2011) 40 ODCs were already in operation (n=32) or planned (n=8)^u. The location of these 40 ODCs was considered as undisputable (Figure 23). The study simulated the optimal spots for new ODCs and used the municipalities^v as geographical entity. A base scenario (80-110 ODCs: 31 different analyses) searched for the optimal spot based on the lowest travel time and highest number of inhabitants as only determining parameters (except that the existing and planned ODCs were considered as an accomplished fact). In addition, simulations were made with restrictions for travel times (15-20-25 minutes), minimum number of GPs per ODC (≥ 35 GPs per ODC) and a scenario where the location of the existing or planned ODCs was still considered as a fixed fact but allowing for the potential optimisation of their catchment area. The results indicated that the restriction of maximum 15 minutes travel time is not desirable since it would result in too many small ODCs (too small scale with a low number of GPs per ODC and a low number of inhabitants in the catchment area).

As an illustration we show the results of one base scenario with 80 and one scenario with 90 ODCs (see Table 10).

Figure 23 – Optimal location of organised duty centres, results of one scenario



Note: Scenario plotting 80 ODC locations (municipalities), where locations of existing/planned ODCs in 2012 were fixed, but catchment areas were not.

Source: Reproduction by RIZIV – INAMI based on Brijs (2012), geographic data by Federal Public Service Economics/DG Statistics Belgium

^u The study of Brijs (2012)¹⁴³ mentions 37 ODCs. In reality, this corresponds to the number of geographical entities where one or more ODCs were located or planned at the time, not to the actual number of ODCs. The 3 ODCs located in Ghent were counted as 1 since they occupied the same municipality, as was the case for the 2 ODCs in the centre of Brussels.

^v For the large cities (Antwerp; Ghent; Brussels; Charleroi; Namur; Liège) the pre-fusion community borders were taken as unit of analysis resulting in 670 geographical entities.



Table 10 – Simulation results for optimal organised duty centre (ODC) spots

	80 ODCs	90 ODCs
Mean travel time in minutes (sd)	7.24 (3.36)	6.63 (3.36)
Mean travel times in kilometres (sd)	15.63 (6.39)	14.47 (6.19)
Number of ODCs with <50 000 inhabitants	7	12
Number of ODCs with 50 000-99 999 inhabitants	24	35
Number of ODCs with 100 000-149 999 inhabitants	28	26
Number of ODCs with 150 000-199 999 inhabitants	13	9
Number of ODCs with >200 000 inhabitants	8	8
Number of ODCs with <35 GPs	0	1

sd=standard deviation

Source: Instituut voor Mobiliteit (IMOB) | UHasselt¹⁴³

Based on the different simulations and the decision on the total number of ODCs for the Belgian territory (a decision heavily depending on the budget that policymakers decide to invest), between 43 and 73 new locations were identified. About 35 locations came up in all scenarios. In addition, another 10 locations also showed good results. Since the publication of this study early 2012, 30 new ODCs have been set up (see Figure 24). From these new ODCs 17 are located in one of the 45 municipalities that came up as a solution in all or most of the scenarios as calculated by the study of Brijs (2012).¹⁴³ Given the multitude of scenarios and solutions, the study was primarily used as an informative tool. However, decision makers never used it to develop a clear policy about the desired location and minimal catchment area of new ODCs. As a result, the location of new ODCs largely depends on local preferences and opportunities, and propositions made by GP circles are rarely contested by decision makers.

Geographically well dispersed but blank areas remain

The interviewed stakeholders indicated that the ODCs are geographically relatively well dispersed (Figure 24) but do not yet cover the entire

population which hinders in some regions the harmonisation of acute care between primary care and EDs.

From the map it is clear that differences exist between the regions. Especially in Flanders there are more areas which are not yet covered by an ODC (coverage 2014 – surface: 47%; population: 53%). In Wallonia (coverage 2014 – surface: 83%; population: 76%) and Brussels (coverage 2014 – surface: and population: 100%) coverage is much larger. Some stakeholders, however, attributed the different geographical spread of ODCs to the different vision on (and related scale of) ODCs. In Wallonia, ODCs are often located within a building of the public municipal welfare centre (OCMW – CPAS) or local government (municipality or province) and generally demand smaller investment costs. In addition, Wallonia has more rural areas which require more but smaller ODCs. In Flanders on the other hand, the implementation of ODCs is more costly since they are seen as large centres. They generally have more GPs per hour offering consultations and home visits, receptionists are more often employed the entire 61h the ODC is open to the public instead of just during daytime hours and there are more ODCs in Flanders that use two instead of one car with a driver. These



choices may in part reflect the fact that Flanders has more densely populated areas. Table 11 shows the distribution of the catchment area, the number of inhabitants and the number of GPs participating in an ODC per

province. In Brussels, language issues, the specific metropolitan context (socioeconomic problems, higher proportion of inhabitants without a regular GP, etc.), the high concentration of EDs complicate the situation.

Table 11 – Number of inhabitants, catchment area and number of GPs participating in ODCs, per province

Region	Catchment area (km ²)						Number of inhabitants						Participating GPs				
	N	Min	Q1	Q2	Q3	Max	Min	Q1	Q2	Q3	Max	Min	Q1	Q2	Q3	Max	
Brussels	4	40	40	40	40	40	290 870	290 870	290 870	290 870	290 870	20	24	35	48	55	
Wallonie																	
Brabant Wallon	1	129	129	129	129	129	52 335	52 335	52 335	52 335	52 335	40	40	40	40	40	
Hainaut	10	53	211	236	677	1 170	58 905	69 112	99 987	131 172	446 932	44	55	81	104	365	
Liège	18	7	54	105	227	339	15 834	27 321	38 685	67 142	171 014	13	26	31	57	166	
Luxembourg	6	352	498	812	1 066	1 177	16 727	43 079	47 233	60 959	77 219	16	32	42	48	78	
Namur	6	200	245	398	679	923	34 521	44 109	64 156	86 876	114 248	29	39	60	85	122	
Vlaanderen																	
Antwerpen	11	14	42	187	280	604	22 084	105 294	121 824	138 484	183 365	72	80	95	114	126	
Limburg	6	146	165	184	301	350	57 564	84 177	88 860	98 033	146 816	47	54	67	86	142	
Oost-Vlaanderen	8	49	49	142	146	243	71 216	71 216	87 292	88 181	118 253	58	58	87	98	105	
Vlaams-Brabant	3	180	233	286	308	331	82 801	104 972	127 142	162 988	198 834	61	72	82	140	197	
West-Vlaanderen	4	68	171	272	342	354	43 002	58 867	100 635	137 419	138 333	26	72	109	131	133	

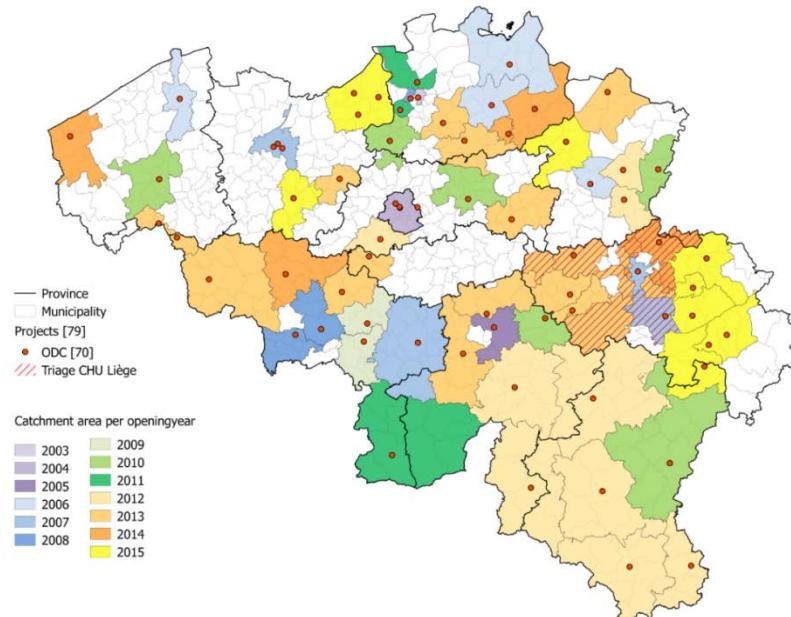
Source: RIZIV – INAMI

Note 1: Including 8 projects without an ODC that use the triage service by CHU Liège

Note 2: For those projects having multiple ODCs/ODC satellites but no separate data per ODC, the total catchment area, inhabitants and GPs of the project were divided equally among the number of ODCs.



Figure 24 – Catchment area and location of ODC projects per opening year



Source: RIZIV – INAMI, geographic data by Federal Public Service Economics//DG Statistics Belgium

In general, stakeholders roughly estimated that in a maximal scenario about 100 ODCs are needed to cover the Belgian territory (roughly 1 per 100 000 inhabitants and less in more densely populated areas). The plan on GP out-of-hours services advanced by the previous Minister of Public Health is in line with this logic since 15 additional ODCs per year (during three years) were announced.¹⁴⁴ The National agreement reached by the 'Medico-Mut' for the year 2015 followed the plan of the former minister to financially support the implementation of 15 additional ODCs in 2015. This does not imply that 15 ODCs have actually been implemented since. Only two projects have been approved, accounting for 11 new ODCs/ODC satellites. In addition, extra requirements concerning the coordination between ED- and ODC-activities were added.¹³³

"On a besoin d'argent et donc, on demande alors que cet argent reste réparti soixante-quarante. Pour qu'on puisse nous l'utiliser à des endroits utiles que la Flandre n'a pas. Heu, les postes de garde francophones sont minimalistes. C'est-à-dire que très souvent, ils ont reçu un local de la commune ou du CPAS et ils ont organisé ça, ils ont fait quelque chose de minimalist, efficace, mais minimalist au niveau du bâtiment lui-même... Les Néerlandophones sont plus demandeurs de faire des choses... heu... plus grandioses. Et donc vous avez des projets qui coûtent beaucoup plus cher en Flandre. Et donc aujourd'hui, la francophonie couvre plus ou moins septante pourcents déjà de son territoire avec la réorganisation des postes de garde, la Flandre que quarante pourcents."

"Het is de bedoeling om gans België in feite vol wachtposten... Dus het gebied volledig te coveren door wachtposten. Dan kunnen we zeggen dat de eerste lijn klaar is voor de opvang van niet-geplande zorg buiten de kantooruren. Zoals ik daarjuist zei, binnen de kantooruren, daar moeten we nog een beetje aan werken. Dat is nog niet helemaal op punt."

The current Minister of Public Health announced to revise the role of ODCs in several policy documents.¹⁴⁵ The financial support to the rollout of new ODCs became more restricted. For 2016, an original budgeted amount of € 5.25 million was abandoned while an amount of € 4.95 million was temporarily put on hold. Indeed, according to a recent agreement of the 'Medico-Mut' new ODCs will have to comply with four criteria:

- *"Collaboration agreements between EDs and ODCs concerning the organisation of referrals, communication and service delivery. The requirements of these agreements will be further detailed by 31 March 2016 at latest by a special task force on acute unscheduled care (including representatives from ODCs, GP circles, hospitals, emergency physicians, public authorities and the 'Medico-Mut'). The agreements have to take into account differences in geographical context. ODCs will have to comply with these agreements by 31 December 2017;"*
- *"Opening hours: at least 61 hours (entire weekend from Friday evening until Monday morning);"*



- A minimal threshold for geographical and population coverage is met;
- Costs are in line with the new rules concerning standardization that will be specified by 31 March 2016.”¹⁴⁵

5.2.3.2 Location of ODCs mostly independent from EDs

A first observation is that, anno 2015, there are more EDs (n=139) than ODCs (n=70) (see Figure 25). This is particularly so in large cities like Antwerp (4 ODCs; 8 EDs), Ghent (3 ODCs; 5 EDs), Brussels Capital (4 ODCs; 18 EDs). Secondly, since ODCs are developed bottom-up without an initial clear guidance about their location (at the hospital site, next or close to a hospital site, independently located from hospital sites) or catchment area, there is considerable variation. Although 15 ODCs are located at (Arlon, Boussu, CMGU Brussels, Merksem, Mons, Mouscron, Tournai, Tubize) or next to a hospital site (<150 meters; Ath, Bastogne, Dinant, Herentals, Huy, Libramont, Malmedy), most ODCs are not and none are truly integrated in an ED.

Table 12 shows the distribution of distances between ODCs and hospitals. The differences can mainly be explained by the different visions of the initiators (GPs and GP circles) and their relationships with the local hospital and EDs. Belgian study material about this topic is, however, limited. The study of the ODC ‘Antwerpen-Noord’ which is located next to the hospital illustrated that this did not immediately result in a diversion of patients away from the ED to the ODC (except perhaps for younger children).¹⁴² A second study¹⁴³ showed that the optimal location of new ODCs would not drastically change if policymakers would decide to link ODCs to EDs (i.e. no large shifts in the optimal geographical areas for an ODC will take place since most of these optimal areas (municipalities) already have a hospital with ED within their borders). In any case, a proper evaluation of the most appropriate link between EDs and ODCs (integrated in ED of a hospital, at hospital site but not in the ED, close to hospital site, independent from hospital site) did not yet take place (in Belgium) but is urgently required.

Table 12 – Distance between ODCs and EDs

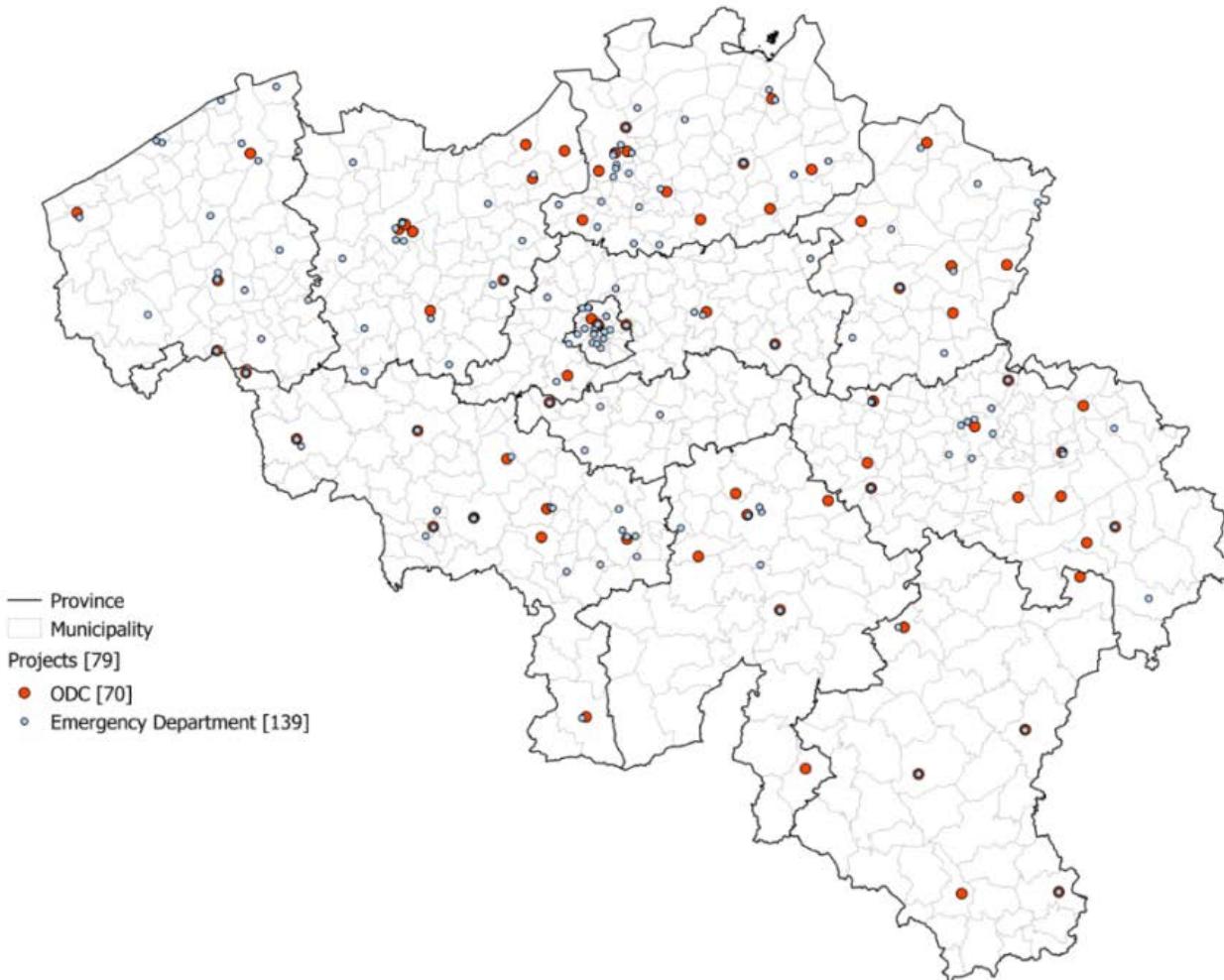
	Min	P10	P25	P50	P75	P90	Max
Distance in km	0.0	0.1	0.2	1.1	5.9	9.7	25.8

Source: RIZIV-INAMI

Note: Straight line distance



Figure 25 – Location of ODCs and EDs in Belgium, 2015



Source: RIZIV – INAMI, geographic data by Federal Public Service Economics//DG Statistics Belgium

Many stakeholders (e.g. emergency physicians, hospital administrators) did not understand the decision to set up a structure (with large fixed costs) next to (and often independent from) the existing hospital infrastructure. After all, hospitals remain a central attraction pole for patients. Moreover, they complained that EDs are currently already overcrowded and could use administrative and logistic investments (e.g. to accommodate people with a low priority after triage). Although they know that policymakers opted to install ODCs independently from the hospital since this measure mainly aimed to improve working conditions for GPs and because an integration was no option for many GPs (too hospital-centric), they find this decision irrational and a waste of resources.

"Y compris avec un financement de type administratif. Alors, bien sûr, la structure en tant que telle il faut la financer, mais si vous allez dans un hôpital, dans n'importe quel hôpital, dans n'importe quel service d'urgences d'un hôpital, ..., vous avez des capacités d'accueil administratives, des capacités administratives actuelles pardon, qui sont encore bien sous-occupées ou sous-employées. Donc on est en train aujourd'hui de financer au sein des hôpitaux, toute une administration, un accueil, la logistique à plein on pouvait les utiliser plus et en parallèle on va financer des systèmes de postes de garde de médecine générale y compris dans leur composante administrative qui sont aussi nettement sous-utilisés donc on voit que c'est vraiment une idiotie à un certain moment il faut s'arranger pour centraliser la prise en charge des urgences, des vraies urgences, des quasi urgences, des non urgences, avec tous les patients qui se présentent aux urgences parce qu'ils estiment que leur état de santé nécessite des soins urgents, donc il faut centraliser ça, mais ça ne fait pas plaisir aux médecins généralistes évidemment."

Yet, in practice some initiatives already were set up to improve the coordination between GP activities and emergency physician activities. An example is the employment of GPs (with additional training to obtain a certificate in acute medicine) in some EDs where they are (in some hospitals) responsible for the fast-track ED services targeting patients with

^w Costs per contact based on contacts in 2014 and ODC annual budgets proportional to the number of months' activity in 2014. Costs per inhabitant

low levels of severity. They are seen quickly and referred back home or to their treating physician as soon as possible.

"Aujourd'hui les urgentistes les mieux organisés disent ça c'est le meilleur moyen, ça n'engorge pas le service, c'est qu'il soit vu par un médecin qui le fait rentrer à domicile. Qui est ce médecin ? Soit un médecin urgentiste qui est dédié à ça, que l'on appelle le "fast-track", en circuit rapide. Tous les services d'urgences fonctionnent comme cela. Ça peut aussi être un généraliste intégré au service d'urgence ou dans un poste de garde juste devant. Mais c'est un peu idiot de payer une structure juste devant alors qu'il pourrait être dans le service."

5.2.4 Paying for ODCs: are the budgets covering investments and operational costs and the fee-for-service payments for GPs well-balanced?

As was detailed in section 5.1.2, the ODCs receive budgets from RIZIV – INAMI that cover investment costs, staffing costs, costs for transport during home visits, etc. The physicians are paid on a fee-for-service (FFS) basis.

Out-of-hours services in ODCs: worth the large investments?

As described above the yearly budget for ODCs increased from € 332 858 in 2003 to € 16 984 292 in September 2015. There is a large heterogeneity between ODCs' expenses, even within similar areas (see section 5.1.2).

Some stakeholders questioned the relevance of these high investments especially since the intended benefits of ODCs were never proven (or properly evaluated). Moreover, the evaluations that exist seem to suggest that the accessibility (i.e. limited opening hours, see section 5.2.2) and activity of ODCs (i.e. low caseloads during night time, see section 5.2.2) may not be at an appropriate level in a consistent way to justify the investments.¹²³ The average cost per contact varies between € 6 and € 65 (without medical fees) which comes down to a range of € 0.13 to € 10.34 per inhabitant^w.

based on population at 01/01/2014 and ODC annual budgets. Excluding projects without an ODC which only use triage system provided by CHU Liège.



Box 9 – Cost per contact and per inhabitant

As a measure and policy instrument, the relevance of the cost per contact and per inhabitant is limited. As described in section 5.1.2 the costs per project reflect differences in organisation that remain invisible in a single value measure. These organisational differences may not necessarily have to do with the number of inhabitants targeted by the ODC. In large but sparsely populated catchment areas for example, it might be necessary to provide additional transport in order for the GPs to be able to respond to calls for a home visit in a reasonable amount of time.

Although these measures may provide a crude indication of differences in costs as a function of (potential) activity, their exact values may be difficult to assess. A difference of € 1 per inhabitant seems significant given the total Belgian population of 11 150 516 in 2014, but at the level of an individual ODC this does not translate into a perfect linear relationship between the number of inhabitants and total costs. Two ODCs that are open during 61h every weekend, one reaching 100 000 inhabitants, the other reaching 150 000 inhabitants, both have the same staffing costs for their receptionists.

ODC budget not related to population needs

Some stakeholders indicated that the budgets allocated to ODCs are insufficiently reflecting the needs on the field. Two different ODCs can receive the same budget while the needs of the population they serve are very different (e.g. a socioeconomically deprived area with a lot of safety issues versus an area with higher-income inhabitants both receiving a budget for a car with driver for home visits).

"Moi, je sais bien qu'il y a poste de garde et poste de garde. Ils avaient ouvert un poste de garde à Borgerhout, ça a été un des premiers dans une banlieue très musulmane d'Anvers et qui a eu beaucoup d'activité d'emblée. Et puis, ils en ont ouvert un autre, je sais plus, à Mortsel enfin dans les environs, pour lequel on a aussi payé le chauffeur, les

docteurs, les locaux tout le bazar et où ils faisaient deux appels sur un jour de week-end."

Rewarding during the day but not at night

Consultations in ODCs during the day (weekend days and weekdays) are financially attractive for GPs. A GP who sees four patients/hour can charge about €140/hour. Nights, on the other hand, are not rewarding since the caseload is often low. In addition, waiting several hours for a patient to call is not a challenging activity. The 'availability fees' tried to compensate for this situation. Moreover, physicians who work in an ODC need some time to recover after a (night)shift before they can see patients in their own GP practices. Also home visits are financially less attractive according to some of the interviewed stakeholders. Although the remuneration per home visit seems reasonable, they are perceived as insufficient, especially in rural areas when physicians have to cover long distances. The financial compensation for ODC activities which is perceived as insufficient by some stakeholders is seen as one of the factors that makes it difficult to find GPs for ODC duties especially for the deep-night periods. It should be noted that the main income of most GPs (certainly when they have some experience) is generated during daytime. Only taking into account the GP home visit and consultation fees (excluding special medical interventions, supplementary availability fees and lumps sum payments in medical houses^x) €1009 million were reimbursed^y in 2012, of which € 46 million or 4.6% were linked to out-of-hours activity. The discussion about the remuneration of ODC activities should be placed in this perspective. In addition, ODC activities should according to the stakeholders be seen as a legal obligation and an act of solidarity.

"Alors dans un poste de garde vous avez trois activités : vous avez le médecin qui travaille en consultation la journée, lui il rapporte beaucoup d'argent. Beaucoup d'argent, 35 € par consultation, fois quatre par heure, voilà c'est ça qu'il rapporte. Vous avez le médecin qui fait des visites qui lui ne rapporte pas beaucoup d'argent. Il rapporte pour 50 € par visite. ... On met tout en pool, nous, on est tous dans le même pool et donc vous avez de la troisième activité c'est le médecin de nuit qui

^x 'Permanentietoeslag'/'supplément de 'wachttoeslag'/'supplément de garde';

^y Results do not include patient co-payments.



lui rapporte encore moins et alors quand vous mettez tout ça dans un pool, quand vous répartissez ça en fonction du nombre d'heures prestées par chacun semestriellement, de façon semestrielle, et simplement appliquer une règle de trois, vous arrivez à des honoraires autour de 50 € de l'heure et donc est-ce que c'est normal qu'un médecin travaille à 50 € de l'heure, la nuit, le dimanche, etc., la nuit du dimanche à lundi non c'est pas normal, voilà.”

Payment rules for ODCs are isolated from payment rules for other acute care services

The payment rules for ODCs do not fit in a larger set of rules for the payment for acute care services. Consequently, discrepancies or illogical differences exist between payment rules for ODCs and EDs. One example is the compensation for transport. ODCs, for instance, receive a budget for a driver while mobile emergency groups (MUG – SMUR) don't.

“Parfois de personnels infirmiers, de chauffeurs pour conduire les gens à domicile alors que par exemple les SMUR n'ont pas de chauffeurs payés. Les hôpitaux ont intégralement à leur charge le frais d'avoir des conducteurs professionnels pour conduire les véhicules d'urgences. Par contre pour faire une visite à domicile, ce qui historiquement les généralistes ont toujours fait avec leur voiture, maintenant il leur faut un chauffeur pour les sécuriser. Alors oui il y a eu des cas d'agressions de médecins généralistes, mais il y a des cas d'agressions d'ambulanciers, des médecins SMUR, des policiers... .”

5.3 Solution elements

5.3.1 Integration of EDs and ODCs

Some stakeholders suggested to stop investments in separate structures. The high fixed costs of setting up an autonomous ODC independently from hospitals could be avoided by using the services of hospitals. Others advocated to improve the collaboration between EDs and ODCs by a more integrated approach. A crucial role is attributed to triage (see Chapter 6) since many of the cases that present during out-of-hours can also be treated during the normal office hours or at another level of care (e.g. ODC instead of ED). Therefore, stakeholders considered that it would probably be more efficient to install a telephone triage system during out-of-hours periods and a performant triage system at the hospital door (for self-referrals) that can

guide patients towards the most appropriate level of care at the correct time (e.g. during daytime). Others suggested to stop with some activities such as home visits during out-of-hours. These services are considered as expensive and unsafe. An alternative solution is to define a sufficiently large territory – catchment area – for home visits, taking into account topological restrictions, number of potential calls, traffic flow, estimated mean travel time and available budget.

“Ik ga het anders zeggen: 96 % van alle roepen die we krijgen in het weekend kunnen we behandelen tussen 7 uur 's morgens en 9 uur 's avonds. Dat wil zeggen: 4 % van de oproepen is eigenlijk tussen 9 uur 's avonds en 8 uur 's morgens. Wij stelden ons de vraag: moeten wij dan eigenlijk een performant systeem van wachtpost, waar dat er dus per wacht personeel en een wachttarts zit, één of twee... Moeten wij dat openhouden? Wij hebben geconcludeerd: neen. Omdat wij dat eigenlijk de moeite niet vinden. Er is dus wel nog een huisartsenwachtdienst aanwezig, in tegenstelling tot in Wallonië. Daar zeggen ze: “We schaffen heel het wachtsysteem af.”

“Ils ont créé des postes de garde partout. Et on a des rapports de l'INAMI là-dessus, l'efficacité est évidente, l'efficience est questionable, ça coûte des fortunes pour un service rendu limité puisque le nombre de patients en regard de la présence d'un ou deux généralistes dans les postes de garde, d'un chauffeur pour aller faire les analyses et tout ça, par rapport aux recettes, enfin, c'est totalement déséquilibré.”

Below we describe the (dis)advantages and preconditions of an increased integration of ODCs and EDs as mentioned by the stakeholders.

Advantages

When ODCs and EDs are integrated there is one clear entrance gate for patients. After triage, patients receive care at the most appropriate level. Patients do not have to make the choice, it is the organisation that guides the patient to the most appropriate level of care. Examples exist abroad in countries like the Netherlands, France (i.e. Lyon) and the United Kingdom (see Chapter 9). Hospitals remain an important attraction pole for patients, therefore it may be opportune to organise the ODCs within EDs or at least at the location of the hospital site. For others, the integration of ODCs in EDs



is one step too far. Many GPs find it important that the ODC is located at close distance (e.g. 100m) from the hospital but that it can be regarded as an independent GP practice. When ODCs are located at the hospital site or at least nearby it is easy to refer patients to the hospital for additional tests without causing extra burden to the patient. It is also safer for patients since they can rapidly be transferred to specialised care when required. In rural areas this will not always be possible (because of the absence of a local hospital). Yet, some stakeholders indicated that each hospital ED should have a link (on or nearby the hospital site) with an ODC to make it possible to triage patients away from the ED in case they do not require care from the ED.

"L'hôpital continue à avoir une attractivité qui est, je dirais, importante et à laquelle on ne peut pratiquement pas s'opposer, donc partant de ce principe, il faut peut-être quelque part arrêter de vouloir continuer absolument l'hôpital, accepter que l'hôpital est l'endroit où les patients vont se rendre, y compris d'ailleurs à la demande d'une série de médecins généralistes auxquels on s'adresse et qui disent "allez aux urgences des hôpitaux", essayer de structurer comme c'est peut-être déjà le cas à Saint-Luc ou dans certaines grosses institutions, de structurer l'accueil de manière à pouvoir travailler ensemble dans un endroit qui est identique voire très proche et donc quelque part il y a un tri des patients sur place qui doivent être orientés soit le médecin généraliste, soit vers le médecin hospitalier, voire on renvoie carrément le patient chez lui en lui disant "revenez demain à la consultation". ..."

"Er dient ook werk gemaakt van een meerjarenplan om aan elke spoedgevallendienst minstens 1 huisartsenwachtpost te koppelen. Uiteraard moeten huisartsenwachtposten ook nog buiten spoedgevallendiensten kunnen worden ingepland in gebieden waar geen nabije spoedgevallendiensten zijn. Voorbeelden uit Nederland waarbij de patiënt zich anmeldt via 1 gezamenlijke ingang met 1 gezamenlijke triage, waarna de patiënt plaatsneemt in de juiste wachtaal en slechts de tijd van 1 van beide artsen gebruikt, zijn de piste naar maximale symbiose. Er werd opgemerkt dat het niet zeker is dat er voldoende huisartsen bereid zullen zijn om de vele noodzakelijke huisartsenposten (aansluitend aan spoeddiensten) operationeel te krijgen."

The concentration of activities from ODCs and EDs in one location also provides some economies of scale: decreasing number of physicians on call, sharing IT and infrastructure, more supporting staff available which is not only safer (e.g. security staff) but also more comfortable (e.g. a nurse or care assistant can be called in to help with an agitated child that needs a puncture). This implies the same service is shared and not merely duplicated as is the case in some ODCs located at or next to a hospital site, but not physically integrated into the ED.

"Wat zou je het liefste doen: in de huisartsenwachtposten gaan zitten, zelf dat van thuis doen of in een ziekenhuis komen zitten? En allemaal, unaniem, zagen ze dat wel zitten om bij ons in het ziekenhuis te komen zitten, omdat ze zich ook veiliger voelen, niet alleen veiliger qua agressie, maar ook veiliger van: "We hebben hier ineens de mogelijkheid om even over de toog te vragen: Zeg, kom eens mee kijken." Het biotoop is gewoonweg compleet anders. En we moeten willen afstappen van die echelonnering. Echelonnering is dubbele kost en niet-gegarandeerde veiligheid."

Disadvantages

Some stakeholders were afraid that an integration of ODCs in EDs will result in more technical activities. After all, patients treated at the ED receive considerable more technical examinations compared to patients treated at the ODC.¹⁴¹ The GP is trained to perform a clinical assessment and is more reluctant than medical specialists to prescribe additional tests. Integration of ODCs in a high-tech environment might also decrease the threshold for them to prescribe more diagnostic tests.

"In Wallonië gebeurt het vaak dat spoedartsen huisartsen zijn. Als je de huisartsenwachtpost in het ziekenhuis plaatst, dan krijg je ziekenhuisgeneeskunde: beeldvorming, labo...."

Several GPs feared that their independence and identity of 'general practitioner' will be affected and that their role will be narrowed down to 'gatekeeper of the emergency care services'. It is important to make good agreements about the triage of patients such that every care level knows which patients to expect and consequently follows these guidelines in referring patients to the most appropriate and agreed upon level of care. In addition, integration of ODCs in an ED will require GPs to work within the



hospital setting which might be a barrier for many GPs because it might worsen their work-life balance. After all, within the current rotation systems, they can be on-call from their private practices (often located in or close to their home place).

Another concern mentioned by the interviewed stakeholders is that an integration will force GPs to contribute to the payment of overhead costs of the hospitals which are very high and are exactly one of the push factors for medical specialists to start private practices at the expense of their practice in the hospitals.

“... et on revient à mon poste de garde, votre poste de garde de médecine générale, il faut le financer comme une polyclinique et pas comme un service hospitalier. Énorme différence, si c'est une polyclinique, vous n'êtes pas avec la cascade des frais répartis qu'on remet sur le calcul interne du prix. C'est une entité, c'est un cocon, c'est séparé. Ça a ses propres frais, qui faut couvrir puisque c'est un service au public, mais ça sert à rien de faire payer des frais généraux de l'hôpital : une part du jardinier, une part du médecin général directeur pour un truc qui doit vraiment être considéré comme une polyclinique parce qu'une partie de l'activité, c'est du dispensaire.”

Preconditions

Several preconditions are required to make an integration of EDCs and ODCs successful:

- A closer collaboration (or integration) between EDs and ODCs will also require another payment system. Nowadays, with the fee-for-service system (both at EDs and ODCs) there is a competition for patients. ED physicians will not triage patients away from the ED since this will decrease their income. Therefore, a better coordination of care between EDs and ODCs will only be possible when the payment mechanisms are reformed.

“Ik denk dat dat qua workload en qua rendement en investeringskost enzovoort wel voordeelen heeft, maar dan moet de mentaliteit... En daar hangt dan de financiering van de ziekenhuizen af. Zolang dat de financiering van de ziekenhuizen gebeurt per prestatie ook voor die spoeddiensten, dan zijn spoeddiensten niet geneigd om mensen langs de wachtpost te laten gaan, want dan verliezen zij inkomen natuurlijk.

Dus daar is het kalf echt verdrunken, qua financiering van de spoeddiensten.”

- It requires a professional triage system (training GPs in triage or employing triage nurses). Triage does not require a diagnostic work-up, it is an estimation of the emergency severity. A study by Philips et al. (2015)¹⁴⁶ illustrated that the current administrative support of ODCs lacks the necessary expertise to perform this triage correctly. In 10% of the cases secretaries underestimate the urgency level of patients which is a safety issue, in 13% of the cases they overestimate the urgency level of patients which is an efficiency issue.¹⁴⁶
- Integrating ODCs in EDs does not imply that GPs can simply replace emergency physicians. They need to work complementarily. Some stakeholders believe that this is the underlying motive of hospital administrators to support the integration of ODCs in EDs. They see it as a means to solve the problem of unfilled vacancies for emergency physicians. Yet, this is a step back in time and reverses the recent evolutions in emergency medicine.^{4,6} In order to work complementarily a sufficient caseload (and further concentration of services, see Chapter 3) will be required. If the caseload of patients (that can be treated by a GP) is too low then it is not efficient to integrate a GP in ED activities.

“En dan zitten we weer in hetzelfde systeem dat ik u verteld heb, hé, van de 100... Wat probeert men dan te doen? Dan probeert men de normen zo laag mogelijk te houden, in de hoop dat men dan zegt van: “Kijk, als we nu eens een keer huisartsenwachtposten in ons ziekenhuis zetten, in de hoop dat ze zo veel mogelijk zelf oplossen. En voor hetgeen dat er nog overschiet, kunnen ze specialist A, B, C of D van ons eigen ziekenhuis erbij roepen.” Hop, en het is afgedekt. Dat is de drive waarom dat sommigen dat graag willen hebben. En dan natuurlijk ook, waarschijnlijk ook in de veronderstelling dat ze meer scoren bij sommige huisartsengeledingen. I don't know. Maar dat is het fundament van het idee dat er achter zit. Dat is natuurlijk geen goede geneeskunde, hé. Dan gaan we terug naar 50 jaar geleden waarbij dat er iemand kwam inslapen in een ziekenhuis. De urgentiegeneeskunde is eigenlijk juist opgericht om daar een antwoord op te bieden, om die moonlighters die in een ziekenhuis kwamen slapen en alleen maar goedendag zeiden tegen de mensen en voor de rest de mensen aan



hun lot overlieten. Dus waarom zouden wij teruggaan naar die periode?"

- To overcome some of the barriers that keep hospitals and GPs from integrating ODCs in EDs some stakeholders recommended to start with pilot projects that illustrate the benefits of such a collaboration.
- It requires investments in buildings and infrastructure which are deemed unrealistic on the short term by some since the budgetary context does not allow such investments at the moment. Another barrier which hinders the integration of ODCs in EDs is the lengthy application process to obtain, for instance, building permits.
- In rural areas with a low density of hospitals well-equipped and advanced ODCs are needed (especially in Wallonia). In these areas it is not realistic to only set up an ODC at or next to a hospital site.

5.3.2 *Payment and organisation of acute care requires one general approach*

The organisation and payment system for acute care services require a general approach with harmonized policy measures. Many stakeholders advocated the integration of ODCs and EDs, or at least a closer link (both operational and geographical). Many other suggestions were given. The planning of EDs, for instance, could follow the same logic as the planning of ODCs by using the same geographical level for planning (i.e. the GP circles).

"De regio's voor spoeddiensten moeten we enten op huisartsenkringen. Als we per provincie 2 à 3 spoeddiensten hebben, dan is dat ruim voldoende. In de steden (Antwerpen, Gent, Brussel, Leuven...) kan het aantal spoeddiensten verminderen. Op het platteland is het overaanbod minder aanwezig."

"En de financiering als geheel, hoe zou die eruit moeten zien? Budget zeker niet verhogen, we financieren veel nodeloze zorg die we vanuit een collectief systeem zouden moeten afremmen. De truc bestaat erin om organisationeel bij te sturen zodat het aantal patiënten op spoed gereduceerd wordt. Gevolg is minder artsen en verpleging. De hervorming moet budgetneutraal zijn .. Er is wel massaal geld gepompt in huisartsenwachtpost ... Wel: verplichten om huisartsenwachtpost en

ziekenhuis samenwerken en financiering daarvan laten afhangen. Zeggen is gemakkelijk, maar in de praktijk doen is dit niet evident."

Other examples include a harmonization (or even integration) of the payment systems for ODCs and EDs:

- Also the payment can be further harmonized. Nowadays two separate systems exist: one for EDs and one for ODCs. A global budget to organise acute care during out-of-hours might be opportune.
- According to several interviewed stakeholders, the most logical solution was the integration of ODCs in EDs (many advantages: sharing fixed costs, safer, clear and visible for patients). This will also require an integrated payment system. GPs can take up a role in the EDs as long as they can keep their independent status. If an integration of ODCs in EDs would be desired, a necessary precondition for success according to some stakeholders is that GPs can keep charging fees for their own activities, even when they take place within the hospital context.

"Herorganisatie en financiering van spoeddiensten moet gekoppeld worden aan financiering van huisartsenwachtposten. Liefst naast of geïntegreerd in het ziekenhuis. Dit heeft tal van voordelen: veiligheid huisartsen (kunnen beroep doen op bewakingsfaciliteiten ziekenhuis), gemak patiënt (moet niet eerst naar huisartsenpost om dan te worden doorverwezen naar het ziekenhuis), huisartsenpost vergt niet dezelfde dure infrastructuur als spoedgevallen."

"Chaque fois qu'un patient va entrer le généraliste même patient qui ne nécessite pas d'être pris en charge par lui pour différente raison il va facturer un honoraire donc je veux dire il faut rester un peu cohérent et correct, il faut... ça c'est aussi une vision que nous avons développée et à laquelle on tient beaucoup, c'est que l'hôpital est pour nous le centre de l'activité autour du patient et donc c'est un peu pour ça aussi qu'on se dit il faut tout rassembler au sein... mais ça veut pas dire non plus que l'hôpital doit capter toute l'activité je veux dire l'hôpital est quelque part le garant, la plaque tournante d'un continuum de soins qui, aussi bien en amont qu'en aval doit permettre au patient d'être traité de la manière la plus efficace à l'endroit le plus efficace pour l'évolution de sa santé, il faut..."



- According to some, the availability fees that are used to compensate GPs can better be pooled and used to further develop ODCs (better staffed and equipped) to concentrate the on-call GPs, increase their caseload during on-call duties and improve the coordination with the activities of EDs.

"En dus weliswaar open in de weekends enzovoort, maar wat men dan in het Franstalige landsgedeelte noemt 'les nuits profondes'... Er zijn een aantal wachtposten die ook niet kunnen bemand worden daarmee. Dus vandaar is dan de vraag gekomen: "Oké, probeer een stukje geïntegreerde zorg tot stand te brengen tussen huisartsen en ziekenhuis. Dan gaan we toch eens moeten kijken hoe inderdaad de financiële incentives daar voor een stukje gaan kunnen georiënteerd worden." Vandaar dat we ook zeggen: "Oké, een stukje van de beschikbaarheidshonoraria die we nu aan huisartsen geven, die zouden we best terug integreren in de wachtposten, zodanig dat de capaciteit een beetje kan opgedreven worden."

"Alors, pour faire clair, si... pour parler des postes de garde, si vous prenez la structure de supprimer les horaires de disponibilité, maintenant sans rien faire d'autre c'est une très mauvaise mesure. Si vous dites " Je prends du recul, je vais supprimer les honoraires de disponibilité, mais en contrepartie je vais revoir le financement pour qu'il soit correct ». Alors là c'est une très bonne mesure."

5.3.3 *The role of primary care services during office hours in acute care*

GPs are, according to some stakeholders, insufficiently taking up their role (or do not have the opportunity to sufficiently take up their role) in acute care during normal office hours. This will require the shift from single-handed and small group GP practices towards larger multidisciplinary care practices.^{147, 148} Also other creative solutions are developing in the field. In some areas GP services are organised in one location, where the GP availability is provided by several GPs from the region (e.g. 1 day per week). In these locations patients are also treated for acute care problems. Keeping ODCs open during daytime is also mentioned as an option by some but this will decrease continuity of care (e.g. ODCs staffed by several GPs that have their own practices) if it is not set up as a multidisciplinary group practice. In some particular cases it can be a solution (e.g. in Brussels where many migrants without a GP are seeking care in EDs or with already crowded GP practices while they can be treated by a GP specifically targeting this patient group).

"Zoals ik daarjuist zei, binnen de kantooruren, daar moeten we nog een beetje aan werken. Dat is nog niet helemaal op punt. 's Nachts. Ja. Overdag kunnen huisartsen groepspraktijken vormen. Dat zou men nog meer moeten stimuleren, denk ik. Ook multidisciplinaire groepspraktijken."



Key points

- Context of primary care in Belgium:
 - The demography of the GP profession is changing. The GP profession is ageing (cohort from 55-64 years represent 40% of GP activity) and the younger age cohorts are characterised by the phenomenon of feminization (66% of active GPs younger than 35 years are female). Despite these demographic changes the GP profession remains predominantly organised in solo or small-group practices.
 - The primary care landscape is further characterised by an unequal spread of GPs across the Belgian territory with some geographical zones with a low density of GPs and reported shortages.
 - Although 62% of patients in Belgium have a GMD – DMG, there is no gatekeeping system. The current healthcare system allows that citizens with an acute care or unscheduled problem during out-of-hours periods choose to contact the GP on call for a visit or consultation, go directly to the emergency department or call '112/100' for emergency medical assistance.
 - Organisation of GP availability during out-of-hours periods evolved from GPs being permanently on call over organised rotation systems to organised duty centres:
 - All ODCs were initiated bottom-up without a clear national guidance.
 - Nowadays, there are 70 organised duty centres (32 in Flanders; 34 in Wallonia; 4 in Brussels) covering about 68% of total Belgian population.
 - The main driver of policymakers to financially support ODCs was the improvement of working conditions of GPs (e.g. safety, less on call duties).
 - The implementation of 38 ODCs between 2009 and 2014 did not substantially change the number of hours GPs are on call and geographical differences remained (the median number of hours on call per GP was 587h/GP in rural areas, 324h/GP in semi-rural areas and 198h/GP in urban areas). Yet, the proportion of GPs on

call for more than 50 nights per year has dropped in rural areas, while the proportion of GPs on call between 10 and 29 nights per year has increased.

- Organisation, functioning and chosen location of organised duty centres highly heterogeneous:
 - There is no obvious logic in how they are distributed across the Belgian territory. Although study work was undertaken to define the most optimal locations for new ODCs, only 17 of the 35 new ODCs (since publication of the study) are located in one of the 45 municipalities that came up as a solution in all or most of the scenarios. In fact, the location of new ODCs still largely depends on local preferences and opportunities rather than on empirical data.
 - Geographical differences in coverage exist. In Flanders there are more areas which are not yet covered by an ODC (coverage 2014 - surface: 47%; population: 53%) compared to Wallonia (coverage 2014 - surface: 83%; population: 76%) and Brussels (coverage 2014 - surface: and population: 100%).
 - Most ODCs are not located at hospital sites (50% is more than 1 km removed from the nearest hospital site). The differences can mainly be explained by the different visions of the initiators (GPs and GP circles) and their relationships with the local hospital and EDs.
 - There is high variability in how they operate (e.g. variable opening hours; available staff). Limited opening hours are attributed to GP shortages and the reluctance of GPs to work during out-of-hours periods (work-life balance, safety issues, and caseloads too small to be profitable).
- Interaction between GP activities and ED activities during out-of-hours periods?
 - Out-of-hours activities represent only a small portion of GP activity (i.e. 2.6%) while this proportion is more substantial in EDs (i.e. 42%).
 - Besides supporting the working conditions of GPs, it is expected that ODCs could attract patients with primary care complaints that would otherwise go to an ED.

- The introduction of ODCs did, however, not result in a substitution of ED attendances (ED attendances increased on average 4.6% per year for the period 2008-2013).
- An interplay of different factors underlie the lack of substitution of ED attendances by ODC consultations:
 - The organised duty centres are criticised as being a policy measure that is taken too isolated from the general policy on acute care.
 - Patients keep visiting EDs when they perceive their problem as severe and urgent enough to attend the ED. This decision is based on previous experiences, the easy access (e.g. there are still more EDs than ODCs) and because they like a technical environment.
 - Also the ODC structures are insufficiently known among the general public and opening hours are much more restricted (e.g. are not required to open during the entire weekend) compared to EDs.
 - GP practices are not well equipped to deal with urgent cases and GPs are insufficiently trained to deal with real emergency cases. It has been shown that patients choose to attend the ED if they think they will need medical imaging or specialised treatment.
 - ODCs attract another patient population than EDs (e.g. patients go to an ODC during the weekend instead of going to their GP during weekdays to avoid taking off from work).
 - The increased co-payment, a policy measure taken in the past to decrease ED visits, seemed to miss effect (e.g. insufficiently known by patients, not uniformly implemented).
- Agreement about the need for increased collaboration between EDs and ODCs but not about the extent: from local agreements to full integration (on site with triage).
- Some advocated the integration of ODCs and EDs to lower fixed cost (e.g. infrastructure, equipment, security staff) and increase patient comfort (e.g. no transport needed when referred from primary to secondary care). This will require a professional triage system (medically trained triage staff), measures to

safeguard the independence of GPs, a different payment system (e.g. the fee-for-service system results in a competition for patients not stimulating emergency physicians to triage patients away from the ED), a reform of the entire acute care landscape (e.g. less EDs to ensure sufficient caseloads per ED, adaptation to geographical needs: low density areas should keep free-standing ODCs when there is no ED at close distance).

- Many GPs find it important that the ODC is located at close distance (e.g. 100m) from the hospital but also that it can be regarded as an independent GP practice. They support agreements between ODC and ED and many support professional triage systems (e.g. telephone triage guiding patients towards the most appropriate level of care during out-of-hours periods; opportunity to triage self-referred patients away from the ED towards the nearby ODC).



6 TELEPHONE TRIAGE FOR PATIENTS WITH NON-EMERGENCY MEDICAL CONDITIONS

Many countries introduced, besides emergency call centres, also telephone triage systems targeting non-emergency patients to enable the direction of these people to the right place at the right time and to ensure they get the right advice. In some countries such a telephone triage system acts as a gatekeeping mechanism. On one hand, these telephone triage systems aim to guide patients with non-emergency conditions to alternative settings than the ED to alleviate the pressure on the ED. On the other hand, they are an additional entrance gate to the healthcare system. As such, it can help to direct patients with otherwise not (timely) recognised complaints and symptoms that may require emergency care services towards the emergency care system. As such, it can help to shorten the period to access the emergency care system for people with time-critical conditions (e.g. stroke) who, otherwise, would not have contacted emergency care providers because they did not perceive their symptoms as a medical emergency. In this chapter we describe the current emergency call system (section 6.1), a critical appraisal (section 6.2) and potential solutions for current problems (section 6.3). We focus on solution elements for telephone triage systems for non-emergency medically acute conditions.

Disclaimer. The critical appraisal and solution elements are based on stakeholder consultation, literature and available Belgian data. Critical appraisal and solution elements without a reference were stated by stakeholders during face-to-face interviews. The cited literature is mainly based on a recently published review by Turner et al. (2005).¹⁴⁹ Additionally, an ad-hoc search for more recent systematic reviews was carried out (see annex to Chapter 6). The solution elements resulting from this review are integrated with the solution elements that emerged from the stakeholder interviews. The topic of telephone triage is also discussed in the international comparison (Chapter 9) and the narrative review (Chapter 10).

6.1 Access to the emergency care system: referrals, self-referrals or contacting the emergency call centre

Patients can access the ED via a self-referral (walk-in patients), a referral by a physician (GP or specialist) or after an emergency call. Besides the 112 emergency call number, a new telephone triage system for primary care calls (i.e. 1733 number) is being rolled out.

Emergency calls: 112 number

Throughout Europe the number '112' can be called free of charge for all emergencies. In Belgium, calls for police services are transferred towards the '101' centre and it is recommended to dial '101' directly when only a police intervention is required (to avoid losing precious time). The 100^z – 112 call centres handle the 'Medical Urgency Service & Fire Brigade' calls. The 'medical calls' in the call centres 100 – 112 are handled by non-clinical staff based on an initial standardized inquiry and a standardized 'process book'.¹⁵⁰ Based on this triage, it is decided which type of transport will be sent out:

- Severe to very severe – an apparent life-threatening situation: 112 ambulance and Mobile Urgency Group (MUG – SMUR);
- Moderate to severe – a potential life-threatening situation: Paramedical Intervention Team (PIT);
- Minor but urgent situation: 112 ambulance.

If the most appropriate type of transport is not available within a reasonable timeframe, deviations are possible (e.g. PIT instead of MUG – SMUR, etc.). Indeed, some geographical regions are better covered than others but for more than 90% of the Belgian territory emergency care transport can arrive within a 15 minutes time window.⁵⁶

After medical stabilization at the scene, the patient is transported to a specialised ED (a triage at the scene will potentially influence the choice of hospital: e.g. in case of a STEMI a hospital with cathlab will be chosen). The lowest care level in case of a 112-call is thus a 112-transport towards a specialised ED.

^z The 100-number refers to the number to activate the fire brigade or medical emergency transport that existed before the 112-number. When people dial this number, they are transferred automatically to the 112-number.



Primary care calls: 1733 number

Patients requiring a general practitioner can call their GP directly. During out-of-hours periods local telephone numbers for GPs on call exist. Besides these GP-numbers and the 112-number, a new number '1733' has been launched for primary care related calls. This number exists since 2008 but is only in use in specific project regions (e.g. Luxemburg). In a first phase, the number 1733 has been implemented as an automatic connection to the GP on call. In a second phase, the 1733-calls will be handled in the 100 – 112 call centres where first a 'medical emergency' is excluded based on 100 – 112 protocols. Next, for non-emergency calls the call-handler will advise (based on protocols that are adapted to the GP context) the most appropriate level of care (e.g. consultation GP on call or organised duty centre, GP home visit, scheduled GP appointment). The introduction of this second phase will happen via pilot projects (e.g. a pilot project for the region Leuven-Tienen started at the end of 2015; another pilot-project exists in Bruges).

In anticipation of the national deployment of the 1733 telephone number, the CHU Liège (Centre Hospitalier Universitaire de Liège) provides a government subsidized local triage alternative to 13 GP circles, four of which also benefit from an ODC. This telephone triage system is operated seven days a week between 9 PM and 7 AM and is staffed by a nurse from the ED of the CHU de Liège. Anno 2014, 13 GP-circles participated in the project and it covered about 500 000 inhabitants in the Liège region. In 2015, 4 217 calls were registered (on average 11.5 per night): 2% with the advice to visit their GP the next day; 51% referred to GP on call; 18% with the advice to visit the hospital; 24% transferred directly to 112 for an urgent intervention and 5% with incomplete data or calls from patients outside the covered area. From the patients who were referred to the GP on call, 3.4% came subsequently to the ED (0% for the patients which were advised to visit a GP the next day)^{aa}.

6.2 Critical analysis

One call centre with non-medically trained staff: a set-up not suited to handle primary care related calls

All calls (112 – 1733 when the 1733 number will be rolled out as foreseen) are to be handled by one and the same not medically trained call-taker who is also responsible for medical dispatching. Although this might be appropriate to handle 'emergency calls', several stakeholders considered this as an important limitation to make a 1733-number successful. Indeed, stakeholders pointed out that this does not allow specialisation (e.g. emergency versus non-emergency calls). For non-emergency calls (target of 1733) a focused and time intensive questioning is required. The current call handlers are only trained to make a fast decision about the emergency level in order to dispatch the most appropriate level of medical transport. As such, some suggested to separate the call taking and call handling for 1733-calls. This would allow that clinically trained staff (e.g. nurses trained in telephone triage) handle the primary care related calls when an emergency is excluded. Several stakeholders stressed that the educational level of current call handlers is insufficient to deal with primary related calls. A Belgian study in the primary care context confirms that safety problems are much higher when telephone triage at organised duty centres is performed by non-clinical staff compared to clinical staff (i.e. nurses) (see Box 10).

Other stakeholders emphasized the importance of implying physicians (emergency medicine; GPs) in the development of standardized protocols but stipulated that employing medically trained staff to do call handling is overshooting. They suggested to include nurses specialised in emergency care in the call centre teams to supervise the non-medically trained call takers (see section 6.3 for evidence about the educational level for telephone triage). Several stakeholders referred to the French model where calls can be transferred to medically trained staff (see Chapter 9).

"Nee, dat zijn eigenlijk vaak ambulanciers met een bijkomende opleiding van call taking, maar dat is eigenlijk geen medische dispatching. Dus dat is eigenlijk een randvoorraad die ter discussie ligt, omdat... In 1733 werkt men met protocollen. Dat wil zeggen: je krijgt een zorgvraag en er wordt ... [gewerkt met] huisartsspecifieke

^{aa} http://www.chu.ulg.ac.be/jcms/c_1702234/salomon-nuits-profundes



protocollen. En die huisartsspecifieke protocollen worden nu nog altijd niet ten volle begrepen door de dispatching aan de 112-centrale, omdat zij jaren alleen maar dringende medische hulpverlening gedaan hebben. Dus zeer snel triëren: "Wat is dringend? Moet er een MUG gestuurd worden of niet?" Maar zo, dat doorvragen... Een kind met koorts: zijn er vlekjes, hoe lang is de koorts, zijn er nog andere symptomen, enzovoort. Ze zijn dat niet gewoon..... Op een relatief snelle manier, op een zevental vragen, kun je eigenlijk bij een kind met koorts heel snel zien: "Ja, maar dat is heel dringend of dat kan wachten voor een huisarts." Of: "Dat moet dringend naar een huisartsenwachtpost gestuurd worden." Of: "Dan kan de dokter van wacht rustig op z'n gemak naar huis gaan."

"... actuellement le 1733 ce sont des pompiers qui sont formés, je pense que le taux de satisfaction est très important, c'est vrai qu'ils ont une petite formation malgré tout je pense qu'ils travaillent très bien on pourrait éventuellement réfléchir de les faire superviser par un infirmier SIAMU ça c'est peut être pertinent, demain mettre un médecin ça va coûter cher est-ce qu'on va les trouver, est-ce que c'est pertinent ? du tri opéré par un médecin est inférieure à celle opérée par un non-médecin qui répond à un protocole, parce que le médecin sort du protocole, il formule des hypothèses, il réfléchit en terme de diagnostic et ne réfléchit pas en terme de plainte, qu'est-ce qu'il faut faire, qu'est-ce que dit le protocole, voilà."

Box 10 – Agreement on urgency assessment between secretaries and GPs

New care models emerge to deal with the challenge to provide safe, accessible and affordable care towards out-of-hours periods in a context of scarce resources (budgets and available workforce) and an increasing demand. These models often contain a telephone triage by non-medical support staff or a nurse and the organisation of out-of-hours GP care in large practices integrated (or at least in close collaboration) within the ED of the local hospital. The evidence underpinning the use of telephone triage for reducing ODC consultations and home visits during out-of-hours is mainly based on studies in countries with performant and well-organised primary care services (during out-of-hours periods). Philips et al. (2015) compared

urgency levels assessed by secretaries and GPs in one Belgian ODC (106 GPs and 5 secretaries, catchment area 135 000 inhabitants). Secretaries were asked to assess the reasons for referral on the basis of a predefined list of 26 most frequent reasons. In addition, they were asked to assess the urgency level of all calls (weekends and bank holidays between 8 AM and 9 PM) for the entire year 2010 based on a triage system that results in five urgency levels: U1-U5 based on Manchester Triage System. In addition, the GP assessed the urgency (blinded for assessment secretary) after handling the consultation or home visit. The comparison resulted in 'correct triage', 'under-triage' (lower urgency level attributed by secretary, which is a safety issue) and 'over-triage' (more urgent assessment by secretary, which is inefficient). From the 4017 calls, 77% were classified as correct, 10% as under-triage and 13% as over-triage. None of the calls were classified to the highest urgency categories (i.e. U1 or life-threatening - U2 or urgent) by the secretaries, while this represented 1.3% or 53 of the patients seen by the GP. In addition, 484 from the 531 U3 patients (acute problem) were under-triaged. The most frequently under-triaged reasons for referral were 'shortness of breath', 'skin cuts', 'chest pain', 'feeling unwell' and 'syncope'. The most over-triage reasons of referral concern 'administration' reasons such as 'medication prescriptions' and 'granting a medical certificate'.

It should be noted that secretaries were untrained and unfamiliar with telephone triage since currently secretaries are instructed to give all patients an appointment (which can explain the high proportion – 97% – of patients classified as U4, not urgent). As such, results should be considered as a baseline measurement prior to starting a telephone triage. Yet, when considering a telephone triage system it may be required to develop stringent protocols and dedicate the triage to nurses which is also done in other countries (e.g. the Netherlands) where misclassification rates are much lower. Even when trained staff and triage guidelines and protocols are implemented a continuous monitoring of the safety and efficiency of the telephone triage, as well as clarity about legal accountability (e.g. staff performing the triage, ODC administrators, public authorities, etc.) will be needed.¹⁴⁶

The current 1733 system is not known among the general public. The proliferation of numbers (e.g. suicide: 1813; poisoning: 070 245 245) does not contribute to the visibility of new numbers. Moreover, it results in different responses to similar problems (e.g. the response from the 112-number can be different from a call to 070 245 245 in case of poisoning). In addition, the current 1733 is in most regions still restricted to an automatic transfer to the GP on duty to get an appointment. Some stakeholders stressed the need for two separate numbers while others stated that it would have been more straightforward when there was only one number '112'. However, the latter option would no longer include a self-selection of emergency cases as is currently the case for 112-calls. This risks to burden emergency care even more than today (more false positives) (see also evidence on the English NHS 111 system in Chapter 9). Moreover, on peak moments the 112-calls will have priority over the 1733-calls (which are distinguishable for the call handler based on an additive signal). As such, 1733-calls risk to remain unanswered.

Stakeholders stated that pilot projects can illustrate the benefits of the 1733-number for a particular region and can gradually increase the acquaintance of the general public with the number. The pilot projects should be closely monitored for unintended consequences (e.g. under-triage) according to some interviewed stakeholders. After all, small mistakes can have serious (patient safety) consequences. A downside of pilot projects is that they are in contradiction with the requirement of one uniform national approach which was suggested by some stakeholders.

"Was het nodig een apart nummer in te voeren? ... De reden dat men dit zo ingevoerd heeft is omdat sommige huisartsenkringen dit nummer hadden, de overheid heeft dat concept overgenomen. Maar het is geen succes, de mensen kennen het nummer niet. De FOD heeft daar informatiecampagnes rond opgezet en gaat er vervolgens van uit dat dit nummer gekend is, maar zo werkt het niet."

"Dat mag voor mijn part wel blijven bestaan, omdat men dan... Kijk, accidenten die buiten de woonomgeving gebeuren, ongevallen, arbeidsongevallen, Die moeten niet naar de 1733 bellen. Die moeten naar de 112 bellen en daar moeten meteen de grote middelen op afgestuurd worden. Maar iemand die thuis met een hamer op zijn duim klopt, die mag gerust naar de 1733 bellen. ...Nee, dat is nog

onvoldoende gekend. Maar we gaan eerst moeten proefdraaien, omdat dat.... Ja, dat is dus zeer gevoelige materie. We mogen niet over een nacht ijs gaan, omdat dus... Ja, potentieel speelt men hier met mensenlevens. Dus men moet dat toch serieus... Men gaat dat proefdraaien en we gaan daar onze tijd voor nemen."

Local initiatives with responses depending on the local implementation process: a more uniform approach across the Belgian territory is needed

The 112 call centres use a national protocol which standardizes the call handling across the Belgian territory. A uniform approach is imperative from a public health point of view. For 1733-calls there is no such national standard manual yet. Consequently, the approach of a same type of call can differ greatly according to the geographical area from which this call is made.

"On fait le 1733 et suivant les zones où ont lieu le 1733 parce qu'il n'y a pas encore d'uniformité de protocole de prise en charge de ce 1733. Entre le 1733 qui a répondu à [XX] ou le 1733 répondu à [XX], je ne suis pas sûr qu'il y ait une réponse d'interlocuteur, une gestion de l'appel qui soit identique. On fait le 112, là on a une réponse relativement uniforme parce que là il y a un manuel belge à régulation médicale qui est normalement national et qui a des critères de gestion des appels relativement similaires."

6.3 Solution elements

Advantages of accurate telephone triage systems: efficiency gains without a risk for patient safety?

Stakeholders pointed out that a good functioning telephone triage system can have several benefits such as efficiency gains (e.g. less consumption of emergency care services for primary care problems) and decreased ED workload. Yet, there is a lack of evidence about the effect of validated prehospital telephone triage systems on ED use (see results from the narrative review in Chapter 10). This is a domain that is clearly understudied (see Box 12).¹⁵¹ However, an evaluation has been conducted of the English NHS 111 number (see Box 11), a system that is most similar to the 1733-number as it will be implemented in its second phase. This evaluation showed an increase of ambulance incidents after the introduction of NHS 111 in four pilot regions.¹⁵² No increase in ED attendances was found.



Box 11 – NHS 111 telephone triage system in England

NHS 111 is a 24/7 available telephone service for not life-threatening situations in which the caller is unsure about the required service or when the caller requires care during out-of-hours periods. The NHS 111 service provides consistent clinical assessment and routes the callers to the right NHS service. In case of a medical emergency, ambulance transport can be immediately dispatched. The calls are handled by trained non-clinical staff who use standardized protocols and an electronic skills-based directory of local available services to refer the callers to (or where possible make an appointment with) the most appropriate care level. In case additional clinical assessment is required the call is transferred to a clinician within the same call. Currently the addition of senior (doctor) clinicians is considered as part of the ongoing development of the service.¹⁴⁹

The NHS 111 system was introduced in 2010 in four pilot regions and it was shown that the number was immediately well-known among the citizens living in the pilot areas.^{153, 154} During the first year 350 000 calls were registered of which in 11% of the cases an ambulance was sent, 6% were advised to visit an ED, 56% were directed to primary care and 22% received advice via the telephone. Eighty-six percent of the callers indicated that they complied with the advice and a vast majority of the callers was satisfied with the service.¹⁵⁵ A before-after evaluation with a matched control showed that there was no statistically significant change in emergency ambulance calls, ED visits or urgent care contacts. However, a statistically significant increase in ambulance service incidents (i.e. 29 additional incidents per 1000 calls or 3% increase in ambulance activity) was observed.¹⁵² Despite some positive results on patient experience, the large envisaged impact on ambulance ED resources was not achieved. This can potentially be attributed to the early implementation stage. Nevertheless, it was decided to roll out the system across England and in the year 2014-2015 the NHS 111 dealt with 12.1 million calls with a similar distribution of dispositions as was observed during the initial pilot sites.¹⁵⁴ Also in the reform plans of the entire English emergency and urgency care system, the NHS 111 remains a corner stone but with the advice to involve additional senior clinical assessment in the triage process to avoid excess overload on the emergency care system.^{154, 156}

Some stakeholders also indicated that it has the potential to increase patient comfort as well as patient safety (e.g. patients that require specialised care will be referred directly towards the ED without losing time or have the discomfort to visit the GP first). The impact of telephone triage on patient safety was evaluated by the review of Huibers et al. (2011)¹³ which included 13 primary studies of which ten studies presented safe performance in 97% (95%CI: 96.5-97.4%) of unselected patients. This high proportion of safe performance (no adverse events: mortality, medical errors, unplanned hospitalisations or ED attendances) for all out-of-hours telephone triage contacts decreased to 89% (95% CI 86.7-90.2%) for patients with high urgency (based on five studies). Turner et al. (2015)¹⁴⁹ updated this review and included eight additional studies. This update resulted in similar conclusions.¹⁴⁹ It should be stressed that out-of-hours care involves large numbers of contacts. As such small error rates can have serious implications at the population level.

Clinical background is important

Huibers et al. (2011)¹³ concluded that there is room for improvement and suggested a better training of nurses and the use of clinical decision-making aids. A recent review by Wheeler et al (2015)¹⁴ confirms that these are valid approaches. Wheeler et al. (2015)¹⁴ reported that four types of triage staff can be observed in the international literature: 1) nurses; 2) physicians; 3) emergency medical dispatchers; 4) clerical staff. The review results indicate that clinicians (nurses, physicians) perform better than non-clinicians. In addition, it was shown that nurses perform better than physicians since more system-elements of an effective triage system were taken into account (i.e. guidelines, documentation, training, standards). Furthermore, the effectiveness of nurses can be improved by training and call-centre standards while this is deemed more difficult for non-clinicians and physicians. After all, non-clinicians have an insufficient clinical background and physicians have the inclination to not follow the triage protocol and start with a diagnostic work-up.



Box 12 – Quality of studies in the field of telephone triage

The evidence in the field of telephone triage is mainly based on retrospective studies and studies with an observational design. The few randomised clinical trials are single-centre studies. The interventions (e.g. triage protocols, educational level staff) and outcomes (e.g. definitions satisfaction, appropriateness) are heterogeneous. As a result of these methodological issues comparisons of results between different studies or firm conclusions are difficult.¹⁴⁹

Accuracy of triage decisions: decisions more likely to be unnecessary than insufficient

The review by Turner et al. (2015)¹⁴⁹ included 26 studies on the accuracy and appropriateness of telephone triage decisions. Given the variety in definitions, accuracy and appropriateness rates are hard to compare. However, most studies reported appropriate referrals in more than 90% of the cases. Moreover, triage decisions were more likely to be unnecessary (efficiency issue) rather than insufficient (safety issue). As such, accuracy of telephone triage decisions is in general high with respect to minimising risk which points towards a risk aversion of telephone triage systems.

Higher compliance with advice to attend the ED than with advice that recommends a primary care contact

The review by Turner et al. (2015)¹⁴⁹ included 21 primary studies and two reviews on compliance with telephone triage advices. Compliance rates between 56% and 98% were reported, but there seem to be differences according to the type of advice. Compliance rates are higher when the patients receive a self-care advice or an advice to attend the ED compared to an advice to contact primary care.

The review of Turner et al. (2015)¹⁴⁹ also evaluated patient satisfaction with telephone triage services (22 studies) and found satisfaction rates ranging from 55% to 97%. Only two studies compared satisfaction rates between different staff types with higher rates reported for physicians than for nurses.

Telephone consultations do not necessarily result in less workload for GPs

Some stakeholders assumed that a (medically staffed) telephone consultation system linked to a telephone triage system decreases GP workload. The evidence resulting from the narrative review of systematic reviews, however, is contradictory. The published studies about the effect of telephone consultations (e.g. pre- and post-discharge telephone calls) on ED visits showed mixed results and there are indications (e.g. increased re-visits) that telephone consultations in reality rather delay than resolve the problem (see Chapter 10).¹⁵⁷⁻¹⁵⁹ This is confirmed by a recent English large-scale clustered randomised trial testing telephone triage and consulting in the management of same-day consultation requests. It was shown that telephone consultation shifts the workload from face-to-face to telephone contact and increases the number of primary care contacts within 28 days of the initial consultation. Telephone consultation appeared to be safe, but had a negative impact on patient satisfaction and a negligible impact on ED attendances (small non-statistically significant increase in the intervention group). The benefits of telephone consultation might increase when it is focused on specific target groups such as those with long-term conditions.¹⁶⁰⁻¹⁶²

[Telefoonconsultaties] zijn een stukje toekomst. want dat betekent ook dat die huisarts zich misschien in het weekend 's nachts, om drie uur 's nachts, niet moet verplaatsen, maar even mensen kan geruststellen. Ik denk dat je daar best pilootprojecten rond opzet om te kijken van wat en hoe. "k was in het weekend van wacht en ik krijg iemand die diarree had en die belde mij dan... Maar misschien heeft die patiënt op dat moment alleen even iemand nodig die zegt van: Kijk, het mag niet meer dan zo lang duren, want anders ga je uitdrogen, enzoverder. Als dat en dat zich voordoet, neem dan opnieuw contact op of ga dan morgen naar je huisarts toe, enzoverder. En voor dat te geruststellen, is er misschien niet meer nodig dan een telefoontje, of het dan nodig is dat je je huisarts dan nog even live ziet, dat kan misschien helpen ja..."



Preconditions telephone triage

Several interviewed stakeholders supported the idea of a telephone triage system for primary care related problems but mentioned several preconditions to make the 1733 number successful and give their support to 1733 projects:

- Telephone triage is only useful when several referral options are available: self-care; postpone care; attend a GP the same day (consultation or home visit); attend the ED or other specialist care; send an ambulance. If such care alternatives are not available it is possible that ED attendances will increase. Also at the hospital front door a triage should take place with different referring options (not only determining the urgency level to take throughput decisions such as fast-tracks: see Figure 1). The responsibility for choosing the care level cannot be placed with citizens alone, the organisation of the healthcare system has to guide patients with unscheduled acute problems towards the most appropriate level of care.

“Le patient ne doit pas avoir le choix, le patient doit être guidé vers la structure qui va le mieux répondre à son besoin et le patient n'est pas à même, excusez moi de le dire, je m'excuse auprès du patient, mais le patient n'est pas à même lui, de décider là où il doit aller, là où c'est le mieux qu'il aille, donc je pense qu'il faut un tri, un tri comme il y a un tri au 1733 que je connais bien ici dans la province, eh bien ce tri 1733 pour moi devrait être... ou un tri similaire au 1733 devrait être à l'entrée des urgences aussi, hein en fait en résumé, toute personne qui a besoin d'un médecin en dehors des heures d'ouverture normales, telles que définies par le nouvel arrêté royal d'avril de l'année dernière, toute personne devrait subir le même tri pour qu'il soit dirigé là où il doit être, voilà.”

- The staff performing telephone triage should, according to several interviewed stakeholders, be clinically trained (see above for the available evidence). It cannot solely rely on non-medically trained staff and protocols, also described by some as check-box medicine. This does not mean protocols are not needed, on the contrary. Stakeholders indicated this as a prerequisite for successful triage but also stated that the 112 and 1733 cannot use the same protocols. The current 112 protocols are not adapted to primary care and result in sending out

emergency care services for simple problems (e.g. ambulance for a headache). They can build on the 112-protocols to ensure that a medical emergency is ruled out first, but should be adapted to the primary care context.

“De triage moet gebeuren met protocollen die door de huisartsen zijn aangemaakt, in samenwerking met de urgentieartsen. Want men gebruikt nu de Belgische regulatiedienst door de 112-centrales, maar dat is zeer huisartsonvriendelijk. De protocollen zoals die nu worden gebruikt... Je belt naar de 112 en je zegt: “Ik heb hoofdpijn”, dan sturen ze de MUG naar u. Dat is eigenlijk absurd. Dus die protocollen moeten eigenlijk herschreven worden, zodanig dat de huisarts daar veel meer in terecht komt. Urgentieniveau vier, vijf, zes is eigenlijk voor de huisarts. En ten tweede, het toezicht op de verwerking van die protocollen moet ook door een huisarts gebeuren. Daar zal men nog mensen voor moeten opleiden, zodanig dat dat... Dat toezicht in de 112-centrales die die protocollen... Die mensen, die call-takers, dat die worden gesuperviseerd door een huisarts. Zoals in Denemarken gebeurt en zoals in Nederland gebeurt. Bijvoorbeeld in Nederland heeft men grote centrales, daar zitten dus een stuk of tien calltakers, maar daar zit ook een huisarts die dat allemaal in 't oog houdt en als er problemen zijn, dat die dus kunnen ingrijpen. Dus dat is de methode.”

- Information campaigns for the general public. The 1733 number is not known among the general public. It is proven elsewhere (e.g. see NHS 111 in England Box 11) that it is possible to increase the knowledge of citizens about such a system in a short time period. Some stakeholders were in favour of one single number to enhance clarity for citizens. Yet, this can be difficult to realise because it will require different protocols, call-takers etc.

“Maar dat vraagt natuurlijk ook een enorme sensibilisering bij de patiënten. En daar gaan we moeten met z'n allen aan werken, zowel de spoedgevallendiensten als wij huisartsen, dat we eigenlijk moeten zeggen van: “Kijk, bij deze vraag moet je naar de huisartsenwachtpost gaan en met die vraag kun je naar de spoed gaan.. Hoe gaat de burger dat weten? Dan zit je al met grote bekendmakenacties gelijk à la antibiotica, dat je dat niet met een snottebel moet gebruiken. En dan nog zijn er mensen die daarnaar vragen.”

- Co-location of EDs and ODCs with one entrance gate to enable immediate guidance of patients towards the most appropriate care level. While several stakeholders favoured such a model, others (some emergency physicians and GPs) did not favour this for various reasons: e.g. loss of autonomy and fear for hospital-centrism (GPs); distrust in triage decisions taken by GPs (among emergency physicians).

“Waar wij tegen zijn, dat is dat er een huisartsenwachtpost in het ziekenhuis komt om een selectie te doen van patiënten die toestemming zouden mogen krijgen om door ons gezien te worden. Dat is gewoon een ‘bridge too far’. Wel, omdat wij niet wensen dat zij de selectie maken van de patiënten die we kunnen... Zij hebben ook de opleiding niet om dat te kunnen doen. Dus die triage, dat is iets wat wij zelf moeten doen. Wij doen teamgeneeskunde en het kan zijn dat wij 2 of 3 artsen tegelijkertijd of sequentieel naar een patiënt zitten te sturen, by the way aan dezelfde prijs van hun dat binnen de spoedgevallen gebeurt. En zo hoort dat eigenlijk ook, ja. En er is niemand van ons die zegt: “Kijk, jij mag niet naar die patiënt kijken.” Dat zit eigenlijk niet in ons concept.”

“Alors, le triage, oui, si vous mettez une zone de triage, le poste de garde de médecine générale pourrait faire le rôle de triage. Le tout, c'est, il faut alors le mettre dans les hôpitaux parce que, sinon, le malade va se déplacer deux fois, tous n'ont pas des voitures. Il y en a qui doivent prendre des taxis.”

- Telemedicine will increase the accuracy of telephone triage. This will require the possibility of receiving data (e.g. glucose monitoring diabetes patients) or images (video; pictures) in the call centres.

“Bij bepalen van ‘echte spoed’. Kan reeds door de PIT ter plaatse of zelfs voordien (bv. 1733 bemannen met medisch geschoold personeel en video-mogelijkheden).”

- Telephone triage without strict gatekeeping. The implementation of telephone triage should not be seen as an obligation to get access to the GP during out-of-hours. It is better to offer citizens the opportunity without imposing it. This is against the Belgian cultural habits and expectations and will not work. A soft gatekeeping (by offering the opportunity) will have more chances for success in the long run.

Nevertheless, some of the interviewed stakeholders favoured to make a call to the 1733-number compulsory to get access to out-of-hours GP care.

“Nee, nee, dat heb ik niet gezegd, hé. Er zullen er misschien zijn die zeggen: “Dat gaan we zo doen, hé.” Je kunt niet zonder eerst te bellen. Dat heb ik nog niet gezegd. Dit is geen land voor stalinistische systemen. Ik ben dus geen voorstander van een systeem waarbij je eerst moet bellen naar de 1733 om bij een huisarts van wacht te kunnen komen en eerst de zorgvraag moet door de 1733 geobjectiveerd worden via telefoon. Het zal vaak spontaan hierop neerkomen maar zonder verplichting.”

“Als er een hulpvraag is in het weekend, maar ook 's nachts, dat men eigenlijk verplicht is van te bellen naar dat nummer, de 1733 of een ander nummer, dat je na het aanbieden van de zorgvraag eigenlijk een antwoord krijgt... “Je gaat moeten naar de huisartsenwachtpost gaan.” Maar dat dat ook elektronisch geregistreerd wordt. En dat die registratie zowel naar de huisartsenwachtdienst, zijn wachtpost of de wachtaarts, maar ook naar de spoed gestuurd wordt. En als je met uw probleem, ondanks het feit dat dat voor de huisartsenwachtdienst is, aanbiedt bij de spoed, dat je eigenlijk teruggefloten wordt en naar de huisartsenwachtpost terug moet.”

- A triage system in primary care can only be successful when there is also a triage system at the front door of the hospital to guide self-referrals with primary care problems towards primary care. Implementing such a front-door triage system will also have some medico-legal consequences that need to be solved. Under the current payment system (even when it would be legally possible) there is no incentive to guide patients away from the ED to primary care. On the contrary, the triage time is not paid when patients are sent away. Many stakeholders advocated to include senior physicians within triage teams. This statement is backed up with evidence, since triage systems that included senior physicians have superior ED performance (e.g. waiting time, less patients left the ED without being seen) compared to triage teams that only included nurses (see Box 13). Some stakeholders are of the opinion that triage finds its origin in disaster medicine and cannot be used for emergency medicine, at least not on a 24/7 basis.



They stipulated that it can be used on peak moments to determine which patients should be seen first and which patients can wait but not to decide about the most appropriate level of care. Some even stated that it is in contradiction with the 'Patients Rights Act' where it is stipulated that patients have the right to choose their care provider.

"Quand quelqu'un s'adresse à un service d'urgences, la jurisprudence est telle qu'on est pratiquement dans une obligation de résultat de prise en charge complète."

"Si j'ai une infirmière qui voit un patient, une secrétaire qui l'inscrit, une infirmière qui le voit, ça a un coût. Je ne peux rien facturer. Je n'ai pas de consultation médicale... Nous hôpitaux on va prendre en charge un coût infirmière de tri pour lequel on n'aura aucun retour. On les enverra éventuellement à un poste de garde de médecine générale où les gens vont devoir payer. Payer une consultation de médecine générale la nuit, cela a un coût qu'ils doivent payer tout de suite."

"Nee, nee. Er is trouwens een groot verschil... een groot, belangrijk issue rond triage dat men fout ziet, hé. Triage, dat komt uit de rampengeneeskunde. Rampengeneeskunde en oorlogsgeneeskunde. En wat is de bedoeling van triage? Dat is: als je ineens een grote hoop patiënten hebt voor heel weinig ressources, wie moet je eerst gaan behandelen? Daarvoor dient dat. En dan doet men dat in een onderverdeling van "Dit onmiddellijk binnen de 30 minuten...". Maar dat zegt niets over de competentie over wie wat moet behandelen. Dat zegt daar niets over."

Box 13 – Hospital front-door triage systems

- There is no gold standard triage instrument but most instruments result in similar categories linking the level of emergency to a time in which the patient should be treated (e.g. resuscitation: immediately; emergency: minutes; urgent: 1 hour; acute: hours; non-urgent: days).¹⁶³
- Triage has become an integral part of the function of EDs around the world and has demonstrated its value mainly on organisational performance: e.g. the fast track to handle patients with less serious symptoms resulted in reduced waiting times and length of stay in the ED.⁵³
- Most triage systems worldwide rely on an experienced nurse to undertake triage. However, recent evidence reviews indicate that ED performance (e.g. ED length of stay; patients left without being seen) might improve when senior physicians participate in the triage team. The effects on clinical outcomes are understudied.¹⁶⁴



Key points

- In Belgium pilot projects exist to test the 1733 number. This number aims to guide patients with primary care problems during out-of-hours periods to the most appropriate care level in order to alleviate the pressure on EDs.
- A further national rollout is planned with calls being handled by the current 112 centres. Although several stakeholders supported the idea to experiment with such telephone triage systems they stipulated that a list of prerequisites will have to be fulfilled, arguments often supported by evidence:
 - Increased number of clinicians (e.g. nurses with a specific training in telephone triage) in call centres to enable transfers in case of doubt. After all, evidence suggests that call handling is safer when undertaken by professionals with a clinical background.
 - Cautious pilot-project based implementation with careful monitoring of unintended consequences. After all, evidence suggests that in about 97% of the cases telephone triage is safe but there is clear room for improvement (especially in high-risk cases). Given the large absolute numbers, small error rates can have large consequences. In addition, the workload of the entire acute unscheduled care system will have to be monitored. Pilot tests in England with a similar system showed that the number of ambulance incidents increased.
 - Although the risk of non-compliance exists (higher non-compliance rates are reported for advice to attend the GP compared to self-care and ED-attendance advice), most stakeholders suggested to introduce such system as an additional entrance gate without making it compulsory to get access to out-of-hours care. After all, the Belgian system is not used to work with such a gatekeeping mechanism.
 - The opportunity to guide self-referrals towards GP-care after a hospital front-door triage. There is indirect evidence (i.e. better ED performance on, for instance, waiting time) that inclusion of senior doctors in triage teams is beneficial.

7 THE ROLE OF PATIENT COST SHARING IN PROVIDER CHOICE

One of the characteristics of the Belgian healthcare system is the freedom of provider choice for patients. This contributes to the high patient and citizen satisfaction with the healthcare system. This freedom of provider choice also applies to patient choice between GP and emergency department services. Various possible factors are associated with choosing between both options, such as patient profile (e.g. socioeconomic background), the organisation of care settings (e.g. distance) or provider characteristics (e.g. opening hours). Also financial barriers that patients encounter can play a role in the decision to see a GP or go to the ED.

Belgium is one of the many countries where patients pay part of the healthcare cost. Patient cost sharing can be defined as private payments at the point of use. In a recent KCE Report on the performance of the Belgian health system it was shown that out-of-pocket payments represent a relatively large share in total healthcare expenditure in Belgium compared to the EU-15 mean (17.9% for Belgium versus 16.6% for the EU-15 mean).¹²¹ In Belgium, there is no full service coverage for GP care nor for services provided in the ED.

Two direct forms of cost sharing can be identified in the Belgian healthcare system: co-payments and coinsurance (see Box 14).

Box 14 – Definition of co-payment and coinsurance

A **co-payment** is when a patient pays a fixed fee (flat rate) per item or service.

A **coinsurance** is when a patient pays a percentage of the cost of a product or service.

The public payer (insurer) pays the remaining part.

In addition to co-payments and coinsurance, some indirect forms of cost sharing exist. These include the difference between official tariffs and freely set fees by providers, called 'supplements' in Belgium.



In section 7.1 the current patient cost sharing rules for GP and ED services are described. A critical appraisal of strengths and weaknesses of the current patient cost sharing system as perceived by stakeholders and supplemented with information found in literature is given in section 7.2. Possible solution elements for weaknesses in the current system as suggested by stakeholders or found in literature are discussed in section 7.3. We refer to the disclaimer below for the critical appraisal and solution elements.

Disclaimer. The critical appraisal and solution elements are based on stakeholder consultation and literature. Critical appraisal and solution elements without a reference were proposed by stakeholders during face-to-face interviews. A specific systematic review was carried out to gather evidence about solution elements to decrease the number of emergency department visits. One of the possible solution elements was patient cost sharing (see Chapter 10).

7.1 Patient cost sharing for GP and emergency department services

In the Belgian healthcare system, no referral is needed to see a medical specialist or to attend the emergency department. The majority of healthcare services are not free at the point of delivery, but patients are charged a co-payment or coinsurance. All reimbursed services are described in the national fee schedule, called the 'nomenclature', which specifies the fee and the reimbursement level of almost 9000 services. The amount patients have to pay out of pocket differs between care settings and depends on the type of service provided and the social status of the patient. For vulnerable population groups, several measures are in place to ensure access to care. For example, people with a low income are eligible for higher reimbursement of their medical costs.

We give a brief overview of patient cost sharing amounts and rules for ED consultations (section 7.1.1) and GP consultations and home visits (section 7.1.2). In this chapter we focused on current cost sharing rules for GP and ED services, and considered cost sharing for all other services (e.g. technical acts) or products (e.g. medicines) out of scope.

7.1.1 Patient cost sharing for emergency department services

Co-payment for emergency physician services to reduce non-emergent use of EDs

A co-payment of € 12.5 was introduced in 2003 to reduce the non-emergent use of the emergency department. Hospitals were not obliged to charge the co-payment and patients were exempted from paying the co-payment in some specific situations, such as: if they were referred by a physician; if the ED attendance was followed by a hospital stay (including day case) or a period of observation of at least 12 hours; if they were brought to the ED by ambulance, a Mobile Emergency Group (MUG – SMUR) or the police. The co-payment of € 12.5 was abolished in 2005.

On 1 July 2007 co-payments for ED services were re-introduced and are still in use today. A co-payment is charged for all emergency department visits (and hence for all emergency physician fees or A-fees; see Chapter 8) but the amount of the co-payment is differentiated according to two criteria: whether the patient is entitled to increased reimbursement of medical costs or not and whether the patient is referred to the ED by a physician.¹⁶⁵ In 2015, patients referred by a GP pay a co-payment of € 4.5 (or € 1.67 when they are entitled to increased reimbursement). In all other cases patients can be charged a co-payment of € 20.21 (or € 11.23 for patients entitled to increased reimbursement). Co-payment amounts are index-linked. No distinction is made between the educational level of the emergency physician (physician with specialty in emergency care medicine, in acute medicine or with certificate in acute medicine; see Chapter 4).

However, hospitals are free to choose whether or not they charge the higher co-payments to patients who were not referred.

Patient cost sharing for other medical specialists providing services in the ED

No co-payment is charged for fees of medical specialists called in consultation by an emergency physician (called C-fees; see Chapter 8). However, when a patient is treated by the same medical specialist, for example a specialist in internal medicine, outside the premises of the ED a co-payment is charged. In the example of a specialist in internal medicine the co-payment is equal to € 12 for patients not entitled to increased reimbursement and € 3 for patients with increased reimbursement.

Supplements

Emergency physicians are not allowed to charge 'supplements'.



Table 13 – Patient cost sharing for emergency physician services (2015)

	General population	Increased reimbursement of medical costs
Referral by GP	€ 11.23	€ 1.67
Self-referral	€ 20.21	€ 4.5

7.1.2 Patient cost sharing for GP services

Although the focus of the report is on out-of-hours services of GPs, we also give some patient cost sharing amounts for GP services provided during office hours because, for example, a pre-hospital triage system can direct patients to the (regular) GP during office hours.

Consultations

A complete overview of all possible cost-sharing amounts is, however, out of scope. For GP consultations the cost-sharing structure has substantially been simplified on 1 December 2011. Since that date all patients pay a fixed co-payment for each office consultation (see Table 14) which only depends on eligibility for increased reimbursement of medical costs and on whether the patient has a global medical record (GMD – DMG) or not.

Also since 1 December 2011, the patient share of supplementary fees for (urgent) out-of-hours GP consultations is fully reimbursed for all patients to

reduce unnecessary reliance on hospital emergency departments. Hence, co-payments during normal working hours apply.

Home visits

In principle, patients not entitled to increased reimbursement of medical costs pay a coinsurance rate of 35% of the GP fee for home visits. In reality, the cost-sharing structure for home visits is far more complicated and consists of co-payments and coinsurance. Many factors determine the amount to pay: the place and time of the service, patient characteristics, the GP's qualification (licensed or with acquired rights^{bb}) and the number of patients seen per contact (see Table 15).

Table 14 – Co-payments for GP consultations during office hours and out-of-hours (2015)

	General population	Increased reimbursement of medical costs
No GMD – DMG*	€ 6.50	€ 1.50
GMD – DMG	€ 4.00	€ 1.00

**Global medical record*

^{bb} GP with acquired rights ('algemeen geneeskundige met verworven rechten'/'médecin généraliste avec droits acquis'); licensed GP without an accreditation ('erkende huisarts'/'médecin généraliste agréé'); and licensed GP with an accreditation ('geaccrediteerde erkende huisarts'/'médecin

généraliste agréé accrédité'). A GP with acquired rights is a GP who had a physician diploma on 31 December 1994, but who does not have a certificate of supplementary training (for example, who did not do a work placement).

**Table 15 – Determining factors of patient cost sharing for GP home visits**

Impact on patient cost sharing	
Patient status (increased reimbursement or not)	Coinurance for general population and co-payment for patients eligible for increased reimbursement
Regular hours/out-of-hours	Patient cost sharing is based on a single fee for regular hours and on two fees for out-of-hours
Global medical record	Reduction of 30% in patient share depending on patient status, age and being chronically ill
Patient residence: <ul style="list-style-type: none">• Private home• Living in an institution with collective accommodation (not including residential care facilities)• Residential care facilities (home for the elderly or a nursing home)	Patient cost sharing is based on a single fee for visits at the private home and on two fees for visits at a collective home
Patient age	Reduction in patient share for elderly (+75) with a GMD – DMG during regular hours and for children (<10) during regular hours and out-of-hours
Being chronically ill	Reduction in patient share for chronically ill with a GMD – DMG during regular hours
GP qualification	Determines the amount as well as the form (coinsurance or co-payment) of cost sharing
Number of patients visited by the GP	Determines the amount, the form and calculation (one versus two fees) of cost sharing

Source: Farfan et al. (2012)¹⁶⁶

To detail the complicated structure of co-payments and coinsurance for GP home visits, we defined a group who pays a 35% coinsurance rate for GP visits during regular hours (see Table 16). This group consists of patients aged between 10 and 75 years, who are not chronically ill, who have a GMD – DMG and who belong to the general population (no increased reimbursement). All other patient groups pay reduced coinsurance rates or co-payments. The exact amount to be paid out-of-pocket depends on three

additional elements: the patient's residence, the GP's qualification and the number of patients seen per visit. These characteristics are structured in Table 16. We also give the cost-sharing amounts for a patient entitled to increased reimbursement but with otherwise the same characteristics.

**Table 16 – Patient cost sharing for GP home visits for selected patient groups and for patients entitled to increased reimbursement**

		General population		Increased reimbursement	
		GP qualification		GP qualification	
		Acquired rights	Licensed	Acquired rights	Licensed
Private home	Regular hours	€ 11.50	€ 13.86	€ 2.90	€ 2.87
	Evening (6 PM-9 PM)	€ 11.95	€ 15.85	€ 4.59	€ 4.48
	Weekend or holidays (8 AM-9 PM)	€ 12.86	€ 17.97	€ 4.93	€ 4.76
	Night (9 PM-8 AM)	€ 18.43	€ 28.39	€ 6.36	€ 6.68
Institution with collective accommodation	Regular hours	€ 11.50	€ 13.86	€ 2.90	€ 2.87
	Supplementary fees	<i>increased by</i>		<i>increased by</i>	
	Evening (6 PM-9 PM)	€ 2.41	€ 3.18	€ 0.68	€ 0.55
	Weekend or holidays (8 AM-9 PM)	€ 2.86	€ 5.14	€ 0.81	€ 0.79
	Night (9 PM-8 AM)	€ 6.21	€ 15.60	€ 1.77	€ 1.64

Source: Table 5 in Farfan et al. (2012)¹⁶⁶ (to be updated to 2015)

Selected patient groups are patients aged between 10 and 75 years, who are not chronically ill, who have a GMD – DMG and who belong to the general population.

Specific measures for patients younger than 10 and older than 75, and for the chronically ill were introduced. Hence, their patient share is lower than the amounts in Table 16.

Contrary to GP consultations, for home visits patient cost sharing is higher for out-of-hours services. The exact amount depends on reimbursement status, patient residence, patient age, being chronically ill and whether or not the patient has a global medical record, but it can amount to about € 30.

7.1.3 Direct payment versus third-party payer system

Not only the amount of cost sharing differs between ED visits and GP services, also the payment method is different. For GP services (as for most ambulatory care) a direct payment system is in place which means that the patient first pays the full tariff of the service and then gets reimbursed by his/her sickness fund for part of the expense. For ambulatory drugs, home nursing and hospital care a third-party payer system exists where the sickness fund pays the provider directly and the patient only pays the co-payments, supplements or non-reimbursed services. The third-party payer system is also applied under specific conditions for ambulatory care in order to ameliorate financial access for vulnerable population groups.



7.2 Critical appraisal of the role of patient cost sharing in the choice between GP and emergency department services

Co-payments have only limited effect on steering patients to the right care setting

Since the beginning of the years 2000 Belgian policymakers have experimented with introducing a higher co-payment for self-referrals to reduce the number of ED visits. In 2012, more than 70% of ED visits were self-referrals (see Chapter 3). Most stakeholders claimed that a co-payment did not change patient behaviour. However, only limited evidence on this topic is available for Belgium and hence this statement cannot be confirmed or rejected. For example, no studies measuring changes in behaviour with different co-payments or studies on the willingness to pay for ED services have been performed. In KCE Report 8 two patient groups (one attending the ED and another consulting a GP during out-of-hours) were surveyed about the role of the co-payment of € 12.5 (in place in 2003) for attending the ED without referral, in their choice of provider. No firm evidence was found that the co-payment played an important role in the choice between an ED and GP.¹⁶⁷

Another element explaining the limited impact of the measure is the fact that there is no legal obligation for hospitals to charge the co-payment. Stakeholders representing GPs stated that hospitals often do not charge the co-payment to avoid that patients with a GP pathology would prefer to go to a GP instead of to the ED.

“Donc, les hôpitaux n'ont pas joué le jeu. Je pense que c'était pour permettre à tout le monde de venir et donc de remplir les... de remplir le temps... heu... de même de cas de médecine générale. Enfin j'imagine que c'est pour cela, sinon je ne comprends pas très bien pourquoi ils n'ont pas joué ce jeu.”

A co-payment disadvantages vulnerable population groups

Moreover, stakeholders feared that (high) co-payments for ED services will result in delay of needed care for vulnerable population groups.

“Ça n'a pas freiné et alors il y a aussi un autre aspect par rapport à une éventuelle pénalisation financière, parce que, non seulement, empiriquement, on constate que ça ne va pas freiner, mais alors on pense aussi que le problème c'est qu'on va probablement davantage pénaliser une population qui est déjà socialement fragilisée.”

“La consultation est probablement plus chère en médecine d'urgence hospitalière qu'en médecine généraliste et ça les gens ils ne le savent pas et même s'ils le savent cela ne change rien. On a fait pendant x années, il y a eu cet essai, cette tentative de pénalisation, les patients qui arrivent aux urgences sans être référés par le médecin traitant dans l'ambulance ou là en estimant s'il est envoyé par la police ou par l'ambulance ou le médecin traitant, alors c'est justifié d'aller aux urgences et s'il vient par ses propres moyens ce n'est pas justifié. 1, ça n'a rien changé à la fréquentation des services d'urgence, rien, strictement rien. Aucun hôpital n'a vu son activité diminuer suite à cette pénalité financière. C'est la preuve que la demande de soins, demande de réponse est plus forte que la pénalité financière. 2, si on médiatise encore plus ça si on stigmatise encore plus cela ne peut que retarder l'accès aux soins des gens qui en ont vraiment besoin. Ça ne peut, soit vraiment besoin de faire le trajet complet et la douleur thoracique va d'abord voir le médecin généraliste pour venir aux urgences, résultat des courses, au lieu d'être dilaté dans l'heure de son infarctus, il sera dilaté dans les trois heures de son infarctus. Ce n'est pas bon. Ou cela va retarder l'accès aux soins du gars qui dit que “ moi j'ai pas de quoi payer un généraliste, j'ai pas de quoi payer l'ambulance et donc j'attends, ça va peut-être passer ».”

International evidence suggests an (mostly limited) impact of patient cost sharing on ED use.^{31, 157} However, except for one Irish study all studies in two reviews were conducted in the US and the reviews are mainly based on observational studies. A second limitation is that studies assessing the effect of cost-sharing in populations with low purchasing power and in the more disadvantaged social classes are absent. More research on the impact of socioeconomic factors on patient choice of provider (ED versus GP) is needed.^{168, 169, 170}

Differentiated co-payment for referrals and self-referrals but patients are not medical experts

One argument for patient cost sharing is to increase patients' cost-consciousness and discourage unnecessary or too expensive care. Health insurance reduces the marginal cost of healthcare to the patient and patients purchase more or more expensive care than without insurance. Co-payments are supposed to reduce this moral hazard effect. Another argument for cost sharing is to provide patients with monetary incentives to alter their behaviour towards the consumption of specific, e.g. more cost-effective, care. The increased co-payment for self-referrals attending the ED is an example of an attempt to steer patients to the right care setting.

Many stakeholders, however, emphasized that patients should not bear any responsibility in judging whether a medical problem requires ED services or not. They refer to the Netherlands, where a triage system instead of financial incentives refers the patient to the most appropriate healthcare provider, with GPs and the emergency department at the same location (see also Chapter 9).

“Ce qu'il y a aussi, je pense, c'est que le patient n'est pas forcément à même de savoir si son recours aux urgences est justifié ou pas. La douleur est quelque chose de subjectif et donc le patient il ne sait pas toujours lui-même non plus dans quel cas il doit aller aux urgences et dans quel cas il peut aller voir le médecin généraliste. Il ne sait pas toujours non plus quelle porte il peut ouvrir donc.”

Impact of the payment system on perception of out-of-pocket amount

Not only the co-payment amount differs between GP services and the ED, but also the payment system itself. Except for low-income groups, patients first pay the full tariff of a GP service and are reimbursed afterwards by their sickness fund. For emergency department services (and for hospital care in general) a third-party payer system exists and patients only pay co-payments, coinsurance and in some cases also supplements out of pocket. Moreover, these out-of-pocket payments are paid with some delay. While GP services are paid at the moment care is provided, for ED services out-of-pocket payments have to be paid when receiving the hospital bill. These delayed payments sometimes create the perception that ED services are (always) cheaper than GP services and therefore a small portion¹³⁷ of

patients prefer to go to an ED instead of to a GP or organised duty centre (ODC). For example, a patient who is not chronically ill, is between 10 and 75 years of age and who has no GMD – DGM, has to pay €84.55 for a home visit in the late evening or at night (between 9 PM and 8 AM). Afterwards, he will be reimbursed and the co-payment equals €29.39 or €6.68 if he is entitled to increased reimbursement.

However, according to stakeholders, more and more hospitals request patients attending the ED to make an immediate payment in an attempt to reduce the number of unpaid bills.

“En tot nu toe was dat forfait weer afgeschaft, dus dat remgeld op de spoed. En men vergat dat men op spoed moest betalen omdat men niet moet voorschieten... Men heeft het remgeld wel bij de huisarts. Daar moet men het op tafel leggen. Men moet niets op tafel leggen bij de spoed. Maar achteraf betaalt men het wel. Maar die perceptie alleen al geeft een ander idee.”

“Appeler un médecin généraliste la nuit, si je ne m'abuse, on est dans l'ordre de 75 euros. Vous voulez les sortir vous les 75 euros ? Moi je les ai pas parfois dans mon portefeuille chez moi. Faut un peu savoir ce que l'on veut. Dire tous ces gens-là... Alors il y a le discours : “Oui, mais les gens vont aux hôpitaux parce qu'ils ne doivent pas payer tout de suite. » Ce qui n'est pas tout à fait vrai, car de plus en plus d'hôpitaux essaient quand même de faire payer tout de suite par bancontact. On sait que l'on a un contentieux monstrueux et les services d'urgences, en particulier, sont le service de l'hôpital où le contentieux est le plus élevé. Donc on a de toute façon intérêt à récupérer cet argent-là d'une manière ou d'une autre.”

7.3 Solution elements

Only co-payments when patients overrule the triage system

Very divergent opinions on the role of an increased co-payment for self-referrals were found among the consulted stakeholders. For some, (higher) co-payments are a necessary instrument to reduce the number of ED visits, especially for patients with a 'GP profile'. Most stakeholders, however, claimed that the introduction of the higher co-payment did not change patient behaviour. However, the number of Belgian studies that have been performed on this topic is too limited to draw firm conclusions and hence this



statement cannot be confirmed or rejected. Another argument against co-payments reported by the consulted stakeholders is that patients should not bear any responsibility in judging whether a medical problem requires ED services or not. Therefore, they preferred a triage system (possibly combined with co-payments) instead of only financial incentives to steer patients through the healthcare system. However, they were in favour of charging co-payments when patients overrule the advice of the triage system.

Compared to other countries, Belgium has a highly differentiated co-payment structure. If higher co-payments are used to reduce unnecessary reliance on EDs and to redirect patients to primary care services, these co-payments should be confronted with co-payments for out-of-hours primary care services. At this moment, for some patient groups (depending on reimbursement status, age, etc.) co-payments for out-of-hours home visits are much larger than the increased co-payment for self-referrals attending the ED.

Remove the difference in payment modality between EDs and GPs for out-of-hours

Moreover, also the different payment modality (third-party payer versus direct payment) plays an important role in patient choice of provider.¹³⁸

“Maar de eerste lijn is op dit moment ook weinig of niet zichtbaar, ook niet altijd even laagdrempelig. Dan bedoel ik daar ook mee, financieel. Laagdrempelig in zijn totaliteit, maar ook financieel niet laagdrempelig. Als je nu naar spoed gaat, dan krijg je je factuur twee maanden later. Dan krijg je vaak wat pilletjes mee, voor als de apotheek ook nog gesloten is. Terwijl bij de huisarts, als die van wacht is en die komt langs, dan moet je eerst ook al, hoeveel is het, 70 euro of..., toch al een heel bedrag op tafel leggen en daar ook nog is mee... Dus ik denk richting derde betaler in het weekend dat dat misschien ook een mooi pilootproject zou zijn richting toegankelijkheid ook, en ook het promoten van de eerste lijn ook in het weekend, om zo spoed ook te ontlasten.”

Key points

- Belgium has a highly differentiated and complex cost-sharing structure. To reduce the non-emergent use of the emergency department, co-payments are higher for self-referrals but the impact on ED use is questioned. Moreover, higher out-of-pocket payments might result in delay of needed care for vulnerable population groups. International evidence suggests an (mostly limited) impact of patient cost sharing on ED use, but populations with low purchasing power and living in the more disadvantaged social classes are absent in studies.
- Cost-sharing amounts as well as the payment method differ for ED and GP services. In many cases, co-payments for out-of-hours GP services are larger than the co-payment for the ED, even for self-referrals. The third-party payer system in place in EDs creates the perception that ED services are (always) cheaper than GP services.
- Although very divergent opinions on the role of an increased co-payment for self-referrals were found among the consulted stakeholders, most stakeholders preferred a triage system (possibly combined with co-payments) instead of only financial incentives to steer patients through the healthcare system. However, they were in favour of charging co-payments when patients overrule the advice of the triage system.

8 PAYMENT MODELS FOR THE EMERGENCY DEPARTMENT AND ITS WORKFORCE

Belgian hospitals receive their revenue from various sources. The payment system depends on the type of services that are provided. Consultations and technical procedures are remunerated through a **fee-for-service** (FFS) system. Non-medical activities, such as the services of accommodation, accident and emergency services and nursing activities are paid for via a **closed-end budget**, called the 'Budget of Financial Means (BFM)', which is partially based on pathologies. Physicians cede part of their fees to the hospital to pay for (part of) the costs directly or indirectly linked to the provision of medical activities. These include costs of nursing, paramedical, caring, technical, administrative, maintenance or other supportive staff but also the costs related to the use of rooms, costs of purchasing, renovation and maintenance of equipment and costs of materials not included in the hospital budget.⁴¹ This **dual payment system** of a closed-end budget and physician fees also applies to emergency departments (EDs).

In KCE Report 229, providing a conceptual framework for the reform of the Belgian hospital payment system, a detailed description was given of the different hospital revenue sources and their payment method.⁴¹ Chapters 2 and 5 of that report present the components of the BFM and the calculation and payment of the individual hospital budget. Chapter 9 describes and assesses the remuneration system of Belgian medical specialists. Many arguments provided by stakeholders in KCE Report 229 or found in literature in favour of or against a specific hospital payment or physician remuneration method, also apply to the ED and emergency physicians. However, (working in) an emergency department has some specific characteristics which do not necessarily apply to the hospital setting in general. In this chapter we will therefore concentrate on strengths, weaknesses and possible solution elements for the payment method of EDs and emergency physicians or other medical specialists providing services in an ED and refer to the relevant chapter in KCE Report 229 for those aspects which also apply to other departments.

This chapter consists of three parts. In the first part we describe the current payment mechanisms for emergency departments (section 8.1) and medical

specialists working in the ED (section 8.2) as well as performance measurement in EDs (section 1.1). The second part assesses the strengths and weaknesses of the current payment system as perceived by stakeholders and supplemented with information found in literature (sections 8.3 to 8.7). In part three possible solutions elements for weaknesses in the current system as suggested by stakeholders or found in literature are discussed (section 8.8).

We refer to the disclaimer below for the critical appraisal and solution elements.

Disclaimer. The critical appraisal and solution elements are based on stakeholder consultation, literature and available Belgian data. Critical appraisal and solution elements without a reference were proposed by the consulted stakeholders. The cited literature mainly concerns literature about the Belgian context which is particularly based on ad-hoc searches. Chapter 9 discusses the payment system for hospital emergency departments and emergency physicians in five countries.

8.1 The Budget of Financial Means

8.1.1 Components of the closed-end hospital budget

Each year the national hospital budget or Budget of Financial Means (BFM) is defined by Royal Decree. It is a **closed-end budget** covering non-medical activities, such as the services for accommodation, accident and emergency services and nursing activities. The BFM consists of three major parts (A, B and C), which are set separately: part A covers capital and investment costs; part B covers operational costs; and part C covers some corrections (positive or negative) of budgets for past financial years. In Table 17 the absolute amount as well as the share of each component in the total hospital budget are given for acute hospitals (data on 1 July 2015).

A budget year runs from 1 July to 30 June. Only at 1 January the budget can be adapted, e.g. to index changes. The BFM for acute care hospitals amounted to € 6433 million in July 2015. Subparts B1 (common operational costs) and B2 (clinical costs) are the two major parts of the hospital budget with a share of 20.34% and 38.39% in 2015, respectively. Every year, the budgets for parts B1, B2, B5, B7, B8 and C3 are set at the national level and allocated to individual hospitals according to calculation rules that are specific to each part. For the other parts, the calculation of the individual Ohospital budget comes first and is based on (historical) actual costs or



activity levels. In a second step, the national budget is determined as the sum of the individual hospital budgets.¹⁷¹ There is, however, no obligation to spend sub-budgets on that part of hospital activity for which they are provided. For a more extensive description of the different components of the BFM we refer to KCE Report 229⁴¹ and the references therein.

8.1.2 *Calculation of the B2-budget for clinical costs*

Although several components of the BFM concern the ED, we will focus on the B2-part of the budget since the B2-part makes up the largest part of the hospital budget for the ED. In this section we give a brief overview of how the total B2-budget is allocated to individual hospitals. In section 8.1.3 we describe how the B2-budget for EDs is determined and allocated to hospitals.

The B2-budget covers clinical services of nursing staff and medical products. In 2015, the budget for B2 was equal to about € 2470 billion or almost 40% the total hospital budget for acute hospitals. Box 15 explains how the national B2-budget is allocated among hospitals.

Box 15 – Allocation of the B2-budget to individual hospitals

General principle

A national closed-end budget for part B2 is allocated to individual hospitals on the basis of a point system by which the national B2-budget is divided by the total number of B2-points ‘earned’ by all hospitals. This gives the monetary value of one B2-point. ‘Justified activities’ and the resulting number of ‘justified beds’, the number of operating theatres and the availability or not of an emergency department determine the number of basic points a hospital is entitled to. Supplementary points can be attributed depending on activity and care profile (e.g. nursing intensity).

Justified activities

Justified activities are based on the number and type of admissions during a reference year (2012 for the budget of 2015). A national average length of stay per pathology group (All Patient Refined Diagnosis Related Groups (APR-DRGs)) is calculated, which is then applied to the case-mix of each hospital. Multiplying the national average length of stay per pathology group with the case-mix of a hospital gives the number of justified patient days for the hospital. Per department or group of departments, the number of justified patient days is divided by the ‘normative occupancy rate’ of the service (in general 80%). The concept of justified activities is based on average activity and should not be confused with justified as reflecting evidence-based practice.⁴¹

The monetary value of a B2-point

The monetary value of one B2-point was equal to € 25 410.07 in 2014.

**Table 17 – Components of the Budget of Financial Means for acute hospitals, in absolute amounts and as a % of the hospital budget (July 2015)**

Component	Description	Amount in €	% of total hospital budget
A1*	Depreciations of movable and immovable investments and financial costs of the credit taken	615 794 427.27	9.57%
A2	Costs of short-term credit	52 163 797.48	0.81%
A3*	Investment and depreciations costs of MRI-units, PET-scanners and radiotherapy	26 751 456.02	0.42%
B1	Common operational costs (administration, maintenance, laundry, etc.)	1 308 309 624.59	20.34%
B2	Clinical costs (nursing and care personnel and medical equipment)	2 469 862 706.19	38.39%
B3	Operational costs for medico-technical departments	67 738 635.21	1.05%
B4	Lump sum payments, e.g. for pilot projects or data registration	855 609 271.68	13.30%
B5	Operational costs of the hospital pharmacy	112 662 561.89	1.75%
B6	Costs for carrying out the social agreement for personnel not included in the hospital budget	87 958 441.12	1.37%
B7	Costs for specific missions of university hospitals or non-university hospitals with university beds	170 025 936.61	2.64%
B8	Specific costs for patients with a weaker socioeconomic profile	24 084 397.12	0.37%
B9	Costs for extra-legal benefits determined in the social agreements of 2005 and later	411 441 644.19	6.40%
C2	Readjustment (positive or negative) of budgets for past financial years	243 262 655.59	3.78%
C3	Reduction of the budget of financial means to 'compensate for' the room supplements charged in single rooms (negative amount)	-12 176 097.11	-0.19%
Total		6 433 489 457.85	

Source: Federal Public Service (FOD – SPF) Public Health

MRI = Magnetic Resonance Imaging; PET = Positron Emission Tomography. *The 6th State reform includes a transfer of powers from the federal state to the federated entities for subparts A1 and A3 of the hospital budget.



Table 18 shows the points for selected components of the national B2-budget for the years 2010-2014. The corresponding budget is equal to the number of points multiplied by the monetary value of a point.

Points for nursing and caring staff

The starting point for the basic part is the number of justified beds and the minimal nursing staff ratios that have been set in the past for various types of nursing units. For example, for nursing units C and D (surgery and internal medicine) 12 FTE per 30 recognised beds with an occupancy rate of 80% boils down to 0.4 FTE or one point per bed. Hence, one FTE nursing staff is ‘worth’ 2.5 points.

In addition to basic points, supplementary points can be earned for surgery, internal medicine, paediatrics and intensive care units. For surgery, internal medicine and paediatrics units, hospitals get supplementary points according to their relative position among all hospitals. This relative position depends on their nursing profile and their profile based on surgical and medical interventions in the respective units. Additional points are distributed according to the severity of treated patients, defined on the basis of a number of resuscitation interventions, the length of stay in an intensive care unit standardised per APR-DRG and the nursing care profile in C, D, E (paediatrics) and C+D intensive care units. For the budget of 1 July 2014, 9347 supplementary points were added to the 49 370 basic points.

For nursing and caring staff in an operating theatre, ED, sterilization department or for nursing management, additional points can be earned. For each category specific rules determine the number of points (see KCE Report 229 for details⁴¹; the rules for nursing and caring staff in EDs are the topic of section 8.1.3).

Points for medical products

A budget for medical products for nursing units, the ED and operating theatres is assigned according to the number of points for the nursing staff budget for these three units.

Final steps to calculate the individual hospital budget for part B2

The number of points for nursing and caring staff is corrected to take account of average labour costs of a hospital compared to the national average labour costs. Average labour costs are ‘theoretical’ labour costs as determined in collective labour agreements. The theoretical labour cost equalled € 65 556 in 2014.

A second correction is applied to guarantee that for each hospital basic activities are covered. Basic activities correspond to the staffing standards for the different nursing units, but qualified personnel should be less than 75% of total staff. For the ED a minimum of 6 FTE is required (see section 8.1.3).

In case the sum of all parts and corrections deviates from the national budget for B2, a further correction is applied to equalize both budgets.

**Table 18 – Points for selected components of the national B2-budget and monetary value of a point, 2010-2014**

Components	Points 2010	Points 2011	Points 2012	Points 2013	Points 2014
Nursing and caring staff					
Nursing units	59 892.67	60 331.97	61 545.05	59 437.95	58 717.46
• Basic points	49 986.02	50 445.38	51 681.82	49 866.02	49 369.98
• Supplementary points	9906.65	9886.59	9863.23	9571.93	9347.48
Operating theatre	7695.16	7748.51	7901.71	7647.34	7562.04
<i>Emergency department</i>	3867.44	3896.19	3973.97	3836.79	4179.92
Nursing management	1301.19	1318.77	1335.5	1273.83	1261.29
Sterilization	1187.08	1195.99	1219.88	1177.76	1163.50
Medical products	11 421.69	11 494.15	11 718.98	11 373.63	11 259.70
Adjustment for average labour cost	43.92	23.2	20.33	11.25	-9.65
Day surgery	1373	4122	1516	1460	4190
Total B2-points	86 782.15	87 430.78	89 231.42	86 218.55	85 624.26
Monetary value of a point (€)	23 146.42	23 096.58	24 556.62	24 837.85	25 410.07

Source: FOD – SPF

8.1.3 The B2-budget for the emergency department

In this section we focus on the B2-budget and its calculation rules since this is the largest part of the payment system for EDs. Moreover, the system underwent significant changes in July 2013. However, EDs also receive their revenue from other parts of the BFM: A1, B1, B4 (e.g. Mobile Urgency Group (MUG – SMUR); MUG – SMUR registration; Paramedical Intervention Team (PIT)), B9 (e.g. special title intensive care and emergency care nursing; end of career measures; attractivity bonus).

Contrary to the data shown in Chapter 3 on ED activity per hospital site, all figures in this section on the BFM are at the level of the hospital because financing rules apply to the hospital level and not to the level of a hospital site.

The B2-budget for EDs

In 2013, a closed-end budget of about € 95.3 million (equal to 3837 points or 1535 FTE) was allocated to Belgian hospitals to pay for their nursing and caring staff in the ED. The 3837 points represent 6.32% (as stipulated in the law) of the sum of basic and supplementary points for the nursing and caring staff in nursing units plus nursing management (60 711.78 points).¹⁷² Some hospitals are excluded from the lump sum budget. These are hospitals that only provide specialised care to children or for cancer care or hospitals with an increase/decrease of 25% in the number of recognised beds between the year for which the data are calculated and the year for which the budget is determined.¹⁷² These hospitals are financed in a different way.



In 2014, part of the mini lump sum budget was transferred to the budget for ED staff. Until 1 January 2014 hospitals received a mini lump sum payment for an emergency bed occupancy or intravenous infusion. The payment was equal to half of the B2-part of the per diem price. Hence, the price of the lump sum payment was hospital specific but had a minimum price of € 25.¹⁷³ On 1 January 2014 the mini lump sums were abolished and the interventions allowing hospitals to charge a mini lump sum were included in the B2-part of the BFM.⁴¹ As a transitional measure, hospitals received in the period 1/1/2014 – 30/06/2014 a fixed amount for each intervention previously giving right to charge a mini lump sum. The fixed amount was calculated as the average amount of the mini lump sum in 2013. The transitional measure has been prolonged and still holds today (March 2016) but with a reduced amount equal to 80% of the advance that was given for the first half of 2014. The remaining 20% was transferred to the budget for emergency services, because about 28% of the mini lump sums were used in the emergency department. The new fixed amount is lower than the mini lump sum for some hospitals, and higher for others. The total budget of the mini lump sums in 2013 (€ 63 million) transferred to the BFM was reduced by € 10 million, as an austerity measure. The National Council for Hospital Facilities (NRZV – CNEH) is in charge of working out a proposal for the distribution of the reduced budget (€ 53 million) among hospitals.

As such, the number of points for ED staff in 2014 consists of 3790.33 points calculated as in previous years plus 389.59 points from the mini lump sum budget.

The calculation method to allocate this budget among individual hospitals underwent significant changes in July 2013, with a gradual implementation between July 2013 and July 2017.

Allocation of the B2-budget for EDs to individual hospitals: calculation method until 1 July 2013

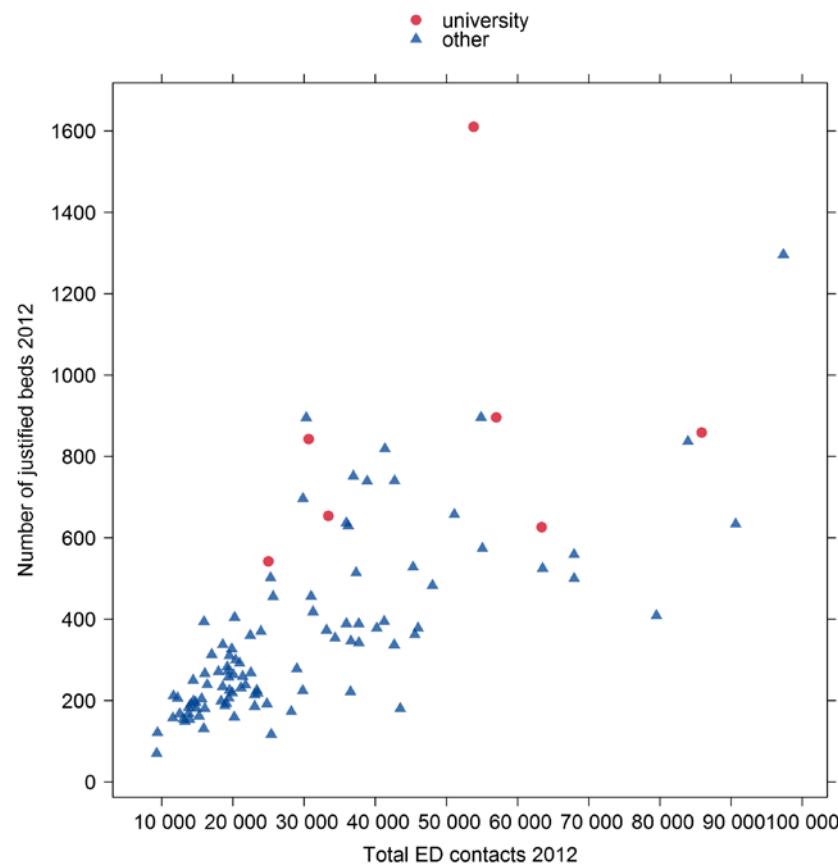
Until 1 July 2013, the **basic part** of the payment system for EDs was based on the number of justified beds per hospital.¹⁷⁴ As such, larger hospitals received a larger budget for the ED. More specifically, hospitals received the following basic points per 100 justified beds:

- 3 basic points for acute hospitals with a non-specialised ED to provide first care and treatment for patients with an acute pathology;
- 5 basic points for acute hospitals with a specialised ED or an intensive care unit.

Although in general larger hospitals have a larger ED caseload than smaller hospitals, the relation between the size of the hospital (defined as the number of justified beds) and ED caseload is not necessarily proportional. In Figure 26 hospitals are ranked according to the ED caseload in 2012. When we compare the seven university hospitals, we see that some of them have a comparable number of justified beds (which means that the number and case-mix of patients treated in the hospital are more or less the same), but their ED activity is very different. With the old payment system these university hospitals receive a comparable budget for a very different ED caseload. The same reasoning holds for the non-university hospitals.



Figure 26 – Number of emergency department contacts and justified beds, by hospital type (2012)



Source: FOD – SPF

On top of the basic points, **supplementary points** can be earned. The number of supplementary points depends on the value of supplementary fees per occupied bed which are charged for urgent services (Art 26 § 1 of the nomenclature: supplementary fee for activities performed during night, weekend and bank holiday) for hospitalised patients, irrespective of whether or not they were admitted through the ED. Clinical biology activities are excluded. These supplementary fees range from € 20.33 to € 254.12, and depend on the type of urgent technical intervention.

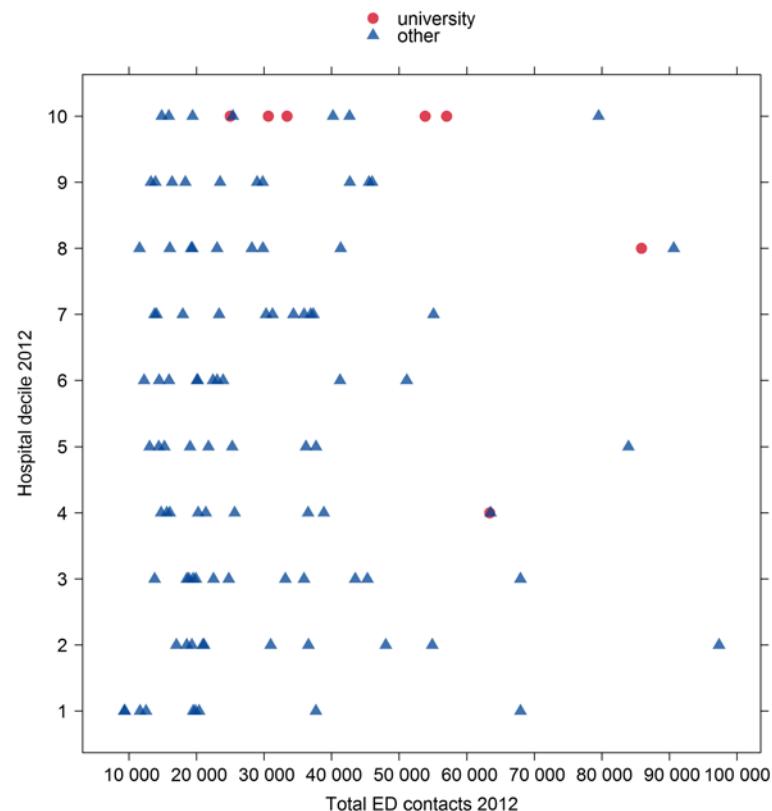
Hospitals are classified in deciles based on the values of these supplementary fees per occupied bed. Supplementary fees charged in 2011 and 2012 were used to calculate the supplementary points for the ED budget in 2014. The number of basic points are multiplied by a decile-specific factor:¹⁷⁴

- Deciles 1-3: factor 1
- Deciles 4-6: factor 1.2
- Decile 7: factor 1.4
- Decile 8: factor 1.6
- Decile 9: factor 1.8
- Decile 10: factor 2.

Figure 27 shows the relation between the decile and the number of ED contacts per hospital, with hospitals ranked according to the ED caseload in 2012. Hospitals with a comparable ED caseload are found in all deciles. For example, five out of seven university hospitals are in decile 10, but their ED caseload ranges from about 25 000 contacts to almost 60 000 contacts. From Figure 28, which relates the hospital decile to its number of justified beds, we get a similar picture as in Figure 27: hospitals with a comparable number of justified beds are found in all deciles. Hence, it is perfectly possible for a small hospital (in terms of justified beds) to be in decile 10 and for a large hospital to be in a low decile.

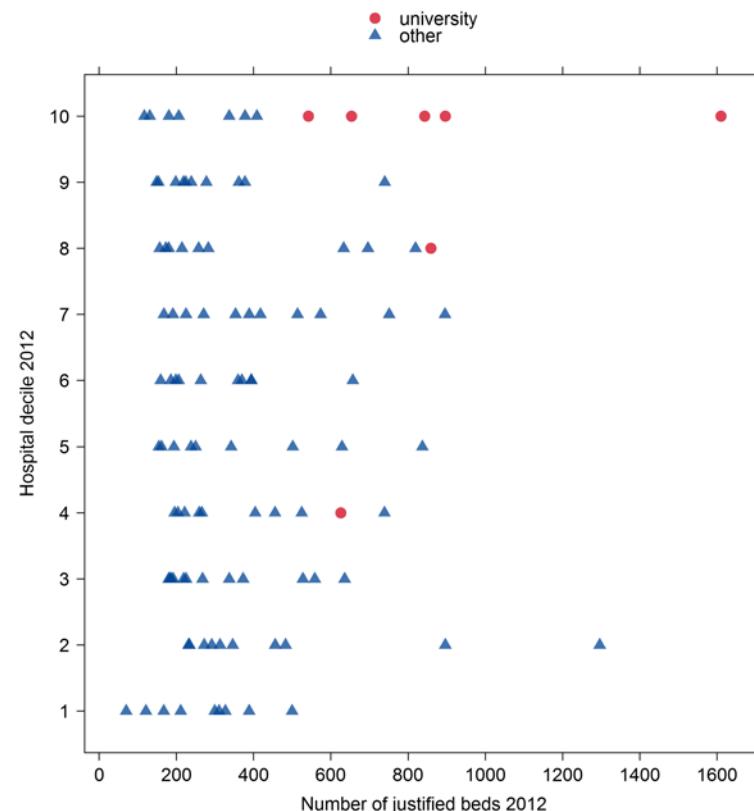


Figure 27 – Number of emergency department contacts and deciles, by hospital type (2012)



Source: FOD – SPF

Figure 28 – Number of justified beds and deciles, by hospital type (2012)



Source: FOD – SPF



Gradual implementation of the new allocation rules

New calculation rules for the B2-part have been gradually implemented since 1 July 2013. For the calculation of the B2-budget on 1 July 2013, the new rules counted for 10% and the old rules for 90%. Table 19 shows the increasing weight of the new rules between 2013 and 2017 (intention as of 2015).

Table 19 – Gradual implementation of new calculation rules for the B2-part for emergency departments

Date	Old rules	New rules
1/07/2013	90%	10%
1/07/2014	80%	20%
1/07/2015	60%	40%
1/07/2016	30%	70%
1/07/2017	0%	100%

Source: Duran (2014)¹⁷⁴

With the new allocation rules, points are allocated to individual hospitals proportional to the number of emergency units (EUs; 'Unit Spoedgevallen'/'Unité d'Urgence') generated by the hospital. For each ED attendance the hospital gets one ED unit. This rule can be considered as the **basic part** of the new payment system.

On top of the basic part, **supplementary EUs** can be earned for specific patient groups (Table 20). The B2-points are distributed among individual hospitals in proportion to the share of EUs of each hospital in total EUs.

**Table 20 – Additional emergency units in the new calculation rules for the B2-budget for emergency departments**

Patient group	Additional emergency units (EUs)
Patients transferred to an intensive care unit	1 EU
Patients with one of the following verified admission diagnosis (ICD-9) (and not meeting the first criterion)	1 EU
430: subarachnoid hemorrhage	
431: intracerebral hemorrhage	
432.x: other and unspecified intracranial hemorrhage	
433x1: occlusion and stenosis of precerebral arteries with cerebral infarction	
434x1: occlusion of cerebral arteries with cerebral infarction	
436: acute but ill-defined cerebrovascular disease	
437.1: other generalized ischemic cerebrovascular disease	
Patients with a psychiatric diagnosis admitted to a psychiatric nursing unit (and not meeting the two previous criteria) if the hospital stay corresponds with:	1 EU
A DRG defined as 'UAA' or 'AAA'	
An ICD-9 code from 290-319 (verified admission diagnosis or secondary diagnosis)	
Children aged 0-3 years (and not meeting the first three criteria)	1 EU
Children aged 4-15 years (and not meeting the first three criteria)	0.5 EU
Patients aged less than 75 residing in a home for the elderly or nursing home or patients 75 years of age and older (and not meeting the first three criteria)	
Admitted as an inpatient	0.4 EU
Not admitted as an inpatient	0.2 EU
Patients (not meeting the previous criteria) admitted between 9 PM and 6 AM	0.1 EU

Source: Durant (2014)¹⁷⁴

ICD-9 = International Classification of Disease, ninth revision; DRG = Diagnosis Related Group



Until 1 July 2014 all ED visits registered in the 'urgency care module' of the hospital discharge data set (URGADMIN in the MZG – RHM) counted for the calculation of EU's. Since that date planned hospital admissions entering via the ED are excluded.¹⁷⁴

Figure 29 shows the ratio of supplementary EU's to basic EU's per hospital for the years 2013 and 2014. A first observation is that, for the majority of hospitals, the ratio is between 20 and 40%. There is one outlier hospital of which the ratio is about 75%, but this is a children's hospital. A second observation is that for about two thirds of hospitals the ratio has increased between 2013 and 2014. Third, for most hospitals the difference between 2013 and 2014 is small, but for three hospitals the increase is between 8% and 10%.

Guaranteed minimum budget

A minimum of 15 points is guaranteed to cover basic activities, which corresponds to the required minimum of 6 FTE nursing staff. This minimum is guaranteed for hospitals with a specialised or non-specialised ED. In case there is no other hospital with a specialised ED within a radius of 25 km or for hospitals situated in a community with only the specialised EDs not within a radius of 25 km, the guaranteed minimum is raised to 30 points for hospitals with at least 200 recognised beds (see Figure 30). The minimum of 30 only holds for hospitals with a specialised ED. It should be noted that a hospital with several hospital sites can receive this guaranteed budget (15 or 30 points) only once. In 2014 three hospitals received the minimum of 15 points, seven hospitals the minimum of 30 points.

The total number of points for ED nursing and caring staff based on the old and new rules is adjusted with a coefficient to keep it within the pre-defined national budget (3837 points in 2013) and at the same time to guarantee the minimum number of points. The adjustment coefficient equalled 0.9715 in 2013.¹⁷⁴

Shifts in activity, points and budget

The new calculation method changes the way the closed-end budget is distributed among individual hospitals and, hence, makes new winners and losers. It should, however, be noted that shifts in the budget allocation can be the result of two effects. First, in the new allocation rules the budget share of each hospital is directly linked to the caseload of the hospital, with some adjustments for specific patient groups. Hence, smaller hospitals, defined in terms of the number of justified beds, with a large ED caseload will be entitled to a larger share of the ED-budget compared to the old system. However, with the new system all hospitals have an incentive to increase ED activity to 'earn' more points. This incentive was also present in the old method, but given the direct link between ED caseload and budget, it can be expected to be more pronounced in the new method.

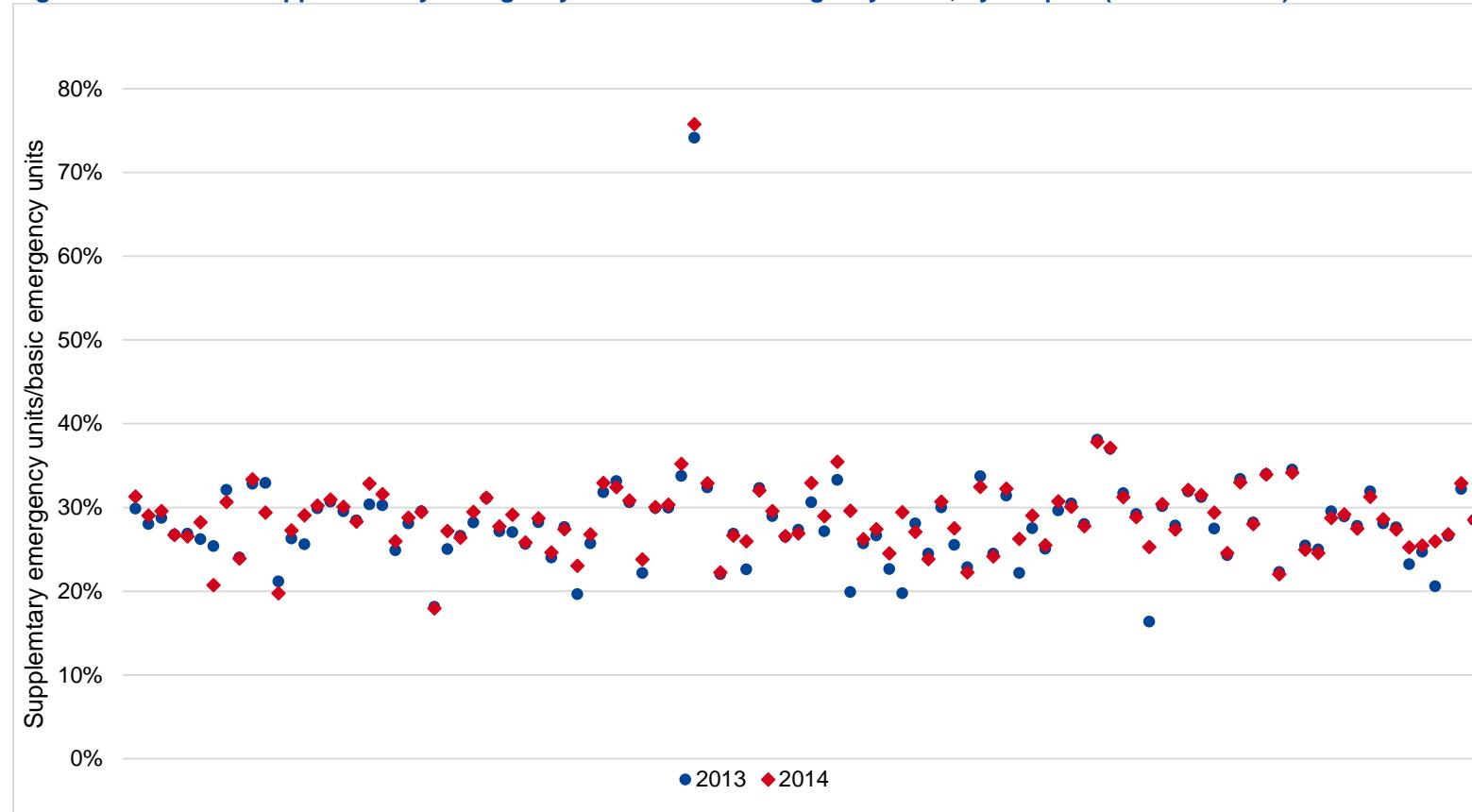
Although the new rules counted for only 10% in 2013 and 20% in 2014, Figure 31 clearly shows a pattern in the shift in points and hence budget allocation between hospitals. To take account of the increase in the number of points between 2012 and 2014 (because of the budget of the mini lump sums that was transferred to the ED budget), the B2-points for all EDs were raised by a coefficient so that the total number of points in 2012 equalled the total in 2014. For EDs receiving the minimum number of points in 2012 (15 or 30 points), the number of points was not changed.

Hospitals with the largest loss of points in 2014 are concentrated among the largest hospitals in terms of justified beds. The difference in points ranges from about -32 to about 21 points. For 20 hospitals the change in the number of points between 2012 and 2014 was less than 1 point. In relative terms, for some hospitals the shift in points can entail a difference of more than 40% compared to 2012.

To translate shifts in points to shifts in budget, each point has to be multiplied by the monetary value of one point which was equal to €25 410.07 in 2014.



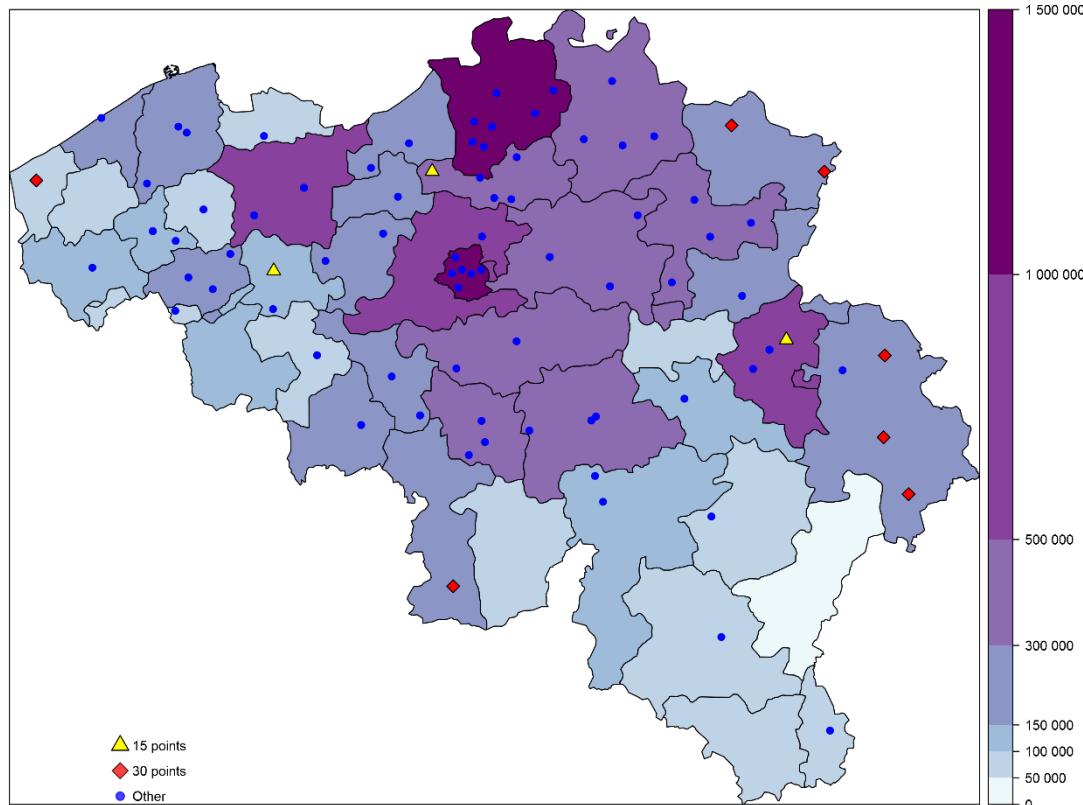
Figure 29 – Ratio of supplementary emergency units to basic emergency units, by hospital (2013 and 2014)



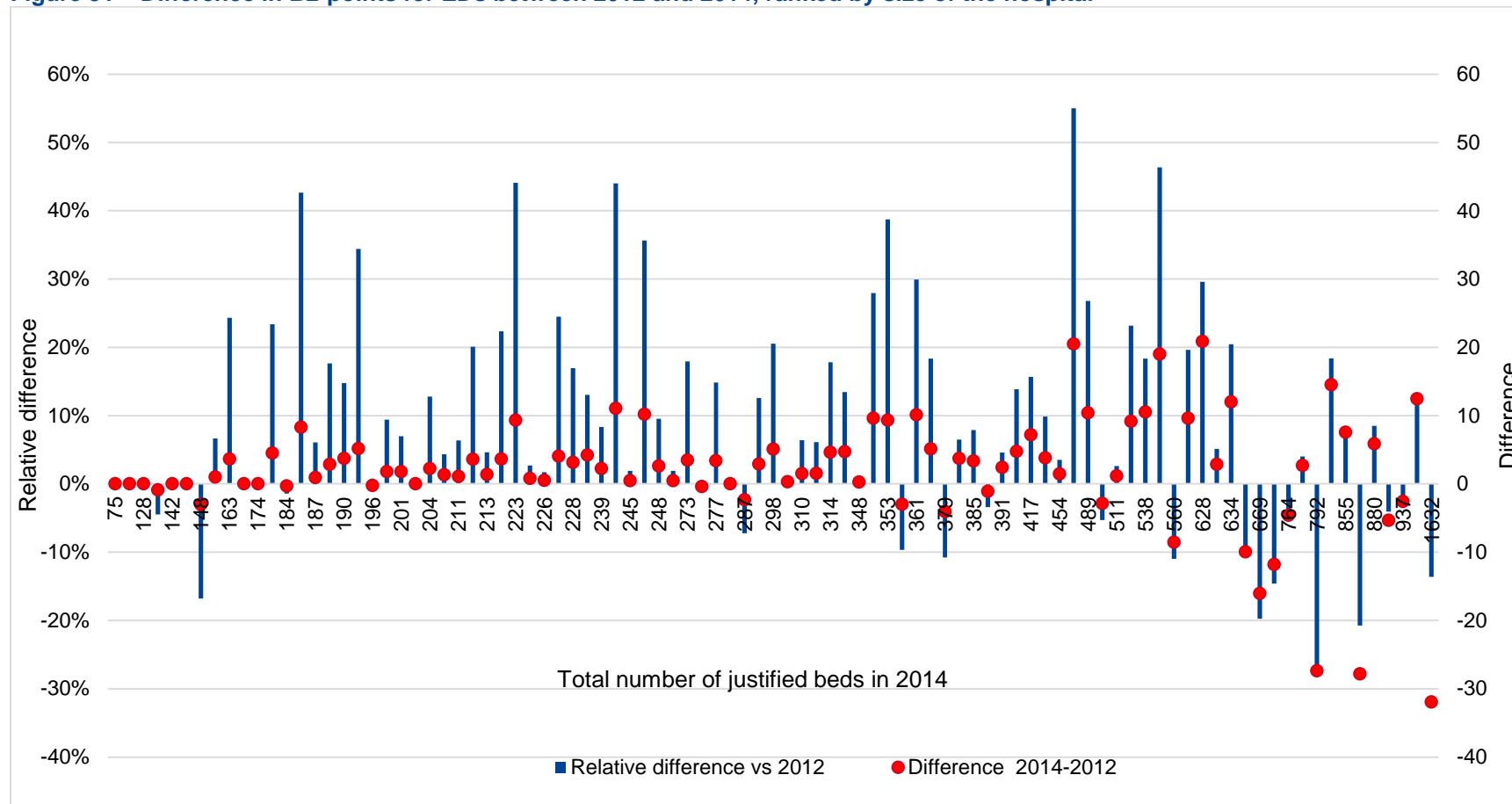
Source: FOD – SPF



Figure 30 – B2-points per hospital (2014)



Source: Density data 2010 from *Algemene Directie Statistiek en Economische Informatie (ADSEI)* - *Direction Générale Statistique et Information Economique (DGSEI)* and points per hospital from FOD – SPF

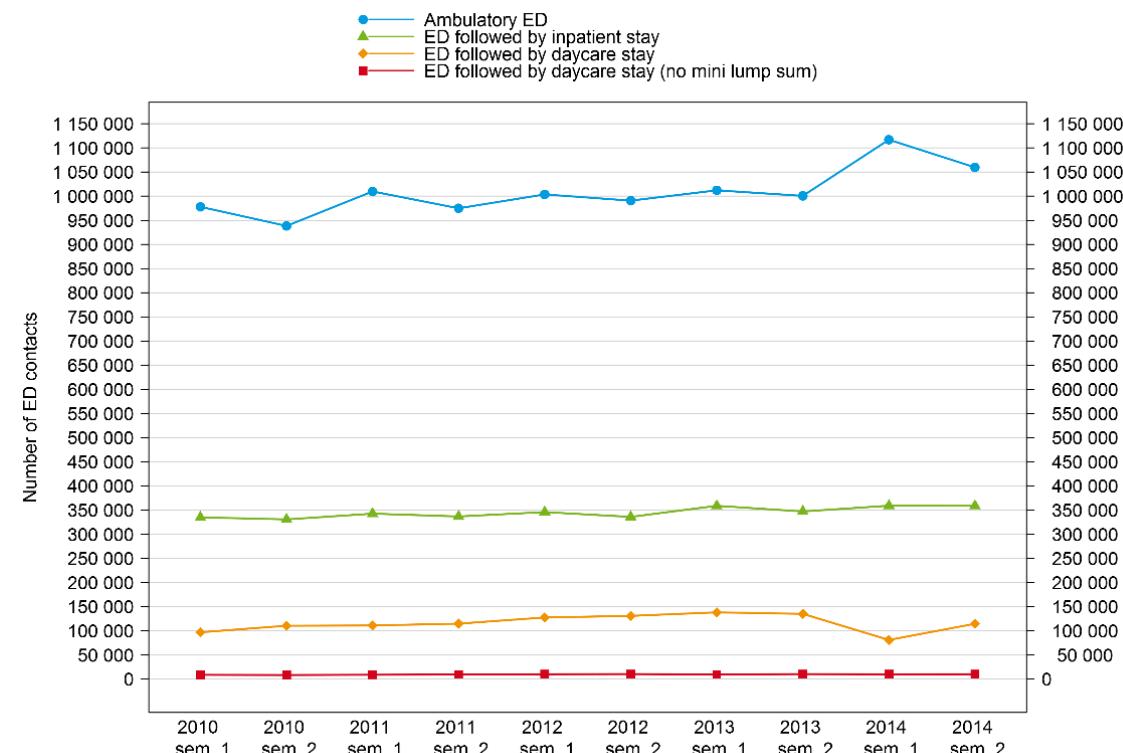
**Figure 31 – Difference in B2-points for EDs between 2012 and 2014, ranked by size of the hospital**

Source: FOD – SPF

Figure 32 and Figure 33 show the caseload of specialised EDs before and after the introduction of the new calculation rules. Only hospitals for which data were available for 2010-2014 are included (93 hospitals). The increase in ambulatory ED visits in the first semester of 2014 (Figure 32) can only partly be explained by the integration of the mini lump sum in the hospital

budget (see section 3.1.3). Some hospitals have an ED activity in 2014 that largely differs from their activity in previous years (Figure 33), but an audit by the FOD – SPF is needed to fully understand this divergent pattern.

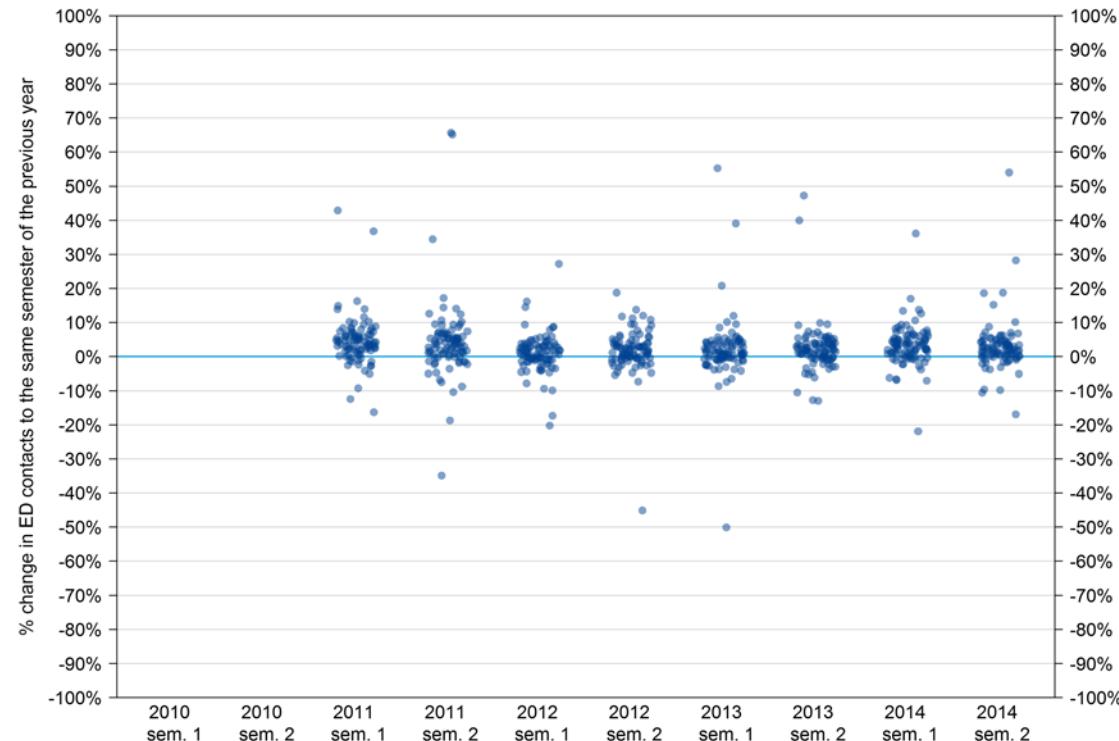
Figure 32 – Caseload in specialised emergency departments by disposition and semester (2010-2104)



Source: FOD – SPF



Figure 33 – Percentage change in caseload of specialised emergency departments, by hospital (2010-2104)



Source: FOD – SPF

Note: The percentage change was defined as the percentage change in caseload compared with the caseload of the same semester of the previous year.



8.2 The remuneration system of medical specialists providing services in an emergency department

8.2.1 How are physician fees determined?

In order to understand the way medical specialists in Belgium earn their money, we have to make a distinction between how fees are determined and the remuneration system of the medical specialist, which goes together with his/her employment status. We outline the procedure to determine physician fees and the remuneration system in Box 16, which is a summary of the detailed information in Chapter 9 in KCE Report 229.⁴¹

Box 16 – The remuneration system of medical specialists in a nutshell

The nomenclature

Medical and paramedical services covered by compulsory health insurance are listed in a fee schedule, called ‘nomenclature’, which lists almost 9000 unique covered services. The list of reimbursable codes contains for each item the professional qualification needed to be eligible for reimbursement, a code-number, a description of the item, a key letter according to the medical specialty, a coefficient and application rules. The coefficient gives for each procedure the relative value compared to other procedures with the same key letter. Multiplying the coefficient by the value of the key letter determines the amount of payment to the provider concerned (i.e. the fee). For example, the key letter N refers to consultations, visits, advice and technical acts of GPs and other medical specialists and the key letter D to availability. At present, the nomenclature contains ten chapters, classified into 36 articles.¹⁶⁶

It should be noted that the fees cover more than only the intellectual and physical activities of the physician. In most cases the fee also covers the (direct and indirect) costs related to the medical activity (e.g. nursing staff; equipment). On top of the negotiated fee, (most) medical specialists are allowed to charge fee supplements under certain conditions.

Fees are determined by negotiation

The type of reimbursable benefits and their amounts (total fee and reimbursement) are determined through a process of negotiations with the various parties involved within the National Institute for Health and Disability Insurance (RIZIV – INAMI), all within pre-set budgetary limits. The National Commission of Sickness Funds and Providers, the so-called ‘Medico-Mut’, negotiates on the tariffs, and more specifically, on the value of the key letter. The negotiated fee or ‘convention tariff’ is settled in agreements (for physicians and dentists) and conventions (for other healthcare providers).

Remuneration and deductions

Whatever the employment status of the medical specialist (self-employed or salaried) the same fee applies. However, how a medical specialist earns his/her money depends on the care setting, the employment status and on the medical discipline.

The different possible remuneration schemes (e.g. fee-for-service or salary) for hospital-based medical specialists are stipulated in Article 146 of the Hospital Act. Whatever the remuneration system, a central collection of fees is compulsory for all hospitalised patients (including one day care) but not for ambulatory patients (Article 147 of the Hospital Act¹⁷⁵). The Hospital Act (Article 154) stipulates that physicians have to help to finance the costs of medical activities in the hospital. The compulsory financial agreement between hospital management and the hospitals’ physicians about the physician contribution to the operating costs (space, equipment, staff, overhead services) of the medical activities is, however, not regulated by law which causes a lot of variability in the type of financial agreements across hospitals. The two ‘pure’ forms of cost arrangements are a ‘deduction as a percentage’ and ‘real cost coverage’ but most hospitals use mixed forms.



8.2.2 The fee schedule for emergency physicians and other medical specialists providing services at the emergency department

The fee schedule for emergency physicians and other medical specialists providing services at the emergency department consists of:

- Fees for emergency physicians (called A-fees);
- Fees for medical specialists called in consultation by emergency physicians in the premises of the ED (called C-fees);
- Supplementary fees for providing services during out-of-hours;
- Fees for being on duty;
- Availability fee.

Fee schedule for emergency physicians: A-fees

In 2007 a separate fee schedule for emergency physicians was created, introducing 12 codes of which the pricing amount depends on the educational level and accreditation status of the emergency physician but not on the admission status (referred or self-referral). Fees are highest for a physician in emergency medicine, followed by a physician in acute medicine and the lowest fees are for a physician with a certificate in acute medicine. For the three types of emergency physicians, fees are higher for accredited physicians (see Table 21).

Table 21 – Fees for emergency physicians (2015)

Educational level physician	Admission status	Accreditation status physician	Nomenclature code	Fee
Physician with specialty in emergency care medicine	Without referral	No	590516	€ 38,92
	With referral	No	590531	€ 38.92
	Without referral	Yes	590553	€ 40.51
	With referral	Yes	590575	€ 40.51
Physician with specialty in acute medicine	Without referral	No	590634	€ 29.71
	With referral	No	590656	€ 29.71
	Without referral	Yes	590671	€ 31.15
	With referral	Yes	590693	€ 31.15
Physician with certificate in acute medicine	Without referral	No	590752	€ 22.54
	With referral	No	590774	€ 22.54
	Without referral	Yes	590796	€ 23.86
	With referral	Yes	590811	€ 23.86



Fee schedule for medical specialists called in consultation by emergency physicians in the ED: C-fees

Also the fee schedule for medical specialists called in consultation by emergency physicians in the premises of the ED was created in 2007. The fee depends on the medical discipline and the accreditation status of the physician (see Table 22).

Table 22 – Fees for medical specialists called in consultation in the ED (2015)

Medical discipline	Accreditation status physician	Nomenclature code	Fee
Internal medicine, cardiology, gastroenterology, pneumonology, rheumatology, medical oncology, paediatrics	No	590892	€ 32.82
	Yes	590973	€ 35.68
Neurology, psychiatry, neuro-psychiatry	No	590914	€ 41.03
	Yes	590995	€ 43.93
Other	No	590870	€ 19.98
	Yes	590951	€ 23.77

Supplementary fees for out-of-hours services

For out-of-hours services (nights and late evenings between 9 PM and 8 AM, weekends and bank holidays), emergency physicians and medical specialists called in consultation are entitled to supplementary fees. The supplementary fees for emergency physicians was equal to € 5.56 in 2015 (code 590833); for medical specialists called in consultation the supplementary fee was equal to € 13.89 in 2015 (code 590855).

Fees for being on duty

The budget available to reimburse emergency physicians to be on duty in the ED comes from two fee codes: code 590181 and 590310. The first code represents an amount of € 25.73 (2015) that a hospital receives for every admission in an acute hospital ward (A, C, D, E, G, H, (i), K, L, M, NIC). The second code represents an amount of € 5.36 (2015) that a hospital receives for every day giving right to a maximum lump sum or day care lump sum for one of the medical activities from a limitative list or to a reimbursement for day surgery (see Chapter 6 in KCE Report 229).⁴¹ Hence, the more admissions or day care activities, the larger the budget for on duty availability in the ED.

Availability fee

Since 2008 hospitals with a specialised ED and/or an intensive care unit are entitled to an ‘availability fee’ during weekends and bank holidays. In 2014-2015 the fee amounted to € 358.01 for being on call during the weekend and € 214.80 or € 143.09 for a bank holiday, depending on whether the bank holiday is in the weekend or not, respectively. Hospitals are entitled to one fee per specialty, irrespective of the number of physicians on call. However, the fee is meant to cover on call services for the hospital as a whole and not only for the emergency department.

Hence, the budget available to hospitals for guaranteeing that emergency physicians or other medical specialists are available, comes from codes 590181 and 590310 and (partly) from the availability fee during weekends and bank holidays.

The way physicians are paid for being on duty is determined in the individual financial contract between the hospital and the physician.



8.2.3 Fees for physicians providing services in the ED: evolution of reimbursements and cases

The total amount of RIZIV – INAMI reimbursements for fees of physicians providing services in the ED has increased by about € 28 million between 2008 and 2013 (see Figure 34). In 2009 and 2010 it was not allowed to charge supplementary fees for out-of-hours services. Figure 35 shows the number of cases for which A-fees and C-fees were charged for the years 2008 to 2013. In about 40-45% of the cases A-fees are charged during out-of-hours; for C-fees this percentage is about 35% (results not shown in Figure 35).

8.2.4 Combination of one A-fee and one or more C-fees per emergency department visit

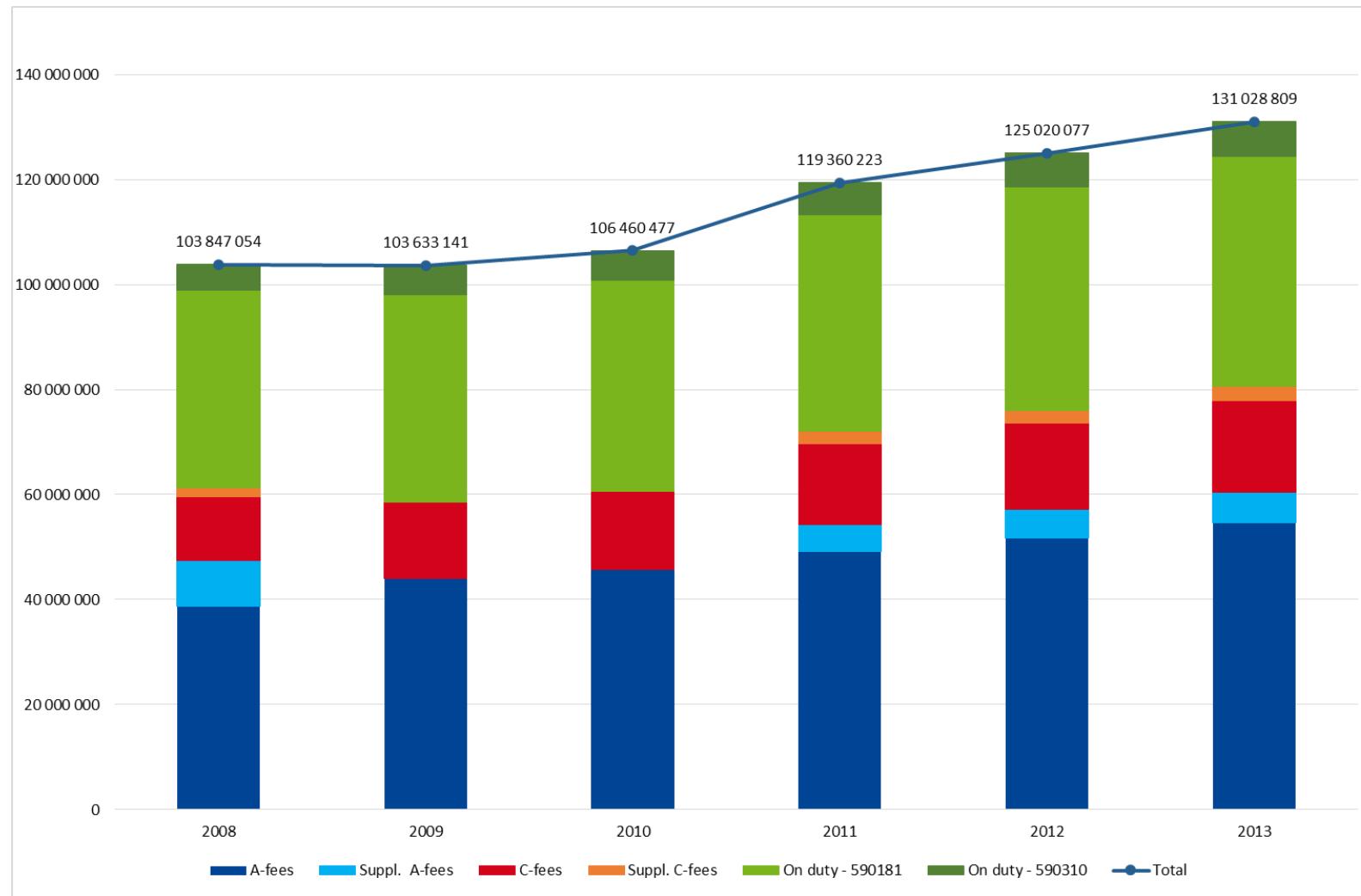
Emergency physicians can call one or more medical specialists in consultation. Hence, for each patient attending the ED one A-fee is charged for the services provided by the emergency physician and for each medical specialist called in consultation, also a C-fee has to be paid. There are, however, large differences between hospitals in the number of C-fees that are charged per A-fee (see Figure 36). Each dot in Figure 36 represents one hospital; hospitals are ranked according to the number of A-fees or ED caseload (note: the caseload is based on RIZIV – INAMI data including only patients who are insured by the compulsory health insurance system). The number of C-fees per A-fee ranges from 0% to more than 100%. These results confirm the analysis that was performed by RIZIV – INAMI in 2011.¹⁷⁶

8.2.5 A-fees by type of emergency physician

Only one A-fee per ED visit can be charged, but the amount of the A-fee depends on the type of emergency physician (see 8.2.2). Fees are highest for a physician in emergency medicine, followed by a physician in acute medicine and the lowest fees are for a physician with a certificate in acute medicine. Figure 37 shows per hospital the share of the three types of fees for emergency physicians. Some hospitals only charge the A-fee of a physician in emergency medicine, while other hospitals have a mix of two or three types.



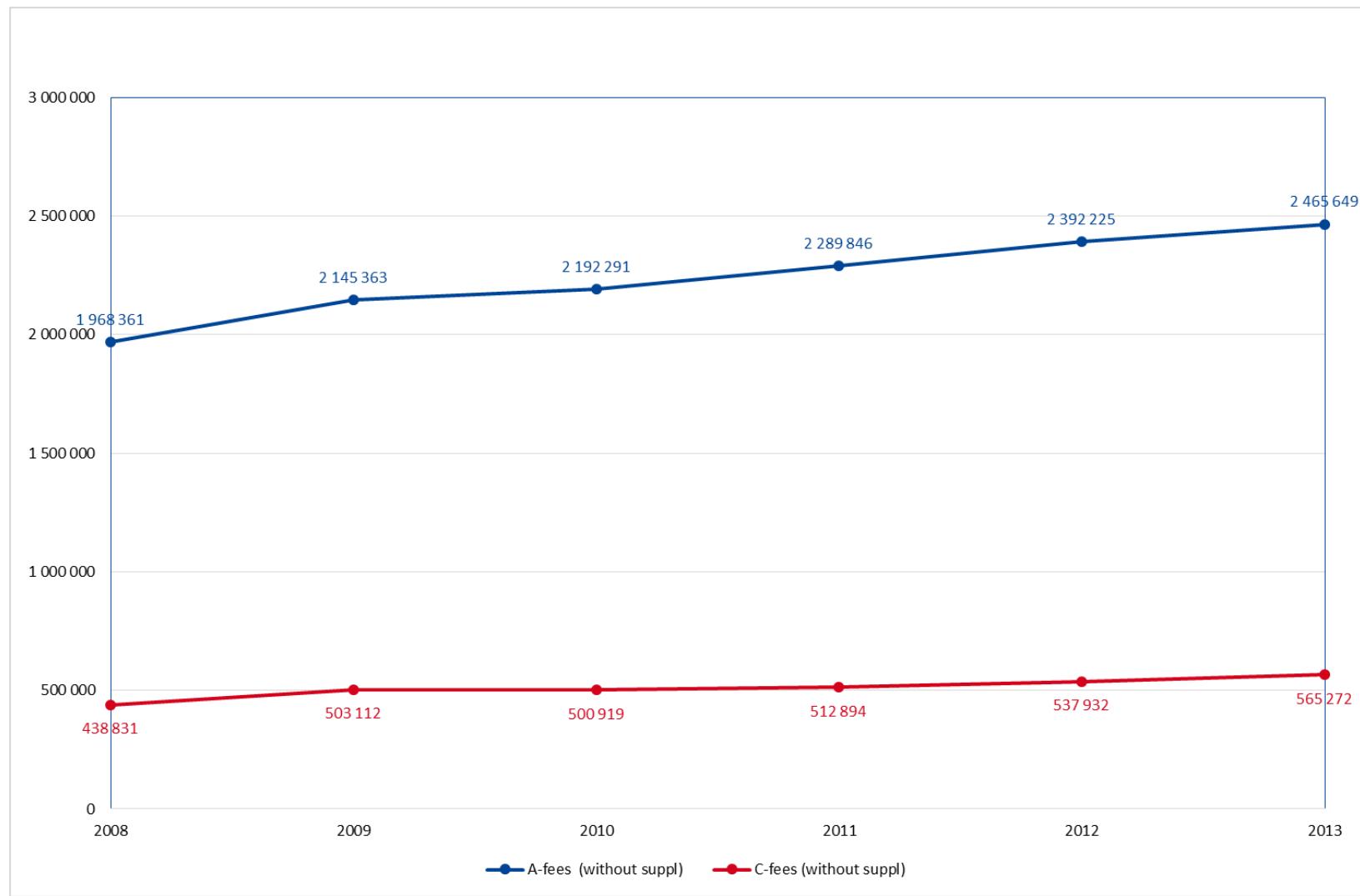
Figure 34 – RIZIV – INAMI reimbursements (€ for fees of physicians providing services in the emergency department (2008-2013)



Source: RIZIV – INAMI



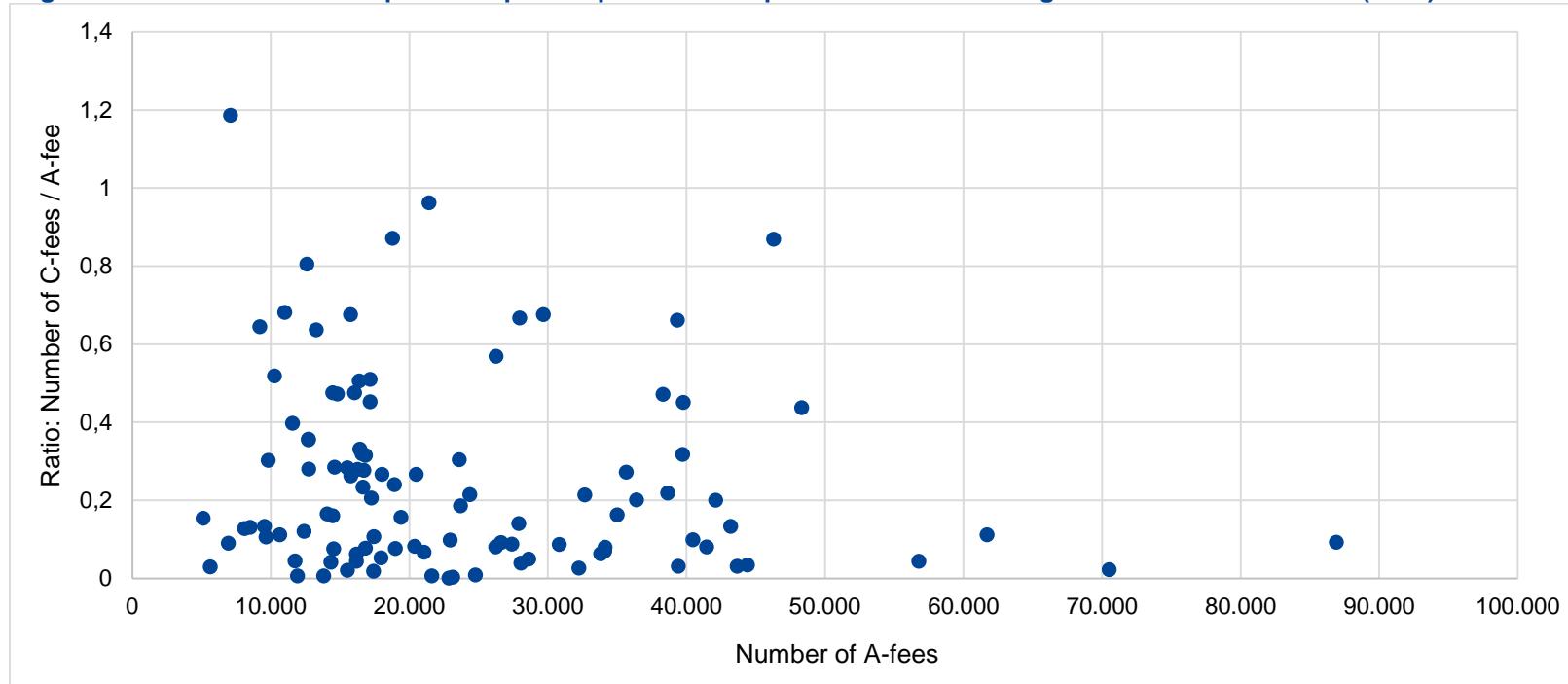
Figure 35 – A-fees and C-fees: number of cases (2008-2013)



Source: RIZIV – INAMI



Figure 36 – Number of C-fees per A-fee per hospital with hospitals ranked according to the number of A-fees (2013)



Source: RIZIV – INAMI



Figure 37 – A-fees by type of emergency physician per hospital with hospitals ranked according to the number of A-fees (2013)



Source: RIZIV – INAMI

G acut: physician with a certificate in acute medicine; GS acu: physician in acute medicine; GS urg: physician in emergency medicine

8.3 Performance measurement and pay for performance

Quality of care is a multidimensional concept that can be defined as “the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge”^{cc}.¹⁷⁸ There are several policy levers to influence quality of patient care, such as accreditation, public reporting, programming or payment. In Belgium these competencies are situated both at the level of the federal authorities as at the level of the federated entities. We refer the reader to KCE Report 229⁴¹ for an in-depth description of the Belgian quality of care policy instruments. In this section we focus on a brief description of existing initiatives that concern emergency departments. An exhaustive description of all relevant elements was considered out of scope since policy interventions to improve quality of care were not the main focus of this report.

8.3.1 Quality of care in emergency departments traditionally relies on a policy of recognition norms

As is the case for hospital care in general, also for EDs the quality of care strategy mainly relies on the **recognition of norms** (e.g. staffing ratios, architectural norms; see Chapter 3) and the **instalment of quality structures**. For instance, the Belgian college of emergency physicians has been installed with the aim of developing quality indicators and a registration model, performing quality audits, submitting an annual report to the Multipartite structure^{dd} and giving feedback to hospitals and physicians.¹⁷⁹ These policy measures are considered as necessary but not sufficient and resulting in a too restrictive view on quality of patient care.⁴¹

During the last decade more and more Belgian hospitals are applying for (or effectively obtained) hospital-wide accreditations^{ee}. In Flanders hospitals are stimulated to apply for hospital-wide accreditations. In fact, hospitals are exempted from a hospital-wide audit by the Flemish authorities when they opt for hospital-wide accreditation (to be obtained at the latest on

31 December 2017). In addition, the Flemish public authorities organise targeted audits of care pathways. In May 2015, the reports from these targeted audits were made public. One of the elements of the ‘internal medicine pathway’ concerns EDs. The published audit reports show that one of the most common warning signals in the concerned hospitals was the availability of nursing and medical staff according to the recognition norms (www.zorginspectie.be). The Flemish hospitals are also stimulated to participate in the Quality Indicators Project, called VIP², on a voluntary basis.¹⁸¹ Yet, there are no indicators specifically targeting emergency departments, except maybe the ‘door-to-needle time indicator’ for stroke patients.

8.4 Critical appraisal of the old calculation method of the B2 budget for the emergency department

8.4.1 The B2 budget is not sufficient to guarantee minimum staffing ratios

Staffing standards are imposed but the money does not follow

One of the main complaints stakeholders have with the current hospital budget (B2) is that it is insufficient to pay for nursing and caring staff at the ED. Although a minimum of 15 or 30 points is guaranteed, payments are considered as insufficient to guarantee imposed minimal staffing norms of a 24/7 hour service provided by at least two nurses in a specialised ED. Moreover, during peak hours additional nursing staff above the two FTE is necessary. In addition to an insufficient minimum budget, the monetary value of a B2-point (see Box 17) is considered too low to pay for the average labour cost.

^{cc} A former KCE report by Vluyen et al. (2006)¹⁷⁷ proposed the following dimensions of quality of care: safety, clinical effectiveness, patient centeredness, timeliness, equity of care, efficiency of care, continuity and integrativeness.

^{dd} The Multipartite structure is a consultative body that was established to build bridges between the RIZIV – INAMI and the FOD – SPF.

^{ee} Initiatives to externally assess hospitals against predefined explicit published standards in order to encourage continuous improvement of the healthcare quality.¹⁸⁰



Box 17 – Monetary value of a B2-point is not sufficient to cover average labour cost

Given that 1 full time equivalent (FTE) nursing staff represents 2.5 B2-points and the monetary value of one point was equal to €25 410.07 in 2014, each hospital received €63 525.175 per FTE nursing staff in 2014. However, the ‘theoretical’ average labour cost which is based on collective labour agreements and used by the FOD – SPF to calculate the BFM, equalled €67 555.96. Hence, payments for nursing staff in the B2-part of the hospital budget are on average about 6% lower than their cost.

In general, the same arguments were given as in KCE Report 229:⁴¹ minimum staffing ratios, collective labour agreements and recognition standards are imposed but the money does not follow.

Lack of sufficient nursing and caring staff is considered problematic especially during peak volume times. Moreover, the available staff has to work through their breaks because of staff shortage. The study of Jordache et al. (2014) also illustrated that staffing patterns in Belgian EDs do not increase according to ED caseload (see Chapter 4).¹¹⁰ Peak moments are situated during the late shifts (between 2 PM and 10 PM).^{106, 109}

“Qui plus est, les points et les points complémentaires n'ont pas assuré une présence de personnel qualifié infirmier et même aides-soignants suffisant pour avaler les pics d'activité. Ni pour faire des shifts convenables qualitatifs. Donc ça, c'était absolument pervers.”

Some of the interviewed stakeholders emphasized, however, that the ‘underpayment’ should be evaluated in the context of a landscape with many EDs and low caseloads.

8.4.2 Distribution of the budget among hospitals: parameters are insufficiently related to ED activity and favour large hospitals

Stakeholders agreed that the two main parameters used in the calculation of the hospital B2-budget for the emergency department, namely the number of justified beds for the basic part and supplementary fees for activities performed during the night, weekend and bank holidays for hospitalised

patients for the supplementary part, are insufficiently related to the ED activity and nursing workload (see also Figure 26 and Figure 27).

“L'ensemble des suppléments d'honoraires d'urgence c'était le fait que pour un acte INAMI presté, s'il a lieu pendant les week-ends, jours fériés, et/ou les heures après 18 h, cela génère un supplément d'urgence parce que l'acte INAMI de l'appendicectomie par exemple a lieu en dehors des heures ouvrables. Et, ça, ça génère un supplément d'urgence et donc ce système-là ne reflète pas du tout le nombre d'activités de charges en soins infirmiers des urgences, parce qu'on parle ici du financement des infirmières des urgences et pas des médecins.”

Most stakeholders acknowledged that a payment system that is based on the size of the hospital (number of justified beds) instead of on ED activity disadvantages small hospitals with a large ED caseload, even with a guaranteed minimum number of points. Figure 26 indeed shows smaller hospitals with a large ED caseload and larger hospitals with a relatively low ED caseload.

“Deze regeling kende begrijpelijk veel tegenkanting van kleine ziekenhuizen met veel (oneigenlijke) spoedpatiënten (bv. in grotere steden). Voor deze kleine ziekenhuizen waren de kosten van de spoed disproportioneel hoger dan de financiering die men ervoor kreeg.”

The points in the basic part are multiplied by a factor which depends on the supplementary fees per occupied bed for activities performed during the night, weekend and bank holidays for hospitalised patients. Hospitals are divided in deciles in accordance with the values of these supplementary fees. Stakeholders criticized the cumulative effect of the basic and supplementary part favouring large hospitals. However, this cumulative effect is not confirmed by the data: hospitals with a comparable number of justified beds are found in all deciles (see Figure 28). Smaller hospitals can be in the highest deciles and large hospitals in the lowest decile.

Some interviewed stakeholders reported that with the old method some hospitals can climb up the decile ranking because they have one or two permanent operating theatres and thus have the necessary personnel (nurse, anaesthetist, surgeon, etc.) available at any moment during the night to perform out-of-hours surgery.

Moreover, university hospitals can also appeal to residents to (help) operate during the night. Contrary to other hospitals, university hospitals have (more) residents who are on duty during the night and who are eager to acquire the necessary experience to operate. Consequently, because of the assistance of residents, surgeons can start their normal working day at 8 AM without being woken up at night. This advantage of university hospitals is considered unjust by stakeholders from non-university hospitals.

Another advantage for university hospitals in the old system that was mentioned by stakeholders is the fact that they hold a monopoly in performing transplants^{ff}. When these transplants are performed during out-of-hours, a large amount of supplementary fees and hence points are earned.

"Or que fait-on la nuit, qu'est-ce qui génère des suppléments d'urgence la nuit ? ... Effectivement la radiologie possiblement un peu. Et puis c'est quoi d'autre qu'on fait la nuit ? La salle d'opération et là on a un biais monstrueux dans le calcul des points de la salle d'opération parce que les hôpitaux qui disent 'cet acte-là je ne vais pas le faire à trois heures du matin je vais le faire à huit heures', n'avaient pas de point. ... Donc j'ai un gros service d'urgence avec beaucoup d'urgences, mais on opère peu la nuit parce que le quartier opératoire est ainsi fait. Et pour ça peu de points et c'est le cas de beaucoup de petits hôpitaux. Parce que rappeler une infirmière la nuit ça coûte plus cher, etc. Où est-ce que l'on opère la nuit ? ..., ces gros hôpitaux qui ont tous fait savoir haut et fort que cette réforme de la nomenclature était une catastrophe Est-ce qu'ils voient plus de gens aux urgences ? Oui, peut-être en nombre absolu que d'autres. Mais proportionnellement que tel autre hôpital qui n'est pas académique, non, pas forcément. Ils opèrent la nuit pourquoi, parce qu'ils ont des assistants qui opèrent la nuit et que l'assistant qui voit l'appendicite à deux heures du matin il a tout intérêt, lui pour sa formation à l'opérer la nuit. Ils ont des assistants de garde en plus que les plus petits hôpitaux n'ont pas, qui eux opèrent la nuit parce que cela leur fait de l'expérience et que pour sortir comme médecin spécialiste ils ont besoin d'opérer. Le chirurgien il a intérêt à opérer la nuit puisque c'est un assistant en

formation dans la plupart de ces hôpitaux académiques, que le quartier il est libre, que l'anesthésiste il est sur place, que l'infirmière elle est sur place. Donc eux ils génèrent une pseudo nomenclature d'urgence, simplement par le caractère académique qui fait qu'il y a des assistants qui peuvent opérer dans ces hôpitaux la nuit. Opérer la même chose que ce qu'ailleurs dans un autre hôpital, l'appendicite à trois heures du matin, le chirurgien va dire et bien écoute, je commencerai mon programme à huit heures."

8.4.3 The old emergency department payment system better reflected the case-mix of the hospital

Stakeholders in favour of the old calculation method emphasized the importance of a payment system that reflects the case-mix of a hospital. The number of justified beds a hospital is entitled to depends on the number and case-mix of hospital admissions. Of course, this assumes a direct link between the case-mix of the hospital and ED activity.

8.4.4 Hospital responses

Incentives to climb up the decile ranking

Stakeholders reported that some hospitals deliberately admit patients via the ED during out-of-hours for elective diagnostic procedures, such as an electrocardiogram or chest X-ray, while in fact these interventions can be done in polyclinics during normal working hours.

Incentives for a small emergency department

From a business economic point of view, the old calculation method created an incentive to keep the ED as small as possible because only the number of justified beds were taken into account, irrespective of the number of ED visits.

^{ff} Except for the Onze-Lieve-Vrouw hospital in Aalst that is allowed to perform heart transplants.



8.5 Critical appraisal of the new calculation method of the B2 budget for the emergency department

8.5.1 New rules did not solve the structural underpayment but only changed the distribution of the closed-end budget

The structural underpayment is not solved by the new system

The new calculation method did not change the total B2-budget for EDs. Hence, the budget is still not sufficient to cover the minimum staffing norms for smaller hospitals.

"Ik kan u zeggen: men heeft dit gemaakt op basis van overleg met de verpleegkundigen op spoed via de NRZV afdeling financiering. En gezegd zo: "Waar heb je meer werk aan? En je zou zeggen: "Chapeau, goed dat verpleegkundigen van spoed inspraak krijgen." "Dat is toch wel goed gezien, want zij zitten met de werkbelasting, enzovoort, enzovoort." ... Maar die dachten dat dat niet met een gesloten enveloppe was. Maar als je met een gesloten enveloppe werkt, blijft de ganse pot gelijk en is er alleen maar een herverdeling. Ik weet niet of u mij begrijpt, hé?"

New winners and losers

The new calculation method only changes the way the closed-end budget is distributed among individual hospitals. Hence, the new payment rules make new winners and losers. The losers are mainly concentrated in large hospitals and winners in smaller hospitals, mainly those with a large ED caseload. They will be entitled to a larger share of the ED-budget compared to the old system.

Stakeholders pointed out that hospitals that have invested in collaboration with an organised duty centre (ODC) are punished by the new rules because patients who can be treated by a GP will be transferred to the ODC, resulting in a smaller share of the national budget. Also hospitals that have invested in for example day care for geriatric patients or in a polyclinic that allows seeing patients without an appointment while other hospitals send these patients to the ED, will have a smaller share of the B2-points.

"Enfin, il y a des hôpitaux qui ont des polycliniques et pendant la journée dans leur polyclinique ils organisent une prise en charge des patients

sans rendez-vous, et puis il y a des hôpitaux qui ne vont pas prendre en charge les patients sans rendez-vous et donc il y a ces mêmes patients, c'est les mêmes cas, on va leur dirais : « Ben allez aux urgences. »"

8.5.2 Emergency department caseload and workload is better reflected

Stakeholders, mainly from smaller hospitals, defended the new calculation method because it better reflects ED caseload. Also the differentiation criteria to earn supplementary points were considered as fairer by the same stakeholders: in general, hospitalised patients that are transferred to an intensive care unit need more (nursing) care; a child often needs a second nurse to hold it while the other nurse is providing the necessary care; also elderly people demand extra care from nurses, e.g. in case of incontinence; etc.

The choice of parameters that give a right to supplementary points has been evaluated by Di Pierdomenico et al. (2013) who analysed nursing procedures given to 689 patients attending the ED of a general hospital in Belgium during one specific week in 2011.¹⁸² Only direct care was taken into account; indirect care such as patient transport, administration or material management was excluded from the measurement of nursing workload. Nursing workload was higher for patients that were hospitalised and for geriatric patients. However, for children (0-3 years or 4-15 years of age) nursing workload was not higher than for adults.

8.5.3 The pros and cons of a patient classification system for emergency department payments

The differentiation criteria to earn supplementary points are mainly demographic and/or pathology-related. However, although the criteria are related to pathology, the payment system is not a pathology-based payment system where hospitals get a fixed amount per treated pathology group, e.g. per All Patient Related Diagnosis Related Group (APR-DRG).

In line with international developments (see Chapter 9), some stakeholders proposed to have such DRG-based payment system for EDs. Others were not in favour of such system. One of their arguments against such system for the ED is that DRGs are not very homogeneous with respect to nursing care.¹⁸³

Another argument against a DRG-based payment system for the ED given by the consulted stakeholders is that small and large/university hospitals have a comparable share of severe cases, which makes an ED payment system based on pathology or severity redundant. Stakeholders from large/university hospitals contradicted this allegation. There are, however, large differences in the main reason for attending the ED according to disposition type (inpatient or not) and in disposition type between hospitals (see Chapter 3).

"Mais oui, mais dans... faut jamais oublier qu'on ne finance pas encore à la pathologie on répartit une enveloppe; donc le financement c'est jamais qu'une répartition d'enveloppe. Et donc nous partons de l'hypothèse que quelque part le case mix de l'ensemble des services d'urgence étaient assez proche et donc il n'y avait pas d'hôpitaux qui faisaient plus des petits cas et des hôpitaux qui faisaient beaucoup de gros cas tenu du fait qu'on n'envoyait pas les patients au service d'urgence d'un hôpital académique parce que l'hôpital était académique, mais parce que les logiques de répartition des patients étaient plus des logiques territoriales, d'accessibilité, etc. Et donc pour nous il n'y a pas de raison que quelque part il y ait plus de gros problèmes à Bruxelles qu'à Arlon, à la limite même qu'à Bastogne si on peut contester l'existence d'un service d'urgences à Bastogne m'enfin bon pour vous dire voilà c'est un peu l'idée que nous en avions."

8.5.4 Hospital responses

A drive for production...

Although a closed-end budget is from a macro perspective an understandable strategy to control healthcare costs, it encourages individual hospitals to increase activity to get a larger share of the national budget. Every hospital tries to increase its 'market share' at the expense of other hospitals. Many stakeholders mentioned the new payment rules for EDs as an illustration of this drive for production. They fear that the reform opens the door for inappropriate use of the ED more than was the case with the old system.

...especially for patients who give a right to supplementary points?

Stakeholders proposed to carefully monitor the patient groups that give a right to supplementary points. Stakeholders feared more planned admissions via the ED for children because they are a rewarding patient group (1 extra emergency unit for children aged 0-3 years and 0.5 extra emergency unit for children aged 4-15 years).

Although the results in Figure 29 have to be interpreted carefully (e.g. because we only show the results for 2013 and 2014 and not for previous years), the ratio of supplementary emergency units to basic emergency units has increased between 2013 and 2014 for about two thirds of hospitals. For most hospitals the increase is small, but for some the increase is between 8% and 10%.

"Als je lege bedden hebt op IZ, je legt de patiënt op IZ, want je krijgt een punt bij. Wie gaat daar over oordelen, hé?"

"Als ik pervers ben, ga ik nu aan mijn kinderartsen zeggen: "Geachte kinderartsen, je moet niet komen. En neem via de spoedartsen alle kindjes maar op tijdens het weekend en je wordt daar ruimschoots voor beloond in de financiering van de spoed."

8.6 Critical appraisal of the remuneration system of medical specialists providing services at the emergency department

8.6.1 A fee-for-service payment system contributes to a productive workforce but incentivizes the quantity of services a physician provides

Many stakeholders pointed the fee-for-service (FFS) payment system out as one of the contributing factors of a highly productive, motivated and enterprising healthcare workforce. However, all interviewed stakeholders agreed that FFS should not be the only payment method, and most of them agreed that FFS should not be the main payment method.

"Niet dat ik pleit voor louter forfaitaire geneeskunde. Ik denk dat je nog altijd best een incentive hebt voor te werken. [lacht] Want anders krijgen we nine-to-fivetoestanden en staatsgeneeskunde om het een beetje zwart-wit te zeggen. En daar weten ze in sommige landen ook de



gevolgen van. Maar een mix is volgens mij nodig, maar een haalbare mix.”

More production to fill the emergency department budget deficit

The main critique on the FFS payment system for emergency physicians are the inherent incentives for production: the more one produces, the more one earns. While a FFS system in itself includes an incentive to produce (see Chapter 9 in KCE Report 229⁴¹), this incentive is in Belgium reinforced by the structural underpayment of the hospital budget in general and also more specific of the emergency department budget. Many stakeholders mentioned the standard practice of hospital managers, certainly in hospitals with financial problems, to ask their physicians to ‘produce’ more. For an emergency department this means that patients who are suitable for primary care will not be referred to their GP or to an organised duty centre (ODC), that extra tests, such as X-rays, are done, that patients are monitored more or longer while a clinical examination would be sufficient to make the diagnosis or an increase in planned admissions via the ED.

“Ça implique deux médecins sur place, etc. Et puis je pense que c'est logique qu'il y ait quand même un lien avec l'acte, mais que pour l'instant il est beaucoup trop fort et que ce lien avec l'acte ne doit pas être à ce point important qu'il va pousser les gestionnaires à multiplier les actes il faut savoir que dans cette même réunion [...] ils nous ont clairement dit que un infar c'était pas très rentable donc un infar ça leur coûte parce que pendant qu'ils font l'infar ça leur prend du temps, ils gagnent je ne sais pas quelle quantité d'argent, s'ils pouvaient voir de la bobologie ou de la médecine générale pendant ce temps-là ils gagneraient beaucoup plus d'argent à l'heure. Donc demandez sur le plan financier à un service urgence ils disent « j'aimerais bien avoir moins d'infar et plus de médecine générale ».”

Combination of A- and C-fees further stimulates overproduction

Although the introduction of specific fees for ED activity in 2007 has enhanced transparency, the concrete way the fee schedule for ED activity has been designed by the Medico-Mut was criticised by many stakeholders. Their main objection was the possibility to combine an A-fee with one or more C-fees for one ED visit because this further stimulates the inherent incentive for production of a FFS payment system. The only limitation is that

the medical specialist who is called in consultation by the emergency physician is no longer allowed to charge a fee for seeing the patient at the ED and also when the patient is admitted to his/her department. Some stakeholders defended the possibility to combine A- and C-fees because it (partly) compensates for the low A-fees (see section 8.6.3).

“Dus vroeger was het zo als je... Als spoedarts had je geen mogelijkheid om specifieke honoraria te rekenen. Maar als je dan een cardioloog riep, dan was het zo dat die cardioloog... als hij de patiënt niet opnam, mocht hij rekenen. Ja? En als hij de patiënt opnam, mocht hij niet rekenen. Dus hij mocht de cumul niet doen. In de financiering van de spoedhonoraria Full Speed, ..., mocht de spoedarts rekenen, de cardioloog rekenen en als hij de patiënt opneemt, nog een keer rekenen. Dan is het spel onspoord. Iedereen wist dat dat ging gebeuren. En dan heeft men die cumul grotendeels weer afgeschaft en gezegd: “Nee, nee, als je dan toch de patiënt opneemt, het is het één of het ander.”

Fee-for-service **hampers multidisciplinary collaboration** because coordination of care and communication with patients and family is undervalued in the fee schedule. Physicians do not easily refer patients to other colleagues, since this holds the risk that they lose their patient and money.

8.6.2 The fee schedule helps us to keep track of what happens within the system

A FFS system allows to have a trace of what is happening in the system. Therefore, many stakeholders were in favour of keeping a FFS component in the future payment system. This will allow policymakers to adjust the amount of lump sum payments in case the activity profiles change.

“Ik pleit eerder nog altijd zowel voor de financiering van de spoed voor ons, als voor de honoraria, voor meer forfaitarisering gemengd met prestaties. Men doet dat ook in het labo, hé. In het labo is er ook 25 % nog altijd gelinkt... Men blijft dan zien wat er gebeurt. Men blijft dan toch een groot stuk veel werk belonen.”

Some stakeholders referred to the fee schedule for emergency physicians before 2007 when no distinction was made between services provided at the emergency department or at other hospital departments. The



introduction of specific codes for ED services has the advantage that the hospital as well as policymakers get insight into ED activity.

8.6.3 The fee schedule for physicians working in the ED: amount of the fee

Place of A-fees in ranking of physician fees

Stakeholders were also asked to compare the A-fee for emergency physicians who are specialist in emergency medicine with the fee of other medical specialists. Here the stakeholders held profoundly different views.

Some of the interviewed stakeholders stated that for qualified emergency physicians who see a sufficient number of patients the income is comparable with that of other medical disciplines, certainly since 2007 with the introduction of a separate fee schedule. Some even claimed that emergency physicians are among the higher-paid disciplines with an income comparable to the income of radiologists or biologists. One of the reasons they gave is that in many hospitals emergency physicians are head of department. Moreover, many hospitals have difficulties in recruiting emergency physicians (see Chapter 4) which provides them with a strong negotiation position.

On the other hand, stakeholders from the side of the emergency physicians claimed they have to work very hard for an income at the bottom of the income distribution, even after six years of education. They referred to the results of KCE Report 178⁹⁸ in which the income of medical specialists was estimated. Emergency physicians belong to the eight lowest-earning disciplines when income is defined as the annual gross income, after deductions and including fee supplements (per FTE). However, as was emphasized in KCE Report 178, average income per discipline hides large differences between specialists of the same discipline. The figures in KCE Report 178 are the best available estimates but they are based on a limited number of hospitals. Seventy-seven Belgian hospitals were invited to participate in the study, but only 13 hospitals provided aggregate data by specialty for the year 2010.⁴¹

"En dan aan een marktconform honorarium minstens van wat andere specialisten zitten te doen... Want die lijsten die bestaan van inkomsten van specialisten... Dat urgentieartsen, die 6 jaar opleiding hebben

moeten doen en in slechte omstandigheden moeten werken, dan moeten die niet in de onderste schaal van de inkomensschaal zitten."

Emergency physicians are not allowed to charge fee supplements.

"On ne peut pas facturer de supplément d'honoraire à l'hôpital. Tous les autres spécialistes dans l'hôpital peuvent demander des suppléments d'honoraires pour chambre particulière sauf les urgentistes, y compris dans mon hospitalisation provisoire.."

Stakeholders also stressed that the practice that (part of the) **deductions** on physician fees are used to compensate for the structural underpayment of the hospital should be remediated.

One A-fee per patient rewards teamwork

Emergency physicians charge one A-fee for each patient attending the ED, irrespective of the number and type of emergency physicians involved, of the provided care, of the patient profile, of the mode of referral and of whether or not the patient is admitted to the hospital. Therefore, some stakeholders called it a lump sum payment instead of a fee-for-service payment.

Stakeholders from the side of the emergency physicians defended the current practice of one amount per ED attendance for all involved emergency physicians. They feared that introducing a separate fee for each emergency physician per patient attending the ED would further stimulate (over)production and costs. They see working in an ED as teamwork that should be rewarded as such.

"En als je in team gaat werken, dus waarbij een urgentist betrokken is bij de zorg van een spoedpatiënt, een acutist betrokken is en een brevetist, bij dezelfde patiënt, dan is er ook maar 1 honorarium dat er mag aangerekend worden. En dat is wel iets waar ik voor zou pleiten om dat te behouden."

EDs optimize their revenue by charging the highest A-fee

Only one A-fee can be charged per ED attendance. However, stakeholders mentioned (and some of them defended) the current practice of EDs to charge the highest fee whenever possible. This means that the highest fee is charged when the physician concerned is available at the ED irrespective of whether this physician has seen the patient or not.



“Oui, pour moi la nomenclature est claire, maintenant il y a ce qui est prévu dans la nomenclature et la manière dont la nomenclature est appliquée par les institutions, oui, je veux dire, il est évident que si à un moment déterminé, la présence médicale au sein du service d’urgence permet à l’hôpital de pratiquer l’honoraires le plus intéressant, ça dépend évidemment de la personne qui pose réellement l’acte voilà.”

“Les dérapages ça a été quoi ? Un. Les urgentistes, ils ont signé les papiers pour tout le monde. Donc on avait des attestations de soins, comme s’ils étaient vus par des urgentistes alors qu’ils étaient pas vus par des urgentistes. Un peu sur le modèle le maître de stage signe pour tous les stagiaires. Mais c’était pas le cas. Donc, ça, ça a fait un dérapage considérable dans les hôpitaux qui étaient, ah oui, ils étaient très forts, des multisites qui avaient un seul urgentiste qui signait pour les quatre sites. Phénoménal.”

Many EDs pool all A-fees and have rules on how the pool is divided among the three types of emergency physicians.

A-fees are not differentiated along the mode of referral

Stakeholders from the side of the emergency physicians claimed that at the time A-fees for emergency physicians were introduced (2007), GPs proposed to differentiate the fees according to the mode of referral, with a higher fee for patients that were referred by a GP. Emergency physicians were, however, not in favour of such dichotomy in fees. For them, all patients attending the ED should be treated in the same way, whatever their mode of referral, which implies that the A-fees do not depend on patient characteristics (here: self-referral, GP referral, ambulance, etc.).

One A-fee per patient makes ‘primary care’ patients very attractive

Other stakeholders, however, referred to some inherent financial incentives of lump sum payments and claimed that these incentives also apply to the A-fees of emergency physicians (see Chapter 9 in KCE Report 229)⁴¹: a lump sum payment does not give an incentive to produce as much as possible, but risks to stimulate patient selection (only treating patients for which the lump sum is lucrative) and underproduction of care. Their main argument against the A-fees is the lack of differentiation according to patient type which makes ‘primary care’ patients very attractive. Patients that could also be treated by their GP or in an organised duty centre allow emergency

physicians to have a good income and a comfortable job. A consequence is that EDs and ODCs become competitors while the services provided by an ED should be complementary to those of an ODC. Stakeholders from the side of the GPs emphasized that this competition is a ‘one-way competition’ with only EDs competing for patients instead of referring ‘primary care’ patients to the ODC. They claimed that for an ODC less patients means less hours on duty which is welcomed by most GPs. However, they also pointed out the financial impact on costs for society because of the more expensive infrastructure of an ED compared with an ODC.

“Normalement, ça doit l’être, complémentaire parce qu’on fait pas tout à fait le même travail, quoi. Oui, ça doit être complémentaire. À partir du moment où il y a une concurrence, alors c’est que les urgences voient dans leur intérêt la facturation de pathologies non urgentes de patients qui viennent avec des problèmes non urgents et donc là, ils ont un manque à gagner. Et donc, peut-être pour solliciter de la part des urgences d’informer aussi les patients qui vont chez eux et qui ne se sont pas bien orientés, c’est clair qu’il faut leur permettre d’avoir le juste financement pour le travail qu’ils ont à faire. Et donc là, plutôt que de taper sur les doigts et de jouer la concurrence en leur retirant une partie de leurs gains financiers, je pense qu’il faut leur dire : Faites correctement votre travail et vous aurez les moyens financiers nécessaires.”

Less supplier-inducement of demand in emergency care

When physicians are paid on a FFS basis, they have a financial incentive to provide more services and induce demand. However, emergency physicians do not refer patients to themselves as is the case for GPs and most other medical disciplines. On the other hand, it has been shown that EDs have a higher use of medical imaging and laboratory tests for patients with primary care problems.⁵²

“Si demain on coupe la consultation en deux des urgentistes, on est sur la paille. Si demain on coupe la consultation d’un cardiologue en deux, qu'est-ce qu'il va faire ? Il va dire à son patient je vous revois dans six mois, trois mois, le problème est réglé et on le verra plus longtemps et le budget sera identique. Nous on n'est pas autoprescripteurs. Donc essayer de nous pénaliser sur le coût de la consultation cela ne peut avoir que des effets injustes et jamais réducteurs en nombre de



consultations puisqu'on n'est pas autoprescripteurs. C'est les gens qui viennent chez nous ou que l'on envoie chez nous.

8.6.4 Large differences between hospitals in the share of ED visits for which a C-fee is charged

Many stakeholders criticised the principle as well as the real practice in hospitals of the combination of A- and C-fees. They all mentioned the large differences between hospitals in the ratio between the number of C-fees and the number of A-fees. This ratio varies from 0% to (sometimes more than) 100% (see Figure 36). Some stakeholders clearly stated that both percentages are not compatible with the profile of patients who attend an ED and described both situations as fraud. Although none of the stakeholders had a clear idea of an acceptable share of patients for which the emergency physician calls another medical specialist in consultation, some proposed to start with the mean value of current practice and only pay the corresponding number of C-fees. Stakeholders also suggested to have a closer monitoring of this practice where medical specialists are called in consultation by an emergency physician and charge a C-fee instead of referring the patient to the relevant department where the medical specialist disposes of the necessary equipment.

Stakeholders mentioned a 42 million euros overrun of the target budget due to the C-fees at the emergency department. As to who is the initiator of this practice, most interviewed stakeholders stated that emergency physicians are not in favour of this double consultation because it gives the impression that they are not competent to do their job, but hospital managers urge their physicians to produce more.

"Ik heb werkelijk een probleem... En ik spreek niet over de benchmarking. Ik heb een probleem waarbij verschillende ziekenhuizen, bij elke patiënt die binnenkomt, zeggen: "Ah, een C-honoraria." Ik heb het daar moeilijk mee. Laat ons heel duidelijk zijn. En ik denk dat het RIZIV die cijfers kent, die kan bijna namen op ziekenhuizen gaan plakken. En ik denk dat ze daar hun energie gaan moeten insteken. Ik kan niet inbeelden dat elke patiënt die binnenkomt gezien wordt door een urgentiearts en een specialist. Wij doen dat niet. Men weet gemiddeld dat A- en C-honoraria gecombineerd zouden kunnen worden tussen 30-40 %, ik zeg zomaar. Dat is het gemiddelde. Omdat je zegt: "Ik heb hem gezien, hij gaat naar de neuro, naar de

operatiekamer, naar de cardio en dergelijke meer." Maar ik heb het er moeilijk mee omdat ik weet dat er een aantal ziekenhuizen zijn die de A en de C voor alle patiënten gebruiken... Dat is misbruik. Dat is de term die ik daarvoor gebruik."

The C-fee can only be charged when the medical specialist is called in consultation and provides the necessary services at the emergency department and not at the own department. Some stakeholders criticised this condition because it creates unequal treatment of medical specialists. Some specialists need medical equipment which is only available in their department while other specialists are less dependent on equipment and can much easier come to the ED to give an advice.

No co-payment is charged for C-fees. However, when a patient is treated by the same medical specialist, for example a specialist in internal medicine, outside the premises of the ED a co-payment is charged. In the example of a specialist in internal medicine the co-payment is equal to € 12 for patients not entitled to increased reimbursement and € 3 for patients with increased reimbursement.

Fee-for-service is not an attractive payment system in low volume areas

Although an inherent incentive of a fee-for-service payment system is to see patients more often or to order more tests and interventions, the incentive to see patients more often is non-existent for emergency physicians. Moreover, in low-density areas emergency physicians risk to see an insufficient number of patients to earn an attractive income. Some stakeholders mentioned sometimes fierce competition between emergency physicians and ODCs in these low-density areas where demand is not sufficient to ensure viability of an ED with emergency physicians largely dependent for their income on the number of attendances.

"Il faut renforcer l'expertise et il faut avant même de parler d'expertise il faut voir qu'il y ait des gens qui veulent bien aller travailler, même dans la confédération actuelle à [...] ils n'arrivent pas à recruter des urgentistes, donc pourquoi, probablement parce que est-ce que le travail n'est pas intéressant c'est possible, mais surtout parce qu'ils n'arrivent pas à générer un volume suffisant pour avoir des honoraires attractifs, ils ne sont pas compétitifs, donc le financement actuel des



services d'urgence c'est qu'il faut faire des actes et ils ne sont pas compétitifs."

8.6.5 A system of salaried emergency physicians: less appropriate for a flexible workforce and more expensive for society

Only a few stakeholders mentioned possible advantages of a system with salaried emergency physicians. Most of them stressed the disadvantages and risks of such system. In general, salaried payment methods are believed to control (over-)production of services and they give physicians a better social protection. Disadvantages and risks are related to incentives to work and to the societal cost.

First, stakeholders feared that a system of salaried emergency physicians will have less incentives to work and will adopt a 9-to-5 mentality. A related argument is that being self-employed is an important part of the professional culture of Belgian physicians. Moreover, even if a salaried system would not change the intrinsic motivation of emergency physicians to work outside a 9-to-5 schedule, social legislation reduces the possibilities to mobilize emergency physicians in a flexible way that is responsive to emergency department activity during the day, week or season (for example, during the tourist season in coastal areas). Stakeholders considered a salaried workforce system more appropriate for jobs with more or less stable working hours.

"Non, non, non. Et si les salariés... Vous avez un cadre, vous savez plus sortir du cadre Or, l'urgence, ça doit pouvoir s'adapter vite à des modifications de référencement, donc des gens qui viennent ou qui viennent plus. Et donc, pouvoir remobiliser des personnes, demander qu'ils viennent, voilà. On sait bien que s'il y a un mondial de foot, il y aura du monde dans les urgences, alors vous pouvez... Alors, c'est plus dans le cadre, on est plus dans une logique de stabilité, d'emplois qui bougent pas."

A further argument against a salaried system mentioned by the interviewed stakeholders is the higher societal cost than other payment systems because of higher social security contributions, as is currently the case in university hospitals. The same argument was given by stakeholders interviewed for KCE Report 229⁴¹, but others contested this reasoning

because "the higher social security contributions are reinjected in the budget and can be spent by the social security system". They also stated that "public authorities miss a lot of money because of the fiscal optimisation practised by self-employed physicians."

8.6.6 The fee schedule of emergency physicians: redundant or too restricted?

Budget overruns due to separate fee schedule

In 2007 a separate fee schedule for emergency physicians has been created. For some stakeholders this separate fee schedule is completely redundant and has caused substantial budget overruns.

"Men heeft inderdaad die urgentisten allemaal opgewaardeerd, maar dat heeft ook een budget gekost om u tegen te zeggen. Dus men heeft inderdaad de kwaliteit proberen te verhogen... De vraag is: is die kwaliteit nu verhoogd? We weten alleen dat het budget met x miljoen overschreden is."

Emergency physicians cannot work in a private practice

At the other extreme, stakeholders from the side of emergency physicians not only complained about the amount of the fee but they would also like to work with a more elaborated fee schedule than is currently the case. For example, all services have to be provided in the ED which implies that emergency physicians are not allowed to work in a private practice. This condition is not imposed on other medical specialists.

"Oui, l'honoraire de nomenclature du médecin spécialiste urgentiste il est valable dans les locaux d'un service d'urgence spécialisée. Il n'y a aucune autre spécialité où on leur dit que les honoraires de consultation d'un chirurgien doivent avoir lieu dans les locaux de consultation de la chirurgie hospitalière. On peut faire de la chirurgie dans son cabinet privé. On fait de la cardiologie à son cabinet privé. Nous on est coincés dans nos locaux de service d'urgence spécialisée. Donc ça nous interdit l'accès à une médecine extrahospitalière. ... Donc grossso modo on n'a pas la possibilité d'accroître nos revenus en dehors de l'hôpital."

The fee schedule is limited and does not allow implementation of evidence-based practice

Services that can be charged by emergency physicians are determined by the fee schedule. Emergency physicians who also hold a degree in another medical discipline (e.g. internal medicine) are allowed to also charge services according to the fee schedule of that discipline.

According to stakeholders from the side of emergency physicians, the limited fee schedule also implies that in some cases the service offer does not comply with an evidence-based practice. The example of noninvasive ventilation is given, which is described as a labour-intensive intervention that avoids ICU admissions, reduces morbidity and mortality. However, emergency physicians are not reimbursed for performing this intervention and hence the hospital management is not interested in buying the equipment.

"En de synchroniciteit is er niet tussen wat eigenlijk nodig is volgens wetenschappelijke normen en wat men eigenlijk ter beschikking stelt. Bijvoorbeeld, niet-invasieve beademing, dat is wetenschappelijk aangetoond, dat is enorm arbeidsintensief. Als we dat doen op spoedgevallendiensten, dan vermijden we opnames op intensieve zorgen, het vermindert de mortaliteit, het vermindert de morbiditeit. Dus dat is een... Wij krijgen dat niet terugbetaald. Wat zeggen veel spoedgevallendiensten? "Oké, dan doen we dat niet, hé. Dan steken we er een tube in, dan worden we er nog voor betaald en de rest zullen we dan wel zien wat ermee gebeurt, hé." Want het komt zelfs zover dat we niet alleen de aktes moeten doen en het toezicht daarover, maar dat we ook de toestellen zelf nog eens moeten gaan betalen. Ja, dan ben je op den duur wel goed zot... Hetzelfde met echografie enzoverder. Dus wij botsen daar gewoonweg tegen een muur. Wij kunnen niet de zorg aanbieden waarvan wetenschappelijk aangetoond is dat dat de beste zorg is omwille van die beslommeringen die er spelen."

Bargaining power determines the fee schedule

Stakeholders not only criticised the design of the ED fee schedule, but also the way decisions on the fee schedule are taken in Belgium. The type of reimbursable benefits and their amounts (total fee and reimbursement) are determined through a process of negotiations with the various parties

involved within RIZIV – INAMI. Stakeholders stated that because the disciplines with predominantly technical acts are overrepresented in the Medico-Mut, they can negotiate better fees for their own disciplines. This resulted in a distortion of physician fees with those disciplines that have historical strong lobby groups also having better fees. On the other hand, although emergency physicians do not have strong lobby groups, stakeholders who are opposed to the separate fee schedule for emergency physicians introduced in 2007 also criticized the way decisions are taken in the Medico-Mut.

"Het grote voordeel van die nieuwe honoraria is dat je nu perfect weet: "Wat gebeurt er op spoed?" Het grote nadeel is dat men daar in een extreem gegaan is, dat wij... Die gezegd hebben: "Ja, oké, wij kennen het. Dat gaat totaal ontsporen." Dat is dus Medico-Mut, hé. Dat is dus puur... Ja, wie het luidst roeft, haalt het. En men heeft het gehaald. Maar men heeft dus de honoraria totaal gemaximaliseerd tot en met, waar wij gezegd hebben: "Ja..." En pas op, wij zijn er ook slachtoffer van hier. "We gaan ontsporen en dat gaat het dubbel zijn van het budget dat ze gaan denken dat het gaat zijn." En dat is ook zo, hé."

8.6.7 The size of the hospital determines the budget available for physicians on duty in the ED

The way physicians are paid for being on duty (for example an hourly wage) is determined in the individual financial agreement between the hospital and the physician. This means that the hourly wage has to be paid irrespective of the number of ED visits. Stakeholders complained about the current regulation where the amount of money that is available to pay emergency physicians for being on duty depends on the size of the hospital (a lump sum amount per inpatient admission (€ 25.73 in 2015) and per day-care admission (€ 5.36)) while an ED has a function of public interest and should be financed accordingly.

When ED case-mix is interpreted in a broader sense and also includes socioeconomic factors such as language, the caseload of EDs in larger hospitals is not necessarily more severe than the caseload in smaller hospitals. For example, smaller hospitals in large cities can be confronted with a large proportion of patients with specific problems (e.g. psychiatric, language) demanding more staff (nurses and physicians) on duty in the ED.



Availability fee during out-of-hours for being on duty: a bridge too far in times of budgetary constraints?

Since 2008 hospitals with a specialised ED and/or an intensive care unit are entitled to an 'availability fee' during weekends and bank holidays. However, the fee is meant to cover on call services for the hospital as a whole and not only for the emergency department. Stakeholders, mainly from the side of hospital management, considered the lump sum payments to be on call for medical specialists other than emergency physicians a bridge too far in times of budgetary constraints.

"Men heeft dan op een bepaald moment, wat ik ook niet begrijp, de beschikbaarheidshonoraria ook nog een keer gegeven. ... Ik weet niet of u weet wat dat is? Maar naast de spoedarts zijn er voor spoed dokters thuis van wacht. En die krijgen dus geld om thuis van wacht te zijn. Nu, dat is een cadeau in schone tijden, maar wij zeggen al lang van: "Ja, maar ja, als er moet bespaard worden, eerlijk gezegd, waarom is men daaraan begonnen?"

8.7 Critical appraisal of the development and implementation of quality indicators for emergency care

During the last decade an increasing number of studies have reported the development of performance indicators in the domain of emergency care. Performance indicators have been developed to assess the quality of care and desirable outcomes of emergency care services.¹⁸⁴ The interest for emergency department performance increased since the many reorganisation efforts of emergency care services that were undertaken in many countries worldwide.³³

Most articles on ED performance indicators focus on a specific domain or patient population (e.g. trauma care^{185, 186}, pain management¹⁸⁷, stroke patients¹⁸⁸). Also the use of more generic indicators is reported.^{33, 189} Alessandri et al. (2011), for instance, found 124 measures that could be categorized as general measures applicable to all ED visits (e.g. left without being seen). Most indicators focused on ways to deliver care (process indicators). Also in the review by Sorup et al.(2014)³³ process indicators dominated.

Accreditation alone will not solve the variable quality of care in EDs

The interviewed stakeholders also indicated the need to develop performance measures for emergency care because quality of care in Belgian EDs is perceived by them as highly variable. To improve the quality of care in EDs it is required that, in addition to other measures (e.g. accreditation) quality indicators are measured and benchmarked. It should be noted that some of the interviewed stakeholders heavily criticized the current wave of JCI and NIAZ accreditation in Belgian hospitals. Although they admitted that it helps to focus on quality of care they are very critical about the real impact on patient care. They stated that there is no evidence that shows that achieving accreditation results in better patient care. In addition, some stated that hospitals apply for accreditation only to escape from interference of the public authorities (i.e. Flemish hospitals that receive JCI or NIAZ accreditation are released from the accreditation process from the public authorities).

But the development of quality indicators is challenging

It should be noted that, although attractive at first sight, the development of performance indicators for emergency care is not evident. After all, performance indicators should be clinically important and have a strong underlying evidence base (relationship between performance and outcome). This latter criterion is problematic in the emergency care domain. A recent review by Madsen et al. (2015) evaluated the underlying evidence of ED performance indicators and concluded that no specific indicators can be recommended over others given the poor quality of the underlying evidence.¹⁸⁴ This problem was also discussed by the interviewed stakeholders. Several stakeholders emphasized the difficulty to define general quality indicators for emergency departments. Development of indicators for emergency departments is challenged by the undifferentiated nature of patient presentations, the operational complex environment of the ED and the time-sensitive nature of much of the ED care.¹⁸⁸ An alternative for general ED performance indicators is to define quality indicators for specific time-critical conditions (e.g. time-to-door for stroke). A review of Sauser et al. (2014)¹⁸⁸ found that three indicators (i.e. brain imaging within 24h, tPA administration within 3 hours of symptom onset, and the delivery of tPA within 60 minutes of hospital arrival) did meet the evidence and clinical importance criteria. Yet, measuring indicators for time-critical

conditions only gives a partial picture since these time-critical patient conditions (e.g. stroke, STEMI-AMI) represent only about 5-10% of the ED population. As such, other quality indicators assessing the quality of process in the ED (e.g. pain assessment) or perceived quality of care by patients are needed without imposing a registration burden to the hospitals. In any case, it is important that only quality indicators with a solid underlying body of evidence are chosen. When it is decided to start measuring process and outcome indicators in EDs there should be underpinning evidence linking the outcomes to evidence-based processes and vice versa. Furthermore, field experts are required in the selection and implementation of these indicators. This will increase the support for and impact of the quality indicators.

"Kwaliteitsindicatoren voor spoed? Dat kan je vergeten, dat bestaat niet. ...Wat wel mogelijk is, zijn indicatoren voor bepaalde aandoeningen zoals hartinfarct en CVA: voor de keten zijn indicatoren gedefinieerd en die spelen zich voor een deel af op de spoed. Dit geldt voor een aantal tijdskritische indicaties: 'time to door', van begin klacht tot interventie. De zorginspectie kan die indicatoren opvolgen en als het mis loopt, dan kan de zorginspectie dit bekijken."

Pay-for-performance

Pay-for-performance is gaining momentum (inter-)nationally and also within the domain of emergency care P4P-experiments are reported (e.g. to reduce length-of-stay in the ED). However, several preconditions and design elements should be taken into account in order to increase their potential effects: select targets with sufficient room for improvement; involve stakeholders intensively during programme development, implementation and evaluation; focus on quality improvement and (not only) on quality achievement; re-invest bonuses directly in quality improvement initiatives; monitor the potential unintended consequences (e.g. gaming; patient selection); carefully select the size of the incentive (not too small so that it is not ignored, not too large so that it results in unintended consequences such as a tunnel vision); select process and (intermediate) outcome indicators which are evidence based.

As described above, the latter criterion (indicators with a strong underlying evidence) is not met. Therefore, starting pay-for-performance initiatives in emergency care seems to be premature.¹⁹⁰

8.8 Solution elements

The face-to-face interviews of stakeholders yielded a wide range of possible solutions for the abovementioned problems with the current payment system for EDs and their workforce. The proposed solution elements range from an evaluation of the new calculation method of the B2-budget over a new payment system to an integrated payment system for the ED and organised duty centres (ODCs).

Lessons learned from international experience are the topic of Chapter 9.

8.8.1 *The ED budget should be sufficient to cover minimum staffing levels*

Stakeholders agreed that the structural underpayment of the hospital budget in general and of the budget for EDs in particular should be resolved first so that the required staffing ratios are covered. Only changing the way a closed-end budget is distributed among hospitals will not resolve this problem. Some of them are convinced that this can be realised in a budget-neutral way, by reducing the number of EDs (see Chapter 3).

8.8.2 *The new calculation method for the ED budget should be evaluated regularly*

Some stakeholders clearly recognized the positive aspects of the new calculation method for the distribution of the B2-budget among hospitals. They underlined the more explicit link between payments and caseload/nursing workload compared to the previous calculation method, for example due to a correction for age (children and elderly), whether or not a patient is admitted to an ICU, etc. However, they also agreed that the method should be evaluated regularly and adjusted when necessary. An example given by many stakeholders (also by those who are in favour of the new calculation method) is a possible shift from high- to low-severity patients at the ED due to the advantageous payment for these patients. Moreover, larger payments for specific patients (based on age, admission in an ICU, etc.) might induce hospitals to admit these patients through the ED for planned hospital admissions. Hence, they advised that shifts in the share of the national B2 budget between hospitals are closely monitored, for example on the basis of the UREG-registration.



"Dus ik denk dat de werklastmeting een goede methode is. En dat vind ik dus inderdaad goed. Men moet eerder de normen kunnen bepalen, er moet permanentie voorzien zijn, aangepast aan de werklast. En daar heeft men dan de spoed voor. En nu kom ik tot de maar... Wat is het probleem? Dat is natuurlijk per patiënt afgemeten. En in tempore non suspecto klopt dat verhaal. Maar dan komt weer het aspect financiering op de proppen. En dat kan wel eens een keer toelaten dat bepaalde ziekenhuizen op voorhand gaan berekenen: "Ah, dit type patiënten, daar worden we op de spoed goed voor gefinancierd. Dus hebben we er alle voordeel bij om dit type patiënten via de spoed naar binnen te laten." En dan zijn we natuurlijk niet goed bezig. Dus hebben wij voorgesteld om daar correctieve maatregelen op toe te passen van: "Oei, je ziet ineens een stijging van zo veel procent. Hoe zit dat men de benchmark met andere ziekenhuizen?" En daar dan een correctie op te doen in min of plus om dat een beetje terug in goede banen te leiden, zodanig dat niemand een voordeel heeft om een bepaalde patiëntenstroom te gaan induceren om een betere financiering te kunnen krijgen."

8.8.3 A mix of fixed and variable payments

Although stakeholders identified a variety of strategies to address the shortcomings in the current payment model, most of the strategies consist of a combination of fixed and variable payments. The mix of fixed and variable payments follows from the very nature of hospital ED functions such as availability to receive patients and stabilization or treatment of these patients. Arrivals at EDs vary over different days of the week and different times of the day or night. Hence, EDs can be almost idle or can be very busy. But even when EDs are standing idle, they provide an 'availability product'¹⁹¹ and are stand-by in case a patient in urgent need of treatment arrives. The 24/7 availability holds for nurses and physicians. In general, stakeholders proposed that EDs receive a fixed amount for the availability function of a team and variable payments according to the number and type of patients arriving at the ED. The fixed payments also cover infrastructure and equipment (e.g. for laboratory and radiology services).

Although most stakeholders agreed on this mixture of a fixed and variable component to pay EDs, they differed in the concrete design of both parts. The fixed part should, however, be set at a level that is sufficient to cover a

minimum staffing level that is required regardless of activity within the ED. And compared to the current payment system, stakeholders agreed that the fixed part should be larger and the variable part should be reduced. Stakeholders emphasized that the balance of incentives between the fixed and variable part of the payment system should be right.

Key policy decisions relate to whether or not the guaranteed payment for the availability of emergency physicians is included in the hospital budget for the emergency department, to the size of this fixed component and to the relative proportions of the fixed and variable payments.

A large share of total ED payments for being open 24/7

Stakeholders suggested that a relatively high proportion of total ED payments is fixed and set at a level that is sufficient to cover a minimum staffing level that is required regardless of activity within the ED. Some stakeholders called this availability function 'a service of public interest'. This is in line with Duckett and Jackson(2001)¹⁹¹ who compared the availability function of an ED with a public good in that all members of the public in the market area potentially benefit from the provision, even though they are not direct consumers. The authors stated that "recognition of the public good nature of at least part of the activities of hospital emergency services implies that public funding for such services should not simply be on the basis of the number of people seen". In some proposals for a new payment model for urgent and emergency care (UEC) in England, this part of the new model is called 'fixed core payment' and reflects the 'always-on' nature of urgent and emergency services.¹⁵⁶ The larger the fixed part in total ED payments, the higher the emphasis on the availability function of the ED.

"Je moet kunnen vertrekken van een basisfinanciering, die bijvoorbeeld met permanentie rekening houdt en met de activiteiten. In een spoed heb je nog veel meer dan in een andere ziekenhuisdienst, mensen die daar permanent moeten ter beschikking staan ook al is het activiteitenniveau laag. Je hebt in de bezetting van een spoed hoogtes en laagtes. Maar het is niet omdat je een laagtemoment hebt in activiteit, dat je daarom uw personeel niet moet ter beschikking stellen. Vandaar dat ik denk dat de financiering van de spoed niet zomaar een DRG-financiering kan zijn. Eigenlijk heb je, wat ik noem, een aantal diensten van algemeen belang. De spoed is dat, de intensieve zorg is dat. Dat zijn diensten die, moest je louter gaan kijken op activiteit, dat



zou niet goed zijn, omdat dus een spoed altijd een stuk sowieso gaat kosten omwille van de permanentie die je moet hebben. Dus het is een dienst van openbaar belang, vind ik, en die ook een eigen financiering moet hebben.”

Guaranteed payment for availability function: including the physician part?

According to some stakeholders, payments for the availability function should be large enough to cover costs for the whole team of emergency physicians, nurses and other staff in line with the minimum staffing levels necessary to operate the emergency department, including the Mobile Emergency Group (MUG – SMUR) which implies a minimum of two emergency physicians on duty.

“Wat vast moet zijn, is eigenlijk wat je altijd als equipe minstens moet hebben. Als men zegt ‘je moet twee urgentisten hebben en twintig verpleegkundigen’, dan moet je los van die activiteiten die financiering kunnen garanderen, vind ik. En dan een stuk volgens de activiteit erbovenop. Maar minstens die continuïteit.”

Other stakeholders were also in favour of a large(r) guaranteed payment for the ‘always-on’ nature of the ED, but were opposed to one integrated budget for the hospital and emergency physicians. The same arguments were given as reported in KCE Report 229. First, stakeholders were concerned that integrated payments for the hospital and emergency physicians would result in more discussions on money than currently is the case. Physicians would first have to negotiate with the management on their share of the hospital budget and then discuss between themselves about how to distribute the physician share between physicians. Stakeholders also feared that an integrated payment could also decrease the motivation of physicians to work hard.

The size of the guaranteed payment

The interviewed stakeholders differed in opinion not only on whether the guaranteed payment should be one integrated payment for the hospital and physicians or not, but also on the determinants to define the guaranteed payment. Some of them proposed that the guaranteed payments are defined as a step function with payment thresholds based on current utilisation rates. Other determinants of the thresholds that were suggested are the hospital

catchment area or population needs of a specified geographical area. Stakeholders remained rather vague about the definition of the geographical area and about the variables to define population needs. The argument for determining the size of the fixed part on the basis of the population size is that, on average, the proportion of persons with for example an infarct is more or less the same across geographical areas, rural and urban. For the adjustment according to population needs, most of the stakeholders mentioned the number of inhabitants (population density), possibly adjusted for demographic or epidemiological characteristics. Some were very clearly opposed to the use of socioeconomic criteria to determine the guaranteed budget. Others preferred to first define the type of patients or pathologies that preferably should be seen at the ED and to base the fixed payment on the incidence of these pathologies per 100 000 population. Such payment system starts from the premise of a well-functioning triage system.

Whatever the choice of determinants, the fixed budget should be adjusted on a regular basis to account for changes in the determinants of the thresholds, staffing costs (e.g. new collective labour agreements, etc.).

“Moi je ne pense pas maintenant, c'est quand même proportionnel au nombre de médecins nécessaires pour faire tourner le service donc ça... et ça a priori c'est proportionnel à la population qu'il draine parce que je pense qu'il y a plus ou moins le même nombre d'infars par 100 000 habitants en milieu rural, en milieu urbain tout ça c'est plus ou moins... on a des statistiques quand même ça doit exister, ils ont des RCA le nombre de coliques néphrétiques et encore c'est être traité en médecine générale, mais qui existe par 100 000 habitants c'est sensiblement pareil donc on devrait pouvoir voir quel est le type de pathologies qu'un service d'urgence doit drainer, on doit savoir un petit peu quelle est la récurrence de ces pathologies, de l'incidence de ses pathologies par 100 000 habitants et estimer comme ça les moyens humains nécessaires en terme de médecin dans un service d'urgence et rémunérer en fonction de ça je pense qu'on peut voilà... je pense que si un tri est bien fait on peut remplacer la rémunération, le lien à l'acte par le lien à la population qu'il draine.”



8.8.4 Variable payments reflecting the ED caseload and patient case-mix

Using a volume-based payment in combination with a fixed payment recognises patient activity and possibly also case-mix as key cost drivers additional to the availability function of the ED. Two EDs with the same fixed payments (e.g. based on current activity levels or population characteristics of a specified geographical area) can have a different caseload. Stakeholders emphasized that a payment system linked to the number and mix of patients has the advantage of creating an incentive to work (more patients mean a higher income) and allows to keep a track of ED activity. In a mixed payment system a larger share of the variable part means that a larger part of the availability costs (for emergency physicians and nursing staff to be on duty) are spread over all presenting patients.

Most of the interviewed stakeholders defended a reduction in the fee-for-service part to provide less incentives for overproduction for physicians as well as for hospital management, especially in case of low severity patients which could be treated by a GP.

"Et puis je pense que c'est logique qu'il y ait quand même un lien avec l'acte, mais que pour l'instant il est beaucoup trop fort et que ce lien avec l'acte ne doit pas être à ce point important qu'il va pousser les gestionnaires à multiplier les actes il faut savoir que dans cette même réunion que nous avions eue donc il y a trois ans ils nous ont clairement dit que un infar c'était pas très rentable donc un infar ça leur coûte parce que pendant qu'ils font l'infar ça leur prend du temps, ils gagnent je ne sais pas quelle quantité d'argent, s'ils pouvaient voir de la bobologie ou de la médecine générale pendant ce temps-là ils gagneraient beaucoup plus d'argent à l'heure. Donc demandez sur le plan financier à un service urgence ils disent « j'aimerais bien avoir moins d'infar et plus de médecine générale »."

Volume-based payments: only counting numbers or also correcting for patient type?

Although stakeholders defended volume-based payments taking account of the number of patients attending the ED, there was less agreement on also differentiating the variable component by type of patient and even less

consensus on the characteristics to determine the patient type (see also Chapter 9 for adjustment factors in the international comparison).

The interviewed stakeholders suggested a wide variety of possible variables to classify patients and to adjust (variable) payments according to these groups: pathology (DRG-type), nursing care, age (e.g. children), transfer to ICU, disposition decision (ambulatory, inpatient), degree of urgency, psychiatric problems, etc. Only a minority of stakeholders proposed to make payments dependent on patient pathology as in for example DRG-based hospital payment systems. The main argument given by opponents of such classification is the lack of direct link with nursing workload (see section 8.5.3).

For the fees of emergency physicians some stakeholders proposed to keep one fee per patient, but to differentiate the fee to whether or not the patient is admitted to the ICU.

"Si vous dites la constipation vous parlez par pathologie, par diagnostic, par plainte c'est encore différent. Mal au ventre, voilà, ça peut être de la constipation, il y a beaucoup trop de constipés qui vont aux urgences, ça peut être une appendicite, c'est différent, la douleur abdominale il faut parler plutôt pour... enfin a priori par diagnostic, mais ça c'est difficile."

Opponents of adjusting ED payments to pathology also argued that this will lead to risk selection of better paid pathologies. Moreover, patients arrive at the ED with complaints, symptoms and signs but not with a verified discharge diagnosis.

Several stakeholders were in favour of a system with payments adjusted for the degree of urgency. They consider such payment system as an important tool to discourage treatment of patients with GP-type conditions. At this moment these patients are very lucrative because they can be treated in a short time period.



8.8.5 Funding for sparsely populated and remote areas

To keep EDs in sparsely populated and remote areas an attractive workplace for emergency physicians, separate funding could be considered. Of course, the relative proportions of the fixed and variable payments also play an important role in the attractiveness of these areas. A possible alternative to a payment per (type of) patient could be to offer emergency physicians an hourly wage that is high enough to be competitive with a variable payment system. The same options can be offered to EDs.

“Maar er zijn situaties... Ik geef altijd hetzelfde voorbeeld. In een ver deel van het land die niet voldoet, maar op basis van de overheid dat men bepaalt: daar moet een urgentie of een spoedgevallenfunctie aanwezig zijn om de populatie te kunnen ontvangen, maar wetende dat de populatie... het aantal inwoners niet voldoende is. En als men dat bepaalt op hoog niveau, waar [...] zelf niks mee te maken hebben, en men weet dat het aantal patiënten klein is, maar je moet iets kunnen voorzien om de bevolking op te vangen, dan denk ik dat men voor die patiënten een soort van uurloon moet kunnen borgen zodat mensen daar willen gaan werken. Anders ga je een ziekenhuis hebben waar geen persoon daar wil gaan werken. Dus dat zijn de twee populaties. Dat is de financiering die ik denk die eerlijk en accuraat is.”

8.8.6 A payment system to support the development of an emergency care network

Fixed and variable payments at the level of a network, including payments for ODCs

Only a minority of stakeholders were in favour of an integrated budget for EDs and OCDs to stimulate collaboration. Opponents feared that one envelope for both partners might have the risk that EDs and OCDs will try to maximize their share of the budget.

Several stakeholders suggested to pool the available resources for EDs at the level of a network of hospitals.



Key points

- Emergency departments receive their budget from a closed-end budget, called the 'Budget of Financial Means' (BFM) and physician fees.
- The largest part of the BFM is the B2-budget, covering clinical costs (nursing and care personnel and medical equipment). The B2-budget is considered insufficient to guarantee imposed minimal staffing norms of a 24/7 hour service provided by at least two nurses in a specialised ED.
- The allocation of the B2-budget for EDs among individual hospitals is based on a point system. Until 1 July 2013 the size of the hospital (in terms of justified beds) and supplementary fees per occupied bed for out-of-hours services provided to all inpatients determined the allocation of points. The main critique on these budget allocation rules is that both parameters are insufficiently linked to ED caseload.
- New allocation rules have gradually been implemented since 1 July 2013 with full implementation from 1 July 2017. Points and hence budget are allocated among hospitals on the basis of their ED caseload: for each patient attending the ED hospitals receive one 'emergency unit' and for specific patient groups (e.g. children, some diagnoses, admission time or disposition decision) supplementary 'units' can be earned. The total number of points is allocated proportional to the number of emergency units. The new allocation rule better reflects caseload differences between EDs, but it is also criticized because of a higher risk of inappropriate use of the ED.
- Results for 2013 and 2014 (with 10% and 20% of points allocated with the new rules, respectively) show a shift in points and budget allocation: the losers of the new rules are concentrated among hospitals with a large number of justified beds. Total ambulatory ED activity has increased in 2014.
- Emergency physicians and other medical specialists providing services in the ED are mainly paid on a fee-for-service basis.
- Emergency physicians can charge one fee (called A-fee) per visit, irrespective of the provided services or of patient

characteristics. The fee only depends on the educational level of the physician (three types) and on the accreditation status. There is a large diversity between EDs in the share of the three types of A-fees. Emergency physicians are entitled to supplementary fees for out-of-hours services. The budget available to reimburse on duty services is determined by the number of inpatient and day-care stays in the hospital (not only in the ED).

- Medical specialists called in consultation by emergency physicians receive a C-fee which depends on the medical specialty. There is a large difference between hospitals in the ratio between the number of C-fees and the number of A-fees, ranging from 0% to 100%.
- There is no pay for performance (also) because the development and implementation of quality indicators in EDs is not straightforward (lack of evidence-based indicators).
- Stakeholders proposed that EDs receive a budget for the availability function and variable payments according to the number (and type) of patients visiting the ED. However, there is less agreement on the share of both parts (and hence on what to include in the fixed part, e.g. physician fees) and on the determinants of the variable part.
- The fixed budget is set at a level that is sufficient to cover a minimum staffing level that is required regardless of the volume of cases. Determinants of the guaranteed payments that were proposed are current caseload, the hospital catchment area and population needs of a specified geographical area.
- Stakeholders were in favour of variable payments which depend on the number and for some stakeholders also on the type of patients visiting the ED. There was less agreement on how close the link between activity and payments should be, on the relative weight of variable payments, on the role of patient characteristics to adjust the variable payments and on the role of triage.



9 ORGANISATION AND PAYMENT OF EMERGENCY CARE SERVICES IN SELECTED COUNTRIES

Chapter authors: Wilm Quentin, Natalie Baier, Mickael Bech, David Bernstein, Thomas Cowling, Terri Jackson, Johan van Manen, Andreas Rudkjøbing, Alexander Geissler

9.1 Introduction

9.1.1 Background

In Belgium and in most high-income countries, the number of visits to hospital emergency departments (EDs) has increased considerably over recent years.¹⁹² The reasons for this increase are multifaceted and include factors related to both patient characteristics (e.g. demographic change, socioeconomic conditions, lack of knowledge about different options for emergency care, or changing preferences) and service characteristics (e.g. lack of access to primary care services, inconvenient primary care out-of-hours services, complexity of the care system for unscheduled urgent and emergency care).

In many countries, the high number of patients at EDs has led to increasing workload for providers, long waiting times for patients, reduced quality of care, and inefficient use of resources.¹⁹³⁻¹⁹⁵ In addition, a considerable proportion of patients at EDs have been found to attend for conditions that do not require urgent attention or complex interventions¹⁹² – and could potentially be managed by primary care providers in a timelier manner and at lower costs. In fact, these visits to EDs are often referred to as ‘inappropriate’ ED visits, although there is considerable debate about the concept of ‘inappropriateness’.^{16, 192, 193}

The organisation of emergency care services and payment systems for these services differ greatly across and often also within countries. Several countries have undertaken reforms over recent years with the aim of reducing the number of inappropriate ED visits and rationalizing the use of emergency care services. The aim of this chapter is to compare the

organisation of and payment systems for emergency care services in Australia, Denmark, England, France, and the Netherlands. In addition, the chapter will provide examples of promising reforms that were undertaken in these countries.

The next section of this chapter describes the methodology we have adopted in order to gather relevant information for the analysis of emergency care services across countries. We then provide an overview of the availability and use of emergency care services across countries. Section 9.2 presents information about the organisation of emergency care services in the five included countries, focussing on urgent primary care (out-of-hours) services, emergency departments, and call centres and coordination. Section 9.3 explores payment mechanisms used to reward emergency care providers and professionals. Section 9.4 describes reforms and debates in the selected countries and presents particularly interesting examples of reforms that have (1) improved the availability of urgent primary care services, (2) supported better coordination of EDs with urgent primary care, (3) streamlined emergency care provision for specific groups of patients by concentrating highly specialized services, and (4) rationalized the distribution of EDs in the country. Finally, section 9.5 concludes with a summary of our findings and lessons learned for policymakers.

9.1.2 Methodology

A scoping review was performed using Health System in Transition (HiT) reviews, web-search, and contacts with experts in order to identify countries, where the organisation of and payment for emergency care services was expected to provide interesting examples for discussions about emergency care reform in Belgium. Table 23 shows basic information on 13 countries, which were considered to potentially provide relevant examples for the Belgian debate. The table also indicates which of these countries were selected for inclusion in our study. In particular, we included countries where primary care was coordinated with emergency care services, where interesting payment systems existed for EDs, and/or where the number of EDs has been reduced over time.



Table 23 – Selected countries, simplified health system characteristics and specialist payment models

Countries	Health System characteristics	Inclusion (Yes/No)	Reasons for inclusion/exclusion
1 Australia (New South Wales, Victoria)	Decentralized, NHI	Yes	Cooperation with primary care, case-mix system for emergencies
2 Denmark	Decentralized, NHS	Yes	Strong gate-keeping, reduction of EDs, cooperation with primary care
3 England	Centralized, NHS	Yes	Cooperation with primary care, case-mix system for emergencies
4 France	Centralized, etatist SHI	Yes	New call centres, new primary care (out-of-hours) providers
5 The Netherlands	Centralized, etatist SHI	Yes	Cooperation with primary care, user charges for EDs
6 Switzerland	Decentralized, SHI	Yes**	Cooperation with primary care, population-based allocation of resources
7 Norway	Decentralized, NHS	No	Strongly decentralized, sparsely populated areas
8 Sweden	Decentralized, NHS	No	Strongly decentralized, sparsely populated areas, concentration of acute care hospitals, better education of patients about health-seeking behaviour
9 Poland	Decentralized, etatist SHI	No	Little information available
10 Hungary	Decentralized, etatist SHI	No	Strong primary care, payment reform, little information available, difficult contacts
11 Italy	Decentralized, NHI	No	Strongly decentralized system, little information available
12 Germany	Centralized*, SHI	No	Little cooperation with primary care
13 Canada (e.g. Ontario)	Decentralized, NHI	No	Strongly decentralized, sparsely populated areas

Notes: * At least concerning SHI; ** Contacted experts failed to provide answers in time; NHI = National Health Insurance; NHS = National Health Service; SHI = Social Health Insurance

Source: Authors' own compilation; health system characteristics based on Bohm et al. (2013).¹⁹⁶

Information on emergency care services is often fragmented and reforms are relatively rarely described in the available literature. Therefore we designed a survey (see annex to Chapter 9 for the blank questionnaire) and approached national experts (see annex to Chapter 9 for a list of participating experts) in order to obtain qualified, comprehensive and detailed information on the organisation of and payment systems for emergency care services in the included countries.

The survey was structured in four sections. The first section asked for general background information, including on planning of emergency infrastructure, emergency health professionals, and indicators of emergency availability and use. The second section asked questions on the organisation of emergency care services, including about different providers, legal requirements, triage and coordination, and on the patient perspective. Section three focused on the payment systems for different providers of emergency care services. The last section contained questions aiming to obtain information about the most important challenges and reforms in each country.

Completed questionnaires were reviewed and country experts answered additional questions about points that had remained unclear in their original responses. Reports and studies that were mentioned by national experts or were identified by searching the available literature were assessed in detail. Experts in Denmark and the Netherlands were asked to complete a second individual questionnaire in order to obtain more specific information on reforms that had reduced the number of EDs in the country and had improved coordination between primary care and emergency care.

9.1.3 Overview of emergency care services across countries

9.1.3.1 Indicators of emergency service availability and use

There is no internationally accepted **definition** for emergency care or emergency cases. In fact, none of the countries included in our survey has a national definition of an emergency case, which is independent of the care provider. Instead, all cases attending emergency departments are generally considered to be emergencies. However, differences exist also concerning

the definition of emergency departments. In Australia, EDs are defined by the Australasian College of Emergency Medicine (ACEM) as dedicated hospital based facilities specifically designed and staffed to provide 24 hour emergency care.¹⁹⁷ These facilities must provide (as a minimum) continuous access to medical staff, have a dedicated resuscitation area, provide 24 hour access to blood products, laboratory, radiology, and access to specialist medical and surgical services.¹⁹⁸ In France, the definition of an ED is similar (see section 9.2.2.4) but in other countries, the definition of EDs is less specific. For example, in the Netherlands, facilities that are open only during daytime may also be considered EDs, and in Denmark, some hospital-based nurse-led outpatient clinics are locally referred to as EDs.

Table 24 summarizes data about the availability of EDs in six countries, including only facilities that comply (more or less) with the ACEM definition, i.e. they are hospital based and open 24/7. The number of EDs per 100 000 population varies considerably from 0.33 in England to 1.25 in Australia. Partially, differences in the availability of EDs reflect differences in the general availability of acute care hospitals in these countries. Consequently, the proportion of hospitals with EDs out of all acute care hospitals is relatively similar in Australia, Denmark, France, and England, i.e. between 37% and 45%. In the Netherlands, where the number of acute hospitals is relatively low (0.78 per 100 000), almost 70% of all acute care hospitals have an ED. However, these numbers need to be interpreted in view of the national context, e.g. with Australia being a sparsely populated country; and caution should be applied because of discrepancies in the organisation of care. For example, numbers shown in Table 24 for Australia do not include EDs at private hospitals (because private hospital EDs do not play an important role and because utilisation data for private hospital EDs are unavailable); data shown for England do not include single specialty EDs (because these may be co-located with other EDs and because they provide care only to a very specific group of patients) nor do they include other providers of unscheduled primary care, such as minor injury and walk-in units, which are often included in national A&E (Accident and Emergency) data.



Table 24 – Availability of emergency departments in Australia, Denmark, England, France, and the Netherlands

Countries	Total acute care hospital sites in the country**	Acute care hospital sites/100 000 population	Number of hospital sites with ED*	Hospital sites with ED/100 000 population	Proportion of acute care hospital sites with ED	Population***
Australia (2013-14) ^a	728 ^b	3.15	289 ^c	1.25	39.7%	23 125 868
Denmark (2013)	49	0.87	22	0.39	44.9%	5 614 932
England (2013)	419	0.78	180 ^d	0.33	43.0%	53 865 800
France (2013) ^e	1592	2.41	655 ^f	0.99	41.1%	65 925 498
The Netherlands (2014)	131	0.78	91 ^g	0.54	69.5%	16 804 432

*Sources: AIHW, 2014; Ricroch, 2015; Regions, 2014; HSCIC, 2015²⁵⁻²⁹; ** Sources: Regions, 2014; HSCIC, 2015; WHO, 2015; AIHW, 2015; Deuning, 2015²⁸⁻³²; *** Sources: World Bank, 2015; ONS, 2014^{33, 34}

Notes: ^a The number for Australia refers to hospital organisations, which are usually established at one site but some may have several sites and sometimes several organisations may be located at the same site; ^b Number refers to acute public hospitals; ^c There are also 23 EDs at private hospitals but they are excluded because do not play an important role³⁵ and because utilisation data is not available for these EDs; ^d Excludes 28 single specialty EDs (e.g. for ophthalmology or dentistry) because these do not provide general emergency care and might be co-located with other EDs; ^e For France the number of hospital sites is underestimated since for public hospitals only information was available at the level of the hospital; ^f Hospitals with multiple EDs are counted only once; ^g In addition, four hospitals have an ED, which is not open 24/7.

Table 25 summarizes indicators of ED use in the six included countries. There is considerable variation across countries in the number of ED visits per 1000 population, ranging from 124 in the Netherlands to 311 in Australia. However, Australian statistics include also patients who visit the ED for planned follow-up and pre-arranged visits. Possibly as a result of this, Australia has the largest number of ambulatory ED visits and the largest number of emergency inpatient admissions, while the proportion of admitted

patients out of all ED visits is only slightly above numbers in other countries, i.e. 33% in Australia versus 27 to 32% in England, Denmark, and the Netherlands. The Netherlands has the lowest number of emergency inpatient admissions (i.e. 40 per 1000 population). However, the proportion of all ED visits subsequently admitted to the hospital is relatively high (32%) because the number of hospital ED visits is also the lowest of the five countries.

**Table 25 – Indicators of emergency department use in Australia, Denmark, England, France, and the Netherlands**

Countries	Number of hospital ED visits	Hospital ED visits/1000 population	Number of ambulatory ED visits (w/o admission)	Ambulatory ED visits/1000 population	ED visits followed by an inpatient stay	Emergency inpatient stays/1000 population	Emergency inpatient stays/ED visits
Australia (2013-14) ^{1*}	7 195 903	311	5 069 750	219	2 383 578	103	33.1%
Denmark (2013) ²	875 765	156	624 670	111	251 097	45	28.7%
England (2013-14) ³	14 213 148	264	10 791 930	200	3 792 806	70	26.7%
France (2013) ⁴	18 400 000	279	14 400 000	218	4 000 000	61	21.7%
The Netherlands (2012) ⁵	2 079 172	124	1 413 837	84	665 335	40	32.0%

Sources: 1 AIHW, 2014; AIHW, 2015^{25, 35}; 2 Regions, 2014; Statistics Denmark, 2015^{28, 38}; 3 NHS England, 2015³⁹; 4 Cour des Comptes, 2014⁴⁰; 5 Own calculations based on Berchet, 2015⁴¹ and Gaakeer, 2014⁴²

Note: numbers are different from those reported in Berchet (2015)¹⁹² for Australia, England and France because of various reasons: Australia: the number reported here is more recent (2013 instead of 2012); the number reported for England is lower because it does not include visits to minor injury units or walk-in centres, which are intended to provide primary-care like services and are not comparable with EDs in other countries; the number for France is more recent (2013 instead of 2011); Denmark was not included in Berchet (2015)¹⁹²; the number for the Netherlands is identical.

9.1.3.2 Education of emergency staff

One essential difference concerning the organisation of emergency care across countries is the availability of specifically trained staff dealing with emergency medical care. Table 26 provides an overview about qualifications of emergency staff in the selected countries. In all countries except for Denmark, emergency medicine has been recognized as a medical specialty, and physicians working in EDs should generally have a qualification in emergency medicine or be in the process of obtaining a specialisation title. In Denmark, the introduction of emergency medicine as a medical specialty has been debated since 2007. A recent review of the development of emergency medicine in Europe found that by 2012, more than 60% of all EU countries had recognized emergency medicine as a medical specialty.⁴

Increasingly, countries have a variety of training courses that specifically train nurses or paramedics to take on more important roles in emergency care provision. In Australia and Denmark, post-graduate emergency nursing or acute nursing courses exist and there is training for paramedics. In England, multiple different qualification courses exist for emergency nurse practitioners, emergency care practitioners, and paramedics. In France, there are no special training courses for nurses working in emergency departments but paramedics play an important role in staffing ambulances. In the Netherlands, there are no paramedics and ambulances are staffed with nurses that have a training as an ambulance nurse.

**Table 26 – Qualifications of emergency staff in selected countries**

Countries	Physicians with specialisation in emergency medicine	Nurses with further training in emergency nursing	Paramedics
Australia	Yes	Yes (requirements vary across states)	Yes (requirements vary across states)
Denmark	No – but debates to establish a specialty	Yes (optional)	Yes
England	Yes	Yes (optional)	Yes
France	Yes	No	Yes
The Netherlands	Yes	Yes	No

9.2 Organisation of emergency care services

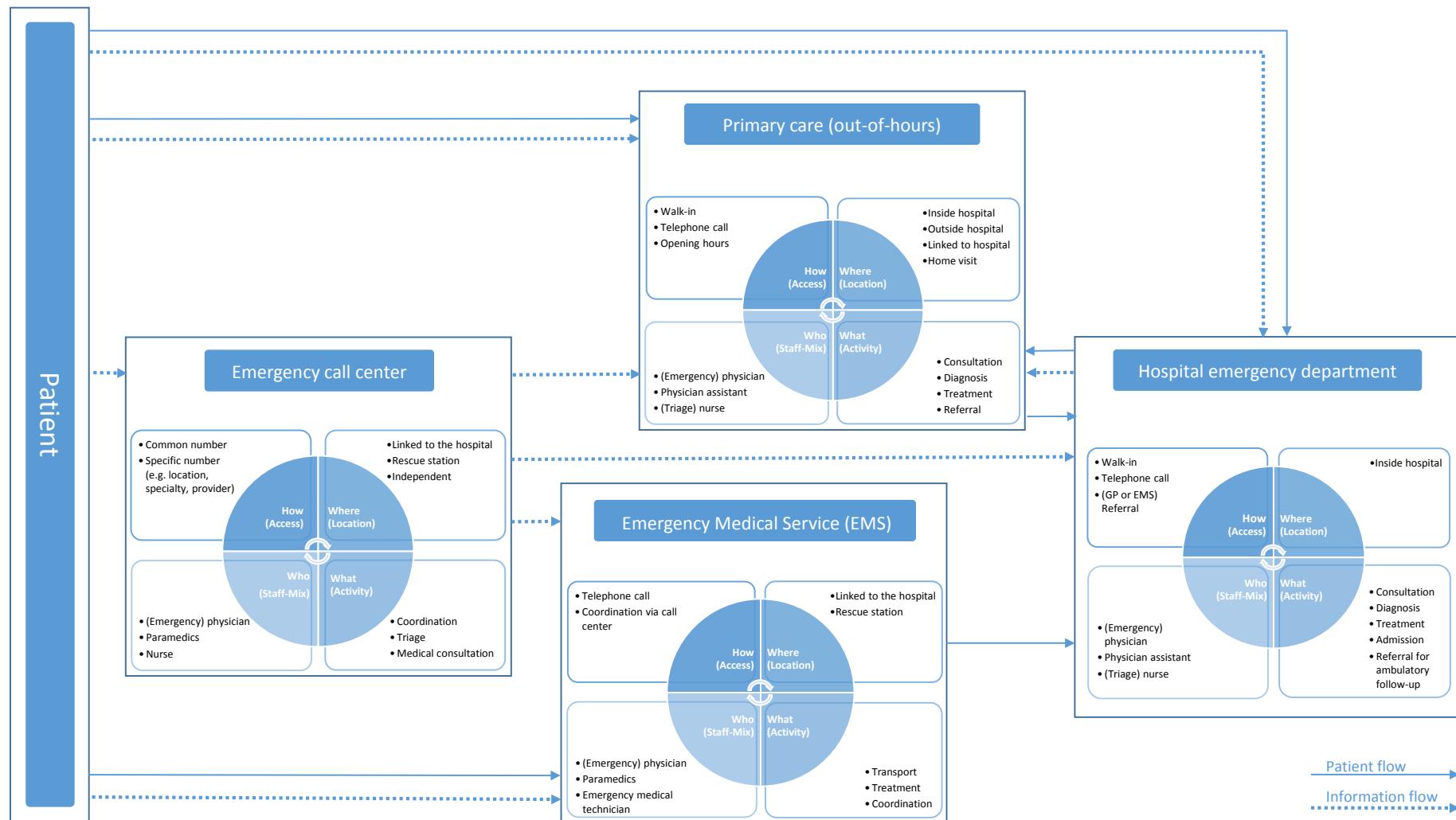
9.2.1 Framework

In order to analyse the configuration of emergency care services across countries, it is important to understand the interplay between different providers of emergency care and urgent primary care in a national setting because the boundaries between the two are often blurred. Therefore, we developed a framework to systematically describe different providers of urgent primary care and emergency care and the flow of patients and information through the system. Figure 38 shows that patients in need of urgent or emergency care 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?);
- Staff-mix (Who is providing the service/treatment?).

Figure 38 – Framework for analysing different emergency service providers and the flow of patients





9.2.2 Organisation and planning

9.2.2.1 Australia

Context: The healthcare system is highly fragmented, with responsibilities and funding divided between the national, state or territory governments, and private insurance plans. The national government pays fee-for-service for care provided by physicians working in independent private practices (some established near hospitals, facilitating diversion of patients away from EDs) but physicians may charge higher fees to patients, and the difference to the standard fee has to be covered out-of-pocket. State governments pay for hospital inpatient, outpatient, and ED care. Service provision is divided between the public sector (most hospital and emergency medical services) and private sector (private hospitals and ambulatory services). State-based public sector arrangements for emergency services may vary by location of the service (metropolitan, regional cities, rural and remote).

Planning: Each state health department plans hospitals for the state, and as part of this also determines the allocation of EDs. There are no formal criteria for the allocation of EDs and decisions are influenced by local politics. Nevertheless, underpopulated areas usually do not get a fully staffed 24h ED. There is no formal planning of primary out-of-hours care, and consequently there is little coordination between emergency and primary care. Some public hospitals have created general practice annexes to their emergency departments in order to better coordinate the provision of primary care and ED care, and to make sure that patients are treated in the most appropriate setting. However, this is often viewed as cost-shifting away from state budgets (responsible for covering hospital care) to the federal budget (responsible for covering ambulatory care). Small rural hospitals without EDs may have on-call doctors or other arrangements to provide emergency services.

ED Requirements: There are no legal requirements for the operation of EDs. However, requirements exist at the state level to qualify for public subsidies or private insurance coverage. The Australasian College of Emergency Medicine (ACEM) issues minimum requirements for facilities to be designated as EDs for training purposes, which demand that EDs must (1) operate structurally and functionally within hospitals, have (2) 24h nursing staff and a Nurse Unit Manager, (3) daily rostered medical staff and 24/7 access to emergency specialists medical staff or be part of an

Emergency Medicine Network, (4) a dedicated facility to manage emergencies, (5) a dedicated resuscitation area, (6) 24h access to blood products, laboratory facilities, radiology services, specialty care or advice, and retrieval services.¹⁹⁸ Additional requirements concerning the availability of clinical support services (e.g. intensive care, surgical and medical subspecialties, paediatrics) apply for higher levels of EDs (levels 1 to 4, see Table 26). The Independent Hospital Pricing Authority has also issued definitions for six different levels of EDs for funding purposes²¹⁴, but not all of these levels would be considered EDs under ACEM criteria.

Provision of care and patient pathway: Table 26 provides an overview of different care providers available for patients feeling in need of urgent and emergency medical care in Australia. There is a national phone health advice line, which has the primary objective of helping patients to manage their conditions at home, but nurses and general practitioners (GPs) on call will also advise patients if they should wait and visit their GP the next day, call a GP home visit (locum) provider, visit a 24hr clinic, or if they should visit the closest ED in case of emergency care needs. In general, patients may seek care at the provider that is most convenient for them. Patients who place a high value on their time (not having to wait for care at the ED), and those who can afford to pay (or have voluntary health insurance), choose private hospital emergency departments or GP out-of-hours care with multiple fee-for-service charges for associated diagnostic services. Patients who cannot afford (or do not want) to pay co-payments and who value the convenience of having all services available at the ED (consultations, imaging and lab; interpreters for patients with little or no English) choose to attend at the ED.

Challenges and reforms: The most important challenges for EDs are long waiting times, limited inpatient capacity blocking transfer of ED patients to the ward, and shortage of emergency specialists in rural areas. In 2011, a National Emergency Access Target was agreed, setting a goal of 90% of patients leaving the ED within 4 hours of presentation. By 2013, substantial waiting time reductions had been achieved but only 44% of major metropolitan hospitals and only 16% of major regional hospitals had met the target.²¹⁵ Many EDs have problems admitting patients because of limited capacity in wards, which is called 'access block'.²¹⁶ This has sometimes led to EDs being closed for ambulances (i.e. ambulance diversion), which then need to transport patients to another ED, although this practice has been in



Victoria prohibited since the end of 2015. There has not been a national or regional strategy against these problems but states and hospitals have responded in different ways. Some EDs have established assessment and planning beds in units adjacent to the ED to be able to formally discharge

patients from the ED. Some GP-type 24h clinics have been established to divert low-acuity patients to these facilities, which are institutionally separated (with separate premises and different staff) but located adjacent to the hospital.

Table 27 – Emergency and primary care in Australia

Service	How (Access)	Where (Location)	What (Activity)	Who (Staff-Mix)
Primary care (out-of-hours)	24 hr clinics	<ul style="list-style-type: none"> • walk-in 	<ul style="list-style-type: none"> • outside hospital • linked to hospital 	<ul style="list-style-type: none"> • primary care • referral
	locum (home visit) services	<ul style="list-style-type: none"> • call (various numbers of locum services) 	<ul style="list-style-type: none"> • home visits by locum services 	<ul style="list-style-type: none"> • primary care • referral
Call centres	primary care/ health advice	<ul style="list-style-type: none"> • call 1800 022 222 	<ul style="list-style-type: none"> • call centre 	<ul style="list-style-type: none"> • general health advice • information about locum service • connect to emergency call centre
	emergency	<ul style="list-style-type: none"> • call 000 or 112 	<ul style="list-style-type: none"> • call centre 	<ul style="list-style-type: none"> • triage for police, fire, ambulance
Emergency medical service	<ul style="list-style-type: none"> • through emergency call centre 	<ul style="list-style-type: none"> • ambulance station • co-located with fire service • not hospital linked 	<ul style="list-style-type: none"> • emergency care ("scoop and run") • transport • coordination 	<ul style="list-style-type: none"> • emergency medical technician • paramedic • (emergency) physician on call
Emergency department (ED)	level 1	<ul style="list-style-type: none"> • walk-in • ambulance 	<ul style="list-style-type: none"> • remote or rural hospital 	<ul style="list-style-type: none"> • emergency care (basic primary and secondary assessment) • life support and stabilisation • primary care • planned follow-up care • pre-arranged inpatient admission services



Service	How (Access)	Where (Location)	What (Activity)	Who (Staff-Mix)
level 2	<ul style="list-style-type: none"> • walk-in • ambulance • transfer 	<ul style="list-style-type: none"> • secondary hospital with some sub-specialty services 	as level 1 + <ul style="list-style-type: none"> • complete range of primary emergency care • response to local major incidents 	as level 1 + <ul style="list-style-type: none"> • emergency specialist • nurse manager • access to social work, pharmacist, physiotherapists etc.
level 3	<ul style="list-style-type: none"> • walk-in • ambulance • transfer 	<ul style="list-style-type: none"> • major regional, metropolitan or urban hospital 	as level 2 + <ul style="list-style-type: none"> • provide support to other EDs through Emergency Medicine Network 	as level 2 + <ul style="list-style-type: none"> • a Director of Emergency Medicine Training • Advanced Skills Clinical Nurses • Social worker
level 4	<ul style="list-style-type: none"> • walk-in • ambulance • transfer 	<ul style="list-style-type: none"> • tertiary or major referral hospital 	as level 3 + <ul style="list-style-type: none"> • trauma services • provide tertiary level support to other EDs 	as level 3 + <ul style="list-style-type: none"> • 24h Emergency Medicine trainees (physicians) • Pharmacist, physiotherapist, discharge planner etc. dedicated to the ED

9.2.2.2 Denmark

Context: The Danish public and tax-funded NHS offers equal access to health care for all citizens. The health system is mainly organised and steered by the five regions but system coherence is assured by The National Board of Health (NBH) (Sundhedsstyrelsen), which determines national regulations and standards, and monitors developments in the regions. The regions receive an annual budget from the central government and have the responsibility for health service provision and payment of hospitals, GPs and emergency services. Ambulatory specialist services are mostly provided within hospitals whereas GPs are self-employed entrepreneurs outside of hospitals.

Planning: The NBH determines the national specialty plan, which defines the hospitals that are allowed to provide specific specialized services,

including emergency services at EDs, and it monitors regional plan. The regions are responsible for planning and organising emergency care services and coordinating care across providers, including hospitals, GPs (both within and outside normal working hours) and ambulance services. The overall number and location of EDs (known as joint acute wards, JAWs, or "Fælles akutmodtagelser" in Denmark) is determined by the national specialty plan. The original plan for the establishment of JAWs was made developed by NBH in 2007²¹⁷, which specified that a JAW should cover a catchment area of about 200 000-400 000 citizens. In 2015, there were 22 JAWs, of which 13 had a catchment area of between 200-400 000 citizens, while 4 had a catchment area of more than 400 000 and 4 with less than 200 000. The latter are in remote areas or on islands and cannot hold the same number of specialties on duty available and therefore cooperate with other hospitals. Increasingly the regions (e.g. Capital Region) have tried to



coordinate and integrate hospitals' JAW and the provision of primary health care outside normal working hours.

ED Requirements: JAWs have to meet specific personnel and technical requirements which have been defined by the NBH including: 24 hours availability of specialists in internal medicine (with cardiology expertise), general and trauma surgery, anaesthesiology, radiology (on-call within 30 min) and clinical chemistry (on-call) as well as CT and MRI scanners, clinical laboratory, blood preservation and trauma centre. JAWs usually have own bed capacities and patients can stay up to 48 within a JAW before being referred to a specific ward or discharged.²¹⁸

Provision of care and patient pathway: Table 28 provides an overview of different care providers available for patients feeling in need of urgent and emergency medical care in Denmark. When in need of an ambulance, patients should call the emergency call centre. In all other cases, patients should always call their out-of-hours service centre for medical advice. They can then access the out-of-hours service centre, which is often located at the local hospital but organisationally independent, or arrange a home visit by a mobile GP. Access to EDs has been restricted in all regions since April 2014 to patients arriving by ambulance or having a referral. Walk-in patients always need a referral from their GP or a registration via the emergency call

centre in order to be able to access the ED. In addition, patients have the option to directly access a hospital-based nurse-led clinic. These clinics exists at 26 hospitals – often those hospitals, where a previously existing ED was closed. There are no user charges for emergency care, neither at hospitals nor at GPs (day time and out-of-hours).

Challenges and reforms: Since the mid-2000s, the hospital landscape of Denmark was overhauled by reducing the overall number of hospitals and centralizing ED services in a limited number of JAWs. The number of JAWs was reduced from 57 to 22 (with the aim of further reducing this number to 21), which has led to a considerable increase in travel distances to the next ED (on average 60 km) and an increasing importance of the EMS. In addition, access to EDs was reformed and restricted. Traditionally, GPs have self-organised out-of-hours services in a given geographical, rotating within out-of-hours service centres, but increasingly regions are taking over the organisation of primary-care out-of-hours services with the aim of better coordinating primary out-of-hours care and emergency care. Considerable investments have been made into the development of electronic medical records (EMR). Hospitals use a common system of EMR in the entire country, and it is possible to access and share EMRs across hospitals; but hospitals do not yet have access to data entered by GPs.



Table 28 – Emergency and primary care in Denmark

Service		How (Access)	Where (Location)	What (Activity)	Who (Staff-Mix)
Primary care (out-of-hours)	out-of-hours service centres (46 locations)	<ul style="list-style-type: none"> • walk-in (after prior contact with call centre) 	<ul style="list-style-type: none"> • often at local hospital but organisationally independent of hospital 	<ul style="list-style-type: none"> • primary care • referral to ED/other providers • arrange transport • arrange appointments 	<ul style="list-style-type: none"> • GPs • GPs in training • nurses
	home-visit service	<ul style="list-style-type: none"> • call (through primary care call centre) 	<ul style="list-style-type: none"> • home visits by GP • based at out-of-hours service centre 	<ul style="list-style-type: none"> • primary care • referral to ED 	• GPs
Call centres	primary care	<ul style="list-style-type: none"> • call 1813 (in Capital Region) • various numbers in other regions 	<ul style="list-style-type: none"> • at local out-of-hours service centre 	<ul style="list-style-type: none"> • give medical advice • connect to out-of-hours service centre/home visit service 	<ul style="list-style-type: none"> • GPs • nurses
	emergency call centre	<ul style="list-style-type: none"> • call 112 	<ul style="list-style-type: none"> • at local out-of-hours service centre or at hospitals (depending on region) 	<ul style="list-style-type: none"> • coordination of rescue activities • pre-triage 	<ul style="list-style-type: none"> • nurses • paramedics • GPs
Emergency medical service		<ul style="list-style-type: none"> • through emergency call centre 	<ul style="list-style-type: none"> • ambulance station • co-located with fire service • not hospital linked 	<ul style="list-style-type: none"> • emergency care • transport • coordination 	<p>basic life support:</p> <ul style="list-style-type: none"> • emergency medical technicians <p>advanced life support</p> <ul style="list-style-type: none"> • (emergency) physician • in some areas: GPs • ambulance assistants • paramedics
Emergency department (ED)	Joint emergency (JAW)	acute ward	<ul style="list-style-type: none"> • referral from general practitioner (GP) or private specialist • referral from emergency call centre • by ambulance • restricted walk-in 	<ul style="list-style-type: none"> • at 22 hospitals • throughout the country based on catchment area criteria 	<ul style="list-style-type: none"> • manage complete range of emergency presentations • response to local major incidents
					<ul style="list-style-type: none"> • nurses • doctors • consultants within medical specialties



Service	How (Access)	Where (Location)	What (Activity)	Who (Staff-Mix)
Nurse-led clinics	<ul style="list-style-type: none"> • walk-in (daytime) • no referral 	<ul style="list-style-type: none"> • at 26 hospitals (often where previously existing EDs were closed) 	<ul style="list-style-type: none"> • emergency care (basic primary and secondary assessment) • life support and stabilisation prior to retrieval • treatment of minor health conditions and small injuries 	<ul style="list-style-type: none"> • specialized trained nurses

DaR: The Danish Association of Regions (developed the DaR-Triage model); DEPT: Danish Emergency Process Triage^{gg}

9.2.2.3 England

Context: The English public and tax-funded NHS offers equal access to health care for all citizens. NHS England is responsible for managing the NHS budget and oversees local Clinical Commissioning Groups (CCGs), which are groups of GPs working in a geographical area. CCGs manage about 60% of the NHS budget and they are responsible for the planning and purchasing of local healthcare services, including specialist inpatient and outpatient services as well as urgent and emergency care for the NHS. Primary care services are provided by general practitioners who are mostly (66%) private entrepreneurs, while specialist ambulatory care is mostly provided by specialists employed in hospital outpatient departments. NHS inpatient services are mostly provided by public hospitals, although the share of hospital spending on private hospitals services (3.6% in 2012-13) has increased over time.

Planning: As part of the commissioning tasks, the 212 CCGs are responsible for the planning and purchasing of urgent and emergency care, including primary out-of-hours care, ambulance services, and ED services. There are no national planning criteria for urgent and emergency care but NHS England provides guidance to CCGs, e.g. concerning integrated urgent care²¹⁹ or ambulance services²²⁰. Local CCGs are supported by regional

strategic clinical networks (12 for England), which focus on particular diseases (e.g. cardiovascular diseases or mental health). Strategic clinical networks make recommendations on care coordination and concentration. Until 2013, when Strategic Health Authorities (SHAs) were abolished, SHAs played an important role in some regions for the reconfiguration and concentration of care. Furthermore, specialised services, such as major trauma services provided by major trauma centres are purchased directly by NHS England. Planning of different providers is coordinated locally. Finally, as part of the ongoing Urgent and Emergency Care Review,²²¹ Urgent and Emergency Care Networks have been established in 2015 to promote coordination and coherence in the provision of urgent and emergency care services.²²¹

Requirements: EDs are defined as consultant-led 24 hour entities with full resuscitation facilities and designated accommodation for the reception of accident and emergency patients. Specialist hospitals (e.g. for cardiology or oncology) and smaller ‘community hospitals’ often do not have an emergency department (in total 180 out of 419 hospitals in the country have an ED). Some hospitals have other types of accident and emergency (A&E) facilities, which are also accessible on a walk-in basis. This includes urgent care centres (UCCs), minor injuries units (MIUs), and walk-in centres

^{gg} URL: <http://deptriage.dk/>, 13.10.2015.



(WICs), which can be based at a hospital or in the community (149 across England). These services will typically provide diagnosis and treatment services for minor injuries and illnesses; their exact range of activity is quite variable and there is no standard definition for what differentiates these three types of services.²²² Ambulances are required to reach the most severe patients (according to triage category) within 8 minutes, while longer delays (20 minutes or 60 minutes) are acceptable for less severe cases.

Provision of care and patient pathway: Table 29 provides an overview of different care providers available for patients feeling in need of urgent and emergency medical care in England. In theory, patients should call 111 for non-life-threatening conditions and 999 for life-threatening conditions (in some regions they can also directly call a GP out-of-hours/home visit service). At NHS 111, non-clinical call handlers use a clinical assessment tool called NHS Pathways (triage system) to obtain information and to direct patients to the most appropriate provider: connect patients to a GP telephone advice service, book an appointment at the nearest out-of-hours clinic; or arrange for a home visit. In practice, most patients either call 999 or go directly to an ED. Most EDs can be accessed by walk-in, although hospitals are increasingly installing urgent care centres or other triage services ‘in front of’ the emergency department, such that patients can only enter the emergency department if referred by a triage nurse or doctor. In

addition, patients may access urgent care centres, minor injuries units, or walk-in centres.

Challenges and reforms: The most important challenges are a complex and fragmented emergency care system, misaligned financial incentives and an increase in waiting times at EDs. The large number of different care providers (GPs, urgent care centres, minor-injury units, walk-in centres, EDs) has created a situation, where patients do not understand the system.²²³ GP out-of-hours services are paid by budgets with little incentives for activity, while A&E providers are paid on the basis of activity (see below), which provides incentives for A&E providers to treat more patients. A new payment model has recently been proposed to overcome these unintended incentives.²²⁴ The increase in waiting time at ED (although more than 90% are still treated within 4 hours) has been explained by different reasons, including increasing numbers of patients and insufficient investments in new facilities and staff.²²⁵ There is an ongoing urgent and emergency care review, suggesting plans for restructuring of emergency care in England.²²³ This includes plans to develop Major Emergency Centres, where highly specialized care will be concentrated, although political pressures have so far delayed implementation. In addition, there are plans to transform ambulance services into mobile urgent treatment services, providing care on the spot instead of transporting patients to hospitals.

**Table 29 – Emergency and primary care in England**

Service		How (Access)		Where (Location)	What (Activity)	Who (Staff-Mix)
Primary care	GP home visit service	<ul style="list-style-type: none"> • telephone call (local number, in some regions) 		• patient's home	<ul style="list-style-type: none"> • telephone service • home visit • urgent primary care • triage • referral to other services 	<ul style="list-style-type: none"> • GPs and other clinical staff to support GPs
Call centres	NHS health advice number (NHS 111)	<ul style="list-style-type: none"> • call 1111 		n.s.	<ul style="list-style-type: none"> • clinical assessment (triage) • transfer call to GP • coordination of primary-care out-of-hours services (home visits, appointments) 	<ul style="list-style-type: none"> • non-clinical call handlers • advisors
Emergency medical service		<ul style="list-style-type: none"> • call 999 		n.s.		<ul style="list-style-type: none"> • ambulance paramedics
A&E department		<ul style="list-style-type: none"> • telephone call 		<ul style="list-style-type: none"> • at hospital • 'ambulance station' 	<ul style="list-style-type: none"> • rapid diagnostic • transport • treatment 	<p>ambulance:</p> <ul style="list-style-type: none"> • paramedics <p>'rapid response vehicle':</p> <ul style="list-style-type: none"> • emergency care practitioners
Others		<ul style="list-style-type: none"> • walk-in (a few with triage service) • by ambulance (from home or other A&E providers) • referral (from other A&E departments) 		• at hospital	<ul style="list-style-type: none"> • consultation • diagnosis • treatment • triage 	<ul style="list-style-type: none"> • emergency medicine specialist • physicians in training • nurses
Urgent care centre		<ul style="list-style-type: none"> • walk-in • by ambulance 		• located at hospital	<ul style="list-style-type: none"> • urgent primary care • treatment for minor ailments and injuries with access to the full services of the hospital 	<ul style="list-style-type: none"> • GPs • emergency nurse practitioners • access to the full staff of the hospital



Service	How (Access)	Where (Location)	What (Activity)	Who (Staff-Mix)
		<ul style="list-style-type: none">located away from hospital	<ul style="list-style-type: none">urgent primary caretreatment for minor ailments and injuries acting as a 'mini-ED'	<ul style="list-style-type: none">nurseGPemergency nurseconsultantnon-clinical advisor
Minor injuries unit	<ul style="list-style-type: none">walk-in	<ul style="list-style-type: none">at hospital or in community	<ul style="list-style-type: none">urgent primary caretreatment for less serious injuries than would be treated at an urgent care centre	<ul style="list-style-type: none">specially trained nurses, e.g. emergency nurse practitioners
Walk-in centre	<ul style="list-style-type: none">walk-inno appointmentno registration	<ul style="list-style-type: none">at hospital or in community	<ul style="list-style-type: none">urgent primary careroutine primary caretreatment for minor ailments and injuries	<ul style="list-style-type: none">nurseGPemergency nurseconsultantnon-clinical advisor

9.2.2.4 France

Context: Almost the entire population is covered by Social Health Insurance (SHI), which pays for about 70% of the costs of ambulatory treatment and 80% of inpatient treatment, with the remainder usually financed by complementary voluntary health insurance covering almost 95% of the population. Most ambulatory physicians are independent private providers, while most hospitals are predominantly public or private non-profit-making, but 25% of inpatient beds are in private for-profit making facilities.

Planning: Since February 2013, Regional Health Authorities (RHAs) are responsible for planning of both, out-of-hours primary care ("permanence des soins ambulatoire") and EDs. For out-of-hours primary care, RHAs usually have agreements with the local branch of the representative body of doctors (Conseil Départemental de l'Ordre des Médecins), which is responsible for making a timetable ("tableau des gardes") of physicians voluntarily participating in out-of-hours care. ED planning is part of the general hospital planning and authorization process carried out by RHAs. Hospitals have to apply for an authorization to operate an ED and RHAs will check if they fulfil the requirements (see below). RHAs are also responsible

for making regional health plans to coordinate emergency care provision across providers but often coordination is relatively weak. According to plans of RHA, EDs should generally be accessible within a maximum of half an hour (from patients' home to hospital by car/emergency transport), although median distance of cases that require emergency medical care is around 8-12 km. The Ministry of Health collects regional emergency care plans and ensures the national coherence between regional plans.

ED Requirements: Minimum requirements concerning human and technical resources of EDs are defined by two related regulations (Décret no 2006-576 and 2006-577^{226, 227}), which demand that EDs must: (1) operate in a facility with inpatient beds in internal medicine, (2) have sufficient numbers of physicians (emergency specialists), nursing staff, and other support staff, (3) have access to surgical services, medical imaging, laboratory services (either within their own structures or through contract with other facilities), (4) a dedicated emergency examination and treatment room, (5) a dedicated resuscitation area, (6) at least two short-stay beds, (7) treat a minimum threshold of patients, which has been set at 8000 visits per year. If hospitals do not fulfil the threshold, they have to create an association with another hospital (Groupe Hospitalier de Territoire),

where they share common functions (management, logistics). Specialized EDs exist for pediatric, geriatric, and psychiatric emergencies. These EDs are required to have specialists of the respective specialty available in order to be able to care for these patients.

Provision of care and patient pathway:

Table 30 provides an overview of different care providers available for patients feeling in need of urgent and emergency medical care in France. In 70 of 95 départements, patients should in general always call the number 15, where a call handler based at the ED of the local hospital will answer the phone. The call handler (or an emergency physician if needed) will usually have information on the local availability of out-of-hours primary care providers and of beds in hospitals (computer based “Répertoire Opérationnel des Ressources”). The operator will take one of the following actions: (1) advise the patient to visit a GP on the next day, (2) transfer the call to the home visit service organized by the local network of GPs (or to SOS Médecins in urban and suburban areas), (3) advise the patient to visit the local ED, or (4) send an ambulance. Patients are free to visit EDs and they often do so for reasons that do not require urgent diagnostic or treatment (representing about 20% of ED visits in 2013).²¹²

Challenges and reforms: The most important challenges are increasing numbers of ED visits, a shortage of emergency specialists, and the

unintended incentive of the current payment system rewarding increases in ED activity. The number of ED visits increased by 30% between 2002 and 2012,²¹² creating considerable pressure in the system. Nevertheless, waiting times at EDs remain relatively low, i.e. 80% of patients spend less than 4 hours at the ED and 50% less than 2 hours,²²⁸ and better availability and faster access to care are reported to be the main reasons why patients chose to visit EDs. Staff shortage in emergency medicine is seen to be an important problem, in particular in small and medium sized hospitals. Incentives of the current payment system (see below) are regarded to be problematic²¹² and the Ministry of Health announced in 2014 that the payment system should be reformed by 2016.²²⁹ There have been delays with the payment reform and details remain unavailable. However, the reform is likely to change the payment system for EDs with little activity to a budget system and provide additional funds for IT and telemedicine. Reforms of the past years have focused on increasing availability of primary out-of-hours care by improving remuneration of physicians for these services and opening after-hours health centres as well as improving coordination with EDs by linking the emergency call centre (number 15) with the GP home visit service.²³⁰

Table 30 – Emergency and primary care in France

Service	How (Access)	Where (Location)	What (Activity)	Who (Staff-Mix)
Primary care (out of hours)	Out-of-hours health centres (maison médicales de garde)	<ul style="list-style-type: none"> • walk-in • referred by emergency call centre • weekends (day time) • sometimes weekdays (evenings) 	<ul style="list-style-type: none"> • mostly in (peri-)urban areas • outside hospital • linked to hospital • a total of 369 in France 	<ul style="list-style-type: none"> • primary care • telephone service (give advice, answer questions) • minor surgery
Home visit service (SOS Médecins or local GP network)	Call 3624 (SOS Médecins) or local council number	<ul style="list-style-type: none"> • SOS Médecins - mostly in urban and suburban areas • local network of GPs – mostly in rural areas 	<ul style="list-style-type: none"> • home visit 24/7 • telephone service (give advice, answer questions) • primary care 	<ul style="list-style-type: none"> • GPs • Call handler at call centre



Service	How (Access)	Where (Location)	What (Activity)	Who (Staff-Mix)	
(Emergency) call centre	<ul style="list-style-type: none"> through emergency call centre Call 15 or 112 	<ul style="list-style-type: none"> within ED inside hospital about 3-4 per département 	<ul style="list-style-type: none"> minor surgery advice and triage service transfer call to home visit service (in 70 of 95 départements) send ambulance (different types adapted to the situation) coordination (software indicates which GP is on call, which beds are available in local hospitals) 	<ul style="list-style-type: none"> call handlers (medical secretary qualification) emergency physician 	
Emergency medical service	Service Médicale d'Aide d'Urgence (SAMU)	<ul style="list-style-type: none"> through emergency call centre at ambulance station (organizationally linked to hospital but at a different location) 	<ul style="list-style-type: none"> emergency care ("stay and play") transport 	<ul style="list-style-type: none"> paramedic emergency physician (if needed) 	
	Fire fighters	<ul style="list-style-type: none"> through emergency call centre fire station 	<ul style="list-style-type: none"> first aid 	<ul style="list-style-type: none"> firemen 	
Emergency department (ED)	General emergencies Geriatric emergencies Paediatric emergencies Psychiatric emergencies	<ul style="list-style-type: none"> walk-in ambulance 	<ul style="list-style-type: none"> located within hospital (public and a minority of private) 	<ul style="list-style-type: none"> primary care emergency care there is no explicit definition of the activities that have to be performed by EDs 	<ul style="list-style-type: none"> emergency specialist (or physician with 3 years experience in emergency medicine) physician (in training) (triage) nurse social worker secretarial staff Specialists in paediatrics, geriatrics, psychiatry



9.2.2.5 The Netherlands

Context: Since 2006 all Dutch citizens are obliged to purchase statutory health insurance from private health insurances. The insurance market is regulated by public law (managed competition among insurances) and dominated by four companies out of which one operates under a for-profit scheme. Health insurances are legally mandated to provide a standard benefits package (e.g. covering medical care, medical aids and devices, prescription drugs, maternity care, ambulance and patient transport services) and to purchase respective health services from providers. The system is financed by three separate streams: First each insured pays an annual community-rated premium (about € 1100). Second, there is a nationally defined income-related contribution of 7.75 percent of annual taxable income up to € 51 414 (data for 2014). Third there are tax subsidies to low-income households and for children.

Planning of emergency care: In general, there is since 2007 no central planning of hospital capacity but providers are required to assure the availability of emergency care within their region (Care Providers Licensing Act). However, there are 11 trauma centres, providing specialized emergency care and those hospitals running a trauma centre are chairing the ROAZ ('regionaal overleg acute zorg', the regional emergency care consultative bodies) which are responsible for:

1. Ensuring emergency care access in the region, which means that ED should be within 45 minutes travel time, including the time from first call to delivery at ED (this is assured for 99.8% of the Dutch population)²⁰¹;
2. Training and preparing hospitals and ambulance services for large scale accidents and catastrophes;
3. Preparing protocols in order to direct patients to the appropriate facilities depending on their health status.

GPs are required to provide 24/7 care and therefore responsible for out-of-hours primary care. Since early 2000s most GPs associate themselves in regional Primary Care Centres (PCCs), which have dedicated facilities and support staff, instead of working on the basis of local rotation agreements (see Box 18).

ED Requirements: There are several legal requirements, which have to be met by hospitals to run an ED. However, these requirements do not determine the number of staff, level of qualification or equipment. On

emergency departments in hospitals qualified physicians (specialists) must be available or on stand-by. Traditionally, most ED services are delivered by surgeons or intensive care specialists. In some hospitals, the ED is operated by medical assistants and/or specialists in training, with experienced staff available on call. There is a tendency to have an emergency care specialist on duty at all times, but in smaller EDs this is not always feasible.

Provision of care and patient pathway: A patient feeling in need of urgent and emergency medical attention has different options (see Table 31): He can call the national emergency number, answered by the ambulance dispatch centre (ADC), phone the primary care centre (PCC) and subsequently visit the PCC, or visit the ED on their own initiative. Patients are encouraged to primarily catch up with their GP (i.e. where they are registered as a patient), or the respective PCC for out-of-hours care. There is no deductible/co-payment when visiting a GP/PCC. For all visits to an ED or use of ambulances patients are faced with co-payments (up to the deductible, which was between € 375 and € 875 in 2015). Hospital care without referral from a GP is not covered by the health insurance, unless it is an emergency. PCCs are increasingly located near a hospital ED and patients with less severe problems will be treated by the PCC. However, 10% of PCCs are not open 24/7. In fact, at 71 hospitals (out of 91 hospitals with a 24/7 ED), there is a PCC located on the hospital grounds and 31 PCCs are collaborating very closely with EDs, having agreements on patient flows and various aspects of diagnostics and treatment (see Box 18).²⁰¹

Challenges and reforms: Following an agreement to limit the growth of expenditure on hospitals, health insurers agreed to concentrate emergency departments and reduce the number of locations. This was part of a movement to reduce hospital capacity nationwide. The insurers' initiative was faced by resistance of hospital organizations (although the national hospital association (NVZ) party supported the agreement). The competition authority disagreed with the insurers' plans and the reform has stalled. There is a tendency to intensify coordination between PCC and ED. Increasingly, PCCs are located near or in hospitals (57% and 69% of PCCs nearby or within ED or hospital, respectively). This aims to reduce the number of inappropriate self-referrals. Often agreements exist between PCCs and ED concerning diagnostics and treatment but the use of common triage protocols remains relatively rare (i.e. in 13 centres).²³¹



Table 31 – Emergency and primary care: Netherlands

Service		How (Access)	Where (Location)	What (Activity)	Who (Staff-Mix)
Primary care (out of hours)	Primary Care Centres (PCC) (122 locations)	• walk-in • call	<ul style="list-style-type: none"> nearby or within hospitals (57% and 69% of PCCs nearby or within ED or hospital, respectively) independent from hospital if within hospitals, then coordinated activities (e.g. triage) 	<ul style="list-style-type: none"> daily basic urgent primary care between 18.00 and 08.00, on weekends and bank holidays referrals to ED prescriptions 	<ul style="list-style-type: none"> GPs nurses supporting staff
	Home-visit service	• call respective PCC	• see above	<ul style="list-style-type: none"> home visit telephone advise 	• GPs
Emergency call centre		• call 112	<ul style="list-style-type: none"> usually share facilities with fire and police call centres 21 locations 	• basic triage	<ul style="list-style-type: none"> nurses (at almost all call centres) call handlers
Emergency medical service		• via emergency call centre	<ul style="list-style-type: none"> ambulance station sometimes nearby hospitals 	<ul style="list-style-type: none"> medical treatment transport to the nearest hospital 	• nurses with specialized training
Emergency department (ED)	Emergency departments (n=95)	<ul style="list-style-type: none"> walk in referral by GP/PCC, by ambulance 	<ul style="list-style-type: none"> most hospitals have an ED not all offer 24/7 service (91 out of 95) 	<ul style="list-style-type: none"> basic and advanced emergency care 24/7 open: n=91 24/7 obstetric care: n=84 	<ul style="list-style-type: none"> specialists (traditionally surgeons and intensive care specialists) specialists in training medical assistants
	Out of these: Trauma centres			<ul style="list-style-type: none"> providing specialized emergency care in case of severe trauma 	



Service	How (Access)	Where (Location)	What (Activity)	Who (Staff-Mix)
(n=11)			<ul style="list-style-type: none">coordinating the regional accessibility of emergency departments	

9.3 Payment of emergency care services

9.3.1 Framework

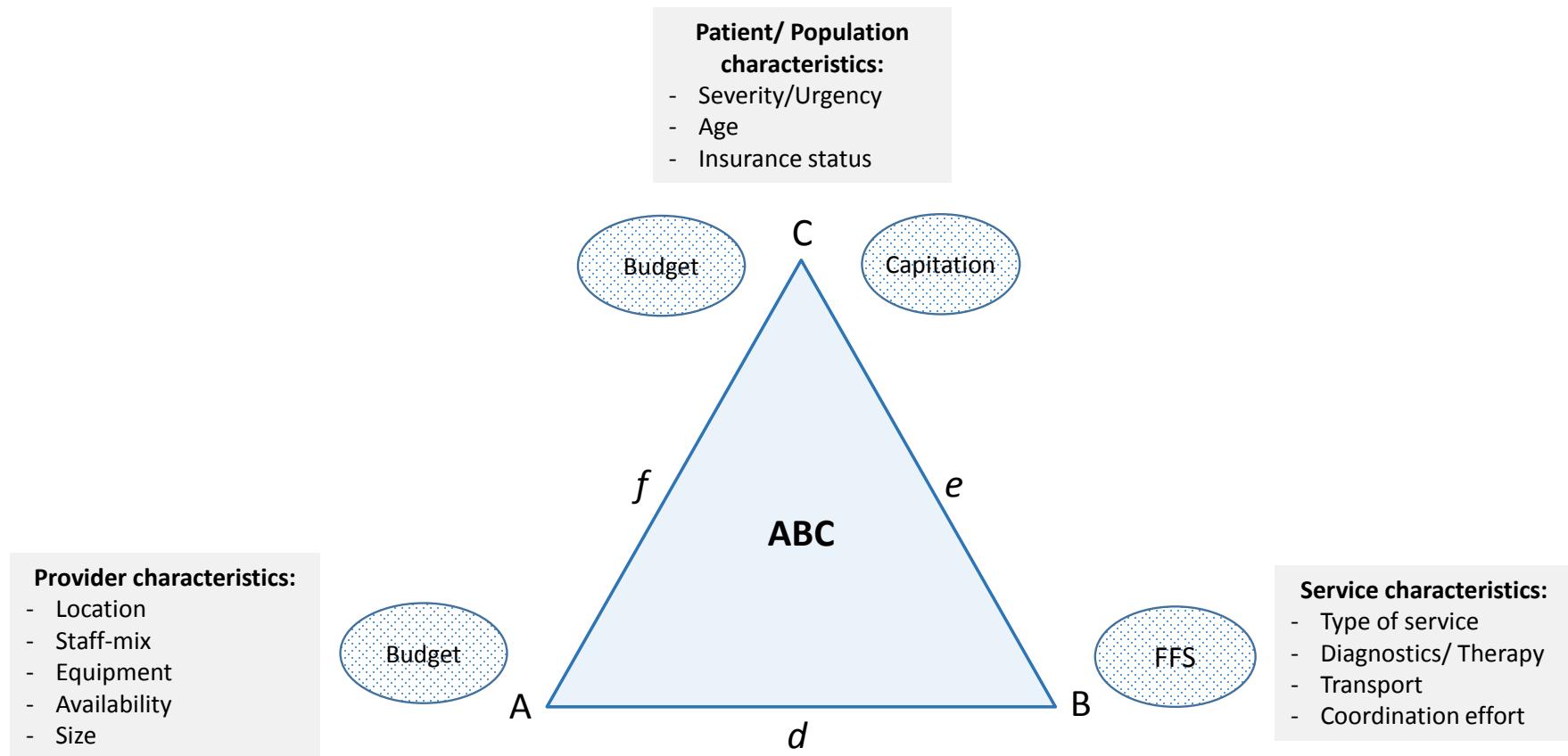
Providers engaged in emergency care can be paid on the basis of different payment mechanisms. In addition, payment systems for EDs or urgent primary care providers in a given country often include a variety of different payment mechanisms. Each payment mechanism has different incentives depending on the type of information that is used to determine payment. Figure 39 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 fee-for-service

(FFS). Moreover, the population and patient characteristics may influence provider payment, e.g. if ED budgets are adjusted depending on the characteristics of the catchment population or 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 39 – Framework for analysing provider payment mechanisms





9.3.2 Payment of Providers

9.3.2.1 Overview

For patients admitted via the ED, countries may have separate payment streams for (1) the reimbursement of treatment in the ED and (2) the reimbursement of inpatient treatment. For example, in England, hospitals receive one payment for all patients treated in the ED and a second payment if the patient is subsequently admitted for inpatient treatment. The idea of this approach is to make reimbursement of EDs independent of whether the patient is admitted or not, and to make sure that the ED has a separate and identifiable funding stream. However, having two different payment streams (one for EDs and one for inpatient treatment) can potentially lead to unintended incentives at the interface, e.g. that EDs attempt to transfer patients to the ward as quickly as possible. In Denmark, France, and the Netherlands, emergency patients admitted as inpatients are generally paid for on the basis of the usual inpatient payment system, and there is no separate payment for services provided in the ED. The idea of having only one payment for inpatients admitted via the ED is to provide incentives that encourage an integrated pathway for the entire admission episode spanning treatment in the ED and during the inpatient stay.¹⁹¹

Also for non-admitted patients, the interplay between two payment systems may lead to unintended incentives: (1) the payment system for visits to the ED and (2) the payment system for treatment of patients by urgent primary care providers. Countries included in our survey can be clustered into two main groups with regard to these two payment systems. The first group includes Australia and Denmark, where payment of hospital emergency departments is mostly based on global budgets, which are determined on the basis of provider characteristics. Payments related to activity as measured in terms of number (and types) of patients treated or services provided do not play an important role. In contrast to EDs, primary care providers (including during out-of-hours times) in these countries are paid on the basis of a fee-for-service system, encouraging activity of these providers. The second group of countries includes England and the Netherlands, where payment of hospital emergency departments is strongly related to the activity as measured by the number and types of patients treated. In England, these payments are determined on the basis of a casemix system, distinguishing 11 different types of ED patients; and the

same system applies also to alternative urgent primary care providers, i.e. minor injury units, walk-in centres and urgent care centres. In the Netherlands, payments are determined by the national Diagnosis Related Group (DRG-) system, which includes also outpatient care and does not distinguish between emergency care and other outpatient care provided. In both countries, primary care and out-of-hours providers are paid on the basis of negotiated capitation payments or block contracts.

9.3.2.2 Australia (with a focus on Victoria)

Context: Payment for EDs varies by State, while payment for primary after-hours care is the same in all of Australia. Funding arrangements for EDs are currently in flux because of a change of the national government in late 2013. Previously, it had been planned that hospital funding would shift to a national activity-based funding model. However, now the plan is to increase general budget allocations to States with the aim of enabling States to pay for growth in hospital costs. Nevertheless, most States are in the process of adopting activity-based funding models or changing to the national model.

ED payment: The national payment model completely separates payments for hospital EDs from any related inpatient admissions. The hospital receives a payment for each patient entering the ED, which is related to the Urgency Related Group (URG) of the patient. In addition, if the patient is admitted, the hospital receives an Australian-Refined (AR-) DRG-based payment. States are not obliged to follow the national approach to ED funding on the basis of URGs, but most states have adopted some variant of the national approach. In Victoria, for patients admitted as inpatients, there is no separate payment to the ED. Instead, costs of treatment in the ED for inpatients admitted to a ward are included in the inpatient AR-DRG-based payment. For all ED patients that are not admitted to the hospital, Victoria has a budget for non-admitted ED care that is distributed to hospitals on the basis of two criteria: 80% of the budget is distributed to hospitals to cover 80% of their reported fixed costs of the ED for non-admitted care (salaries and hotel goods/services). In addition, 20% of the state ED budget is distributed to each hospital on the basis of its proportion of ED visits out of all ED visits in the state.²³²

The URG system defines 73 groups of ED patients on the basis of information on patient disposition (not admitted, admitted, died in episode, left before being seen, etc.), triage category (5 levels of the Australian Triage



Scale, ATS) and the diagnosis. However, the URG system has been heavily criticized because of its strong reliance on triage category for the classification of patients. This is problematic because the triage category has been found to show considerable interpersonal variation and is difficult to verify retrospectively (e.g. during reviews of hospital coding). The Independent Hospital Pricing Authority (IHPA) has recommended to develop a new classification for emergency care in the near future.²³³ Individual states do not necessarily follow the national model.

Primary care out-of-hours services: Payment depends on the national fee-for-service system, i.e. the Commonwealth Medical Benefits Schedule (CMBS). The CMBS specifies for each service item the contribution that Medicare pays for the service, e.g. the CMBS specifies for service item 597 (one of the basic out-of-hours fees) a fee of \$ 129.80, of which Medicare would cover \$ 97.35.²³⁴ The difference between the Medicare payment and total fee value (25% of the costs) have to be covered by patients. However, large GP practices (24h clinics) and large locum services have so-called

bulk-billing arrangements, where they bill Medicare directly and do not levy a user charge on the patient. There are a total of 22 basic service items for 'out-of-hours attendances', depending on the day, the time, the place (at office, nursing home, or other) and whether care is urgent or non-urgent. Physicians can also bill additional service items for diagnostic services or therapeutic interventions.

Payment of physicians: Physicians working in public hospital EDs are paid a salary, which is negotiated at the state level. In areas with staff shortages (e.g. in regional and rural towns), hospitals may offer rates above the negotiated salaries, or will make fee-for-service arrangements. In private hospital EDs, most physicians are independent practitioners who charge patients directly for provided services. Physicians providing out-of-hours primary care are usually salaried employees of large 24h clinics or locum services but they may also be independent GPs providing services to their patients on a fee-for-service basis.



Table 32 – Payment of emergency departments

	Payment for availability (criteria)	Payment per case (criteria)	Payment for services (criteria)
Australia (Victoria, 2015-16), non-admitted care only ¹	Yes – accounting for 80% of State budget for non-admitted ED care (equal to 80% of reported ED costs for salaries and hotel goods/services)	Yes – accounting for 20% of State budget for non-admitted ED care (equal to each ED's proportion of total reported unweighted non-admitted ED visits in Victoria)	None
Denmark	Yes – varies by region (depends on previous years' budget and availability of staff/equipment)	Yes – varies by region (depends on different activity measures, including a case-mix system)	No (but certain procedures have an impact on casemix measurement)
England	No	Yes – accounting for 100% of ED payment (in ~70% of hospitals) (depends on patient casemix measured by 11 A&E HRGs)	No (but services, i.e. investigations and procedures influence classification into HRGs)
France	Yes – at least € 471 306 (depends on previous year's activity: € 471 306 for the first 5000 non-admitted ED visit, about € 165 000 for each additional 2500 visits) + (for EDs with little activity) public interest budget (MIGAC)	Yes – € 25.32 per non-admitted ED visit	Yes – fee-for-service for all services (consultation, imaging, lab tests, surgery, nursing, etc.)
The Netherlands	Yes – but only in certain hospitals (e.g. in certain rural hospitals that are necessary to assure service availability but that do not have sufficient activity, in trauma centres, burn centres, and in hospitals that provide helicopter services)	Yes – accounting for almost all revenue (depends on DBC system)	No (but services have an important influence on the classification of patients into DBCs)

¹ Payment for inpatients admitted via EDs is included in inpatient AR-DRG-based payment system.



9.3.2.3 Denmark

Context: Hospital payment systems vary by region. However, in general, hospitals are paid through a combination of global (historic) budgets and activity-based payment, where a certain proportion of the hospital budget (50-70%, depending on the region) is determined by hospitals' activity as measured by Danish (DK)- DRGs for inpatient activity and by the Danish Ambulatory Grouping System (DAGS) for outpatient activity. However, regions may determine if only specific types of activity (e.g. DRGs or DAGS for patients with long waiting lists) are incentivized through activity-based payment. Acute activity is usually not incentivised by payment per case for additional activity. GPs are paid by a mix of capitation and FFS, with capitations accounting for about one third of their income and FFS for about two thirds.²³⁵

ED payment: Hospital EDs are mostly financed by the global budget. The global budgets for hospitals are determined prospectively but in some regions they take into account the development of acute admissions in previous years. In some regions, an activity-related payment exists. This is different for admitted patients, for whom payment follows the same rules as for other (non-emergency) inpatients (also if they are admitted to observation units of the ED), and for patients who visit the ED without being admitted for inpatient treatment. For non-admitted patients, there are multiple different activity related groups available, which are used by some regions to incentivise a change towards more outpatient rather than inpatient activity. This includes normal outpatient activity measures, such as DAGS, procedure groups, same day treatment groups, substitution groups (rewarding ambulatory treatment of care, which would otherwise be admitted), as well as five specific groups for acute activity (emergency) of the DAGS (including trauma, small surgical injuries, small injuries, observation for accidents and poisoning, and non-visits). In 2015, there were five acute activity groups, including trauma, small surgical injury, small injury, non-visits (if a patient left), and observation for accidents and poisoning.

Primary care out-of-hours services: Payment for primary care out-of-hours services differs across regions as it is determined by regional governments. However, in general, services are paid for through a fee-for-service system. This includes a fee for a GP taking a phone call, and another fee for a phone call in combination with a consultation where the patient

comes to the local out-of-hours service centre. Additionally, the FFS system includes fees for additional services provided during the consultation. In Capital Region, GPs answering phone calls are salaried employees.

Payment of physicians: Physicians working in hospitals are salaried employees but their salary level depends on individual negotiations. GPs are generally self-employed and their income is determined by the mixed payment system consisting of capitation and fee-for-service.

9.3.2.4 England

Context: Hospitals are paid according to a national tariff system for inpatient care, outpatient attendances, and visits to accident and emergency departments (known as 'Payment by Results'). The tariff system is based on Healthcare Resource Groups (HRGs) (the English version of DRGs). Patients with similar clinical characteristics and with similar resource needs are classified into HRGs on the basis of diagnoses, investigations, and operations (currently about 1500). Each HRG has an associated tariff, which differs for elective patients and non-elective patients. In 2015, a new payment model was proposed to support coordination and collaboration within the emerging regional Urgent and Emergency Care Networks.²²⁴ The new model proposes a mixed payment system, consisting of three parts: a budget for availability, volume based payments for activity, and payments based on outcomes (measured in terms of service transformation, patient satisfaction or health outcomes). However, it will likely take several years before the new model is implemented.

ED payment: Hospitals receive one HRG-based payment for every patient seen in the ED, and a second HRG-based payment if the patient is subsequently admitted to the hospital. The tariff for accident and emergency departments is relatively simple and consists of only 11 A&E HRGs defined by broad categories of investigations (e.g. X-Ray, CT, MRI, biochemistry, haematology) and treatment (defibrillation, wound closure, burns review). In theory, the A&E HRGs apply to all types of EDs in the country, including also walk-in centres, minor injuries units and urgent care centres but with different payment levels according to the type of ED. At hospital based EDs, tariffs range from £ 235 (HRG VB01Z) to £ 57 (HRG VB11Z) in 2014/15. Minor injury units and urgent care centres are always paid £ 57, independent of the HRG. However, in practice, some A&E departments still have 'block contracts', i.e. they receive a global budget to provide care. A recent report

suggests that 30% of emergency departments are paid by a block contract. Payments for patients admitted via the ED are higher than payments for elective inpatients. However, two payment adjusters are applied to limit the incentive for increasing the number of emergency admissions: First, the marginal rate emergency rule determines that emergency admissions above a certain threshold value in a year receive only 70% of the full HRG-based payment. Second, emergency readmissions within 30 days of previous admission are not paid for if they breach a locally agreed threshold number within a year.

Primary care out-of-hours services: Out-of-hours primary care services, ambulance services, and the telephone services (999 and 111) are commissioned by local Clinical Commissioning Groups (CCGs). GPs can choose whether to provide 24-hour care for their patients or to transfer responsibility for out-of-hours services to the relevant CCGs. Payment mechanisms for out-of-hours services are not standardised (unlike payment of hospitals), and show considerable variability (e.g. block contracts and HRG-based payments).

Payment of physicians: Specialists are typically National Health Service employees paid by salary, which varies according to seniority. However, there are some opportunities to earn extra money by performing additional work; for example, working in private practice (after completing 44 hours in NHS environment). GPs contracted to provide primary care in-hours may be paid extra for doing out-of-hours work.

9.3.2.5 France

Context: Hospital inpatient payment was reformed in 2005, when DRG-based payment was introduced for both public and private hospitals (with a transition period until 2008). Since then, hospitals have to finance their costs through revenues generated through the provision of services. Ambulatory care (provided by physicians or hospitals) is generally remunerated on the basis of a fee-for-service system.

ED payment: The payment system separates payments for admitted patients from payments for non-admitted patients. For admitted patients, hospitals receive only the normal DRG-based payment. For patients who visit the ED without being admitted for inpatient treatment, hospitals receive three different streams of revenue: a budget for emergency availability, a payment per case, and additional payments for services. The annual budget

for emergency availability (FAU) amounts to € 471 306 for hospitals that had less than 5000 non-admitted ED visits in the previous year (i.e. € 95 per case) and increases by about € 165 000 for each additional 2500 visits.²³⁶ In addition, hospitals can bill a basic ED visit fee (ATU) introduced in 2012 of about € 25 per non-admitted patient visit. Furthermore, each service provided at the ED, including consultations by medical doctors, lab tests, x-rays etc. are paid according to the normal ambulatory fee-for-service schedule and specific fees ("majorations") apply for visits during night-time or weekends.

Primary care out-of-hours services: Primary care out-of-hours services are paid by SHI according to the normal ambulatory fee-for-service schedule, which has specific supplementary fees ("majorations") for home visits and consultations (at the office) during out-of-hours periods (20h-8h on weekdays, and on weekends and holidays). In addition, SHI pays a basic availability fee for GPs participating in out-of-hours care, which depends on the duration of their availability (see Table 33). Primary care physicians answering calls in call centres receive € R69 per hour.

Payment of physicians: Physicians in EDs of public and private non-profit hospitals are almost always salaried employees. Only in private-for-profit hospitals (less than 20% of EDs), physicians often work as independent professionals and are reimbursed according to the normal fee-for-services schedule. GPs are almost always independent professionals and paid according to the fee-for-service system.

9.3.2.6 The Netherlands

Context: Since 2005 hospital payment is mainly based on a case-mix system called Diagnosis Treatment Combinations (DBC)s), which covers both inpatient care and outpatient care. The system distinguishes between DBCs with maximum prices (regulated segment) and those with negotiable prices (free segment). For the latter, prices have to be agreed between hospitals and health insurers. Initially, only a small proportion of DBCs was negotiable. After a gradual increase to 34% of the DBCs in 2011, the negotiable share of the DBCs was set to 70% in 2012, when the DBC system was fundamentally revised. The original system contained more than 30,000 different DBCs, whereas the updated system, called DOT (DBC on the way to transparency) contains 4400 different DBCs. In order to limit overall expenditures, the DBC system operates within a system of a national global



budget. Expenditure exceeding the projected level can lead to ex post charges to hospitals. Additionally, individual SHI usually limit their expenses per hospital by stipulating an agreed upon global budget for the annual payments. An individual hospital will generally have various contracts with SHIs.

ED payment: Emergency services are paid according to the general DBC-based payment system, which classifies patients into groups depending on their diagnoses, treatments, care setting (i.e. inpatient or outpatient) and several other variables. For non-admitted patients, the price of a DBCs is independent of whether the patient is seen in the ED or at the outpatient department. For admitted patients, the price is independent of whether or not the patient was admitted via the ED. The majority of prices are the result of negotiations between hospitals and insurance companies. Small and rural hospitals that are essential to assure access to an ED within 45 min but that have insufficient numbers of patients to be economically viable can claim government subsidies to cover part of their fixed costs. The 10 trauma centres, three burns centres, and the four hospitals providing helicopter services receive additional compensation from the government.

Primary care out-of-hours services: In general, GPs are paid through a mix of capitation and FFS. This system was substantially reformed in 2015, when a so called three tier reimbursement scheme was introduced. Tier 1 is basic GP care, which is reimbursed by a negotiated capitation for every registered patient. Tier 2 consists of payments for several forms of multidisciplinary care, such as COPD, diabetes care etc. Tier 3 allows contracting of other services or to pay bonuses if specific targets are met, e.g. fewer referrals, lower rates of drug prescriptions, taking over care from hospitals etc. PCCs are paid under a budget system, where they receive a capitated amount for the number of inhabitants living in the service area and additional funding for infrastructure cost (e.g. housing or administration). The budget is a result of negotiations between health insurers and the PCC organisation and has to be approved by the health authority. Actual payments to PCCs are made through health insurers.

Payment of physicians: Physicians working in emergency or urgent care settings are paid by various means. Specialists working in hospital EDs are either salaried employees (mostly in university hospitals) or self-employed (in most other hospitals). Self-employed specialists negotiate their fee with the hospital board and there is wide variation across hospitals. Payment may depend upon the number of DBCs provided by the specialists or it may be related to other agreements. GPs are mostly self-employed and they receive a negotiated hourly rate, when working in a PCC.

**Table 33 – Payment of primary care out-of-hours services**

	Payment for availability (criteria)	Payment per case (criteria)	Payment for services (criteria)
Australia	No	Yes (there is a basic consultation fee per case, which differs depending on whether out-of-hours care is urgent or non-urgent. In addition, fee depends on time, day, and place e.g. same fee can be billed weekdays 6 PM-11 PM and Sundays 7-11 PM but is different for a patient visit in the office or at the patient's home))	Yes (additional fees can be billed depending on provided services)
Denmark	No (except in capital region, where GPs at call centres and out-of-hours service centres are salaried)	Yes (there is a basic consultation fee per case, i.e. per phone call and/or per visit)	Yes (additional fees can be billed depending on provided services)
England	GP out-of-hours	Depends on contract with local clinical commissioning group	
	MIU, WIC, UCC	Yes (in some areas) (payment is based on HRGs but there is only one tariff for all HRGs)	No
France	Yes – for GPs participating in out-of-hours care (€50 for 8 PM-0 AM, €100 for 0 AM-8 AM, €150 for 8 AM-8 PM on Sundays/holidays)	Yes (basic out-of-hours fee (“majoration”) depends on day and time, i.e. different for 8 PM-0 AM, 0 AM-6 AM, 6 AM-8 AM, Sunday and Saturday, and place, i.e. in office or at patient’s home)	Yes (additional fees can be billed depending on provided services)
The Netherlands	Yes (Negotiated budget depending on capitated amount per inhabitant in the region plus costs for infrastructure)	No	No



9.4 Reforms and debates

9.4.1 Overview

Emergency care provision in each country included in our survey has undergone changes, which may provide inspiration for reforms in Belgium. A range of different measures is available that can (potentially) contribute to rationalizing the use of emergency care resources and reducing the number of inappropriate ED visits, while at the same time improving quality and appropriateness of care.¹⁹² On the one hand, our survey provides examples of different initiatives that have improved the availability of primary care services for urgent conditions, including during out-of-hours times, with the aim of providing patients with an alternative to seeking care at the ED. On the other hand, countries provide examples of a number of reforms that have been implemented to better coordinate different urgent and emergency care providers and to help patients navigate through the (often confusing) provision systems. Furthermore, several countries are working on rationalising and concentrating emergency care provision at fewer providers. In England, emergency care services for certain patients (i.e. acute myocardial infarction, stroke, major trauma) have been centralized in highly specialized centres. In Denmark emergency care provision has been reformed most radically by strongly reducing the number of hospitals with EDs in the country and by restricting access to the ED. England and the Netherlands have developed similar plans for reducing the number of EDs with the aim of improving quality of care and reducing costs but implementation has met significant local resistance. Finally work is ongoing in France and Australia to reform the payment system for EDs but as details of the new payment systems are yet unknown, they are not the focus of this section.

9.4.2 Improved availability of urgent primary care services and better coordination with emergency care

9.4.2.1 Improved availability of urgent primary care services

Several studies have found an association between better accessibility of primary care and lower numbers of ED visits.^{16, 237-239} However, most existing studies are based on cross-sectional designs, and therefore, the effect of improving access to primary care over time remains largely

unknown.²⁴⁰ Given that the number of primary care visits is usually much higher than the number of ED visits (for example in England there were more than 300 million GP visits in 2008 – the most recent year with data available – but less than 15 million ED visits in 2013), small shifts of patients from primary care to EDs can have a large impact on the number of visits at EDs.²⁴⁰

England is the country that **has most strongly invested in expanding the availability of urgent primary** care services since the late 1990s by introducing new types of providers and by improving access to GPs through various initiatives.^{240, 241} New types of providers that were introduced included a telephone hotline for urgent primary care advice (NHS Direct and later NHS 111), Minor Injury Units, Walk-In Centres at hospitals or in the community, and Urgent Care Centres. Initiatives that aimed to improve access to GPs included financial incentives, training of additional GPs, and various extended hours access schemes.

A recent study of a GP-led walk-in centre in Sheffield found a significant reduction of GP type attendances, which was likely to have been caused by the opening of the walk-in centre.²⁴² A relatively recent evaluation of NHS 111 found no statistically significant change in emergency ambulance calls, ED visits or urgent care contacts, and there was an overall increase of activity in the emergency care system.¹⁵² Two recent reviews of different initiatives concluded that while the introduction of new care providers improved convenience and accessibility of care, their effect on ED visits remains largely unclear because there were few rigorous evaluations.^{241, 243} In addition, the introduction of new providers in England is sometimes viewed as problematic because it has led to an increasingly complex emergency care system, where patients are having difficulties identifying the appropriate provider at the time of need.²²³

Improved availability of urgent primary care services may also be a by-product of incremental reforms in the organisation of out-of-hours primary care services, that have taken place in most countries, also going beyond those included in our survey.¹² Traditionally, out-of-hours primary care used to be organised and provided mostly by local GPs working from their homes and collaborating in a rotation system. This has **increasingly** changed in all countries towards a system of **urgent primary care provided at a central location**. In Australia, 24hr bulk-billing clinics have been established. In Denmark, Out-Of-Hours Service Centres are now organising urgent primary

care. In France, there has been a rapid growth of Maisons Médicales de Garde. And in the Netherlands, out-of-hours primary care is now (almost) exclusively organised by Primary Care Centres (PCC). While the establishment of 24hr clinics in Australia was mostly related to business objectives, the establishment of urgent primary care centres in Denmark and the Netherlands was mostly the result of collaboration of groups of GPs, sometimes referred to as cooperatives.²⁴⁴

The establishment of urgent primary care centres for larger geographic areas has several advantages:²⁴⁴ first, patients have a central point of contact, where they can go to receive urgent and emergency care; second, GPs benefit from having to work fewer shifts as the burden is shared amongst more colleagues; third, urgent primary care centres are usually supported by call handlers, often with dedicated IT infrastructure and triage models, as well as nurses, and drivers, which allows a more systematic and professional response. Evaluations that are available from different countries indicate that these more centralized primary urgent care models may lead to more patients receiving telephone advice, while the number of home visits is reduced (see, for example, Hansen et al. 1998²⁴⁵ for Denmark). However, the establishment of these centres does not necessarily translate into lower numbers of patients at EDs (see, for example, Philips et al. 2010¹⁴¹ for Belgium) unless these centres are located close to EDs (see, for example, Van Uden et al. 2003²⁴⁶ for the Netherlands).

9.4.2.2 Better coordination of urgent primary and emergency care

Countries included in our survey have taken various steps with the aim of improving coordination between urgent primary care and emergency care, including better coordination through a unique telephone hotline for urgent and emergency care, the introduction of a systematic referral system for access to EDs, and the establishment of urgent primary care centres co-located at hospitals and cooperating with EDs.

In France, most regions (70 of 95 départements) have **merged telephone hotlines for urgent primary care and emergency care**, and patients should always call number 15, when in need of urgent primary or emergency care. A call handler based at the ED of the local hospital will then answer the phone and has information on the local availability of out-of-hours primary care providers, ambulances, and beds in different hospitals

(computer based “Répertoire Opérationnel des Ressources”). In Denmark, the Regions introduced an app in 2013 that will **guide people towards the right treatment at the right place** and the app also includes information about waiting times at EDs.

In Denmark, all regions have progressively implemented a **system of systematic referral to the ED**. Since April 2014, patients can no longer access the ED by walk-in without referral from a GP, the urgent out-of-hours service centre, or from the emergency hotline service. Patients in need of urgent and emergency care should always call the urgent care hotline, where a GP or nurse will decide on the most appropriate response. If the GP or nurse determines that the patient needs to visit the ED, he will book an appointment through the IT system at the nearest ED with the shortest waiting time and the patient can wait at home until the time of his appointment. The regional introduction of the referral system followed recommendations from the National Board of Health and the Ministry of Health, and it was supported by the Danish Medical Association. The set-up of the referral system varies slightly across regions, concerning the location of the call centre (at the ED or the out-of-hours service centre) and whether a GP or a nurse will answer the phone. A large information campaign supported the introduction in most regions, including a letter to every citizen, explaining the emergency care system in the region. In almost all regions, the number of contacts at EDs was reduced considerably after introduction of systematic referral, ranging from 27% in Central Denmark Region, and 25% in Region Zealand, to 10% in Southern Denmark.²⁴⁷

In all countries included in this survey, **urgent primary care providers** are increasingly **co-located with hospitals** although they usually remain organisationally independent. In addition, England and the Netherlands are moving in the direction of encouraging **closer collaboration of primary care providers and EDs**, introducing a shared entrance for urgent and emergency care patients and joint triage.²⁴⁸⁻²⁵⁰ The idea is that patients visiting the ED with urgent primary care needs are treated by the co-located primary care provider, where they receive more appropriate and efficient care, while patients in need of emergency care are treated by emergency physicians in the ED.

Several studies are available, which have analysed the effect of primary care centres co-located with hospitals on ED attendances. Pinchbeck (2014)²⁵¹ found that new urgent primary care centres (Walk-in Centres) located in the



vicinity of hospitals reduced the number of ED visits in England, while new facilities in the community had a very limited effect. A recent study of a GP led urgent care centre co-located with an ED at a London hospital found that most self-referred patients could be treated by the urgent care centre without onward referral to the ED.²⁵²

In the Netherlands, closer collaboration between EDs and primary out-of-hours care has gradually become the rule, and at the end of 2014 75% of EDs had a co-located primary care centre (PCC) (see Box 18).²³¹ Multiple studies have investigated the effect of co-located PCCs on ED use. One study found that the introduction of a co-located PCC strongly reduced the number of ED patients (by 53%, comparing three weeks before and after opening of the primary care facility).²⁵³ Another study found that self-referred patients were much more frequent at a hospital with no PCC than at a hospital with such a facility in place,²⁴⁶ and similar findings (lower ED visits, almost complete absence of self-referrals) were also found in a longitudinal analysis of the introduction of a common emergency access point of a primary care centre with the local ED.²⁵⁰ Furthermore, a recent study including six Dutch regions, of which three had a PCC closely integrated with an ED and three did not, showed that patients living in regions with the integrated model were 30% less likely to visit the ED after controlling for casemix than those living in the other regions.²⁴⁹ Finally, adding a GP to the ED team was found to be a cost-effective intervention in a hospital in the Netherlands.²⁵⁴

Also in Switzerland, two studies found that the introduction of a primary care centre linked to the ED was a cost-effective intervention, reducing utilization of diagnostic imaging and process time.^{255, 256} However, as most available studies do not follow rigorous scientific standards, a 2012 Cochrane review included only three studies and concluded that the available evidence was insufficient and inconclusive about the effect on quality or cost-effectiveness of introducing primary care professionals to provide services within or alongside EDs.¹⁰ It should be noted that the included studies did not concern co-located ED and GP-practices but rather the employment of GPs in EDs. Moreover, two of the three studies showed beneficial results while another found no difference in prescription rates between emergency physicians and GPs. A potential explanation that might explain the different results is that in the former two study a triage system was staffed by a nurse while in the latter study (with no difference) triage was done by administrative staff.¹⁰

Box 18 – Case study: Primary Care Centres in the Netherlands ('Huisartsenposten')

PCCs for urgent primary out-of-hours care gradually emerged since the year 2000 because of a high workload for GPs and increasing difficulties of GPs to comply with the requirement of providing 24hr care. Before the introduction of PCCs, out-of-hours services were organized by individual GP practices, by way of mutual 'stand in' or replacement agreements, where e.g. one GP would stand in for 5 to 6 colleagues in a rotation system. The PCCs changed this by working on a larger (regional rather than local) scale and this reduced the number of shifts for individual GPs.

In 2014, there were a total of 121 PCCs, which were part of a total of 53 out-of-hours service structures ('huisartsendienstenstructuren', HDS). HDS organize out-of-hours care for a total of 7700 associated GPs, with an average of 145 GPs per HDS (minimum 9, maximum 696).²⁵⁷ Less than 1% of the population have a GP who is not associated with a PCC. In most PCCs, the associated GPs still work evening and night shifts in a rotation system, earning an hourly fee for the hours they provide. They may trade their shifts with colleagues, and PCCs often also contract qualified GPs to reduce the workload of associated GPs.

Most PCCs are independent trusts or foundations, with a two-tier board, and they are not allowed to generate profits. GPs associate themselves with the PCCs on the basis of a private association-contract. This stipulates e.g. the number of hours they are supposed to work for the PCC, remuneration (hourly rates) etc. There is a trend towards large scale organizations, e.g. the largest organisation is 'Primair', which consists of nine PCCs with a total of 900 associated GPs, covering a population of 1.5 million inhabitants. These large scale organizations have to fulfil the legal requirements regarding governance etc. as other health care providers such as hospitals.

The establishment of PCCs was supported by insurers through financial incentives, providing a capitated budget for out-of-hours care for a specified regional population, and paying additional funds for infrastructure (housing and administration costs). PCCs usually provide housing facilities, transport facilities, managerial support and other support staff (e.g. drivers), which enable a more professional response and reduce the costs for individual GP practices. However, individual GPs lost the turnover they made during out-of-hours services (fees for house visits etc.).

Increasingly, PCCs collaborate with EDs. In 2014, 71 PCCs were located at one of the 91 24/7 EDs in the country. Of these, 57 PCCs had collaboration agreements with EDs concerning diagnostics and treatment, 51 were located close to the ED and shared a common entrance, 49 received all self-referrals or there was a common reception desk for the PCC and the ED and 13 were using a common triage protocol.²³¹ Interestingly, collaboration of PCCs with EDs has always been the result of decisions of local providers (often incentivized by insurers) as there have not been explicit national policies mandating or incentivizing collaborations.

Hospitals benefit from a co-located PCC in several ways: patients are more likely to attend to the hospital for follow-up treatments, if they were already seen at the co-located PCC and securing good relationships with local GPs is essential to assure referrals. In addition, because hospitals usually operate under a global budget, it is often more profitable to refer high cost/low revenue patients to PCCs. Furthermore, health insurers may demand collaboration between hospitals and PCCs as a precondition for contracting, or they may offer shared savings deals, in which hospitals are compensated for loss of revenue. Similarly, insurers may incentivize PCCs to collaborate with EDs by increasing capitation payments.

9.4.3 Rationalizing and concentrating emergency care

9.4.3.1 Streamlining emergency care and concentrating highly specialized care for specific groups of patients

Since the late 1990s, Denmark, England, and the Netherlands have started to streamline emergency services for patients with serious or life-threatening conditions and to concentrate care provision for these patients in centres with highly specialized facilities and expertise. The aim of these initiatives has usually been to maximize patients' chances of survival and to assure a good recovery by improving quality, while at the same time saving costs. In particular, care has been concentrated for patients with burns, major trauma, acute myocardial infarction and stroke and pathways for patients with these conditions have been put in place to assure that patients are taken to the appropriate facilities, possibly bypassing by ambulance other closer facilities on the way. Concentration of care is likely to continue in several countries as current initiatives promote further concentration of care, e.g. the Urgent

and Emergency care Review in England²²³ and a report of the National Health Care Institute in the Netherlands²⁵⁸.

In the United States, regional trauma systems developed since the early 1980s, when evidence about survival benefits of centralizing regional trauma care at major trauma centres was starting to emerge.²⁵⁹ Subsequently, centralization of care began also in European countries. In the Netherlands, 10 hospitals (11 in 2015) with neurosurgical facilities were designated by the Minister of Health as trauma centres in 1999, and protocols were put in place to make sure that severely injured patients with polytrauma would be treated by these centres.²⁶⁰ In Denmark, trauma centres were also introduced since the late 1990s and there are four trauma centres operating in the country.²⁶¹ In England, after many years of debates and pilot testing, regional trauma networks, consisting of local trauma units, grouped around 26 major trauma centres and supported by ambulance transfer systems, were established nationwide in April 2012.²⁶²⁻²⁶⁴

Also emergency care services for acute stroke patients have been streamlined and concentrated in several countries. In England, acute stroke services were reconfigured in two metropolitan areas (London and Greater Manchester) in 2010.²⁶⁵ However, concentration of services was much more pronounced in London (population of 8.2 million people), where suspected stroke patients are now systematically transferred directly to one of eight hyperacute stroke units, providing immediate brain imaging and thrombolysis if appropriate.^{266, 267} In the Netherlands, stroke services have been centralized in part of the Northern Region, where emergency medical services and GPs directly transport patients to a central stroke centre (the Groningen University Medical Centre), serving a population of around 577 000.²⁶⁸ In Denmark, stroke services were centralized in Central Region in May 2012,²⁶⁹ leading to a model where acute stroke services for a population of about 1.7 million people are provided by only 2 hospitals with stroke units and thrombolysis services.

Similarly, care for patients with ST-elevated myocardial infarction (STEMI) has been optimized in many countries because it is a very time-sensitive condition, where system delays (i.e. delays from first contact with the health system to reperfusion) contribute to mortality and morbidity.^{270, 271} European guidelines for the treatment of STEMI recommend that emergency medical services diagnose patients within the ambulance, alert the nearest heart attack centre with facilities for primary percutaneous coronary intervention



(PCI), and transfer patients directly to the hospital, possibly bypassing other hospitals on the way.²⁷² In London care for myocardial infarction patients has been concentrated in eight heart attack centres, and patients are taken directly to these centres after prehospital diagnosis and triage by emergency medical services. In general, 81% of patients in England that were treated with primary PCI in 2013/2014 had been directly transported to a heart attack centre after prehospital diagnosis and triage, while 19% had been transferred from another hospital.²⁷³ In France, where a similar system of direct transfer to PCI facilities has been implemented, a recent study found that about 71% of patients were directly taken to PCI facilities by emergency medical services.²⁷⁴

9.4.3.2 Reduction of emergency departments: achieved in Denmark but failed in England and Netherlands

Denmark has recently implemented a large scale reform of its emergency and urgent care system, centralizing the provision of emergency services at EDs of fewer hospitals (see Box 19). By contrast, the Netherlands and England are still in the process of discussing reform plans to reduce the number of EDs, which have been delayed because of resistance from providers. On the one hand, health authorities and payers usually argue that a reduction of EDs would contribute to improving quality by centralizing technology and staff at fewer centres. A wider 24/7 availability of specialists and equipment at these centres would lead to more rapid treatment of patients despite longer travel time. At the same time, efficiency would increase because higher utilisation rates would mean that fixed costs for availability of resources would be spread across more patients. On the other hand, smaller hospitals and local politicians usually argue that concentration of care would lead to longer travel distances for patients, and in case of more concentrated inpatient care to more difficulties of relatives to visit their family.

In the Netherlands, a tripartite agreement (Ministry of Health, health insurers, hospitals) on the development of the health care system for the period 2012-2015 was concluded in 2011. This prescribed limits to the growth of hospital expenditure, a reduction of hospital capacity in the country, and as part of this process a concentration of emergency care provision at fewer sites. Nevertheless, hospitals organizations campaigned against the specific plans of insurers and also the competition authority

disagreed, and the reform initiative was ultimately stalled. Nevertheless, three EDs have been closed since 2013 without affecting accessibility as measured by the national access target of 45 min.

Also in England, some EDs were closed in recent years but this was always the result of local decision making and not of national planning. Where EDs were closed, urgent care centres (staffed by GPs and emergency nurse practitioners) often remained at the sites. These centres are supposed to manage the vast majority of patients without referral to an emergency department. However, the closure and downgrading of EDs was very unpopular and heavily criticized by different stakeholders. Therefore, the impact of ED closures is currently assessed in different regions (e.g. closED project).²⁷⁵

It is clear that national or regional planning procedures for hospitals in general are decisive in efforts to better coordinate emergency care. In fact, reforms of EDs always need to be supported by an overall assessment of hospital capacities and more strategic planning of hospital infrastructure in a country or region – as was the case in the large scale restructuring of hospital infrastructure in Denmark. In particular, countries with many small EDs might benefit from concentration of emergency services in selected hospitals.

Box 19 – Case study: Hospital reform in Denmark

Context: A large scale structural reform of the Danish healthcare system has taken place since 2007. The process was initiated with an administrative reform, which reduced the number of regions from 14 to five and the number of municipalities from 270 to 98.^{276, 277} This was followed by the Quality Reform in August 2007. As part of this reform, the government and the Danish regions set aside 40 billion DKK (5.4 billion euros) for joint investment in new hospitals. One of the main aims of the reform was to concentrate specialized treatments and emergency care in fewer and larger units.²⁷⁸ The idea was that professionals would increase their expertise with higher patient volumes, which, in turn, would translate into higher quality and efficiency. This idea was promoted through slogans such as 'quality above proximity' and 'practice makes perfect'.

Investments in EDs supported by strategic planning: Emergency care was a central part of the reform and significant investments in new hospitals were made in the period 2009-2018 specifically for emergency care. However, hospital investments were approved only if they followed the recommendations for acute and emergency care from the National Board of Health (NBH). These recommendations had been summarized in a report 'Strengthened acute preparedness – planning for the regional health system'.²¹⁷ The report, proposed a reduction in the number of hospitals with 24/7 EDs from approximately 40 to 20-25 and the establishment of so-called Joint Acute Wards (JAWs), where planned inpatient admissions, ambulatory emergencies and emergency inpatient admissions would take place. Traditionally, each department in a hospital organised its own admissions. The new process was intended to overcome professional boundaries between different specialties,²³⁵ to facilitate more streamlined patient pathways. Quality was intended to be improved through more rapid diagnosis and treatment because all relevant specialists would be available directly in the JAW to take care of patients in need of emergency care.²¹⁷ This was a significant change because traditionally more junior physicians were at the front line, initially receiving the patients. Regions had to apply for investments in new hospitals but it was a national decision that 21 hospitals should have a JAW.

Definition of catchment areas: In discussion papers concerning the planning of surgical specialties from 2005 the Danish Surgical Society and

the Association of County Council (the counties and the association of county councils were abolished in 2007) both proposed a catchment area of 200-300 000 for a JAW.²⁷⁹ In another discussion paper, from 2006, about future regions' acute care planning, this catchment population was used for both surgery and internal medicine.²⁸⁰ NBH determined that a catchment population of 200-400 000 was necessary to have sufficient case volumes at JAWs for economies of scale and scope. In addition, this case volume would be needed for developing and maintaining professional skills, and for making efficient use of key diagnostic equipment and clinical specialties. Furthermore, the NBH assesses that this catchment population is a prerequisite for the organizational resilience needed to securing the same high quality of care at all times.²¹⁷ However, the figure was not based on any specific methodology. For urban areas, the NBH states that further economies of scale can be achieved with a catchment population of more than 400 000 people. However, in all five regions there are sparsely populated areas with island- or island like geography, which can necessitate specific solution such as pre-hospital arrangements or admission centres at smaller hospitals. In these cases, quality must be maintained through formal cooperation with relevant parties.

Implementation process: The establishment of 21 JAWs proceeded with great variation in terms of time, organisation and physical environment. This variation has been the focus of much debate among central actors and interest groups. In a policy paper published in April 2014, the Danish Medical Association called for national guidelines to assure a more uniform way of organizing the JAWs and the processes of care delivered there.²⁸¹ The establishment of JAWs is taking place in parallel with regions' efforts to renovate existing facilities and the construction of new hospitals. In 2015, only five acute care hospitals were at their final location. Regions have also expanded pre-hospital emergency capacities by increasing the number of ambulances, physician-led ambulances, helicopters and establishing clinics for patients who do not need care at a central hospital.

Communication strategy: The reform was accompanied by active communication from the regions, national- and local media and through public debates. Every Danish citizen received a letter, explaining the emergency care system: who should be called, which provider should be contacted – and that EDs can no longer be accessed without prior contact to the emergency hotline.



Evaluation: In June 2014, the Ministry of Health, the Danish Regions and the NBH carried out a technical review of the implementation of the 21 different JAWs.²⁴⁷ The review did not perform an assessment following rigorous scientific standards. However, it evaluated specific areas, such as the catchment area, the capacity in the JAW, the physical environment, the processes of care during admission, the referral of patients, triage, waiting times, readmissions, the use of electronic screens, quality, and staffing – including access to different specialists, cooperation with other hospital departments and cooperation with GPs and municipal health- and social care services. The report established that: (1) quality had improved (although there were no hard indicators), (2) waiting times had reduced (although still varying widely across the country), (3) all JAWs fulfilled the recommendations concerning the availability of specialties at the hospital, but only six hospitals had them available 24 hours a day, and (4) JAWs were a good environment for education and training

9.5 Conclusions

No country has yet found the perfect answer to the basic problem: In case of an urgent or emergency medical care need, patients want timely access to high quality treatment. However, they do not know if their problem, consisting of different signs and symptoms, is serious (requiring specialized diagnostic facilities and interventions) or relatively uncomplicated (requiring clinical advice and treatment). In fact, also professionals often know only retrospectively if a particular patient attended for an uncomplicated problem or if he required emergency care attention. Emergency care systems have to respond to patients' expectations. However, given limited financial and human resources in almost all health systems, emergency services also have to be designed efficiently, making sure that patients receive appropriate care at the appropriate time.

In all countries, different organisational and political constraints limit the capacity to implement an optimal design of the urgent and emergency care system. Nevertheless, our review provides many interesting examples of reforms that aim at better coordination between urgent primary care and emergency care. These reforms often target both, improving quality and – at the same time – saving costs. The most important measures taken to achieve these aims are: (1) Improving measures for **guiding patients**

through the system and (2) **reconfiguring urgent primary and emergency care provision** as part of a general reorganisation of the emergency infrastructure. In addition, payment systems can play an important role in facilitating or complicating changes to existing systems.

9.5.1 Guiding patients through the system

Guiding patients through the urgent and emergency care system is important because there are different providers with different opening hours working at different locations, which can potentially take care of urgent or emergency medical problems. In addition, patients can access these providers either directly (walk-in) or by call (emergency call centre, urgent care call centre). Most countries have at least two different phone numbers, one for primary out-of-office care and one for emergency medical services, and two different types of providers, one for urgent primary care problems and one for emergency medical care.

Several countries have implemented measures to better guide the patient through the system. For example, in almost three-quarters of French départements, a unique number for urgent and emergency care has been established (number 15), where a call handler based at the ED has a digital real time resource monitoring system with information on the local availability of resources (*Répertoire Opérationnel des Ressources*) concerning out-of-hours primary care providers, ambulances and hospital capacities. If a serious condition is ruled out, the call handler can forward the call to the local out-of-hours GP service.

Ideally, the call centre also has clinical back-up staff that can provide clinical advice to the patient and evaluate the need for a home visit. For example, in England and Denmark, health advice is given by GPs who are available via call centres. In addition, Denmark increased the information availability for patients by introducing a smartphone app, which among other functionalities shows the available medical resources, including waiting times at EDs. Taking into account the ongoing development of communication technologies, future integrated call centres will potentially be able to communicate via video calling and open new or edit existing electronic patient records, which are accessible by participating providers and the patients.

Also in case of serious conditions, such as AMI, stroke or trauma, guiding the patient (with the help of emergency medical services) to the most



appropriate provider is essential because survival is highly dependent on rapid diagnosis and treatment. In several countries, including Denmark, England, France, and the Netherlands emergency pathways have been developed for certain groups of patients with serious conditions, and patients are transferred directly to highly specialised facilities after initial pre-hospital triage by emergency medical services.

9.5.2 Reconfiguring urgent primary and emergency care

In all countries, the allocation of emergency facilities has developed historically, often influenced by political considerations. In addition, the development and planning of hospital EDs has traditionally been independent of the organisation of urgent primary care. However, several countries are increasingly developing more rational planning approaches, taking into account population distribution, morbidity, geography, transport infrastructure etc. For example, in Denmark, catchment areas for EDs were defined for a population of 200-400 000 people based on considerations about necessary case volumes to justify 24/7 availability of emergency facilities and staff, while adjusting for sparsely populated areas and island geography. As a result, the number of EDs was cut in half and about 55% of hospitals do no longer have an ED (see Box 20). Instead, many hospitals now have nurse-led clinics, where patients receive treatment for minor conditions.

In the Netherlands, availability of EDs is regularly monitored against the national 45 min access target, which includes the time from initial contact with the call centre until delivery of a patient at the ED. In addition, EDs that are necessary to assure the 45 min access target can receive financial support from the government. Furthermore, needs for local availability of EDs are taken into account in the Netherlands, by adjusting opening hours of EDs, which means that four EDs with low caseloads are open only during day time.

Planning of emergency infrastructure also needs to be embedded in general hospital development plans. In Denmark, the reform of ED infrastructure was part of a large-scale hospital reform (see Box 19). Joint planning of emergency and general hospital infrastructure is important in particular for serious conditions (major trauma, AMI, stroke), as highly specialized facilities need to be available 24/7 within hospitals receiving these patients.

One important trend is that urgent primary care providers are increasingly located together with EDs in order to provide care for patients with less serious conditions. As a result, patients have a unique access point, and can be steered to the most appropriate provider after initial joint triage. For example, in the Netherlands, over the last 15 years, GP-led PCCs for primary out-of-hours care have been established at three-quarters of hospitals with EDs, and they are increasingly collaborating with EDs for diagnosis and treatment, often receiving all walk-in patients entering the ED (see Box 18). In England, there has been a wide proliferation of different urgent primary care providers (also during office hours) co-located with hospitals, including minor injury units led by nurses with advanced training or GP-led urgent care centres.

9.5.3 Supporting integrated emergency and urgent care structures through payment

Section 9.3 has highlighted that different payment systems for urgent primary and emergency care providers have different incentives. On the one hand, if urgent primary care providers are paid on the basis of fee-for-service (as in Denmark, France, and Australia) or on the basis of a casemix system (as in England), the payment system provides incentives for activity of providers. On the other hand, if urgent primary care providers are paid on the basis of a global budget, possibly calculated on the basis of capitation payments for the population living in the catchment area, the payment system ensures availability of GPs but does not provide incentives for activity. Therefore, countries that aim to promote activity of urgent primary care providers can consider increasing the relevance of payments that incentivize activity.

The same reasoning applies also to EDs. In Denmark and Australia, EDs are paid mostly (about 80% in Victoria/Australia) on the basis of a budget, which is independent of activity and is intended to cover the fixed costs of infrastructure and staff. The explicit intention in both countries is to avoid incentives for increased activity. In case of detailed regional planning of emergency care provision, the budget could be related to planning requirements for ED infrastructure, e.g. hospitals designated to fulfil certain highly specialized functions in an emergency network could receive a higher budget for assuring 24/7 availability of infrastructure and staff. However, also Denmark and Australia have payments per case, which are intended to



cover the variable costs of diagnosis and treatment, and these are essential in order to enable monitoring of provider activity.

Section 9.3 also pointed out that countries differ concerning whether emergency inpatient admissions generate one payment for the hospital or two payments (one for the ED and one for the inpatient department). Both approaches have certain advantages and disadvantages, which strongly depend on the national context and the organisation of care. However, an important consideration is that two separate payments for one patient can potentially generate coordination problems at the interface.¹⁹¹

Several countries are currently debating reforms of their payment systems for urgent and emergency care, although details are not yet available. In England, plans include a proposal for the development of one payment system for both urgent primary care and emergency care.²²⁴ This has the potential advantage that payment for a patient is independent of the provider, encouraging providers to organize care in the most efficient setting. However, given the fact that the bulk of ED costs is related to its availability function, while the availability costs for urgent primary care providers are rather low, good arguments exist also in favour of having different payment systems for EDs and urgent primary care providers. Furthermore, any reforms of payment systems should be careful not to incentivize a shift from regular primary care to urgent primary (out-of-hours) care because even small shifts away from regular primary care would constitute a huge increase for the urgent primary (out-of-hours) care system.

One interesting approach supporting the reorganisation of care when introducing a new urgent primary care facility at the location of an ED is the use of a shared savings program. In the Netherlands insurers have offered shared savings programs to hospitals, when PCCs were introduced at the site of the hospital to compensate hospitals for the loss of revenue (see Box 18). Another approach that can potentially incentivize primary care providers to improve accessibility to out-of-hours care is using resources of an ambulatory care budget for payment of hospitals for ambulatory ED patients. However, given that fact that all payment systems have intended and unintended consequences, monitoring and control systems that verify billing practices of providers are essential in order to counter unintended effects.

Key points

- Several western countries have undertaken reforms aiming to reduce the number of inappropriate ED visits and to rationalize the use of ED services.
- The emergency care system differs across countries. In the selected countries the number of EDs per 100 000 population varies from 0.33 in England to 1.25 in Australia. The proportion of acute hospitals with an ED is 70% in the Netherlands while it varies between 37% and 45% for the other four countries. Also the indicators for ED-use differ (e.g. from 124 ED-visits per 100 000 inhabitants in the Netherlands to 311 ED visits per 100 000 inhabitants in Australia).
- Organisational reforms:
 - Several countries are working on rationalising and concentrating emergency care provision at fewer providers. While most countries succeeded to concentrate care for time-critical conditions (e.g. stroke, STEMI, major trauma) in a limited number of specialised EDs, only Denmark was successful in drastically reducing the number of acute hospitals with an ED.
 - To reduce the number of inappropriate ED-visits all selected countries improved the availability of urgent (out-of-hours) primary care services. Several organisational models exist with variable success. Factors contributing to a reduction in inappropriate ED-visits appear to be: co-location of primary care centre at the Ed, a joint triage, one entry gate. While co-location of EDs and urgent primary care providers was identified in all selected countries, the model where ED and primary care closely collaborate is most prominent in the Netherlands and England.
 - Several countries implemented telephone triage systems and telephone advice lines to improve guidance of patients through the system. Although evaluations are limited and a risk of an overall increase of the burden of the emergency care system exists, all countries continue with these efforts.
- All countries use a mix of payment systems in an attempt to balance incentives.

- For patients admitted via the ED, the two following categories were identified:
 - Some countries, like England, separate the payment for the ED and the inpatient part which results in an identifiable funding stream but may create problems at the interface between ED and inpatient care.
 - In Denmark, France, and the Netherlands, inpatients admitted via ED are generally paid for on the basis of the usual inpatient payment system, which provides incentives that encourage an integrated pathway for the entire admission episode spanning treatment in the ED and during the inpatient stay.
- For non-admitted ED patients:
 - In Australia and Denmark payment of hospital emergency departments is mostly based on global budgets (e.g. 80% in Australia to cover fixed costs) which are determined on the basis of provider characteristics. The role of payments related to activity as measured in terms of number (and types) of patients treated or services provided is less important. In these countries primary care providers are paid on the basis of a fee-for-service system, encouraging activity of these providers.
 - In England and the Netherlands payment of hospital EDs is strongly related to the activity as measured by the number and types of patients treated. In England, payments are determined on the basis of a casemix system (11 different types of ED patients) with a same system for urgent primary care providers, i.e. minor injury units, walk-in centres and urgent care centres. In the Netherlands, payments are determined by the national Diagnosis Related Group (DRG-) system, which includes also outpatient care and does not distinguish between emergency care and other outpatient care provided. In both countries, primary care and out-of-hours providers are paid on the basis of negotiated capitation payments or block contracts.



10 INTERVENTIONS TO REDUCE EMERGENCY DEPARTMENT UTILIZATION

10.1 Objective

The objective of this chapter was to analyse the evidence about effectiveness of interventions to reduce emergency department (ED) utilization based on a narrative review of systematic reviews.

10.2 Method

Effectiveness was assessed based on a review of existing systematic reviews. Reviews were identified through a systematic literature search in three databases (Medline, Embase and Cochrane library reviews). The databases were searched in October 2015 with the following restrictions: language (English, French, Dutch); date limits (from 2005-current)^{hh}. Inclusion criteria are depicted in Table 34.

Inclusion criteria were tested on a set of 100 references by one reviewer (KV), after which some small modifications were made. Next all titles/abstracts of references were screened by the same reviewer. Full-text of possible relevant references were obtained and again screened on inclusion criteria by one researcher (KV); in case of doubt a second reviewer (CV) was asked to check the study on inclusion criteria.

Included systematic reviews were methodologically assessed with AMSTAR²⁸² and conformable to the KCE process notes (<http://processbook.kce.fgov.be/node/359>) by one reviewer (KV).

Search date, searched databases, type and number of included studies, analysis and funding were recorded for each systematic review. Next to this, from each systematic review, a description of the target population and interventions was extracted together with the type of study designs and reported outcomes for the respective interventions. Also the **conclusions** from each review as stated by the authors were extracted.

Data from the systematic reviews were extracted and categorized along different axes:

1. Target population included in the systematic review (age groups and description of sub-categories such as frequent ED users);
2. Type of intervention (supply primary care; access hours primary care; telephone services; other primary care interventions; case-management; coordination (other); education and self-management support; gatekeeping; barrier (other); cost sharing; pre-hospital diversion);
3. Type of designs of the included studies (systematic review; RCT; controlled trial; observational study);
4. Country;
5. Type of outcome.

Data analysis and synthesis was descriptive, along the above axes.

^{hh} Initially, we sought for systematic reviews published since 2005, but due to the large amount of references, we restricted the inclusion criteria further to systematic reviews only and dating from 2010 or more recent.

**Table 34 – Inclusion and exclusion criteria**

	Inclusion	Exclusion
P	All type of patients that require acute care services	<ul style="list-style-type: none"> • Studies focusing on disease-specific conditions; • Studies conducted in low and middle income countries; • Studies focusing on healthcare professionals (e.g. staff experiences).
I	<p>Interventions designed to reduce ED visits. This entails a wide variety of interventions such as:</p> <ul style="list-style-type: none"> • healthcare education and self-management interventions; • measures that limit access to the ED (e.g. gatekeeping, cost sharing); • measures that strengthen primary care (e.g. GP supply; extended out-of-hours openings) or alternative care settings (e.g. walk-in centres) to improve access; • interventions to strengthen continuity of care between hospital care and community care (e.g. case-management). 	Medical treatments (e.g. effect medication treatment; surgical procedures), medication reviews and interventions focusing on medication to ensure a smooth transition between hospital and community care (see KCE Report 131 on seamless care ²⁸³), quality indicators, innovations within the ED to deal with low-acuity patients (e.g. fast-track; workforce innovations)
C	Usual care	N/A
O	<ul style="list-style-type: none"> • Primary: ED utilization (e.g. ED visits); • Secondary: other healthcare utilization (e.g. hospital admissions, primary care use); adverse events/patient safety; mortality/survival. 	
T	<ul style="list-style-type: none"> • Review articles without a restriction of the type of primary studies that were included. Furthermore, the search strategy has to be reported and at least two databases were searched (of which one is Pubmed/Medline). 	<ul style="list-style-type: none"> • Primary studies; • Reviews focusing on literature about one particular country.



10.3 Results

10.3.1 Search and inclusion

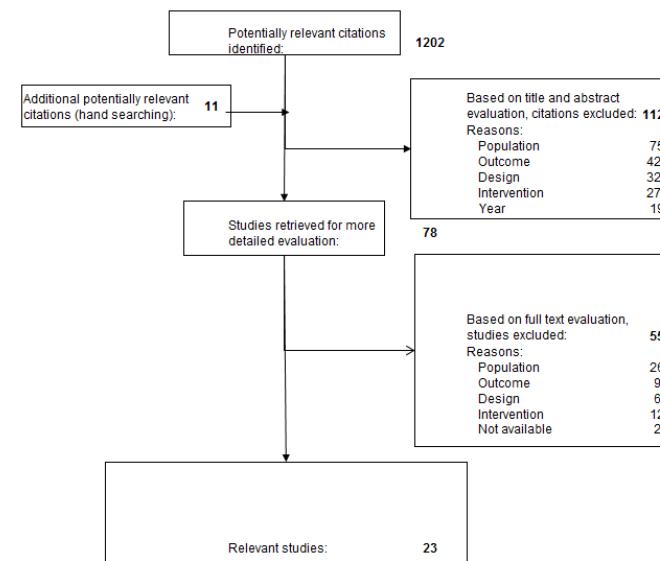
A detailed search strategy can be found in the annex to Chapter 10. Table 35 shows the number of hits obtained in the three databases. All 1202 references were checked on title/abstract by one researcher (KV) to see if they fulfilled the inclusion criteria. As mentioned before, we sought for systematic reviews published since 2005, but due to the large amount of references and the limited time to perform this study, it was decided to restrict the inclusion criteria further to systematic reviews dating from 2010 or more recent (19 potentially relevant reviews were excluded, a cross-check learned that most of these reviews were included in more recent reviews as a source). Seventy-seven reviews were possibly relevant (and one additional reference was found).

Table 35 – Number of hits per database

Database	N hits
OVID_MEDLINE	729
EMBASE	773
Cochrane_reviews	21
TOTAL	1523
After deduplication	1202

The 78 obtained full-text systematic reviews were then screened on inclusion criteria and 23 references^{37, 151, 157-159, 284-301} were retained. Inclusion flow of the full-text assessment of the possibly relevant systematic reviews is depicted in Figure 40.

Figure 40 – Flow chart of study selection process





10.3.2 Methodological assessment

In Box 20 the items of the AMSTAR-instrument are listed.²⁸²

Box 20 – AMSTAR measurement tool to assess the methodological quality of systematic reviews

1. Was an 'a priori' design provided?
2. Was there duplicate study selection and data extraction?
3. Was a comprehensive literature search performed?
4. Was the status of publication (i.e. grey literature) used as an inclusion criterion?
5. Was a list of studies (included and excluded) provided?
6. Were the characteristics of the included studies provided?
7. Was the scientific quality of the included studies assessed and documented?
8. Was the scientific quality of the included studies used appropriately in formulating conclusions?
9. Were the methods used to combine the findings of studies appropriate?
10. Was the likelihood of publication bias assessed?
11. Was the conflict of interest stated?

In annex to Chapter 10 it is shown in green which criteria of the AMSTAR instrument were met, and in the most right column the number of met criteria per included systematic review. The number of criteria met varied from 6 to 9 (see Table 36). The included reviews can be considered as moderately (AMSTAR scores of 5-7) or well (AMSTAR scores of 8 or above) performed systematic reviews. It should be noted that criterion 5 'study list' and criterion 11 'conflict of interest' were partly met by all of the included systematic reviews. However, criterion 5 was not met by 22 systematic review (SRs) since only the list of included studies was published. Criterion 11 was not met by all of the included reviews since conflict of interest of the primary studies was not published (while all studies published conflict of interest for their own review) (see annex to Chapter 10).

Table 36 – Summary of included systematic reviews

Study	Search until	AMSTAR	Number of studies	Target population	Supply primary care	Access hours primary care	Other primary care interventions	Telephone services	Pre-hospital diversion- other	Case-management	Coordination (other)	Education & self-management support	Gatekeeping	Barrier (other)	Cost sharing
Althaus et al. (2011) ²⁸⁴	June 2010	8	11	Adult frequent ED users						+	± ⁱⁱ				
Bahr et al. (2014) ¹⁵⁸	February 2013	6	19	Adult hospitalized patients				± ^{jj}							
Crocker et al. (2012) ¹⁵⁹	December 2011	7	3	Adults				NS ^{kk}							
Fan et al. (2014) ²⁸⁵	January 2014	6	36	General elderly population						± ^{ll}					
Flores-Mateo et al. (2012) ¹⁵⁷	February 2012	8	48	General adult population	+	±		NS ^{mm}			±	±			+
Franek et al. (2013) ²⁸⁶	January 15, 2012	8	11	Adults with general chronic conditions							NS				
Health Quality Ontario (2013) ²⁸⁷	April 2012	6	11	Adults with general chronic conditions						± ⁿⁿ					

ⁱⁱ Case-management light (e.g. individual care planning)^{jj} Post-discharge telephone call (hospital based)^{kk} Post-discharge telephone call (primary care based)^{ll} Community-based>hospital-based interventions (both including, for instance, case-management)^{mm} Telephone consultation for primary care patients during out-of-hoursⁿⁿ Tools and systems for electronic health information exchange that facilitate provider-provider communication

Study	Search until	AMSTAR	Number of studies	Target population	Supply primary care	Access hours primary care	Other primary care interventions	Telephone services	Pre-hospital diversion- other	Case-management	Coordination (other)	Education & self-management support	Gatekeeping	Barrier (other)	Cost sharing
Health Quality Ontario (2014) ²⁸⁸	December 2011	6	23	Adults with general chronic conditions							+				
Huntley et al. (2014) ²⁸⁹	October 2012	8	48	Patients (general)	± ^{pp}	±					+				
Ismail et al. (2013) ²⁹⁰	August 2011	7	34	General population		±	± ^{rr}	± ^{ss}							
Jackson et al. (2013) ²⁹¹	June 2012	8	19	Patient populations representing multiple diseases			± ^{tt}								
Karam et al. (2015) ²⁹²	June 2012	6	3	Older patients with an ambulatory ED contact							± ^{uu}				
Katz et al. (2012) ²⁹³	December 2010	6	13	ED patients (general)							± ^{vv}				

^{oo} Relational continuity of care interventions: ongoing relationship between care provider and patient

^{pp} Mixed results but in general positive for US, Canada (not for Europe where primary care is already more developed)

^{qq} Continuity of care

^{rr} Walk-in and community health centres; emergency nurse practitioners in residential care

^{ss} Telephone triage

^{tt} Patient-centered medical home

^{uu} Interventions classified with an increasing level of intensity as 'referral (assessment and recommendations)'; 'program (on-going support for patient after discharge from ED)' and 'integrated (care facilitator imbedded in individual care plan)'. The latter is most beneficial.

^{vv} ED-based care coordination (development of post ED treatment plan)

Study	Search until	AMSTAR	Number of studies	Target population	Supply primary care	Access hours primary care	Other primary care interventions	Telephone services	Pre-hospital diversion- other	Case-management	Coordination (other)	Education & self-management support	Gatekeeping	Barrier (other)	Cost sharing
Kumar et al. (2012) ²⁹⁴	April 2011	6	12	Adult frequent ED users						+					
Lidal et al. (2013) ¹⁵¹	June 2012	N/A	/	Acute care patients (general)				/ww							
Lohwthi an et al. (2015) ²⁹⁵	December 2013	8	9	Elderly discharged from ED							N S xx				
Morgan et al. (2013) ²⁹⁶	January 2013	7	39	General	±				+		±yy	±	±	+	
Rennke et al. (2013) ²⁹⁷	September 2012	8	57	Adult general patients						±zz					
Sinha et al. (2011) ²⁹⁸	December 2010	6	18	Non-institutionalized elderly					±aaa						
Soril et al. (2015) ³⁷	January 2015	7	17	General adult frequent ED user population					+	±bbb					

ww Validated triage system in the pre-hospital setting

xx Community transition strategies (e.g. GP liaison, telephone follow-up)

yy Greatest reductions by education interventions (but also some null findings)

zz Pre-, post-discharge and bridging interventions (some of these interventions also include self-management support and case-management)

aaa Evidence that case-management is effective when evidence-based, nurse-led, inter-professional approach is followed

bbb Information sharing (mixed), individualised care planning (no effect).



Study	Search until	AMSTAR	Number of studies	Target population	Supply primary care	Access hours primary care	Other primary care interventions	Telephone services	Pre-hospital diversion- other	Case-management	Coordination (other)	Education & self-management support	Gatekeeping	Barrier (other)	Cost sharing
Stall et al. (2014) ²⁹⁹	March 2014	7	9	Community-dwelling older adults							+ ^{ccc}				
Tohira et al. (2014) ³⁰⁰	October 2012	9	13	General population (calling for ambulance transport)					+ ^{ddd}						
Tricco et al. (2014) ³⁰¹	May 2014	8	50	Adult frequent users of the healthcare system					NS		+ ^{eee}				

Legend: + in favour of intervention: ED use decreases; - in favour of control: ED use increases; ± mixed study results; NS non-significant results

^{ccc} Home-based primary care programmes provided by the regular primary care provider

^{ddd} Pre-hospital practitioners (ambulance transport)

^{eee} Care coordination by case-management, team changes (e.g. routine home visits by healthcare provider other than GP), self-management, clinical information systems. Effect for sub-population of the elderly.



10.3.3 Type of target populations included in systematic reviews

All reviews considered mixed populations since reviews that focused on a particular disease group like chronic obstructive pulmonary disease (COPD), chronic heart failure or diabetes were excluded. Yet, some reviews focused on specific target groups: four on frequent ED users^{37, 284, 294, 301}; five on elderly^{285, 292, 295, 298, 299} and three on patients with various chronic conditions²⁸⁶⁻²⁸⁸.

10.3.4 Type of interventions and scope of reviews

The results section is organized according to the following intervention types (see Table 36):

- Strengthening primary care including: increasing the supply of primary care services and access hours of primary care services and some other measures;
- Telephone services. This includes triage and telephone consultation. Both interventions can also be considered as interventions to strengthen primary care;
- Pre-hospital diversion: transport of patients towards other care settings than the ED;
- Coordination activities including case-management and other interventions (e.g. individualized care planning);
- Education and self-management support;
- Barriers to access emergency departments (e.g. gatekeeping);
- Cost sharing.

The scope of included interventions was different for all reviews. Several reviews focused only on one intervention type. Nine reviews focused on coordination interventions^{285, 287-289, 292, 293, 295, 297, 299} and two on case-management^{294, 298}. Althaus et al. (2011)²⁸⁴, Soril et al. (2015)³⁷ and Tricco et al.(2014)³⁰¹ focused on coordination and case-management (which is of course one specific type of care coordination). The focus on care

coordination and case-management is especially seen when the reviews are designed for specific populations such as frequent ED users^{37, 284, 294, 301} and elderly^{285, 292, 295, 299} patients with chronic conditions^{287, 288}.

Further, three reviews evaluated only telephone services^{151, 158, 159}; one review evaluated education and self-management (focus on patients with chronic conditions²⁸⁶); another review evaluated the patient-centred medical home (other primary care)²⁹¹; and yet another review evaluated pre-hospital diversion¹¹⁶.

Three reviews have a large scope:

- Flores-Mateo et al. (2012)¹⁵⁷ focused on organizational interventions (strengthening primary care; telephone interventions; education and self-management; gatekeeping and cost sharing) intended to reduce ED utilization in the general population.
- Morgan et al. (2013)²⁹⁶ evaluated interventions (outside the ED: access hours primary care; other primary care interventions such as walk-in and community health centres; pre-hospital diversion; education and self-management; gatekeeping; cost sharing and other barriers to access the ED) that focused on reducing ED use. Although initially within scope, Morgan et al. excluded case-management and telephone triage since these interventions were already evaluated extensively in the reviews of Bunn et al. (2004)^{fff302} and Althaus et al. (2010).
- Ismail et al. (2011)²⁹⁰ focused on primary care interventions (access hours; telephone triage; other such as walk-in centres and nurse practitioners) aimed to reduce ED use.

10.3.4.1 Strengthening primary care

A distinction can be made between interventions that aim to increase the supply of primary care (e.g. investments in additional primary care centres) and interventions aiming to increase the access hours of primary care services (e.g. out-of-hours availability).

^{fff} The study of Bunn et al. (2004) was included in the reviews of Ismael et al. (2011)²⁹⁰ and was used as a source for primary studies by Flores-Mateo et al. (2012)¹⁵⁷



Supply of primary care services

In two reviews^{157, 289} evidence about increased primary care supply (increasing number of primary care centres or primary care physicians or physician density) was evaluated. Studies from different study settings were included (United States or US; Canada; Spain, Sweden, Brazil).

Impact primary care supply on ED use:

- Ten studies included in the review of Flores-Mateo et al. (2012)¹⁵⁷ focused on evaluations of the association between primary care supply and ED use with evidence from seven studies that increased primary care supply is associated with lower number of ED visits. One study showed a non-statistically significant reduction and one Brazilian study showed an increase (statistical significance levels unclear). The results of one study were unclear.
- The picture resulting from the review by Huntley et al. (2014)²⁸⁹ is mixed.
 - Inpatient ED visits: in five studies from different countries, it is shown that an increase in GP supply is associated with a decrease in inpatient ED visits, while no such relationship is found in five other studies.²⁸⁹
 - Ambulatory ED visits: an increase in ED visits was associated with a higher GP supply in one study in which a high number of areas with a low specialist density were included, while this association was not confirmed in two other studies.²⁸⁹
- Impact primary care supply on other outcomes:

The evidence on other outcomes is limited. From the ten studies in the review by Flores-Mateo et al. (2012)¹⁵⁷ that focused on primary care supply, three studies examined changes in hospital admissions. Two studies found a decrease in hospital admissions, and one study did not find significant differences in charges for hospitalization.

Access hours primary care

Increasing the access hours of primary care, especially during out-of-hours periods (e.g. GPs from different practices forming a non-profit organization to provide care for their own patients out-of-hours), was subject of evaluation in four reviews^{157, 289, 290, 296} including primary studies from a variety of

countries: Belgium, Canada, Denmark, Ireland, United Kingdom or UK, US, Spain, and the Netherlands.

Impact increased access during after-hours periods on ED use:

- Evidence from nine studies included in the review by Flores-Mateo et al. (2012)¹⁵⁷ examined the association between out-of-hours services and ED use. Overall, studies that focused on interventions aimed at increasing out-of-hours primary care services showed a mixed picture regarding the reduction in ED visits: 3 studies with non-significant results; 4 studies without significance levels reported (2 decreasing ED use, 1 increase in ED use and 1 mixed); 1 study with a significant increase and 1 with a significant decrease of ED use.¹⁵⁷
- The review of Huntley et al. (2014)²⁸⁹ included eight studies on the association between increased access hours of primary care and ED visits. Five (US: 4; UK: 1) studies indicated that increased access to primary care (e.g. longer opening hours, more appointment slots available and increased nurse triage) reduce ED visits. Another study in the Netherlands showed that co-locating a GP out-of-hours practice and the ED, reduced ED visits. One longitudinal study conducted in the UK has shown, however, that co-location has increased ED use. In a Danish study, it was shown that replacing out-of-hours care from local GPs by telephone triage and GPs in a central regional triage centre increased ED visits. In a Spanish study, increased out-of-hours accessibility did not affect ED visits.²⁸⁹
- In the review by Ismail et al. (2013)²⁹⁰ eleven studies evaluated the effect of out-of-hours GP initiatives on ED use but evidence is conflicting. One Irish study found a significant reduction in low-acuity attendances, following the introduction of a GP-cooperative but this intervention coincided with the introduction of an increased co-payment for ED attendances. It is, thus, unclear which intervention caused the decrease in ED visits. Also two Dutch studies showed decreases in ED use but these studies had serious methodological shortcomings (no corrections for seasonal variations; unclear significance levels). One Danish study reported a non-significant rise in ED use while five other studies did not report significant results (and two did not report this outcome).



- Of the ten studies included in the review of Morgan et al. (2013)²⁹⁶ about increased primary care access, three examined interventions that expanded capacity through new centres, while the other studies involved existing physician practices expanding appointments and/or hours of care. Four studies found significant decreases in the use of the ED after increases in non-ED capacity (9% to 54%), while five were non-significant and one found an increase of 21%.

Impact increased access hours during after-hours on other outcomes:

- Only few studies included in the review by Ismail et al. (2013)²⁹⁰ evaluated other outcomes. One Dutch study considered mortality and adverse event rates and results were similar as before the increased out-of-hours access. One UK-based study found no significant change in patient satisfaction. One Dutch study compared the cost of stand-alone GP practices with those that were integrated with a hospital with no evidence of a reduction in costs across the healthcare system by housing GP-practices in dedicated facilities.
- Five studies included in the review by Morgan et al. (2013)²⁹⁶ about increased access to primary care reported effects on non-ED use and four studies showed increases in non-ED use ranging from 1% to 102%. Three studies reported cost data showing 10% to 20% savings with the intervention.

The reviews of Morgan et al. (2013)²⁹⁶ and Huntley et al. (2014)²⁸⁹ did not clearly report the impact on other outcomes.

Other interventions to strengthen primary care

The review of Ismail et al. (2013) included also other primary care interventions such as walk-in centres (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) and an emergency nurse practitioner in residential care.²⁹⁰ The review of Jackson et al. (2013)²⁹¹ focused on a particular intervention type, the patient centred medical home (PCMH). These primary care centres are 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 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.²⁹¹ All studies that were included in the review by Jackson et al. (2013) about the impact of patient-centred medical homes on ED use, were conducted in the US.

Impact other primary care interventions on ED use:

- The review by Jackson et al. (2013)²⁹¹ included six studies evaluating the impact on ED use. The three RCTs found no effect (combined RR, 0.93 [CI, 0.72 to 1.20]). However, a subgroup analysis of the two trials among older adults pointed to the possibility of an association with lower ED use (combined RR, 0.81 [CI, 0.67 to 0.98]). In contrast to the trial results, three observational studies (three different study populations: a general adult population, older adults, and children) found small to moderately decreased inpatient and ED use.²⁹¹
- The review of Ismail et al. (2013)²⁹⁰ included a number of studies on 'other primary care interventions':
 - Two studies on community health centres showed a decrease in the number of ED visits that could be labelled as inappropriate (with a specific focus on the uninsured).
 - Ismail et al. (2013) state that "retrospective analyses of ED use suggest that 25–55% of attendees could have been treated by walk-in clinics or minor injuries units but there is no evidence that such redirection occurs in practice where walk-in clinic or minor injuries unit services are available." The authors included a review that did not find a reduction of ED use as a result of walk-in clinics. A similar result was found by two UK-based primary care studies.
 - One Australian study examined the impact of emergency nurse practitioners in residential-care facilities providing first-line medical care for residents and found a statistically significant reduction in ED visits from older care home residents (17%), controlling for seasonal variation.

Impact other primary care interventions on other outcomes:

- The review of Jackson et al. (2012)²⁹¹ included five randomized controlled trials but did not find a statistically significant effect of patient-

- centred medical homes on inpatient utilization (combined RR, 0.98 [95% CI, 0.86 to 1.12]). Evidence for an effect on patient experiences and care processes (especially preventive services) was found but not for clinical outcomes.
- The review of Ismail et al. (2013) included other primary care interventions, but the impact on other outcomes was understudied:
 - Community health centres: /
 - Walk-in units: no significant changes in patient outcomes, higher patient satisfaction, no significant changes on costs.
 - Emergency nurse practitioner in residential care: high satisfaction rates of healthcare professionals.

10.3.4.2 Telephone services

Different types of telephone services are described in the literature. A first type of telephone calls are the follow-up calls post-discharge performed by hospital staff or primary care staff to “determine how they were doing” (e.g. answering patient questions, asking about symptoms, clarifying areas of patient education, reviewing medications, assist in scheduling outpatient appointments and rescheduling missed appointments, and assess barriers to keeping appointments).^{158, 159} A second type of telephone calls are telephone consultations or advice services (e.g. telephone consultation for primary care patients seeking medical help out-of-hours).^{157, 290} A third type of telephone calls are the telephone triage services where patients are prioritized by the use of a validated triage system in the pre-hospital setting via a telephone triage-assessment.¹⁵¹ Only the study by Flores-Mateo et al. (2012)¹⁵⁷ reported the countries in which the telephone services were evaluated: US, Denmark and UK.

Impact telephone services on ED use:

- In the review by Bahr et al. (2014)¹⁵⁸ four studies were included in which the effect of post-discharge calls on ED use was evaluated. Only in one study a significant increase was observed. In the three other studies no difference in the use of ED between persons who received post-discharge telephone calls and those who did not was reported.
- The review of Crocker et al. (2012)¹⁵⁹ included only three studies and none of the studies evaluating impact of primary care based telephone follow-ups on ED visits demonstrated evidence of reduced ED visits.

- The review of Lidal et al. (2013) illustrated that there is a lack of evidence about the effectiveness of pre-hospital telephone or face-to-face triage systems since none of the retrieved studies met the inclusion criteria.
- The review of Flores-Mateo et al. (2012)¹⁵⁷ included six studies evaluating the effect of telephone triage and consultation (four of which were RCTs) and none of these found significant differences in the number of ED attendance between groups.

Impact telephone services on other outcomes:

- In the review by Bahr et al. (2014)¹⁵⁸ the evaluation of the impact of post-discharge telephone calls on several outcomes such as readmission, patient satisfaction, scheduled and unscheduled follow-up, and physical and emotional well-being was done based on 19 studies but evidence remained inconclusive as there were positive and negative findings for most outcomes.
- None of the three studies included in the review by Crocker et al. (2012)¹⁵⁹ reported reduced hospital admissions while improved primary care office contact (e.g. office contacts for prescription refills) as a result of telephone follow-up intervention was reported in all three studies.
- Two of the six studies included in the review of Flores-Mateo et al. (2012)¹⁵⁷ found increased re-visits as a result of telephone triage and consultation. The authors stated that *“this system, in reality, delays the visit rather than resolving the problem”*.¹⁵⁷

10.3.4.3 Pre-hospital diversion or care at the scene

Transport of low-acuity patients towards other care settings than the ED was evaluated in the review of Morgan et al. (2013).²⁹⁶ Significant decreases in ED use ranging from 3% to 7% in one US- and one UK-based study. The UK-based study included an intervention where low-acuity patients were transferred to minor injury units whereas the US-based study offered outpatient-clinic or home care to low-acuity patients. Both studies, however, found increases in use of other care settings and none of the studies assessed other health or cost outcomes.²⁹⁶

The review of Tohira et al. (2014) evaluated pre-hospital practitioners providing care at the scene and/or referring a patient to an alternative healthcare service.¹¹⁶ The aim of these new roles which they called “new



prehospital practitioners" is to provide pathways other than the default transport to the ED for patients who suffer from minor illness or injury. These practitioners are all able to provide care at the scene and discharge patients on site without referral to other clinicians.³⁰⁰ The review included studies from New-Zealand (n=3), Canada and the UK (n=9). All included studies found that the introduction of these new roles were less likely than conventional ambulance staff to transfer patients to the emergency department (but with high variations in effect sizes: 1.6–50 times less likely) and 1.6–26 times more likely to discharge patients at the scene. In addition, it should be noted that there was no conclusive evidence about the impact of these roles on subsequent ED attendance since some studies reported increases in ED visits while others found no difference. Also the evidence about appropriateness of care/decision remains equivocal.¹¹⁶

10.3.4.4 Coordination of care

The most prominent intervention that aims to reduce ED visits by improving coordination is case-management. In this section we first describe case-management and then describe evidence about other coordination interventions.

Case-management

Although case-management is not uniformly defined across studies, common elements return such as: interdisciplinary approach of individual care planning based on a thorough assessment and aimed to guide the patient throughout his care process which often transcends the traditional care boundaries between hospital and community care. The role of case-manager is often assigned to a dedicated person. Soril et al. (2015)³⁷, for instance, defined case-management as "*comprehensive, interdisciplinary approach taken to assess, plan, 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 the patient with as task to broke access and guide the patient through their customized care process, which may extend beyond the normal continuum of the ED and inpatient care, into the community.*"³⁷

It is an intervention that is studied in a wide variety of countries with different types of healthcare systems (see Annex to Chapter 10). The most recent

review³⁷, for instance, included studies from the United States (n=5); Australia (n=2); New-Zealand; Sweden; Canada; Scotland; Taiwan) with the evaluation of case-management as an intervention to reduce ED visits among frequent ED users. Other reviews^{284, 298, 301} also included studies from the UK, Israel and South-Africa. Although randomized clinical trials were (especially in the review that focused on non-institutionalized elderly²⁹⁸) included in all reviews^{37, 284, 294, 298, 301} most included studies were observational studies.

The targeted populations were either frequent ED users^{37, 284, 294, 301} or elderly²⁹⁸.

Impact case-management on ED use:

- From the seven studies included in the review by Althaus et al. (2011) that evaluated case-management, five showed a reduction in ED use, one an increase and one no effect.²⁸⁴ The magnitude of the decrease was not consistently reported (e.g. one study with a 31% decrease in ED visits; one study with a 28% increase in ED visits).
- From the eleven studies included in the review of Kumar et al. (2013)²⁹⁴ that evaluated the impact of case-management on ED use among frequent ED users, eight reported a reduction in ED use (ranging from 31-83%), two studies reported no significant reduction and one study reported a non-significant increase (study that included patients with substance abuse or psychiatric problems).
- From the twelve studies included in the review by Soril et al. (2015)³⁷, ten studies showed a decrease in ED use among frequent ED users (1 RCT with a minor decrease and nine observational studies with a decrease in the mean number of ED visits between -0.66 and -37 ED visits), one without a significant change (1 RCT) and one observational study with an increase of 2.79 median ED visits post-intervention.³⁷
- The review of Tricco et al. (2015)³⁰¹ included 29 studies about case-management, but only six studies were included in the meta-analysis about the impact on ED use:

- Proportion of patients with ED visits (two studies): RR = 1.08 (0.77, 1.38);
- Mean number of visits per patient per month (four studies): mean difference of 0.01 (-0.07, 0.09).
- Of the 13 studies included in the review by Sinha et al. (2011)²⁹⁸ evaluating the effect of case management on ED revisit rates, six studies reported no statistically significant results and seven reported a statistically significant result (of which one a significant increase and six a significant decrease).²⁹⁸ The authors reported that case-management interventions were more effective when they were 'evidence-based'; 'nurse-led' and when they followed an 'inter-professional approach'.²⁹⁸

Impact case-management on other outcomes:

- In the review by Althaus et al. (2011) a cost analysis was performed in 3 of the included studies on case-management and all 3 evaluations (based on hospital perspective) showed a reduction in ED costs but cost of the intervention was not included in ED costs. Yet, the authors concluded that "*introduction of a case management team could reduce ED costs by at least as much as the cost of the team itself. Nevertheless, a cost analysis taking a societal perspective would be necessary to examine whether the inclusion of the additional costs for management of frequent users outside the hospital would be balanced by the additional benefits both for frequent users and society in general.*" The three studies that evaluated clinical (e.g. alcohol and drug use) and social outcomes (e.g. homelessness) showed inconsistent results for clinical outcomes but significant improvements for social outcomes. None of the three studies assessing hospitalization identified significant differences. Use of ambulatory care was evaluated in 3 studies, and 2 studies confirmed a benefit of the intervention (increase in primary care; significant reduction in the number of patients lacking a primary care practitioner).²⁸⁴
- In the review of Kumar et al. (2013)²⁹⁴ all four of the studies that evaluated costs, reported a reduction in ED costs in case-management interventions. However, in only one of these studies the costs of the case-management intervention was factored in and they found that when this was done costs were similar. Furthermore, case-management relies on connecting patients with primary care. It is

possible that the reduction in ED costs is counterbalanced by an increase in the cost of these programmes.²⁹⁴ Four studies evaluated the effect of case-management on hospital admission rates: 4 without a significant effect. The effect of case-management on psychosocial variables is mixed. Four studies found improvement on outcomes such as homelessness, lack of health insurance, lack of social security income and unmet financial needs while the impact on substance abuse is less clear. In three studies a significant improvement in follow-up with primary care and community care programmes was observed.²⁹⁴

- Six studies (2 RCT and 4 observational) included a cost analysis in the review by Soril et al. (2015)³⁷ from a health system's perspective and all showed a reduction in costs.
- The review of Tricco et al. (2015)³⁰¹ included 29 studies about case-management, with 22 studies evaluating the effect on hospital admissions. The 13 studies that evaluated the effect on proportion of patients with hospital admission resulted in a significant decrease (RR 0.79; 0.68-0.91) while the 9 studies evaluating the effect on mean number of admissions per patient per month not (0.00; -0.00-0.01). For length of stay and clinic visits no significant results were reported.

Other coordination activities

Besides case-management other coordination activities are studies. These interventions are diverse but often include one or more case-management components. Althaus et al. (2011)²⁸⁴ and Soril et al. (2015)³⁷ describe these interventions as light forms of case-management. Individualized care plans, for instance, also uses interdisciplinary strategies and coordinated access to primary care resources but are in contrast to the case-management approach less comprehensive in their design, limited in the number of health services and implemented without a designated case manager.³⁷ Also Katz et al. (2012)²⁹³ focused mainly on the development of post-ED treatment plan (including next steps for obtaining appropriate aftercare).

Lowthian et al. (2015)²⁹⁵ focused on community transition strategies including geriatric assessment and post-discharge interventions (community-based referral, telephone follow-up, GP liaison, outreach assistance until community-based services became available)

Other interventions are tools and systems for electronic health information exchange²⁸⁷, clinical information systems³⁰¹, information exchange in



general³⁷, relational continuity (i.e. ongoing relationship between the care provider and the patient)^{288, 289} and team changes' (primary care team changes: expansion of primary care team by other disciplines).³⁰¹

In the review by Fan et al. (2015)²⁸⁵ a difference is made between hospital-based interventions (e.g. geriatric assessment and intervention in ED observation unit; ED based nurse discharge coordinator) and community-based interventions (usually with a focus on preventing the older residents from illnesses or functional decline such as case-management by a geriatric evaluation unit and general practitioners) and some of the interventions can be classified as 'case-management'.²⁸⁵ Community based strategies such as home-based primary care programmes (e.g. holding regular inter-professional care meetings; availability of an afterhour's urgent telephone service provided by primary care) were the focus in the review by Stall et al. (2014).²⁹⁹

Karam et al. (2015)²⁹² classified the interventions (with an increasing level of intensity) as *referral* (assessment in the ED, followed by recommendations to community based agencies); *referral with follow* (e.g. comprehensive assessment, care plan development and care plan implementation by a coordinated team) and *integrated* (a care facilitator is embedded into the patient's individual care plans).²⁹²

Rennke et al. (2013) made a distinction between pre-discharge interventions (e.g. multidisciplinary discharge planning team), post-discharge interventions (e.g. outreach to patients including follow-up telephone calls, patient-activated hotlines, and home visits) and bridging interventions (pre-discharge and post-discharge components).²⁹⁷

Impact other coordination interventions on ED-use:

- From the 4 studies in the review by Althaus et al. (2011)²⁸⁴ that evaluated other coordination interventions 2 showed a reduction in ED use (i.e. counselling on use of health care and social system by a social worker; evaluation of the needs, choice by the patient of a coordination group, care plan) and 2 found no changes (i.e. case management like and provision of case notes from patient's last 3 visits to emergency physician).²⁸⁴ The magnitude of the decrease was not consistently reported (e.g. only one study about the coordination group care plan reported a decrease of 53% in the mean number of ED visits);

- In the review of Fan et al. (2015)²⁸⁵ 16 studies evaluated community-based geriatric interventions and over half of them (9 out of 16) reported significant reductions in ED utilisation (5 RCTs, 1 controlled trial and 3 observational studies). Six other community-based interventions (five RCTs and one observational study), although not statistically significant, also resulted in a diminished ED use. Only one RCT, studying tele-monitoring within home for symptom assessment and treatment initiation, reported a non-significant increase in ED attendances.
- Twenty studies evaluated the effectiveness of hospital-based interventions. Of them, only three studies demonstrated statistical significance in lowering ED use and two on ED length of stay (LOS) (No RCTs). Two of these five interventions featured multidisciplinary team and care planning (effect on ED LOS) and another two interventions included follow-up visits. The three studies focused on 1) geriatric assessment and intervention in ED observation unit; 2) ED based nurse discharge coordinator; 3) risk screening and coordination. Four studies (only two with statistically significant results) found a higher ED utilisation. These interventions employed a uni-disciplinary approach. The other studies did not report clear statistically or clinical different results. The authors noted that a large difference is that "*community-based interventions usually have a focus of preventing the older residents from illnesses or functional decline, while hospital-based interventions focus on rehabilitation and follow-up of the already sick elders.*"²⁸⁵
- Only one study (RCT) out of three studies included in the review of Health Quality Ontario (2013)²⁸⁷ found a significant impact of e-tools on number of ED visits (visits per patient: mean difference of -0.09 [-0.14 to -0.04]). The two other (smaller studies) did not find statistically significant results.²⁸⁷
- In the review by Health Quality Ontario (2013), all three studies that reported ED visits in relation to continuity of care for any condition, reported a statistically significant reduction in ED visits in patients with higher continuity, regardless of how continuity was assessed.
- In the review by Huntley et al. (2014)²⁸⁹ consistent results were found in the 5 studies (3 US- and 2 Canada-based) that evaluated the



association between continuity of care (as measured by seeing the same physician: GP or specialist) and ambulatory ED visits.²⁸⁹ This association was confirmed for emergency hospital admissions, although the authors indicated that these results are potentially context and condition specific (e.g. in case there is no timely and easy access to the primary care physician).²⁸⁹

- The review by Karam et al. (2015)²⁹² classified coordination interventions according to intensity level as:
 - 'referral': 7 studies of which 5 without significant impact on ED visits, 1 with unclear results and 1 with a significant increase in ED visits (but not for risk groups).
 - 'program': 3 studies but only one with statistically significant results (a decrease in ED use);
 - 'integrated care': one study with a significant reduction in ED visits.
- Katz et al. (2012) evaluated the impact of coordination interventions (vast majority concerned the development of a post-ED treatment plan and next steps for obtaining appropriate aftercare) and included 13 studies with a reported effect on ED use. Seven RCTs of which 5 without significant results and 2 with a significant increase in ED use. All six included observational studies reported a statistical reduction in ED use but only 2 of these studies reported statistically significant results.²⁹³
- The review of Lowthian et al. (2015)²⁹⁵ included a pooled analysis about the effect of community transition programs on ED use including 4 studies with sufficient homogeneity. Pooled data showed no effectiveness at reducing ED visits (OR 1.32, [0.99–1.76]). Also no statistically significant impact on emergency hospital admissions was found by pooling the data of 3 studies (OR 0.90, [0.70–1.16]).²⁹⁵
- The review of Rennke et al. (2013)²⁹⁷ identified 18 studies showing that interventions successfully reduced ED visit rates (or readmission rates) after discharge out of a total of 46 studies. Nearly all studies with successful results used a bridging intervention (pre- and post-discharge), and 10 of these studies included in their intervention a

dedicated transition provider who contacted patients before and after discharge (similar to case-management).²⁹⁷

- The review of Soril et al. (2015) also evaluated the impact of 'individual care planning' (1 RCT) and 'information sharing' (1 RCT and 1 observational study). The results for 'individual care planning' were not significant. For 'information sharing' the RCT did not find a decrease while the observational study did (decrease from 67.4 to 50.5 mean ED visits per year).³⁷
- In the review by Stall et al. (2014)²⁹⁹ the effect of home-based primary care programs on ED use was based on effects on four studies that studied ED encounters before and after enrolment in the programme. Two studies reported reductions in ED visits of 15% (no P-value reported) and 48% ($P < 0.01$). Two other studies reported reductions of 20.8% and 18.5% but neither of these reached statistical significance.²⁹⁹
- The overall results of the coordination interventions (including case management; team changes; self-management and clinical information systems) was evaluated by Tricco et al. (2015)³⁰¹ in a meta-analysis⁹⁹⁹ combining studies evaluating:
 - Proportion of patients with ED visits (6 studies): RR = 1.11 (0.65, 1.90).
 - Mean number of visits per patient per month (7 studies): mean difference of -0.02 (-0.06, 0.03).

Impact other coordination activities on other outcomes:

- A study assessing hospitalization identified no significant differences. Use of ambulatory care was evaluated in 3 studies, and 2 studies confirmed a benefit of the intervention.²⁸⁴
- The review of Health Quality Ontario (2013)²⁸⁷ also evaluated the impact of e-tools on other outcomes and found that there was moderate quality evidence of a reduction in hospitalizations (mean difference in admissions per patient -0.03 [-0.05 to -0.01]) and hospital length of stay (mean difference in days per patient -0.11 [-0.19 to -0.03]) following the implementation of an electronically generated laboratory

⁹⁹⁹ Sub-group analysis for the different interventions did not yield other results.



- report with recommendations based on clinical guidelines.²⁸⁷ The evidence showed no difference in disease-specific outcomes (e.g. HbA1c for diabetes). There was also no evidence of a positive impact on process-of-care indicators (e.g. ‘blood pressure measures conducted’) or measures of efficiency (time and communication).²⁸⁷
- The evidence base included in the review of Health Quality Ontario (2013)²⁸⁸ is weak. Yet indications for an association between higher continuity of care and fewer hospitalizations was found in observational studies. In addition, three systematic reviews reported that higher continuity of care is associated with improved patient satisfaction, especially among patients with chronic conditions.²⁸⁸
 - The review of Karam et al. (2015)²⁹² evaluated the impact on hospital admissions; nursing home admissions and deaths. Yet, results were not clear-cut. They found however that “*more intensive interventions more frequently resulted in reduced adverse outcomes than did simple referral intervention types; and that among the lowest intensity, referral-based interventions, studies that used a validated prediction tool to identify high-risk patients more frequently reported improved outcomes than those that did not use such a tool.*”²⁹²
 - Most of the studies included in the review of Katz et al. (2012)²⁹³ evaluated post-treatment plans with follow-up. However, the mixed evidence about the effect of these ED-based care coordination interventions on future resource utilization or the quality of subsequent care services (e.g. follow-up with primary care) is of weak quality.²⁹³
 - The review of Lowthian et al. (2015)²⁹⁵ included two studies evaluating the effect of community transition programmes on functional decline, neither reporting significant results. The two studies reporting effect on institutionalisation were mixed with 1 reporting a statistically significant reduction (OR 0.21, [0.05–0.99]) while the other not.²⁹⁵ No significant effect on mortality was detected when the results of three studies were pooled (OR 1.04 [0.83–1.29]).²⁹⁵
 - Sixteen studies included in the review of Rennke et al. (2013)²⁹⁷ reported evaluations of health care utilization and associated costs but no firm conclusions can be drawn since the reported measures, cost estimates were highly variable and none of the studies included the cost of the intervention.²⁹⁷
 - Only one study included in Soril et al. (2015)³⁷ reported on the cost of ‘information sharing’ and found a significant reduction. This study, however, failed to report about the cost of the intervention itself.³⁷
 - In the review of Stall et al. (2014)²⁹⁹ also the effect of home-based primary care programmes on hospitalisations, long-term care and costs were evaluated.
 - Hospitalisations: 9 studies with seven reporting substantial reductions in hospitalizations (2 without reporting statistical significance). The remaining two studies failed to show a positive effect of their intervention on hospitalization, with one reporting an 8% increase and one showing no significant difference.
 - Long-term use: In all three included studies a substantial reduction in long-term care admissions was found of 10% (no P-value reported), 20% (P=0.001) and 25% (no P-value reported). In addition, one study reported that long-term care bed days reduced without reporting significance levels.
 - Costs: Only four studies included financial analyses and results are mixed. Two of them reported substantial cost savings. Another two reported higher costs per patient after enrolment in the programme.²⁹⁹
 - The meta-analysis included in the review of Tricco et al. (2015)³⁰¹ combined all types of coordination activities (case management; team changes; self-management and clinical information systems) and found no significant impact on clinic visits and length of stay. Also for ‘mean number of hospital admissions per patient per month’ no significant changes were observed. Yet, in the 18 studies that evaluated the effect on ‘proportion of patients with a hospital admission’ a significant impact was observed (RR 0.81; 0.72-0.91).³⁰¹ The authors report that “*interventions that had a significant effect were those with an outreach component and those aimed at patients with the most frequent/severe utilization rate and those at risk of frequent use.*”³⁰¹

10.3.4.5 Education and self-management support

Three reviews focus on educational interventions.^{157, 286, 296} The reviews of Flores-Mateo et al. (2012) and Morgan et al. (2013) focus on educational interventions in general whereas Franek et al. (2013) focus on educational

interventions in patients with chronic conditions.^{157, 286, 296} The educational interventions included in the first two reviews include interventions such as information booklets, monthly group meetings with educational components; teaching patients how to use the healthcare system and providing counselling in social/emotional issues; self-management support.^{157, 296} Evidence from Australia¹⁵⁷ and the US^{157, 296} is available.

The review of Franek et al. (2013)²⁸⁶ focused on self-management support promoting skills such as problem solving, decision making, resource utilization, patient-provider relationship, and/or taking action. More in particular the Stanford Chronic Disease Self-Management Program (CDSMP) was evaluated. This 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).²⁸⁶ The studies evaluating the impact of educational interventions on ED visits were conducted in the US (n=4) and China.

Effect Educational interventions on ED use:

- Evidence from six studies that examined the effect of educational interventions on the ED use is integrated in the review of Flores-Mateo et al. (2012)¹⁵⁷. The significance levels of 1 study were not reported. Three studies showed a significant decrease in ED use. However, in two RCTs (including the largest RCT with the best methodological quality) did not report statistically significant results. It should be noted that this concerned a stand-alone educational intervention (i.e. an information booklet). The authors stated that "*educational interventions seem more effective when they are introduced as a part of a multi-faceted intervention, or even in the treatment of specific chronic conditions*".
- The review of Franek et al. (2013)²⁸⁶ included 5 studies with data available on impact of educational interventions on ED visits. Meta-analysis showed no significant difference between the Stanford Chronic Disease Self-Management Program and usual care (SMD, -0.05; 95% CI, -0.18, 0.09; P = 0.49). One trial, which also failed to show significant results, was not included in the meta-analysis.

- Two out of five studies included in the review of Morgan et al. (2013)²⁹⁶ found significant reductions in ED use (ranging from 21% to 80%).

Effect of educational interventions on other outcomes:

- Two out of six articles included in the review of Flores-Mateo et al. (2012)¹⁵⁷ assessed the impact of educational interventions on mortality rates and hospital admissions. Neither showed differences in mortality rates between the intervention and control group. In addition, the studies consistently found a reduction of hospital admissions (not statistically significant or statistical significance level not reported).¹⁵⁷
- The studies included in the review by Franek et al. (2013)²⁸⁶ showed no statistically significant results with respect to visits with general practitioners, days in hospital, or hospitalizations. Yet, beneficial effects of educational interventions were found for health status outcomes (e.g. pain, disability, fatigue, depression, health distress, Quality of Life) and self-efficacy.
- Three out of five studies included in the review of Morgan et al. (2013)²⁹⁶ reported data on non-ED use with one finding 0.03 fewer clinic visits per person. Three articles reported health outcomes and no significant adverse events were noted.

10.3.4.6 Barriers to access emergency departments

Gatekeeping and managed care

Flores-Mateo et al. (2012) evaluated the effect of gatekeeping. All five included studies concerned US-based evaluations of health maintenance organizations where a pre-authorization for payment for the ED visit via the "managed care gatekeeper" was required. Of the 12 studies included in the review by Morgan et al. (2013)²⁹⁶ examining the effects of managed care on ED use, six had interventions with capitated payment of primary care physicians, five had a requirement of primary care physician approval or gatekeeping, and one was a hybrid of these two. All studies were conducted in the US with the exception of one capitation based study (Canada) and one gatekeeping study (Ireland).²⁹⁶

Impact gatekeeping on ED use:

- The review by Flores-Mateo et al. (2012)¹⁵⁷ included six studies about gatekeeping of which two evaluated the effect of gatekeeping on ED



use. In one RCT the usual GP carried out the gatekeeping role and no changes in ED use were found. Yet, one observational study found that gatekeeping plans were successful in reducing ED use.

- Overall, nine studies included in the review by Morgan et al. (2013)²⁹⁶ (six with capitation and four with gatekeeping as interventions) found significant decreases in the use of the ED after managed care interventions, with reductions ranging from 1% to 46%, while two did not find any significant difference. One study found mixed results.

Impact gatekeeping on other outcomes:

- In the review of Flores-Mateo et al. (2012)¹⁵⁷ one study evaluated adverse outcomes and two re-visits (increases between 11% and 24.1%).
- Regarding the effect on non-ED use, six out of nine studies included in the review of Morgan et al. (2013)²⁹⁶ did report data, with only four reporting significance and mixed results. Six articles included health outcome data but results were mixed and did not always assess for significance. Two studies reported cost data with both showing decreases with capitation.

Cost sharing

Cost sharing is defined as any kind of out-of-pocket payment for healthcare 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).^{157, 296} The study of Flores-Mateo et al. (2012) included 11 US-based studies and 1 Irish study. The review of Morgan included only US-based studies. The intervention in seven studies was the requirement for patient co-payment or coinsurance, and in three it was the implementation of a high deductible. Half of the studies were in Medicaid populations, with the majority of those single state interventions, while the others involved commercial insurers.

Impact cost sharing on ED use:

- All but one of the eleven US-based studies included in the review by Flores-Mateo et al. (2012)¹⁵⁷ found a reduction in ED use (one study reported no changes). The study conducted in the Irish setting reported that the overall ED workload remained stable, but with a slightly

significant reduction in the number of patients who attended with non-emergency pathologies.

- Of the 10 studies included in the review by Morgan et al. (2013)²⁹⁶ using costs to influence patients to use certain sites for care, or to use care efficiently, nine studies found significant decreases in the use of the ED after implementation of the intervention, with reductions ranging from 3% to 50%. The remaining study found a significant relative increase of 34% in ED visits.

Impact cost sharing on other outcomes:

- The studies included in the review of Flores-Mateo et al. (2012)¹⁵⁷ showed no increases in hospitalizations (three studies) or mortality rates or other adverse outcomes (2 studies) following the introduction of cost sharing.
- Only regarding effect on non-ED use, two out of ten studies included in the review by Morgan et al. (2013)²⁹⁶ did report data with one showing no change in urgent care paediatric office, adult office, and ambulatory care visits, but one showed an increase in hospital outpatient department use. Adverse health outcomes remained unchanged or decreased and results on costs were mixed.



10.4 Discussion and conclusion

A first observation is that most of the included reviews (especially the more generic reviews) included remarks on the large encountered heterogeneity in terms of patient populations studied, included interventions (and lack of clear definitions) and ways of measuring outcomes (especially costs and adverse events, if measured at all). Furthermore, heterogeneity also implies the large variety in the organisation of acute care system delivery across developed countries as well as other country specific elements (e.g. geographical differences, financing system). As such, the generalisation of results and transferability of interventions towards other care settings might be limited.

A second observation is that all reviews that included several interventions conclude that for most interventions results are contradictory with mixed results for most interventions (see Table 36).

A third observation is the weak quality of the available evidence. Not only are interventions and other concepts (e.g. adverse outcomes, costs) ill-defined and understudied, there are also concerns about the used designs. Most studies are observational and the few quasi-experimental studies included in the reviews have serious design problems (e.g. under-powered, lack of blinding) and fail to adequately evaluate the long-term impact of the intervention due to restrictions in the follow-up measurements periods.²⁹⁰

Box 21 – Limitations of this narrative review of reviews

This literature review was limited to a search for information on the effectiveness of interventions to reduce ED use in systematic reviews and not directly in primary research studies. This choice was done mostly for pragmatic reasons, related to the limited time to perform the study. As a consequence, the most recent literature is possibly missed. A citation search of the included systematic reviews in Web of Science was undertaken to overcome this limitation. Key publications that resulted from this screening were included in the discussion of this review. Another major limitation is that the sifting of the literature and data extraction was undertaken by one researcher only.

In addition, some topics were not separately discussed in the original systematic reviews (e.g. co-location of EDs and ODCs was mostly integrated in reviews as a method of increasing access to out-of-hours GP services without a specification of the co-location element). Nevertheless, also via a citation search for recent primary studies and an additional expert consultation some recent evaluation studies on this topic were included.

With these general limitations of this narrative review and the primary studies that were included in the evaluated systematic reviews in mind, we discuss below the main study results (see for author conclusions annex to Chapter 10).

There is a lack of high-quality evidence about the effect of validated pre-hospital **telephone triage systems** on ED use. This does not mean that the domain ‘telephone triage’ for calls related to urgent medical problems is understudied.¹⁵¹ Yet, most studies are retrospective studies and studies with observational designs from which the following messages can be drawn:

- Telephone triage systems are relatively accurate but the risk for underuse (referral to a too low level of care according to the urgency level) increases with risk of urgency.¹⁴⁹
- It was shown that safety problems are lower when call handlers have a clinical background.¹⁴
- Compliance rates are generally high with rates reported between 56-98%. However, compliance rates are dependent on the type of advice.



Higher compliance rates are reported for self-care and ED attendance advices compared to advice to contact primary care, potentially reflecting patient preferences for ED care.¹⁴⁹

The evidence about the effect of telephone consultations (e.g. pre- and post-discharge telephone calls) is contradictory and there are indications (e.g. increased re-visits) that telephone consultations in reality rather delay rather than resolves the problem.¹⁵⁷⁻¹⁵⁹

A recent large scale clustered randomised trial testing telephone triage and consulting in the management of same-day GP consultation requests brings circumstantial evidence. The trial showed that telephone consultation shifts the workload from face-to-face to telephone contacts and increases the number of primary care contacts within 28 days of the initial consultation. Telephone consultation appeared to be safe, has a negative impact on patient satisfaction and has a negligible impact on ED admissions (small not statistically significant increase intervention group). The benefits of telephone consultation might increase when it is focused on specific target groups such as those with long-term conditions.¹⁶⁰⁻¹⁶²

Several aspects of **strengthening primary care** as a way to reduce ED visits were evaluated. Overall, studies that focused on interventions aimed at increasing out-of-hours primary care services did not show a reduction in ED visits. Most of the included studies were performed in countries with already a strong primary health care system in place. The conclusion on the evidence about the association between increasing the supply of primary care (e.g. number of GPs and primary care centres) and lower ED visits was not univocal. While one of the reviews¹⁵⁷ with a broad focus concluded that there is clear evidence for an association between increasing primary care supply and ED visits decreases, this conclusion was not confirmed in another review¹⁵⁷ with a broad focus. The latter review stated that such an association could only be observed in the US communities that have poor coverage of primary care services. Also more specifically targeted reviews such as the review of Jackson et al. (2013)²⁹¹ who evaluated 'the patient centred medical home (PCMH)' are inconclusive. Although the PMCH holds promise for improving the experiences of patients and staff in the US context, current evidence is insufficient to determine effects on ED use as well as on clinical and most economic outcomes.²⁹¹ Despite the mixed results presented in this narrative review of reviews, a recent study²³⁹ found clear associations between the strength of primary care and ED use based

on a European survey of GPs and patients. Variables measuring primary care access (e.g. opening hours, the nearness of a general practice and home visiting) were clearly associated with reduced ED visits. Moreover, people who think it is easy to get primary care during out-of-office hours visited the ED less often. It should be noted that this study is based on the perceived, rather than on the actual situation. Nevertheless, as discussed in Chapter 5, the perception of the available care alternatives have an important impact on its actual use. The results of this European review are also in line with the conclusions of a recent review that found evidence for the association between primary care and avoidable hospitalisations.³⁰³

Although the evaluation of the evidence included in the reviews was not conclusive and the quality of the evidence base is weak, there are indications that a co-location at the ED of GP-practices for out-of-hours care with one emergency care access point have the potential to reduce ED visits. In such an integrated access point, it is determined by a triage whether patients will be seen by a GP or by a physician in the ED. A recent study with the co-location of an urgent care centre (staffed by GPs and not nurse-led walk-in clinics which were previously evaluated as having no impact on ED use) with an ED showed that the majority of patients visiting the urgent care centre were treated at the centre without a same-day referral to the ED or other specialist care setting. Yet, the absolute number of patients referred to the co-located ED still remains high.²⁵² Patients went to the urgent care centre because of its superior access (24/7 availability) compared to regular GP care³⁰⁴ or as an alternative to the ED.^{242;252} Also in the Netherlands^{250, 305} this model is becoming the standard. An evaluation compared usual practice (GPs and EDs working at close distance but separately) with this integrated model for out-of-hours. In the latter model patients are allocated to the GP or ED and are assigned a level of urgency based on a triage performed by a nurse in the joint triage area. For patients who contact the centre by phone, a triage by a trained medical assistant is done.³⁰⁵ As such patients do not choose themselves who they contact. After triage, GPs and EDs each have their own department. The study compared the care in six regions with having a usual care model (n=58 620) or an "intervention" (n=63 441) and found that fewer patients attend EDs (27.6% versus 21.6%) and more patients go to GPs. Moreover, the proportion of patients with non-urgent problems that visit the GP is higher in the regions with the intervention model. Especially more patients with mild trauma are visiting the GPs within

the intervention regions.³⁰⁵ Also a study from Switzerland³⁰⁶ confirms the potential of GP practices co-located at the ED to reduce ED visits.

Also intuitively a collaboration between GPs and EDs in the form of one centre makes sense. GPs and EDs each have their own department, while they share one combined entrance and a joint triage area.³⁰⁵ This single “front door” may reduce confusion for the public and the common triage area allows more efficient streaming between ED and primary care. It should be noted that this model is substantially different from hiring GPs to work in the ED as this entails the risk that GPs adapt their practice to the emergency physicians practice and start to prescribe more exams and tests. The model of one centre has the benefit that both parties preserve their own identity, philosophy, and specialism.³⁰⁵

In any case, several reviews stipulated that it is important that increasing access points for acute care (e.g. by the instalment of urgent care centres, telephone triage) may unmask latent demand that if not accommodated by alternative care settings might result in more inappropriate ED visits. 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.²⁹⁰

Evidence about other **pre-hospital interventions** such as pre-hospital practitioners providing care at the scene, referring the patient to an alternative healthcare service, employing emergency care nurse practitioners in nursing homes is limited but promising. Yet, a major shortcoming is the lack of evidence on patient safety outcomes.^{116, 296}

Although evidence about the effect of **educational interventions** is contradictory a large number of studies showed that it has potentially a large impact on ED use.^{157, 296} The education interventions seem not to be successful when they are implemented as stand-alone (i.e. the intention being merely to educate patients regarding overall health service utilization). Educational interventions seem more effective when they are introduced as a part of a multi-faceted intervention. Morgan et al. (2013)²⁹⁶ further indicate that although educational interventions are difficult to standardize they have the potential to reduce overall healthcare use (and not only ED use).

Several **barriers** can be implemented to access ED care directly. Two types of gatekeeping methods were included within the scope of reviews. The first

type is the allocation of a gatekeeping role to GPs which is implemented in several healthcare systems (e.g. UK, Scandinavian countries). The second type concerns managed care where health maintenance organizations practice gatekeeping. This is a model adopted in the US but with no standardized triage criteria and with various personnel functioning as the gatekeeper. The studies identified in the systematic reviews focus on this second type of gatekeeping with some beneficial effects on ED use observed. Yet, the vast majority of these studies were conducted in the US.^{157, 296}

The same limitation holds for the studies on cost sharing. Except one Irish study all studies were conducted in The US. Nevertheless, cost sharing is one of the interventions with the greatest number of studies showing reductions in ED use.^{157, 296} Flores-Mateo et al. (2012) state that “*Apparently, people who should go to the ED are not deterred by co-payments, whereas at least some of those who should not be using the ED are deterred.*” A major limitation of the included primary studies is that the impact of cost sharing in vulnerable populations (e.g. low purchasing power and deprived socioeconomic groups) is understudied.

Some reviews focused on **specific target groups** such as frequent ED users, elderly and patients with various chronic conditions. These studies focused mainly on care coordination and case-management. Case-management is the most-described intervention to reduce ED utilisation among frequent ED users (no uniform definition used). Case-management can be upstream (e.g. to prevent hospital admission for chronic conditions by a good follow-up by primary care) or downstream the ED (e.g. better coordination of care with the community for patients that were identified as frequent ED users). Evidence suggests that case-management could reduce ED use but additional investigation is needed to determine what specific aspects of case-management are most successful and cost effective.^{37, 284, 294} Nevertheless, the breadth of resources and intensity of intervention (e.g. frequency of follow-up; availability of psychosocial services; the aggressiveness of outreach)²⁸⁵ seem to correlate with better results. Case-management is therefore by some review authors seen as an intervention that is worth implementing in hospital EDs in the context of a proper local evaluation setting.²⁸⁴ Tailoring of interventions (e.g. identifying gaps in the current supply of services by evaluating prevalent risk factors of frequent ED users) and models of care, rather than standardization of care,



may prove to be most effective at reducing high ED utilization. Case-management models designed to address the special care needs of the elderly (not limited to frequent users) has also proven to be successful.²⁹⁸ Furthermore, a wide range of other coordination interventions (e.g. individual care planning, post-discharge telephone calls; relational continuity of care)^{284, 285, 289, 292, 293, 295, 297, 299, 301} were studied with mixed results both within the population of frequent ED users and elderly. Coordination interventions that are more intense, multi-layered and incorporate strong linkages to the longer-term primary and community care services are more successful than single interventions (e.g. individual care planning) or solely hospital-based interventions. For the chronic care patients²⁸⁸ there seems to be a relationship with relational continuity of care (same care provider) indicating the important role of primary care in the prevention of unscheduled hospitalisations.

Morgan et al. (2013)²⁹⁶ noted that for some of the studied interventions major **ethical questions** should be discussed prior to its implementation. Cost-sharing initiatives, for instance, may result in an increased number of patients postponing care for financial reasons and in the long-run result in worse health outcomes and increased costs for the health care system.²⁹⁶ Another example is the decreased patient (and healthcare professional) autonomy of gatekeeping systems.

Anyhow, the effective use of ED services and acute care services in general is a **complex and multi-factorial problem** that requires integrated intervention with respect to the organisation of and benefit from emergency services. As such interventions will have to be adapted to the specific context of a country and will have to be implemented as a function of the coverage and funding of the individual country's healthcare system.¹⁵⁷

Reducing (inappropriate) ED visits will require broad changes to the organisation of and payment system for acute care. Morgan et al. (2013)²⁹⁶ suggest that "*change could include a careful multi-layered approach integrating several interventions along with a feedback mechanism to monitor outcomes and averse events*".

Key points

- A systematic review of systematic reviews resulted in 24 studies about interventions that aimed to reduce ED utilisation in mixed study populations (single condition studies were excluded). Three reviews had a large scope while the other reviews focused on one or a limited set of interventions. Several intervention types were considered that can be classified in 6 categories: 1) Cost sharing; 2) Strengthening primary care (supply of primary care services; access hours primary care; other); 3) Pre-hospital diversion (telephone services: telephone triage and telephone consultation; transport of patients towards other care setting than the ED); 4) Coordination (case-management; other); 5) Education and self-management support; 6) Barriers to access emergency departments (gatekeeping; other).
- The high number of interventions, methods used to measure outcomes measurement and the different populations complicate their evaluation. Although approximately two-thirds of the studies included in these reviews showed reductions in ED use for most interventions the evidence showed contradictory results.
- The interventions with the greatest number of studies showing reductions in ED use include ED cost sharing. It should be noted that studies that assess the effect of cost sharing in the more disadvantaged social classes are absent and that with the exception of one study in Ireland all studies were conducted in the US.
- The conclusion about the evidence about the association between increasing the supply of primary care (e.g. number of GPs and primary care centres) and lower ED visits was not univocal. While one of the reviews with a broad focus concluded that there is clear evidence for an association, this conclusion was not confirmed in another review with a broad focus. The latter review stated that such an association could only be observed in the US communities that have poor coverage of primary care services.
- Overall, studies that focused on interventions aimed at increasing out-of-hours primary care services did not show a reduction in ED

- visits. Most of the included studies were performed in countries with already a strong primary healthcare system in place.
- There is a lack of evidence about the effect of validated pre-hospital telephone triage systems on ED use, this is a domain that is clearly understudied. The evidence about the effect of telephone consultations (e.g. post-discharge telephone calls) is contradictory. The evidence about other pre-hospital interventions such as pre-hospital practitioners providing care at the scene or referring the patient to an alternative healthcare service is limited but promising.
 - Some reviews focused on specific target groups such as frequent ED users, elderly and patients with various chronic conditions. These studies mainly focused on care coordination and case-management.
 - Case-management (CM) is the most-described intervention to reduce ED utilisation among frequent ED users (no uniform definition used). Evidence suggests that case-management could reduce ED use but additional investigation is needed to determine what specific aspects of CM are most successful and cost effective. Nevertheless, the breadth of resources and intensity of intervention (e.g. frequency of follow-up; availability of psychosocial services; the aggressiveness of outreach) seem to correlate with better results. Case-management is therefore worth implementing in hospital EDs in the context of a proper local evaluation setting. Tailoring of interventions (e.g. identifying gaps in the current supply of services by evaluating prevalent risk factors of frequent ED users) and models of care, rather than standardization of care, may prove to be most effective at reducing high ED utilization. Case-management models designed to address the special care needs of the elderly (not limited to frequent users) has also proven to be successful.
 - A wide range of other coordination interventions (e.g. individual care planning, post-discharge telephone calls; relational continuity of care) were studied with mixed results both within the population of frequent ED users and elderly. Coordination interventions that are more intense, multi-layered and incorporate strong linkages to the longer-term primary and

community care services are more successful than single interventions (e.g. individual care planning) or solely hospital-based interventions. For the chronic care patients there seems to be a relationship with relational continuity of care (same care provider).

- Although evidence about the effect of educational interventions is contradictory a large number of studies showed that it has potentially a large impact on ED use. The educational interventions seem not to be successful when they are implemented as stand-alone (i.e. the intention being merely to educate patients regarding overall health service utilization). Educational interventions seem more effective when they are introduced as a part of a multi-faceted intervention.
- Two types of gatekeeping methods were included within the scope of reviews. The first type is the allocation of a gatekeeping role to GPs which is implemented in several healthcare systems (e.g. UK, Scandinavian countries). The second type concerns managed care where health maintenance organizations practice gatekeeping. This is a model adopted in the US but with no standardized triage criteria and with various personnel functioning as the gatekeeper. The studies identified in the systematic reviews focus on this second type of gatekeeping with some beneficial effects on ED use observed.
- Reducing ED use will require a broad approach that integrates several interventions adopted to the country's healthcare system and funding system. Every reform will require a feedback mechanism to monitor outcomes and unintended consequences. For example, the evidence suggests that managed care and cost sharing have an effect on ED use but may have unintended consequences, like delaying needed care or limiting patient choice. Another example is that increasing access points for urgent care may unmask latent demand. Cost savings across the urgent care sector as a whole may be negated by the additional cost of providing new services.



■ REFERENCES

1. American College of Emergency Physicians. The Emergency Medical Treatment and Labor Act (EMTALA) [Web page]. [cited 22/01/2016]. Available from: <http://www.acep.org/News-Media-top-banner/EMTALA/>
2. WHO. Emergency Medical Services Systems in the European Union. Copenhagen: 2008.
3. Sagan A, Richardson E. The Challenge of Providing Emergency Medical Care. Eurohealth. 2015;21(4).
4. Totten V, Bellou A. Development of emergency medicine in Europe. Acad Emerg Med. 2013;20(5):514-21.
5. ACEM. Statement on the delineation of emergency departments. 2012. Available from: <https://www.acem.org.au/getattachment/541e19cd-6e5e-48b2-93f6-7416c43ac13a/Statement-on-the-delineation-of-Emergency-departme.aspx>
6. EuSEM. Policy statement on emergency medicine in Europe [Web page]. 2015 [cited 09/07/2015]. Available from: <http://www.eusem.org/policystatement/>
7. Lauwaert D. How to become an Emergency Nurse? An European review. Brussels: 2014. EuSEN - General Assembly
8. Asplin BR, Magid DJ, Rhodes KV, Solberg LI, Lurie N, Camargo CA, Jr. A conceptual model of emergency department crowding. Ann Emerg Med. 2003;42(2):173-80.
9. Philips H. Out-of-hours Primary Care in Belgium. Antwerp: University of Antwerp; 2010.
10. Khangura JK, Flodgren G, Perera R, Rowe BH, Shepperd S. Primary care professionals providing non-urgent care in hospital emergency departments. Cochrane Database Syst Rev. 2012;11:CD002097.
11. Giesen P, Smits M, Huijbers L, Grol R, Wensing M. Quality of after-hours primary care in the Netherlands: a narrative review. Ann Intern Med. 2011;155(2):108-13.
12. Huijbers L, Giesen P, Wensing M, Grol R. Out-of-hours care in western countries: assessment of different organizational models. BMC Health Serv Res. 2009;9:105.

- 
13. Huibers L, Smits M, Renaud V, Giesen P, Wensing M. Safety of telephone triage in out-of-hours care: a systematic review. *Scandinavian journal of primary health care*. 2011;29(4):198-209.
 14. Wheeler SQ, Greenberg ME, Mahlmeister L, Wolfe N. Safety of clinical and non-clinical decision makers in telephone triage: a narrative review. *J Telemed Telecare*. 2015;21(6):305-22.
 15. Union Nationale des Mutualités Socialistes, Direction Etudes. Analyse de profil des patients recourant aux urgences hospitalières. La Mutualité Socialiste; 2011.
 16. Carret ML, Fassa AC, Domingues MR. Inappropriate use of emergency services: a systematic review of prevalence and associated factors. *Cad Saude Publica*. 2009;25(1):7-28.
 17. De Block M, Beleidscel van de Minister van sociale zaken en volksgezondheid. Plan van Aanpak Hervorming ziekenhuisfinanciering. Brussel: 2015.
 18. Berchet C. Emergency care services: trends, drivers and interventions to manage the demand. Paris: OECD; 2015. Health Working Papers DELSA/HEA/WD/HWP(2015)6 Available from: [http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DELSA/HEA/WD/HWP\(2015\)6&docLanguage=En](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DELSA/HEA/WD/HWP(2015)6&docLanguage=En)
 19. Fitzgerald G, Toloo GS, Romeo M. Emergency healthcare of the future. *Emerg Med Australas*. 2014;26(3):291-4.
 20. Sagan A, Richardson E. Out-of-hours primary care and demand for emergency medical services. *Eurohealth*. 2015;21(4).
 21. Uscher-Pines L, Pines J, Kellermann A, Gillen E, Mehrotra A. Emergency department visits for nonurgent conditions: systematic literature review. *19(1):47-59*.
 22. Chan SS, Cheung NK, Graham CA, Rainer TH. Strategies and solutions to alleviate access block and overcrowding in emergency departments. *Hong Kong Med J*. 2015;21(4):345-52.
 23. Kohn L, Christiaens W. The use of Qualitative Research Methods in KCE studies. Method. Brussels: Belgian Health Care Knowledge Centre (KCE); 2012. KCE Reports 187 (D/2012/10.273/68) Available from: https://kce.fgov.be/sites/default/files/page_documents/KCE_187C_qualitative_research_methods.pdf
 24. NVivo9. QSR International; 2011.
 25. Morganti KG, Bauhoff S, Blanchard JC, Abir M, Iyer N, Smith AC, et al. The evolving role of emergency departments in the United States. Pittsburgh, United States: RAND-Health; 2013.
 26. Koninklijk besluit van 27 april 1998 houdende vaststelling van de normen waaraan een functie "gespecialiseerde spoedgevallenorg" moet voldoen om erkend te worden, B.S. 19 juni 1998.
 27. Koninklijk besluit van 27 april 1998 houdende vaststelling van de normen waaraan een functie "eerste opvang van spoedgevallen" moet voldoen om te worden erkend, B.S. 19 juni 1998.
 28. Ministerieel besluit van 14 februari 2005 tot vaststelling van de bijzondere criteria voor de erkenning van geneesheren-specialisten houders van de bijzondere beroepstitel in de urgentiegeneeskunde, van geneesheren-specialisten in de urgentiegeneeskunde en van geneesheren-specialisten in de acute geneeskunde, alsook van de stagemeesters en stagediensten in deze disciplines B.S. 4 maart 2005.
 29. Koninklijk besluit van 11 februari 2013 tot wijziging van het koninklijk besluit van 27 april 1998 houdende vaststelling van de normen waaraan een functie "gespecialiseerde spoedgevallenorg" moet voldoen om erkend te worden, B.S. 11 maart 2013.
 30. Gerkens S, Farfan-Portet M-I, Desomer A, Stordeur S, De Waroux M, Van de Voorde C, et al. The Belgian health system in 2010. Health Services Research (HSR). Brussels: Belgian Health Care Knowledge Centre (KCE); 2010 04/10/2010. KCE Reports 138C (D/2010/10.273/61) Available from: https://kce.fgov.be/sites/default/files/page_documents/kce_138c_the_belgian_health_system_0.pdf
 31. FOD Volksgezondheid, Veiligheid van de Voedselketen en Leefmilieu. Nationale Feedback spoedgevallen 2012. FOD Volksgezondheid, Veiligheid van de Voedselketen en Leefmilieu; 2015. Available from: <http://www.health.belgium.be/eportal/Healthcare/Healthcarefacilities/>



- [Registrationsystems/MHD\(MinimumHospitalData\)/Publications/testnewpage/index.htm?fodnlang=nl](http://Registrationsystems/MHD(MinimumHospitalData)/Publications/testnewpage/index.htm?fodnlang=nl)
32. van der Linden MC, Lindeboom R, van der Linden N, van den Brand CL, Lam RC, Lucas C, et al. Self-referring patients at the emergency department: appropriateness of ED use and motives for self-referral. *Int J Emerg Med.* 2014;7:28.
33. Sorup CM, Jacobsen P, Forberg JL. Evaluation of emergency department performance - a systematic review on recommended performance and quality-in-care measures. *Scand J Trauma Resusc Emerg Med.* 2013;21:62.
34. Auditor General for Scotland. Accident and Emergency: Performance update. 2014. Available from: http://www.audit-scotland.gov.uk/docs/health/2014/nr_140508_ae_update.pdf
35. The King's Fund. What's going on in A&E? The key questions answered [Web page]. 2015 [cited 29 January 2016]. Available from: <http://www.kingsfund.org.uk/projects/urgent-emergency-care/urgent-and-emergency-care-mythbusters>
36. Blank JL, van Hult B, Wilschut J. Schaal- en synergie-effecten bij de spoedeisende hulp: een literatuur- en empirisch onderzoek naar de kostenstructuur van de spoedeisende hulp. Delft: TU Delft: Centrum voor Innovaties en Publieke Sector Efficiëntie Studies; 2013. IPSE Studies
37. Soril LJ, Leggett LE, Lorenzetti DL, Noseworthy TW, Clement FM. Reducing frequent visits to the emergency department: a systematic review of interventions. *PLoS One.* 2015;10(4):e0123660.
38. Nationale Raad voor Ziekenhuisvoorzieningen. Advies inzake de dringende medische hulpverlening in het kader van de dienst 900: voorstel tot experiment. 1985.
39. Nationale Raad voor Ziekenhuisvoorzieningen. Advies inzake de criteria waaraan de ziekenhuizen moeten voldoen om in het kader van de 900-organisatie spoedgevallen op te nemen. 1987.
40. Nationale Raad voor Ziekenhuisvoorzieningen. Advies met betrekking tot bijsturing van het beleid in de spoedgevallenzorg (NRZV-D-180-3). 2000.
41. Van de Voorde C, Van den Heede K, Mertens R, Annemans L, Busse R, Callens S, et al. Conceptual framework for the reform of the Belgian hospital payment system. *Health Services Research (HSR).* Brussels: Belgian Health Care Knowledge Centre (KCE); 2014 26/09/2014. KCE Reports 229 Available from: https://kce.fgov.be/sites/default/files/page_documents/KCE_229_Hospital%20Financing_Report.pdf
42. FOD Volksgezondheid, Veiligheid van de Voedselketen en Leefmilieu. Richtlijnen UREG. Brussel: FOD Volksgezondheid, Veiligheid van de Voedselketen en Leefmilieu; 2014. Available from: <http://health.belgium.be/eportal/Healthcare/Healthcarefacilities/Registrationsystems/UREG/Guidelines/index.htm#.ViTsrCumTL8>
43. Benahmed N, Laokri S, Zhang WH, Verhaeghe N, Trybou J, Cohen L, et al. Determinants of nonurgent use of the emergency department for pediatric patients in 12 hospitals in Belgium. *Eur J Pediatr.* 2012;171(12):1829-37.
44. Durand AC, Gentile S, Devictor B, Palazzolo S, Vignally P, Gerbeaux P, et al. ED patients: how nonurgent are they? Systematic review of the emergency medicine literature. *American Journal of Emergency Medicine.* 2011;29(3):333-45.
45. Wong J, Gott M, Frey R, Jull A. What is the incidence of patients with palliative care needs presenting to the Emergency Department? a critical review. *Palliat Med.* 2014;28(10):1197-205.
46. DiMartino LD, Weiner BJ, Mayer DK, Jackson GL, Biddle AK. Do palliative care interventions reduce emergency department visits among patients with cancer at the end of life? A systematic review. *J Palliat Med.* 2014;17(12):1384-99.
47. Wilson DM, Truman CD. Evaluating institutionalization by comparing the use of health services before and after admission to a long-term-care facility. *Eval Health Prof.* 2004;27(3):219-36.
48. Raven MC, Lowe RA, Maselli J, Hsia RY. Comparison of presenting complaint vs discharge diagnosis for identifying "nonemergency" emergency department visits. *JAMA.* 2013;309(11):1145-53.

- 
49. Lowe RA, Bindman AB. Judging who needs emergency department care: a prerequisite for policy-making. *Am J Emerg Med.* 1997;15(2):133-6.
 50. Wens J, Mortelmans LJ, Verhoeven V, Philips H, Remmen R, Van Royen P. Use of emergency departments by primary care patients. *Eur J Gen Pract.* 2005;11(2):78-80.
 51. Verelst S. Emergency department crowding in relation to in-hospital adverse medical events [Phd]. Leuven: Catholic University Leuven; 2014.
 52. Test-aankoop. Medische overconsumptie in spoedgevallendiensten [Web page]. 2008 [cited 18 oktober 2015]. Available from: <http://www.test-aankoop.be/action/pers%20informatie/persberichten/2008/medische-overconsumptie-in-spoedgevallendiensten>
 53. Oredsson S, Jonsson H, Rognes J, Lind L, Goransson KE, Ehrenberg A, et al. A systematic review of triage-related interventions to improve patient flow in emergency departments. *Scand J Trauma Resusc Emerg Med.* 2011;19:43.
 54. Institute of Medicine. Future of Emergency Care: Hospital-Based Emergency Care at the Breaking Point. Washington DC: The National Academies Press; 2006.
 55. Institute of Medicine. Regionalizing Emergency Care. Workshop Summary. Washington DC: The National Academies Press; 2010.
 56. Nationale Raad voor Ziekenhuisvoorzieningen. Advies PIT. Federale Overheidsdienst Volksgezondheid, Veiligheid van de Voedselketen en Leefmilieu; 2014.
 57. Kommer GJ, Gijsen R, Lemmens LC, Kooistra M, Deuning C. Beschikbaarheid, specialisatie en bereikbaarheid van Spoedeisende hulp in Nederland. Bilthoven: Rijksinstituut voor Volksgezondheid en Milieu, Ministerie van Volksgezondheid, Welzijn en Sport; 2015. Available from: <https://www.rijksoverheid.nl/documenten/rapporten/2015/06/03/beschikbaarheid-specialisatie-en-bereikbaarheid-van-spoedeisende-hulp-in-nederland>
 58. Carr BG, Matthew Edwards J, Martinez R, Academic Emergency Medicine consensus conference BRINoC. Regionalized care for time-critical conditions: lessons learned from existing networks. *Acad Emerg Med.* 2010;17(12):1354-8.
 59. Carr BG, Addyson DK. Geographic information systems and emergency care planning. *Acad Emerg Med.* 2010;17(12):1274-8.
 60. Recio-Saucedo A, Pope C, Dall'Ora C, Griffiths P, Jones J, Crouch R, et al. Safe staffing for nursing in emergency departments: evidence review. *Emerg Med J.* 2015.
 61. Forero R, Hillman K. Access Block and Overcrowding: a literature review. Sydney, Australia: Simpson Centre for Health Services Research, South Western Sydney Clinical School, University of New South Wales; 2008.
 62. Morris ZS, Boyle A, Beniuk K, Robinson S. Emergency department crowding: towards an agenda for evidence-based intervention. *Emerg Med J.* 2012;29(6):460-6.
 63. Bagust A, Place M, Posnett JW. Dynamics of bed use in accommodating emergency admissions: stochastic simulation model. *BMJ.* 1999;319(7203):155-8.
 64. Madsen F, Ladelund S, Linneberg A. High levels of bed occupancy associated with increased inpatient and thirty-day hospital mortality in Denmark. *Health Aff (Millwood).* 2014;33(7):1236-44.
 65. Boden DG, Agarwal A, Hussain T, Martin SJ, Radford N, Riyat MS, et al. Lowering levels of bed occupancy is associated with decreased inhospital mortality and improved performance on the 4-hour target in a UK District General Hospital. *Emerg Med J.* 2015.
 66. Goodacre S, Campbell M. Lowering bed occupancy: a life-saving intervention? *Emerg Med J.* 2015.
 67. Galipeau J, Pussegoda K, Stevens A, Brehaut JC, Curran J, Forster AJ, et al. Effectiveness and safety of short-stay units in the emergency department: a systematic review. *Acad Emerg Med.* 2015;22(8):893-907.
 68. Bamezai A, Melnick G, Nawathe A. The cost of an emergency department visit and its relationship to emergency department volume. *Ann Emerg Med.* 2005;45(5):483-90.



69. Crommentuyn R. Schippers wil minder SEH's [Web page]. Medisch Contact; 2011 [cited 08 september 2015]. Available from: <http://medischcontact.artsennet.nl/archief-6/Tijdschriftartikel/94405/Schippers-wil-minder-SEHs.htm>
70. Hansen-Nod M. Emergency medicine ... the Danish approach. Acuut en opgeschaald. Zeist: UMC Utrecht; 2014.
71. NHS England London Region. Review of the implementation of North West London A&E changes. North West London Collaboration of Clinical Commissioning Groups; 2015. Available from: <http://www.healthiernorthwestlondon.nhs.uk/>
72. Gonzalez Morganti K, Bauhoff S, Blanchard JC, Abir M, Iyer N, Smith AC, et al. The Evolving Role of Emergency Departments in the United States. Santa Monica, United States: RAND; 2013. Available from: http://www.rand.org/pubs/research_reports/RR280.html
73. Hsia RY, Kellermann AL, Shen YC. Factors associated with closures of emergency departments in the United States.[Erratum appears in JAMA. 2011 Jul 13;306(2):162]. 2011;305(19):1978-85.
74. Hsia RY, Srebotnjak T, Kanzaria HK, McCulloch C, Auerbach AD. System-level health disparities in California emergency departments: minorities and Medicaid patients are at higher risk of losing their emergency departments. Annals of Emergency Medicine. 2012;59(5):358-65.
75. Sun BC, Mohanty SA, Weiss R, Tadeo R, Hasbrouck M, Koenig W, et al. Effects of hospital closures and hospital characteristics on emergency department ambulance diversion, Los Angeles County, 1998 to 2004. Annals of Emergency Medicine. 2006;47(4):309-16.
76. Lee DC, Carr BG, Smith TE, Tran VC, Polksky D, Branas CC. The Impact of Hospital Closures and Hospital and Population Characteristics on Increasing Emergency Department Volume: A Geographic Analysis. Popul Health Manag. 2015.
77. Hsia RY, Kanzaria HK, Srebotnjak T, Maselli J, McCulloch C, Auerbach AD. Is emergency department closure resulting in increased distance to the nearest emergency department associated with increased inpatient mortality? 2012;60(6):707-15.e4.
78. Shen YC, Hsia RY. Does decreased access to emergency departments affect patient outcomes? Analysis of acute myocardial infarction population 1996-2005. 2012;47(1 Pt 1):188-210.
79. Liu C, Srebotnjak T, Hsia RY. California emergency department closures are associated with increased inpatient mortality at nearby hospitals. Health Aff (Millwood). 2014;33(8):1323-9.
80. European Association for Injury Prevention and Safety Promotion (EuroSafe). Injuries in the European Union: Summary of injury statistics for the years 2008-2010. Amsterdam: 2013.
81. Celso B, Tepas J, Langland-Orban B, Pracht E, Papa L, Lottenberg L, et al. A systematic review and meta-analysis comparing outcome of severely injured patients treated in trauma centers following the establishment of trauma systems. J Trauma. 2006;60(2):371-8; discussion 8.
82. Caputo LM, Salottolo KM, Slone DS, Mains CW, Bar-Or D. The relationship between patient volume and mortality in American trauma centres: a systematic review of the evidence. Injury. 2014;45(3):478-86.
83. Demetriades D, Martin M, Salim A, Rhee P, Brown C, Chan L. The effect of trauma center designation and trauma volume on outcome in specific severe injuries. Ann Surg. 2005;242(4):512-7; discussion 7-9.
84. Miermans PJ. Bijkomend rapport: Artsen-specialisten in de Urgentiegeneeskunde of de Acute geneeskunde of beschikkend over een bijzondere bekwaamheid in de Urgentiegeneeskunde op de arbeidsmarkt, 2012 Resultaten van de PlanCAD Gegevenskoppeling FOD VVVL - Datawarehouse AM&SB - RIZIV. Brussel: Cel Planning van het Aanbod van de Gezondheidszorgberoepen Dienst Gezondheidszorgberoepen en Beroepsuitoefening DG Gezondheidszorg FOD Volksgezondheid, Veiligheid van de Voedselketen en Leefmilieu; 2015.
85. Miermans PJ. Artsen-specialisten in de Urgentiegeneeskunde op de arbeidsmarkt, 2012 Resultaten van de PlanCAD Gegevenskoppeling FOD VVVL - Datawarehouse AM&SB - RIZIV. Brussel: Cel Planning van het Aanbod van de Gezondheidszorgberoepen Dienst Gezondheidszorgberoepen en

- 
- Beroepsuitoefening DG Gezondheidszorg FOD Volksgezondheid, Veiligheid van de Voedselketen en Leefmilieu; 2015.
86. Miermans PJ. Artsen-specialisten in de Acute geneeskunde op de arbeidsmarkt, 2012 Resultaten van de PlanCAD Gegevenskoppeling FOD VVVL - Datawarehouse AM&SB - RIZIV. Brussel: Cel Planning van het Aanbod van de Gezondheidszorgberoepen Dienst Gezondheidszorgberoepen en Beroepsuitoefening DG Gezondheidszorg FOD Volksgezondheid, Veiligheid van de Voedselketen en Leefmilieu; 2015.
87. Ministerieel besluit van 19 april 2007 tot vaststelling van de criteria voor erkenning waarbij de beoefenaars van de verpleegkunde gemachtigd worden de bijzondere beroepstitel van verpleegkundige gespecialiseerd in de intensieve zorg en spoedgevallenzorg te dragen, B.S. 28 Juni 2007.
88. Delvaux A, De Geest A, Dumont G, Lardennois M, Miermans P-J, Pieters J, et al. Jaarstatistieken met betrekking tot de beroepsbeoefenaars van gezondheidszorgberoepen in België. Brussel: Cel Planning van het Aanbod van de Gezondheidszorgberoepen, FOD Volksgezondheid, Veiligheid van de Voedselketen en Leefmilieu; 2015.
89. FOD Volksgezondheid Veiligheid van de Voedselketen en Leefmilieu. Nationale Feedback van de MZG personeelsgegevens 2011 semester 1, 2011 semester 2 Brussel: 2015.
90. Arrêté Royal de 10 novembre 1967 n°78 relatif à l'exercice des professions de santé, B.S. 14 novembre 1967.
91. Regeerakkoord. 9 oktober 2014. Available from: http://www.deblock.belgium.be/sites/default/files/articles/Accord_de_Gouvernement - Regeerakkoord_0.pdf
92. Pauwels J, Coussé F, Peeters M. Naar een geneeskunde met kantooruren? Voorstellen voor het waarborgen van de continuïteit van acute zorg. Brussel: Zorgnet Vlaanderen; 2012.
93. Arts voor het eerst knelpuntberoep. Knack 29 mei 2015.
94. Nijpend tekort aan spoedartsen. Knack 6 augustus 2014.
95. VDAB. Knelpuntberoepen [Web page]. Brussel: VDAB; 2015 [cited 31 juli 2015]. Available from: <http://www.vdab.be/trends/vacatureanalyse.shtml>
96. Berckmans G, Alvarez Irusta L, Bouzegta N, Defloor T, Peeters G, Stordeur S, et al. Differentiated practice in nursing: opportunities and limits. Health Services Research (HSR). Brussels: Belgian Health Care Knowledge Centre (KCE); 2008 15/09/2008. KCE Reports 86 Available from: <https://kce.fgov.be/publication/report/differentiated-practice-in-nursing-opportunities-and-limits>
97. Ginde AA, Sullivan AF, Camargo CA, Jr. National study of the emergency physician workforce, 2008. Ann Emerg Med. 2009;54(3):349-59.
98. Swartenbroekx N, Obyn C, Guillaume P, Lona M, Cleemput I. Manual for cost-based pricing of hospital interventions. Health Technology Assessment (HTA). Brussels: Belgian Health Care Knowledge Centre (KCE); 2012. KCE Reports 178C (D/2012/10.273/31) Available from: https://kce.fgov.be/sites/default/files/page_documents/KCE_178C_manual_pricing_hospital_interventions.pdf
99. Bragard I, Dupuis G, Fleet R. Quality of work life, burnout, and stress in emergency department physicians: a qualitative review. Eur J Emerg Med. 2015;22(4):227-34.
100. Potter C. To what extent do nurses and physicians working within the emergency department experience burnout: A review of the literature. Australasian Emergency Nursing Journal. 2006;9:57-64.
101. Adriaenssens J, De Gucht V, Maes S. Determinants and prevalence of burnout in emergency nurses: a systematic review of 25 years of research. Int J Nurs Stud. 2015;52(2):649-61.
102. Adriaenssens J, De Gucht V, Van Der Doef M, Maes S. Exploring the burden of emergency care: predictors of stress-health outcomes in emergency nurses. J Adv Nurs. 2011;67(6):1317-28.
103. Thoelen T. Predictoren van arbeidstevredenheid, verloopintentie en burn-out bij verpleegkundigen op spoedgevallendiensten: een exploratieve cross-sectionele studie. Leuven: Katholieke Universiteit Leuven; 2015.



104. Cattoor W, Sabbe M, Sermeus W, Lippens F. De operationele en financiële situatie van spoedgevallendiensten in Vlaanderen. *Tijdschrift voor Geneeskunde*. 2008;64(10):504-9.
105. Recio-Saucedo A, Pope C, Dall'Ora C, Griffiths P, Jones J, Crouch R, et al. Safe staffing for nursing in emergency departments: evidence review. *Emerg Med J*. 2015;32(11):888-94.
106. Jordache S, Van Rompaey B, Elseviers M. Defining nursing workload on Emergency Departments. A model. Brussels: 2014. Euseu-General Assembly. Available from: http://www.vvvs.be/images/uploads/spoedgevallen/2012_nr_2.pdf
107. Pirson M, Di Pierdomenico L, Delo C, Martins D, Leclercq p. Comment l'activité infirmière aux urgences varie-t-elle par patient? *Hospitals.be*. 2015;13(1).
108. Varndell W, MacGregor C, Gallagher R, Fry M. Measuring patient dependency--performance of the Jones Dependency Tool in an Australian emergency department. *Australas Emerg Nurs J*. 2013;16(2):64-72.
109. Jordache S, Elseviers M. De verpleegkundige werklast op spoedgevallendiensten in Vlaanderen: op zoek naar de gemeenschappelijke noemer. *Spoedgevallen*. 2012(2).
110. Somer A, Dumont G, De Geest A, Delvaux A, Jorens L, Miermans PJ, et al. Jaarverslag 2013 van de planningscommissie medisch aanbod. Brussel: FOD Volksgezondheid, Veiligheid van de Voedselketen en Leefmilieu; 2014. D/2014/2196/37
111. Wilson A, Zwart E, Everett I, Kernick J. The clinical effectiveness of nurse practitioners' management of minor injuries in an adult emergency department: a systematic review. *Int J Evid Based Healthc*. 2009;7(1):3-14.
112. Carter AJ, Chochinov AH. A systematic review of the impact of nurse practitioners on cost, quality of care, satisfaction and wait times in the emergency department. *CJEM*. 2007;9(4):286-95.
113. Jennings N, Clifford S, Fox AR, O'Connell J, Gardner G. The impact of nurse practitioner services on cost, quality of care, satisfaction and waiting times in the emergency department: a systematic review. *Int J Nurs Stud*. 2015;52(1):421-35.
114. Hoskins R. Evaluating new roles within emergency care: a literature review. *Int Emerg Nurs*. 2011;19(3):125-40.
115. Hill H, McMeekin P, Price C. A systematic review of the activity and impact of emergency care practitioners in the NHS. *Emerg Med J*. 2014;31(10):853-60.
116. Tohira H, Williams TA, Jacobs I, Bremner A, Finn J. The impact of new prehospital practitioners on ambulance transportation to the emergency department: a systematic review and meta-analysis. *Emerg Med J*. 2014;31(e1):e88-94.
117. Miermans PJ. Syntheserapport Artsen op de arbeidsmarkt, 2004-2012. Brussel: Cel Planning van het Aanbod van de Gezondheidszorgberoepen, Dienst Gezondheidszorgberoepen en Beroepsuitoefening DG Gezondheidszorg, FOD Volksgezondheid, Veiligheid van de Voedselketen en Leefmilieu; 2015.
118. Meeus P, Van Aubel X. Performance of general medicine in Belgium: A check-up. Brussels: RIZIV-INAMI; 2013. Health Services Research
119. RIZIV-INAMI. Praktijkondersteuning huisartsgeneeskunde [Web page]. 2015 [cited 10 november 2015]. Available from: <http://www.riziv.fgov.be/nl/professionals/individuelezorgverleners/artsen/hulp/Paginas/praktijkondersteuning-huisartsgeneeskunde.aspx>
120. Dewulf B, Neutens T, De Weerdt Y, Van de Weghe N. Accessibility to primary health care in Belgium: an evaluation of policies awarding financial assistance in shortage areas. *BMC Fam Pract*. 2013;14:122.
121. Vrijens F, Renard F, Camberlin C, Desomer A, Dubois C, Jonckheer P, et al. Performance of the Belgian Health System - Report 2015. Brussels: Belgian Health Care Knowledge Centre (KCE); 2016. Health Services Research (HSR) 259CD/2016/10.273/03
122. Miermans PJ. De Huisartsen op de arbeidsmarkt, 2012: Resultaten van de PlanCAD Gegevenskoppeling, FOD VVVL - Datawarehouse AM&SB - RIZIV. Brussel: FOD Volksgezondheid, Veiligheid van de Voedselketen en Leefmilieu; 2015.
123. Jonckheer P, Dubois C, Borgermans L, Verhoeven E, Rinchard E, Baudewyns A-M, et al. Afters-Hours Primary Care: which solutions?

- Health Services Research (HSR). Brussels: Belgian Health Care Knowledge Centre (KCE); 2011. KCE Reports 171C (D/2011/10.273/88) Available from: https://kce.fgov.be/sites/default/files/page_documents/171C_after-hours_primary_care.pdf
124. Vluyen J, Vanthomme K, Camberlin C, Piérart J, Walckiers D, Kohn L, et al. A first step towards measuring the performance of the Belgian healthcare system. Health Services Research (HSR). Brussels: Belgian Health Care Knowledge Centre (KCE); 2010 05/07/2010. KCE Reports 128 Available from: <https://kce.fgov.be/publication/report/a-first-step-towards-measuring-the-performance-of-the-belgian-healthcare-system>
125. Koninklijk besluit van 8 juli 2002 tot vaststelling van de opdrachten verleend aan huisartsenkringen, B.S. 22 augustus 2013
126. Arrêté Royal du 25 novembre 2002 fixant les conditions et les modalités selon lesquelles l'assurance obligatoire soins de santé et indemnités paie des honoraires de disponibilité aux médecins qui participent à des services de garde organisés, B.S. 14 décembre 2002.
127. Philips H, Remmen R, De Paepe P, Buylaert W, Van Royen P. Out of hours care: a profile analysis of patients attending the emergency department and the general practitioner on call. BMC Fam Pract. 2010;11:88.
128. RIZIV-INAMI. Jaarverslag 2013. Brussel: RIZIV-INAMI; 2013. Available from: <http://www.riziv.fgov.be/SiteCollectionDocuments/jaarverslag-2013.pdf>
129. Mutualité Chrétienne. Recours aux urgences, une étude de la MC. 2015.
130. FOD Volksgezondheid, Veiligheid van de Voedselketen en Leefmilieu. Medega - Registratie van de beschikbaarheidshonoraria voor huisartsen die deelnemen aan een wachtdienst. 22/07/2015 Available from: <https://www.ehealth.fgov.be/nl/zorgverleners/online-diensten/medega>
131. Jonckheer P, Stordeur S, Lebeer G, Roland M, De Schampheleire J, De Troyer M, et al. Burnout among general practitioners: prevention and management. Health Services Research (HSR). Brussels: Belgian Health Care Knowledge Centre (KCE); 2011. KCE Reports 165 Available from: <https://kce.fgov.be/publication/report/burnout-among-general-practitioners-prevention-and-management>
132. Lorant V, Geerts C, D'Hoore W, Sauwens D, Remmen R, Peremans L, et al. Making General Practice Attractive: Encouraging GP attraction and retention. Health Services Research (HSR). Brussels: Belgian Health Care Knowledge Centre (KCE); 2008 27/10/2008. KCE Reports 90C (D/2008/10.273/65) Available from: https://kce.fgov.be/sites/default/files/page_documents/d20081027365.pdf
133. Nationaal Akkoord Artsen-Ziekenfondsen 2015. Brussel: 2015.
134. Lippens A, Willems S, Buylaert W, Verlinde E. Zorggebruik tijdens wachtdiensten: waarom kiezen voor de spoedgevallendienst of de huisartsenwachtpost? Gent: Universiteit Gent; 2011.
135. Philips H, Remmen R, De Paepe P, Buylaert W, Van Royen P. Use of out-of-hours services: the patient's point of view on co-payment a mixed methods approach. Acta Clin Belg. 2013;68(1):1-8.
136. Bakelandt J, Beerens AS, Elyn P, Schamp V, Vandenbulcke L, Van Haecke C, et al. Analyse van het zorggebruik van niet-verwezen patiënten op de huisartsenwachtposten en de spoedgevallendiensten van Gent: UGent; 2009.
137. Charafeddine R. Contacten met een dienst spoedgevallen. In: Drieskens S, Gisle L, editors. Gezondheidsenquête 2013: rapport 3, gebruik van gezondheids- en welzijnsdiensten. Brussels: WIV-ISP; 2015.
138. Philips H, Mahr D, Remmen R, Weverbergh M, De Graeve D, Van Royen P. Experience: the most critical factor in choosing after-hours medical care. Qual Saf Health Care. 2010;19(6):e3.
139. Van De Vijver E, Devroey D. Lack of confidence in administering emergency care among Dutch-speaking family physicians in Belgium. Int J Gen Med. 2013;6:589-96.
140. Philips H, Michiels B, Coenen S, Remmen R. Reducing inappropriate A&E attendances. Br J Gen Pract. 2014;64(619):70.



141. Philips H, Remmen R, Van Royen P, Teblick M, Geudens L, Bronckaers M, et al. What's the effect of the implementation of general practitioner cooperatives on caseload? Prospective intervention study on primary and secondary care. *BMC Health Serv Res.* 2010;10:222.
142. Streffe MJ, van Bergen J, Philips H, Remmen R. Rapport Huisartsenwachtpost Antwerpen Noord. Universiteit Antwerpen, Centrum voor Huisartsgeneeskunde; 2013.
143. Brijs T. Studie naar de opmaak van een model voor de inplanting van huisartsenwachtposten in België. Diepenbeek: Universiteit Hasselt; 2012.
144. Onkelinx L. Plan huisartsenwachtdiensten. 2013.
145. Nationaal Akkoord Artsen-Ziekenfondsen 2016-2017. Brussel: 22 december 2015. Available from:
http://www.riziv.fgov.be/SiteCollectionDocuments/Akkoord_artsen_ziekenfondsen_2016_2017.pdf
146. Philips H, Van Bergen J, Huibers L, Colliers A, Bartholomeeusen S, Coenen S, et al. Agreement on urgency assessment between secretaries and general practitioners: an observational study in out-of-hours general practice service in Belgium. *Acta Clin Belg.* 2015;2295333715Y0000000017.
147. De Maeseneer J, Aertgeerts B, Remmen R, Devroey D. Together we change: eerstelijnsgezondheidszorg nu meer dan ooit. Brussel: 2014.
148. Paulus D, Van den Heede K, Mertens R. Organisation of care for chronic patients in Belgium: development of a position paper. *Health Services Research (HSR).* Brussels: Belgian Health Care Knowledge Centre (KCE); 2012. KCE Reports 190C (D/2012/10.273/81) Available from:
https://kce.fgov.be/sites/default/files/page_documents/KCE_190C_organisation_care_chronic_patients.pdf
149. Turner J, Coster J, Chambers D, Cantrell A, Phung VH, Knowles E BD, Goyder E. What evidence is there on the effectiveness of different models of delivering urgent care? A rapid review. Sheffield, UK: School for Health and Related Research (ScHARR), University of Sheffield; 2015.
150. FOD Volksgezondheid, Veiligheid van de Voedselketen en Leefmilieu. Belgische handleiding voor medische regulatie - 3de editie. 2013. Available from:
http://www.health.belgium.be/medischeregulatie/files/assets/basic_html/index.html#page4
151. Lidal BI, Holte HH, Vist GE. Triage systems for pre-hospital emergency medical services ? a systematic review (Provisional abstract). In: *Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine;* 2013. p. 28.
152. Turner J, O'Cathain A, Knowles E, Nicholl J. Impact of the urgent care telephone service NHS 111 pilot sites: a controlled before and after study. *BMJ Open.* 2013;3(11):e003451.
153. Knowles E, O'Cathain A, Turner J, Nicholl J. Awareness and use of a new urgent care telephone service, NHS 111: cross-sectional population survey. *J Health Serv Res Policy.* 2014;19(4):224-30.
154. Turner J, O'Cathain A, Knowles E, Nicholl J. Managing demand for urgent care - the English NHS 111 experience. *Eurohealth.* 2015;21(4).
155. O'Cathain A, Knowles E, Turner J, Nicholl J. Acceptability of NHS 111 the telephone service for urgent health care: cross sectional postal survey of users' views. *Fam Pract.* 2014;31(2):193-200.
156. NHS England. Transforming urgent and emergency care services in England. Safer, faster, better: good practice in delivering urgent and emergency care. A guide for local health and social care communities. 2015. Available from: <https://www.england.nhs.uk/wp-content/uploads/2015/06/trans-uec.pdf>
157. Flores-Mateo G, Violan-Fors C, Carrillo-Santistevé P, Peiro S, Argimon JM. Effectiveness of organizational interventions to reduce emergency department utilization: a systematic review. *PLoS ONE [Electronic Resource].* 2012;7(5):e35903.
158. Bahr SJ, Solverson S, Schlidt A, Hack D, Smith JL, Ryan P. Integrated literature review of postdischarge telephone calls. *Western Journal of Nursing Research.* 2014;36(1):84-104.
159. Crocker JB, Crocker JT, Greenwald JL. Telephone follow-up as a primary care intervention for postdischarge outcomes improvement:

- A systematic review. American Journal of Medicine. 2012;125(9):915-21.
160. Campbell JL, Fletcher E, Britten N, Green C, Holt T, Lattimer V, et al. The clinical effectiveness and cost-effectiveness of telephone triage for managing same-day consultation requests in general practice: a cluster randomised controlled trial comparing general practitioner-led and nurse-led management systems with usual care (the ESTEEM trial). *Health Technol Assess.* 2015;19(13):1-212, vii-viii.
161. Campbell JL, Fletcher E, Britten N, Green C, Holt TA, Lattimer V, et al. Telephone triage for management of same-day consultation requests in general practice (the ESTEEM trial): a cluster-randomised controlled trial and cost-consequence analysis. *Lancet.* 2014;384(9957):1859-68.
162. Murdoch J, Varley A, Fletcher E, Britten N, Price L, Calitri R, et al. Implementing telephone triage in general practice: a process evaluation of a cluster randomised controlled trial. *BMC Fam Pract.* 2015;16:47.
163. Fitzgerald G, Jelinek GA, Scott D, Gerdtz MF. Republished paper: Emergency department triage revisited. *Postgrad Med J.* 2010;86(1018):502-8.
164. Abdulwahid MA, Booth A, Kuczawski M, Mason SM. The impact of senior doctor assessment at triage on emergency department performance measures: systematic review and meta-analysis of comparative studies. *Emerg Med J.* 2015.
165. Koninklijk besluit van 19 maart 2007 tot wijziging van artikel 37bis van de wet betreffende de verplichte verzekering voor geneeskundige verzorging en uitkeringen, gecoördineerd op 14 juli 1994, B.S. 14 mei 2007.
166. Farfan-Portet M-I, Devos C, Devriese S, Cleemput I, Van de Voorde C. Simplification of patient cost sharing : the example of physician consultations and visits. *Health Services Research (HSR).* Brussels: Belgian Health Care Knowledge Centre (KCE); 2012. KCE Reports 180C (D/2012/10.273/38) Available from: https://kce.fgov.be/sites/default/files/page_documents/KCE_180C_simplification_patient_cost_sharing_second%20print.pdf
167. Gourbin C, du Boulay D, Philips H, Remmen R, Buylaert W, De Paepe P, et al. Evaluation of a fixed personal fee on the use of emergency services. *Equity and Patient Behavior (EPB).* Brussels: Belgian Health Care Knowledge Centre (KCE); 2005 02/12/2005. KCE Reports 19 Available from: <https://kce.fgov.be/publication/report/evaluation-of-a-fixed-personal-fee-on-the-use-of-emergency-services>
168. Detollenaere J, Verlinde E, Willems S, Blezer J. Which Socio-Economic Factors Influence Patients' Choice to Opt for the ED or the GPC during Out-of-Hours: An Explorative Study in Flanders. *Health.* 2014;6(12):1361-7.
169. Vandenbulcke L, YDE L, Buylaert W, Matthijs JP, De Maeseneer J, Willems S, et al. Analysis of the effect of socio-economic status on out-of-hours self-referral to an emergency department or a primary care centre. *ACTA CLINICA BELGICA.* 2010;65(2):p.150.
170. Khan Y, Glazier RH, Moineddin R, Schull MJ. A population-based study of the association between socioeconomic status and emergency department utilization in Ontario, Canada. *Acad Emerg Med.* 2011;18(8):836-43.
171. Crommelynck A, Degraeve K, Lefèuvre D. De organisatie en financiering van de ziekenhuizen. Info-fiche september 2013. CM-Informatie. 2013;253:1-44.
172. Koninklijk besluit van 25 april 2002 betreffende de vaststelling en de vereffening van het budget van financiële middelen van de ziekenhuizen, B.S. 30 mei 2002.
173. RIZIV-INAMI. Omzendbrief aan de algemene ziekenhuizen. OMZ. ZH. 2014/4. Aanpassingen op vlak van reglementering en facturatie-instructies ingevolge de transfert van miniforfait naar BMF sinds 1 januari 2014. Available from: <http://www.riziv.fgov.be/care/nl/hospitals/pdf/hospitals230.pdf>
174. Durant G. Le financement des hôpitaux en Belgique. Situation au 1er septembre 2014. Wolters Kluwer Belgium.
175. Wet op de ziekenhuizen, gecoördineerd op 7 augustus 1987, B.S. 7 augustus 1987.



176. RIZIV-INAMI. Services des Urgences: Résultats de l'étude de terrain. Direction médicale des Soins de Santé de l'INAMI, GT Médecine Interne Brussels: INAMI; 2013.
177. Vluyen J, Van De Water G, Camberlin C, Paulus D, Leys M, Ramaekers D, et al. Clinical Quality Indicators. Objective Elements - Communication (OEC). Brussels: Belgian Health Care Knowledge Centre (KCE); 2006 19/10/2006. KCE Reports 41 Available from: <https://kce.fgov.be/publication/report/clinical-quality-indicators>
178. Institute of Medicine. Crossing the Quality Chasm: A New Health System for the 21st Century. Washington, D.C.: National Academy Press; 2001.
179. Federale overheidsdienst Volksgezondheid, Veiligheid van de Voedselketen en leefmilieu. Colleges van geneesheren [Web page]. Brussel. Available from: http://health.belgium.be/eportal/Healthcare/Consultativebodies/Doctorscolleges/684650_NL?ie2Term=M%C3%A9decins?&fodnlang=nl
180. de Walcque C, Seuntjens B, Vermeyen K, Peeters G, Vinck I. Comparative study of hospital accreditation programs in Europe. Health Services Research (HSR). Brussels: Belgian Health Care Knowledge Centre (KCE); 2008 10/01/2008. KCE Reports 70C (D/2008/10.273/03) Available from: https://kce.fgov.be/sites/default/files/page_documents/d20081027303.pdf
181. De Troyer V, Ramaekers D, Hellings J. The strength of working together in a structured Q & S approach in Flemish hospitals. Edinburgh, Scotland: 2013. ISQUA: The International Society for Quality in Health Care
182. Di Pierdomenico L, LecLercq P, Senterre C, DeLoa C, Martins D, Pirson m. Activité et financement du personnel soignant aux urgences. Journal de Gestion et d'Économie Médicales. 2013;31(5):247-62.
183. Pirson M, Delo C, Di Pierdomenico L, Laport N, Biloque V, Leclercq P. Variability of nursing care by APR-DRG and by severity of illness in a sample of nine Belgian hospitals. BMC Nurs. 2013;12(1):26.
184. Madsen M, Kiuru S, Castren M, Kurland L. The level of evidence for emergency department performance indicators: systematic review. Eur J Emerg Med. 2015;22(5):298-305.
185. Stelfox HT, Straus SE, Nathens A, Bobranska-Artiuch B. Evidence for quality indicators to evaluate adult trauma care: a systematic review. Crit Care Med. 2011;39(4):846-59.
186. Stelfox HT, Bobranska-Artiuch B, Nathens A, Straus SE. A systematic review of quality indicators for evaluating pediatric trauma care. Crit Care Med. 2010;38(4):1187-96.
187. Stang AS, Hartling L, Fera C, Johnson D, Ali S. Quality indicators for the assessment and management of pain in the emergency department: a systematic review. Pain Res Manag. 2014;19(6):e179-90.
188. Sauser K, Burke JF, Reeves MJ, Barsan WG, Levine DA. A systematic review and critical appraisal of quality measures for the emergency care of acute ischemic stroke. Ann Emerg Med. 2014;64(3):235-44 e5.
189. Alessandrini E, Varadarajan K, Alpern ER, Gorelick MH, Shaw K, Ruddy RM, et al. Emergency department quality: an analysis of existing pediatric measures. Acad Emerg Med. 2011;18(5):519-26.
190. Glickman SW, Schulman KA, Peterson ED, Hocker MB, Cairns CB. Evidence-based perspectives on pay for performance and quality of patient care and outcomes in emergency medicine. Ann Emerg Med. 2008;51(5):622-31.
191. Duckett SJ, Jackson T. Paying for hospital emergency care under a single-payer system. Ann Emerg Med. 2001;37(3):309-17.
192. Berchet C. Emergency Care Services: Trends, drivers and interventions to manage the demand. Paris: Organisation for Economic Cooperation and Development (OECD); 2015.
193. McHale P, Wood S, Hughes K, Bellis MA, Demnitz U, Wyke S. Who uses emergency departments inappropriately and when - a national cross-sectional study using a monitoring data system. BMC Med. 2013;11:258.

- 
194. Hoot NR, Aronsky D. Systematic review of emergency department crowding: causes, effects, and solutions. *Ann Emerg Med.* 2008;52(2):126-36.
 195. Pines JM, Hilton JA, Weber EJ, Alkemade AJ, Al Shabanah H, Anderson PD, et al. International perspectives on emergency department crowding. *Acad Emerg Med.* 2011;18(12):1358-70.
 196. Bohm K, Schmid A, Gotze R, Landwehr C, Rothgang H. Five types of OECD healthcare systems: empirical results of a deductive classification. *Health Policy.* 2013;113(3):258-69.
 197. ACEM. Policy on Standard Terminology. Melbourne: Australasian College for Emergency Medicine; 2014.
 198. ACEM. Statement on the delineation of emergency departments. Melbourne: Australasian College for Emergency Medicine; 2012.
 199. AIHW. Australian hospital statistics 2013–14: Emergency department care. Canberra: Australian Institute of Health and Welfare (AIHW); 2015.
 200. Ricroch L. Urgences hospitalières en 2013: des organisations différentes selon le niveau d'activité. Direction de la recherche, des études, de l'évaluation et des statistiques (DREES); 2015.
 201. Kommer GJ, Gijsen R, Lemmens LC, Kooistra M, Deuning C. Beschikbaarheid, specialisatie en bereikbaarheid van Spoedeisende hulp in Nederland: Analyse gevoelige ziekenhuizen. Bilthoven: Rijksinstituut voor Volksgezondheid en Milieu (RIVM); 2015.
 202. Danish Regions, National Board of Health and Welfare, Ministry of Health and Prevention. Faglig gennemgang af akutmodtagelserne [Technical Review of Emergency Departments]. Copenhagen: Ministry of Health and Prevention; 2014.
 203. HSCIC. Hospital Episode Statistics 2012-13. In: (HSCIC) HSCIC, editor. Leeds: Health & Social Care Information Centre (HSCIC); 2015.
 204. WHO Regional Office for Europe. European health for all database. Copenhagen: WHO Regional Office for Europe; 2015. Available from: <http://data.euro.who.int/hfadb/>
 205. AIHW. Australian hospital statistics: Hospital resources 2013–14. Canberra: Australian Institute of Health and Welfare (AIHW); 2015.
 206. Deuning C. Locaties algemene en academische ziekenhuizen 2014 [Web page]. Bilthoven: Rijksinstituut voor Volksgezondheid en Milieu (RIVM); 2015 [cited 23 Oct]. Available from: <http://www.zorgatlas.nl/zorg/ziekenhuiszorg/algemene-en-academische-ziekenhuizen/aanbod/locaties-algemene-en-academische-ziekenhuizen/#breadcrumb>
 207. World Bank. World Development Indicators Database. Washington, DC: World Bank; 2015. Available from: <http://data.worldbank.org/data-catalog/world-development-indicators>
 208. ONS. Annual Mid-year Population Estimates, 2013. Newport: Office for National Statistics (ONS); 2014.
 209. AIHW. Australian hospital statistics 2013–14: Admitted patient care. Canberra: Australian Institute of Health and Welfare (AIHW); 2015.
 210. Statistics Denmark. www.statistikbanken.dk/ [Web page]. Copenhagen: Statistics Denmark; 2015 [cited 12 January 2016]. Available from: www.statistikbanken.dk/
 211. NHS England. Quarterly A&E Activity and Emergency Admissions statistics, NHS and independent sector organisations in England. NHS England; 2015. Available from: <https://www.england.nhs.uk/statistics/wp-content/uploads/sites/2/2014/04/Quarterly-time-series-2004-05-onwards-with-Annual3.xls>
 212. Cour des Comptes. Les urgences hospitalières: une fréquentation croissante, une articulation avec la médecine de ville à repenser Paris: Cour des Comptes; 2014.
 213. Gaakeer MI, van den Brand CL, Veugelers R, Patka P. [Inventory of attendance at Dutch emergency departments and self-referrals]. Ned Tijdschr Geneeskdl. 2014;158:A7128.
 214. IHPA. Three year data plan. Sydney: Independent Hospital Pricing Authority (IHPA); 2013.
 215. NHPA. Hospital performance: Time patients spent in emergency departments in 2012 and 2013. Sydney: National Health Performance Authority (NHPA), Commonwealth of Australia; 2014.



216. Forero R, Hillman KM, McCarthy S, Fatovich DM, Joseph AP, Richardson DB. Access block and ED overcrowding. *Emerg Med Australas.* 2010;22(2):119-35.
217. Sundhedsstyrelsen. Styrket akutberedskab -planlægningsgrundlag for det regionale sundhedsvæsen [Strengthened acute preparedness – planning for the regional health system']. Copenhagen, Denmark: Sundhedsstyrelsen [The National Board of Health]; 2007. Available from: <http://sundhedsstyrelsen.dk/~/media/0B0FC17774D74E7FA404D272DA9C9369.ashx>
218. Sundhedsstyrelsen. Faglig gennemgang af akut-modtagelserne [Technical review of emergency departments]. Copenhagen: Sundhedsstyrelsen [The National Board of Health]; 2014.
219. NHS England. Commissioning Standards Integrated Urgent Care. London: 2015. Available from: <https://www.england.nhs.uk/wp-content/uploads/2015/10/integrtd-urgnt-care-comms-standrds-oct15.pdf>
220. NHS England. Clinical models for ambulance services. London: 2015. Available from: <http://www.nhs.uk/NHSEngland/keogh-review/Documents/UECR-ambulance-guidance-FV.PDF>
221. NHS England. Board Paper: Urgent and Emergency Care Review. London: 2015. Available from: <https://www.england.nhs.uk/wp-content/uploads/2015/11/item5-board-20-11-15.pdf>
222. Monitor. Walk-in centre review: final report and recommendations. London: Monitor; 2014.
223. NHS England. Transforming urgent and emergency care services in England: Urgent and Emergency Care Review: End of Phase 1 Report Leeds: NHS England; 2013.
224. NHS England and Monitor. Local payment examples. Urgent and emergency care: a potential new payment model. 2015. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/452925/UEC_LPE.pdf
225. Blunt I. Focus on: A&E attendances: Why are patients waiting longer? London: The Health Foundation and the Nuffield Trust; 2014.
226. Décret n° 2006-576 du 22 mai 2006 relatif à la médecine d'urgence et modifiant le code de la santé publique (dispositions réglementaires), Ministère de la Santé et des Solidarités 2006. Available from: <http://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT00000788651&dateTexte=20060523>
227. Décret n° 2006-577 du 22 mai 2006 relatif aux conditions techniques de fonctionnement applicables aux structures de médecine d'urgence et modifiant le code de la santé publique (dispositions réglementaires), Ministère de la Santé et des Solidarités 2006. Available from: http://www.urgences-serveur.fr/IMG/pdf/joe_20060523_0119_0012.pdf
228. Boisguérin B, Valdelièvre H. Urgences: la moitié des patients restent moins de deux heures, hormis ceux maintenus en observation. Paris: Direction de la recherche, des études, de l'évaluation et des statistiques (DREES); 2014.
229. sante.gouv.fr. Marisol Touraine à la rencontre des professionnels de la médecine d'urgence au Congrès Urgences 2014 [Web page]. Paris: Ministère des Affaires sociales, de la Santé, et des Droits des femmes [cited 16 Nov 2015]. Available from: <http://www.sante.gouv.fr/marisol-touraine-a-la-rencontre-des-professionnels-de-la-medecine-d-urgence-au-congres-urgences-2014.html>
230. Vuagnat A. Les urgences hospitalières, qu'en sait-on. In: Le panorama des établissements de santé - 2013. Paris: Direction de la recherche, des études, de l'évaluation et des statistiques (DREES); 2014. Available from: <http://www.drees.sante.gouv.fr/IMG/pdf/panorama2013.pdf>
231. Krommer GJ, Gijsen R, Lemmens LC, Kooistra M, Deuning C. Beschikbaarheid, specialisatie en bereikbaarheid van Spoedeisende hulp in Nederland: Analyse gevoelige ziekenhuizen. Bilthoven: Rijksinstituut voor Volksgezondheid en Milieu (RIVM); 2015.

- 
232. DoHHS. Policy and funding guidelines 2015. Melbourne: Department of Health and Human Services; 2015.
 233. IHPA. Investigative review of classification systems for emergency care – Final report. Sydney; 2014.
 234. Medicare Benefits Schedule (MBS) online. Canberra: Commonwealth of Australia. 6 November 2015. Available from: <http://www9.health.gov.au/mbs/fullDisplay.cfm?type=note&q=A10&qt=noteID&criteria=597>
 235. Olejaz M, Nielsen AJ, Rudkjøbing A, Birk HO, Krasnik A, Hernández-Quiñones C. Denmark: Health system review. 2012. Health Systems in Transitions 142 (1817-6119 (Linking)) Available from: <http://www.ncbi.nlm.nih.gov/pubmed/22575801>
 236. Arrêté du 22 février 2013 fixant pour l'année 2013 les éléments tarifaires mentionnés aux I et IV de l'article L. 162-22-10 du code de la sécurité sociale et aux IV et V de l'article 33 modifié de la loi de financement de la sécurité sociale pour 2004, Ministère de la Santé et des Solidarités, 2013. Available from: <http://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000027115074>
 237. Roberts E, Mays N. Can primary care and community-based models of emergency care substitute for the hospital accident and emergency (A & E) department? *Health Policy*. 1998;44(3):191-214.
 238. Cowling TE, Cecil EV, Soljak MA, Lee JT, Millett C, Majeed A, et al. Access to primary care and visits to emergency departments in England: a cross-sectional, population-based study. *PLoS One*. 2013;8(6):e66699.
 239. van den Berg MJ, van Loenen T, Westert GP. Accessible and continuous primary care may help reduce rates of emergency department use. An international survey in 34 countries. *Fam Pract*. 2015.
 240. Cowling TE, Harris MJ, Majeed A. Evidence and rhetoric about access to UK primary care. *BMJ*. 2015;350:h1513.
 241. Tan S, Mays N. Impact of initiatives to improve access to, and choice of, primary and urgent care in the England: a systematic review. *Health Policy*. 2014;118(3):304-15.
 242. Arain M, Campbell MJ, Nicholl JP. Impact of a GP-led walk-in centre on NHS emergency departments. *Emerg Med J*. 2015;32(4):295-300.
 243. Ismail SA, Gibbons DC, Gnani S. Reducing inappropriate accident and emergency department attendances: a systematic review of primary care service interventions. *Br J Gen Pract*. 2013;63(617):e813-20.
 244. Grol R, Giesen P, van Uden C. After-hours care in the United Kingdom, Denmark, and the Netherlands: new models. *Health Aff (Millwood)*. 2006;25(6):1733-7.
 245. Hansen BL, Munck A. Out-of-hours service in Denmark: the effect of a structural change. *Br J Gen Pract*. 1998;48(433):1497-9.
 246. van Uden CJ, Winkens RA, Wesseling GJ, Crebolder HF, van Schayck CP. Use of out of hours services: a comparison between two organisations. *Emerg Med J*. 2003;20(2):184-7.
 247. The Ministry of Health, Danish Regions, and the National Board of Health. Faglig gennemgang af akutmodtagelserne [Technical review of the acute care wards] In. Copenhagen: http://www.sum.dk/~media/Filer%20%20Publikationer_i_pdf/2014/Faglig-gennemgang-af-akutmodt-juni-2014/Faglig-gennemgang-af-akutmodtagelserne-juni-2014.ashx; 2014.
 248. Gnani S, Ramzan F, Ladbrooke T, Millington H, Islam S, Car J, et al. Evaluation of a general practitioner-led urgent care centre in an urban setting: description of service model and plan of analysis. *JRSM Short Rep*. 2013;4(6):2042533313486263.
 249. van Gils-van Rooij ES, Yzermans CJ, Broekman SM, Meijboom BR, Welling GP, de Bakker DH. Out-of-Hours Care Collaboration between General Practitioners and Hospital Emergency Departments in the Netherlands. *J Am Board Fam Med*. 2015;28(6):807-15.
 250. Thijssen WA, Wijnen-van Houts M, Koetsenruijter J, Giesen P, Wensing M. The impact on emergency department utilization and patient flows after integrating with a general practitioner cooperative: an observational study. *Emerg Med Int*. 2013;2013:364659.



251. Pinchbeck T. Walk This Way: Estimating Impacts of Walk in Centres at Hospital Emergency Departments in the English National Health Service. London: Spatial Economics Research Centre (SERC) and London School of Economics; 2014. Available from: http://eprints.lse.ac.uk/64503/1/_lse.ac.uk_storage_LIBRARY_Secondary_libfile_shared_repository_Content_SERC%20discussion%20papers_2014_sercdp0167.pdf
252. Cowling TE, Ramzan F, Ladbrooke T, Millington H, Majeed A, Gnani S. Referral outcomes of attendances at general practitioner led urgent care centres in London, England: retrospective analysis of hospital administrative data. *Emerg Med J.* 2015.
253. van Uden CJ, Winkens RA, Wesseling G, Fiolet HF, van Schayck OC, Crebolder HF. The impact of a primary care physician cooperative on the caseload of an emergency department: the Maastricht integrated out-of-hours service. *J Gen Intern Med.* 2005;20(7):612-7.
254. Bosmans JE, Boeve AJ, van Randwijk-Jacobze ME, Grol SM, Kramer MH, van der Horst HE, et al. Addition of a general practitioner to the accident and emergency department: a cost-effective innovation in emergency care. *Emerg Med J.* 2012;29(3):192-6.
255. Wang M, Wild S, Hilfiker G, Chmiel C, Sidler P, Eichler K, et al. Hospital-integrated general practice: a promising way to manage walk-in patients in emergency departments. *J Eval Clin Pract.* 2014;20(1):20-6.
256. Eichler K, Hess S, Chmiel C, Bögli K, Sidler P, Senn O, et al. Sustained health-economic effects after reorganisation of a Swiss hospital emergency centre: a cost comparison study. *Emerg Med J.* 2014;31(10):818-23.
257. InEen. Benchmarkbulletin Huisartsenposten 2014. Utrecht: InEen; 2015. Available from: <http://ineen.nl/wp-content/uploads/2015/11/InEen-Benchmarkbulletin-huisartsenposten-2014.pdf>
258. Zorginstituut Nederland. Spoed moet goed: indicatoren en normen voor zes spoedzorgindicaties. Amsterdam: 2015. Available from: http://www.vumc.nl/afdelingen-themas/719134/8513847/8513854/07122015_Spoed_moet_ged.pdf
259. Lendrum RA, Lockey DJ. Trauma system development. *Anaesthesia.* 2013;68 Suppl 1:30-9.
260. ten Duis HJ, van der Werken C. Trauma care systems in The Netherlands. *Injury.* 2003;34(9):722-7.
261. Brink O, Borris LC, Hougaard K. Effective treatment at a Danish trauma centre. *Dan Med J.* 2012;59(3):A4393.
262. Kanakaris NK, Giannoudis PV. Trauma networks: present and future challenges. *BMC Med.* 2011;9:121.
263. Metcalfe D, Bouamra O, Parsons NR, Aletrari MO, Lecky FE, Costa ML. Effect of regional trauma centralization on volume, injury severity and outcomes of injured patients admitted to trauma centres. *Br J Surg.* 2014;101(8):959-64.
264. NHS England. Major Trauma Centres. In: NHS England,; 2012.
265. Fulop N, Boaden R, Hunter R, McKevitt C, Morris S, Pursani N, et al. Innovations in major system reconfiguration in England: a study of the effectiveness, acceptability and processes of implementation of two models of stroke care. *Implement Sci.* 2013;8:5.
266. Ramsay AI, Morris S, Hoffman A, Hunter RM, Boaden R, McKevitt C, et al. Effects of Centralizing Acute Stroke Services on Stroke Care Provision in Two Large Metropolitan Areas in England. *Stroke.* 2015;46(8):2244-51.
267. Morris S, Hunter RM, Ramsay AI, Boaden R, McKevitt C, Perry C, et al. Impact of centralising acute stroke services in English metropolitan areas on mortality and length of hospital stay: difference-in-differences analysis. *BMJ.* 2014;349:g4757.
268. Lahr MM, Luijckx GJ, Vroomen PC, van der Zee DJ, Buskens E. Proportion of patients treated with thrombolysis in a centralized versus a decentralized acute stroke care setting. *Stroke.* 2012;43(5):1336-40.
269. Douw K, Nielsen CP, Pedersen CR. Centralising acute stroke care and moving care to the community in a Danish health region: Challenges in implementing a stroke care reform. *Health Policy.* 2015;119(8):1005-10.

- 
270. Terkelsen CJ, Sorensen JT, Maeng M, Jensen LO, Tilsted HH, Trautner S, et al. System delay and mortality among patients with STEMI treated with primary percutaneous coronary intervention. *JAMA*. 2010;304(7):763-71.
 271. Sorensen JT, Maeng M. Regional systems-of-care for primary percutaneous coronary intervention in ST-elevation myocardial infarction. *Coron Artery Dis*. 2015;26(8):713-22.
 272. Task Force on the management of ST-segment ECG, Steg PG, James SK, Atar D, Badano LP, Blomstrom-Lundqvist C, et al. ESC Guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevation. *Eur Heart J*. 2012;33(20):2569-619.
 273. MINAP. How the NHS cares for patients with heart attack: Annual Public Report April 2013 - March 2014. London: 2015. Available from: <http://www.hqip.org.uk/public/cms/253/625/24/87/Heart%20%20Myocardial%20Ischaemia%20%20national%20report%202014.pdf?realName=eysq8A.pdf>
 274. Leleu H, Capuano F, Ferrua M, Nitenberg G, Minvielle E, Schiele F. Symptom-to-needle times in ST-segment elevation myocardial infarction: shortest route to a primary coronary intervention facility. *Arch Cardiovasc Dis*. 2013;106(3):162-8.
 275. Knowles E. Impact of closing Emergency Departments in England (closED): Detailed project description [Web page]. Sheffield: University of Sheffield; 2015 [cited 22 January 2016]. Available from: http://www.nets.nihr.ac.uk/_data/assets/pdf_file/0013/133033/PRO-13-10-42.pdf
 276. Christiansen T. Ten years of structural reforms in Danish healthcare. *Health Policy*. 2012;106(2):114-9.
 277. Christiansen P, Klitgaard M. Den utænkelige reform - Strukturreformens tilblivelse 2002-2005 [The unthinkable reform - the creation of the structural reform]. Odense: Syddansk Universitetsforlag; 2008.
 278. Regeringen [The Government]. Kvalitetsreformen - Bedre velfærd og større arbejdsglæde [The Quality Reform - better welfare and higher job satisfaction]. Copenhagen: 2007. Available from: http://www.stm.dk/multimedia/Bedre_velf_rd_samlet.pdf
 279. Amtsrådsforeningen [The association of county councils]. Fremtidig organisering af kirurgien – faglighed og sammenhæng [Future organisation of the surgical specialties - content and coherence]. Copenhagen: 2005. Available from: <http://www.regioner.dk/~media/migration%20folder/upload/publikationer/sundhed/fremtidigorganiseringafkirurgien.pdf.ashx>
 280. Danske Regioner [The Danish Regions]. Fremtidens akutberedskab - fra vision til handling [Future acute care - from vision to action]. Copenhagen: 2006. Available from: <http://www.regioner.dk/~media/migration%20folder/upload/publikationer/sundhed/fremtidensakutberedskabfravisiontilhandling.pdf.ashx>
 281. Lægeforeningen [The Danish Medical Association]. Behov for mere ensartede fælles akutmodtagelser – speciallægen med i front [There is need for more uniform joint acute wards - the specialist at the frontline of care]. Copenhagen: Lægeforeningen [The Danish Medical Association]; 2014. Available from: <http://www.laeger.dk/nyhed/download/docs/F21892/L%C3%A6geforeningens%20politikpaper%20Behov%20for%20mere%20ensartede%20f%C3%A6lles%20akutmodtagelser.pdf>
 282. Shea BJ, Grimshaw JM, Wells GA, Boers M, Andersson N, Hamel C, et al. Development of AMSTAR: a measurement tool to assess the methodological quality of systematic reviews. *BMC Med Res Methodol*. 2007;7:10.
 283. Spinewine A, Foulon V, Claeys C, De Lepeleire J, Chevalier P, Desplenter F, et al. Seamless care with regard to medications between hospital and home. *Health Services Research (HSR)*. Brussels: Belgian Health Care Knowledge Centre (KCE); 2010 12/07/2010. KCE Reports 131C (D/2010/10.273/39) Available from: https://kce.fgov.be/sites/default/files/page_documents/kce_131c_seamless_care.pdf https://kce.fgov.be/sites/default/files/page_documents/kce_131c_seamless_care.pdf
 284. Althaus F, Paroz S, Hugli O, Ghali WA, Daepen JB, Peytremann-Bidevaux I, et al. Effectiveness of interventions targeting frequent users of emergency departments: A systematic review. *Annals of Emergency Medicine*. 2011;58(1):41-52.



285. Fan L, Lukin W, Zhao J, Sun J, Hou XY. Interventions targeting the elderly population to reduce emergency department utilisation: A literature review. *Emergency Medicine Journal*. 2015;32(9):738-43.
286. Franek J. Self-management support interventions for persons with chronic disease: an evidence-based analysis. *Ontario Health Technology Assessment Series*. 2013;13(9):1-60.
287. Health Quality Ontario. Electronic tools for health information exchange: an evidence-based analysis. *Ontario Health Technology Assessment Series*. 2013;13(11):1-76.
288. Health Quality Ontario. Continuity of care to optimize chronic disease management in the community setting: an evidence-based analysis. *Ontario Health Technology Assessment Series*. 2013;13(6):1-41.
289. Huntley A, Lasserson D, Wye L, Morris R, Checkland K, England H, et al. Which features of primary care affect unscheduled secondary care use? A systematic review. *BMJ Open*. 2014;4(5).
290. Ismail SA, Gibbons DC, Gnani S. Reducing inappropriate accident and emergency department attendances: A systematic review of primary care service interventions. *British Journal of General Practice*. 2013;63(617):e813-e20.
291. Jackson GL, Powers BJ, Chatterjee R, Bettger JP, Kemper AR, Hasselblad V, et al. Improving patient care. The patient centered medical home. A Systematic Review. *Annals of Internal Medicine*. 2013;158(3):169-78.
292. Karam G, Radden Z, Berall LE, Cheng C, Gruneir A. Efficacy of emergency department-based interventions designed to reduce repeat visits and other adverse outcomes for older patients after discharge: A systematic review. *Geriatrics and Gerontology International*. 2015;15(9):1107-17.
293. Katz EB, Carrier ER, Umscheid CA, Pines JM. Comparative effectiveness of care coordination interventions in the emergency department: A systematic review. *Annals of Emergency Medicine*. 2012;60(1):12-23.
294. Kumar GS, Klein R. Effectiveness of case management strategies in reducing emergency department visits in frequent user patient populations: A systematic review. *Journal of Emergency Medicine*. 2013;44(3):717-29.
295. Lowthian JA, McGinnes RA, Brand CA, Barker AL, Cameron PA. Discharging older patients from the emergency department effectively: A systematic review and meta-analysis. *Age and Ageing*. 2015;44(5):761-70.
296. Morgan SR, Chang AM, Alqatari M, Pines JM. Non-emergency department interventions to reduce ED utilization: a systematic review. *Academic Emergency Medicine*. 2013;20(10):969-85.
297. Rennke S, Nguyen OK, Shoeb MH, Magan Y, Wachter RM, Ranji SR. Hospital-initiated transitional care interventions as a patient safety strategy: A systematic review. *Annals of Internal Medicine*. 2013;158(5 PART 2):433-40.
298. Sinha SK, Bessman ES, Flomenbaum N, Leff B. A systematic review and qualitative analysis to inform the development of a new emergency department-based geriatric case management model. *Annals of Emergency Medicine*. 2011;57(6):672-82.
299. Stall N, Nowaczynski M, Sinha SK. Systematic review of outcomes from home-based primary care programs for homebound older adults. *Journal of the American Geriatrics Society*. 2014;62(12):2243-51.
300. Tohira H, Williams TA, Jacobs I, Bremner A, Finn J. The impact of new prehospital practitioners on ambulance transportation to the emergency department: a systematic review and meta-analysis. *Emergency Medicine Journal*. 2014;31(e1):e88-94.
301. Tricco AC, Antony J, Ivers NM, Ashoor HM, Khan PA, Blondal E, et al. Effectiveness of quality improvement strategies for coordination of care to reduce use of health care services: A systematic review and meta-analysis. *CMAJ*. 2014;186(15):E568-E78.
302. Bunn F, Byrne G, Kendall S. The effects of telephone consultation and triage on healthcare use and patient satisfaction: a systematic review. *Br J Gen Pract*. 2005;55(521):956-61.
303. van Loenen T, van den Berg MJ, Westert GP, Faber MJ. Organizational aspects of primary care related to avoidable hospitalization: a systematic review. *Fam Pract*. 2014;31(5):502-16.



304. Arain M, Nicholl J, Campbell M. Patients' experience and satisfaction with GP led walk-in centres in the UK; a cross sectional study. *BMC Health Serv Res.* 2013;13:142.
305. van Gils-van Rooij ESJ, Yzermans CJ, Broekman SM, Meijboom BR, Welling GP, de Bakker DH. Out-of-Hours Care Collaboration between General Practitioners and Hospital Emergency Departments in the Netherlands. *Family Medicine World Perspective.* 2015;26(6):807-15.
306. Eichler K, Hess S, Chmiel C, Bogli K, Sidler P, Senn O, et al. Sustained health-economic effects after reorganisation of a Swiss hospital emergency centre: a cost comparison study. *Emerg Med J.* 2014;31(10):818-23.

