Out-of-hours Primary Care in Belgium

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Cover Photo: David McIntyre

OUT-OF-HOURS PRIMARY CARE IN BELGIUM

Dissertation for the Degree of doctor in Medical Science at the University of Antwerp

To be defended by

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On November 10 th, 2010

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Eerstelijnshulpverlening buiten de kantooruren in België.

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CHAPTER 1

In this chapter we will briefly outline our reasons for studying the subject of out-of-hours care in Belgium. It is argued that general practice as an important part of the health system in this country is subject to important changes, as society in general is. After we have outlined the methods that were used, we overview the chapters in this thesis.

INTRODUCTION

In early summer 2003, the first General Practitioner Cooperative (GPC) in Belgium opened premises in Deurne-Borgerhout, Antwerp. GPCs had already existed for several years in neighbouring countries (United Kingdom, Denmark, The Netherlands [1]). The GPC-projects, developed from concept to implementation by general practitioners, are funded by the Belgian government.[2] They aim at providing primary care out-of-hours services during the weekends. More GPCs were established in Flanders and at present about 10 % of the Flemish population is covered by a GPC.[3] The need for research was inspired by justification of the initial grants from the Federal Government and also because stakeholders, like general practitioners, Emergency Departments (ED) and policy makers, are interested parties. Research had to clarify the benefits of GPCs for the patients, the influence on the quality of health care and the effects on patient fluxes.

To study the effects of the implementation of GPCs, one needs to consider the health services landscape from different points of view; the patient or 'consumer' of care, the physicians (GPs as well as specialist doctors) and the policy makers. In fact, when changing health care by implementing new services, these are the players in the field.[4]

A HISTORIC FRAMEWORK OF GENERAL PRACTICE, CHANGING DEMOGRAPHICS AND SERVICES.

GENERAL PRACTICE IN BELGIUM

Belgian health care is characterized by free access to primary, secondary and tertiary care facilities. There is no gatekeeper role for general practitioners (GP) and no need for referral. Physicians are most often paid on a 'fee for service' basis, although the system allows GPs (and also nurses and physiotherapists) to work in a capitation based system.[5] During out-of-hours, patients can choose between GP services and the Emergency Department of a hospital. At the EDs there is no direct payment as compared to the GP services, where direct payment during consultation is in general use. Presently, the GP services can use third party payment, although but its use is only meant for the deprived and occasional use.[6] Patients have obligatory medical insurance by which medical care is reimbursed. Out of pocket payment accounts for approximately 25% of health expenses.[7] Providing 24 hours coverage is a legal obligation of general practitioners in Belgium.[3]

There are no exact numbers of out-of-hours patient contacts with primary health care, published in Belgium. To give some idea of the relative workload during weekends we can estimate the number of patient contacts by using data from different sources. The mean number of yearly contacts with the general practitioner in Belgium is 4.5 per person.[8] With 10 million inhabitants, regular primary health care during normal working hours accounts for approximately 45 million GP contacts per year. During out-of-hours, numbers differ between regions. Based on our study in Turnhout, in the Flemish

part of Belgium, we assessed patient contacts during 9 weekends in 2006. We counted 748 patient contacts with the general practitioner on call during these weekends. Extrapolating this number to 52 weekends we might estimate that 4322 patients per year in a population of 80.000 inhabitants (or approximately one patient per 1000 per 24 hours) will use out-of-hours primary care facilities. From this estimation, we might (carefully) conclude that in one year time, about 5.4% of the inhabitants use out-of-hours primary care services.

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The need for organising out-of-hours primary care in a system where doctors perform a call time rotation has been in existence for many years. Since the nineteen-seventies, GPs have organised rotas. This made it possible for GPs, who previously were continuously available for their patients, to spend the weekend with their family and be on call just several weekend days or entire weekends a year. During out-of-hours GPs worked from their private practices, without any support from a telephone operator or any kind of administrative help. In most GP practices, the doctor's wife or another family member took on this task. This way, not only the GPs' leisure time, but also the family members' free time was restricted during on call services.

As more doctors' spouses started their own professional career and more women started a career as GP, organisational changes became a necessity. The opportunity to have the spouse taking the telephone calls or being of any administrative help disappeared. Also female doctors had to take care of their family as well as having their job as GP, necessitating clearly defined working hours and task agreements. GPs increasingly organised themselves into group practices during working hours. This offered the possibility to take part in a practice on a full time or a part time basis and to work set hours. Also male colleagues start preferring this kind of cooperation, increasingly preferring quality time with the family and leisure time as opposed to long working hours.[9, 10] The same needs appeared during out-of-hours services.

Also safety reasons led to rearrangements in out-of-hours primary care. When working alone during weekends and nights, GPs were often confronted with alarming and unsafe situations especially when doing home visits.[11] This is more pronounced when GPs are working in large cities. As crime increases, doctors are also possible victims of violence or robbery. Due to the obligation a doctor has, to assist patients in need, refusal of dangerous or suspicious calls is not an option. The solution must be sought in a better support and organisation.

Logically, the next step in reorganising GP out-of-hours was providing out-of-hours primary care by GPC, where full support is given by administrative staff and offering reception and consultation for the patients in a consistent, central location in the city. This way the doctor is only responsible for his medical tasks, respecting the career or leisure time of his family members. The availability of a car with driver for home visits enhances the safety of the doctor on call.

PROFESSION UNDER PRESSURE

The increasing number of female GPs and the larger part of doctors working part time puts the number of GPs under pressure in all European countries. At present, students prefer careers in medical specialties, rather than general practice.[12] About one out of three students prefers becoming a GP. In Belgium there are also a large number of GPs who quit working as a GP during the first 5 years of their career.[10] Furthermore, GPs are often confronted with alarming and unsafe situations especially when doing home visits in larger cities.[11] So, because of demographics (increasing GPs average age, lack of appropriate influx, feminisation, leaving practice, need to work part-time) re-organisation of out-of-hours care is on the agenda.

BYPASSING THE GENERAL PRACTITIONER ON CALL AND INAPPROPRIATE USE OF SERVICES

Since the 1970's, people tend to increasingly seek help at emergency departments for primary care problems, often by-passing the primary care services. Many reports have shown that this leads to overcrowding of EDs. This trend can be observed in West-European countries, the United States, Australia and Canada.[13-19] This evolution, which has been referred to as 'in-appropriate use', results in inefficient use of manpower and higher costs.[20-22] This is why policy makers and payers of care have become interested in health care seeking behaviour during out-of-hours.

Patients have many reasons for seeking help at the ED instead of going to GP services during out-of-hours. Daily life and working hours keep people very busy during the day, which leads to them often seeking medical help during out-of-hours. This is illustrated by a study examining the relationship between ED visits and perceived barriers to receiving timely primary care. The following barriers for seeking help at the GP services were mentioned; "couldn't get through on phone", "couldn't get appointment soon enough", "waiting too long in doctor's office" , "not open when you could go" and "no transportation".[23] Other studies found out that people anticipated X-rays to be necessary, therefore seeking help at the ED.[24, 25]

Unnecessary or inappropriate use of medical services, especially out-of-hours services, might compromise quality of care and patient safety.[15-19, 26-28] On the other hand, making a selection of patients by 'triage' to rule out inappropriate use, might imply the risk of a misclassification of potentially dangerous and life threatening calls.[29, 30] Therefore, medical services have to keep in mind the consequences of redirecting patients to the appropriate service.

MAPPING THE CAUSES OF ED OVERCROWDING

Several causes have been described for ED overcrowding. First of all, it can be examined using the concept of 'input – throughput – output'. These three components exist within an acute care system that is characterized by the delivery of unscheduled care.[31]

Understanding this conceptual model of ED crowding helps researchers, administrators and policy makers develop potential solutions (see fig 1 and fig 2).

The input component of ED crowding in our conceptual model includes any condition, event, or system characteristic that contributes to the demand for ED services. 3 factors affect the use: patient need for health care services, predisposing factors that affect an individual's likelihood of seeking care, and enabling factors that affect an individual's ability to receive care. An understanding of ED input must include the recognition that there are at least 3 general categories of care delivered in the ED: (1) emergency care; (2) unscheduled urgent care; and (3) safety net care

The throughput component of the model identifies patient length of stay in the ED as a potential contributing factor to ED crowding. The first phase includes triage, room placement, and the initial provider evaluation. The second phase of the throughput component includes diagnostic testing and ED treatment.

The output component is caused by inefficient disposition of ED patients which contributes to crowding for admitted and discharged patients. The most frequently cited reason for ED crowding is the inability to move admitted patients from the ED to an inpatient bed. This problem forces the ED to board admitted patients until inpatient beds are available, effectively reducing the ED's capacity to care for new patients.

Fig. 1: Conceptual model of ED crowding.[31]

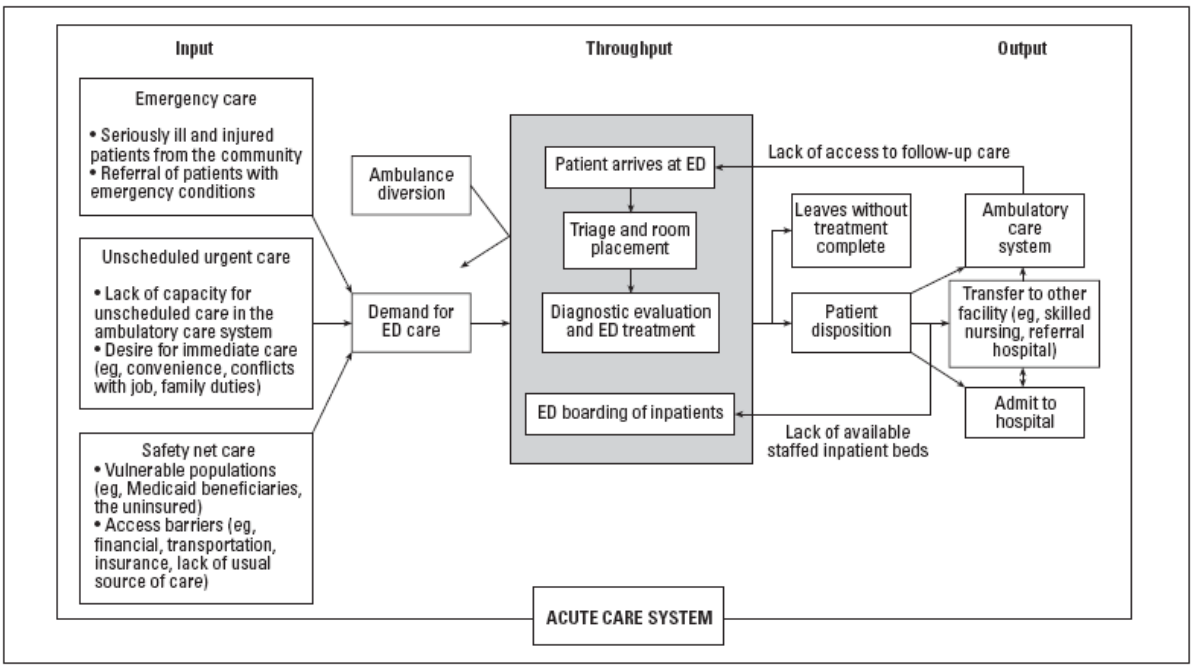

Fig. 2: The input – throughput – output conceptual model of ED overcrowding.[31]

One of the input factors, as it has been studied during the past decades, is the use of the ED for non-emergency complaints. Different opinions are published concerning the effect of diminishing the input by restrictions of entrance to the ED. Some studies describe less patient contacts at the ED after e.g. implementing a GP cooperative or changing patient fluxes when implementing cost-sharing measures.[32, 33] Other researchers suggest

that these input factors are not the root cause of the problem.[34, 35] It is rather a problem of throughput and output as one of the authors suggests: 'the main cause is inadequate inpatient capacity for a patient population with an increasing severity of illness'.[34]

In this thesis the input factors are highlighted, focusing on the very first contact of the patient with out-of-hours care.

WHAT IS OVERUSE OR 'INAPPROPRIATE USE' OF ED?

When studying input factors at ED, inevitably terminology like 'overuse', 'disuse' and 'inappropriate use' emerges. At this point, definitions become unclear, even non-existent. In the last two decades, in several publications researchers aimed to define 'inappropriate use' of ED. None of them managed to formulate a clear definition, because of the complexity of the problem.

Inappropriate use of ED is linked to 'urgency' or 'emergency' of a medical problem. All the players in the field look and interpret 'emergency' in a different way. There are three major players in the field: patients or consumers of care, physicians (working in primary, secondary and tertiary care) and policy makers.[4] We know that the perception of urgent medical problems depends on the individual. There can be great disagreement between these actors, but also overlap. Kelly and Lowe showed that medical doctors and nurses at EDs are largely in agreement concerning 'emergency'.[30, 36] Comparing perceptions of 'emergency' between patients and nurses and between patients and doctors, important differences are found. Patients' perceptions of an emergency do not correspond with clinical interpretations of professionals.[37] This shows that patients assess their medical problems with other worries, perceptions and interpretations than medical staff does. In conclusion, different perceptions of what is or is not an 'emergency' leads inevitably to different interpretations of 'appropriate' and 'inappropriate' ED use.

In this thesis we focus on the input factors and more specifically on the input factors depending on patients or consumers of care.

AIM OF THIS THESIS

Three players are involved when changing out-of-hours primary care facilities. GPs have their reasons for adapting organisational matters during out-of-hours. Specialist doctors, especially ED personnel, aim to decrease inappropriate use of ED. Policy makers are interested in a reorientation of primary care problems to primary care facilities in order to realise a more efficient use of financial and human resources. They face budget constants as budgets for healthcare are not endless. At present Belgium spends slightly more than the European average on health care and up to now, its budgets increase by 4 per cent per year.[7] Finally, patients use the services that are offered to them.

The main aim of this thesis is to study the patient or consumer of care in this matter. We address a number of issues that relate to the changing landscape of out-of-hours primary medical care services in Belgium. We focus on the experiences, choices and behaviour of the patients or consumers of care. The distinction between 'patients' and 'consumers of care' that we use in some chapters, is made to assess the person who is in immediate need of medical care as well as the person who might need future medical care. The idea behind this approach is that people may make different decisions in a moment of uncertainty or anxiety, which can be the case when seeking medical help, as opposed to people who are interviewed about their choice behaviour on the basis of fictional scenarios.

Due to changing patient behaviour and the changing landscape of out-of-hours primary care, research opportunities may take the various prospective of actors into account. In this context, there is a need for evidence to decide the process of rearranging out-of-hours primary care.

METHODS

Assessing patients' experiences, expectations and choice behaviour in out-of-hours care requires different approaches. Therefore we used several study designs which enabled us to describe patients' behaviour using a quantitative method in which we assessed numbers of patients and patient characteristics at primary care services and at the ED. We explored patients' expectations and experiences as a 'patient' in a mixed methods design using qualitative and quantitative research. We also studied the 'consumer of care' by using two methods that are often used in marketing and sociology (Theory of Reasoned Action and Discrete Choice Analysis). We estimated the effect of organisational changes in out-of-hours care by using a prospective intervention study in Turnhout.

HOW TO READ THIS THESIS

This thesis reports five studies that were performed between 2005 and 2007. They have been published or are in review.

Our aim is to view the problem from the patient perspective. The patient is an important player in the field, whose point of view is seldom highlighted. Because we know that changing health care services benefit from a broader approach, including the opinion of the users, we prefer looking beyond the viewpoint of health care workers and policy makers.

To paraphrase Murphy we think that:

'Rather than vainly attempting to make the patients appropriate to the service, future initiatives should concentrate on making services more appropriate to the patient.'

[38, 39]

In **Chapter 2** we examine the case load at emergency departments and the general practitioners on call during out-of-hours.

This chapter intends to describe the situation in 4 large cities in Belgium in 2005, in a period where GPCs were still scarce. By measuring and describing patient contacts at emergency departments and general practitioners on call, we are able to get some insight in patients' choices. Besides case load we also label determinants to choose one or another service and describe the medical problems for which people seek help during out-of-hours. We used a quantitative study design.

Title: **'Out of hours care: A profile analysis of patients attending the emergency department and the general practitioner on call.'**

The research questions are:

1) *What is the case load at the emergency departments and at the primary care services during weekends?*

2) *What are the socio-economical determinants of people seeking help at either service?*

3) *What are the reasons for the choice of service?*

Methods: We used a prospective, quantitative study design, based on semi-structured questionnaires.

In **Chapter 3** we investigate the implementation of co-payment systems at the emergency departments.

In Belgium, this measure was taken in 2005 in order to reduce 'inappropriate use' of the emergency department. At the time, it was a governmental move, with insufficient knowledge regarding the effects. At the same time, the government commissioned an investigation into the influence of the co-payment system on patient fluxes. Instead of examining this matter in a before/after study, which was not possible at that time, we studied the opinion of the patients themselves about the possible influence of co-payment systems on their choice behaviour. We scrutinized the experiences and opinions of patients with regard to their use of out-of-hours care and the influence of payment systems.

Title: **'Use of out-of-hours services: the patient's point of view on co-payment. A mixed methods approach.'**

The research questions are:

4) *Are patients aware of co-payment systems?*

5) *Do they consider co-payment a useful tool to reduce inappropriate use of services?*

6) *Which measures do patients suggest to reduce overuse of ED for minor medical problems?*

Methods: We used a mixed methods study design, combining quantitative and qualitative research. Both methods add complementary data to answer the research questions.

In **Chapter 4** we study the choice behaviour of 'consumers' of out-of-hours care.

In this chapter we deliberately use the term 'consumer' to differentiate from 'patient'. Up until this chapter we only interviewed or questioned 'patients' who had already made a choice at the time of interview. In this study we interviewed people, possible ED or GP users, who did not have any treatment demand at that specific moment. We used fictive scenarios to ask the participants which choice they would make if the scenario should arise. We approached this research question in two methodologies which are not frequently used in health care research.

We firstly describe in this chapter the choice behaviour of the consumers, using the 'Theory of Reasoned Action', which is known in social sciences and developed by Ajzen and Fishbein.[40]

Title: **'Experience: the most critical factor in choosing after-hours medical care.'**

The research questions are:

7) *What are the consumers' experiences with out-of-hours services?*

8) *What is the importance of the different service attributes, what is the perceived performance of the services and what is the intention of choice?*

Methods: We used a prospective quantitative study design. We interviewed people about their choice behaviour in the case of a fictive scenario, based on the Theory of Reasoned Action.[40]

In **Chapter 5** we study the choice behaviour of 'consumers', but this time we used a 'discrete choice analysis'.

This method is often used in marketing studies. In the last few years we often found this study design in health services research.[41-43] There are several advantages in this method of interviewing participants. Consumers can best provide judgment on objects formed by a combination of attributes rather than on each separate object attribute. It is more realistic if the respondents are confronted with decisions similar to the ones they face in their daily lives.[42]

Title: **'Predicting the Place of Out-of-Hours Care - a Market Simulation based on Discrete Choice Analysis'.**

The research questions are:

9) *What are the critical characteristics of an out-of-hours health care service and what is the relative importance of the attributes in the decision process?*

10) *How does the newly established general practitioner cooperative match these needs?*

Methods: We used a quantitative study design, interviewing consumers using a Discrete Choice experiment.[41-43]

Chapter 6 describes a study in which we consider GPCs as an option to redirect patients to primary care during out of hours. The aim of this study was to evaluate the case load before and after the implementation of a general practitioner cooperative in one well circumscribed part of the country.

Title: **'What's the effect of the implementation of general practitioner cooperatives on caseload? Prospective intervention study on primary and secondary care.'**

The research question is:

11) *What is the impact of the implementation of a general practitioner cooperative on the use and caseload of out-of-hours primary and secondary care?*

Methods: We used a prospective, before/after interventional study design.

In the final **chapter 7** we put all findings into perspective and come up with a number of suggestions for policy and future research.

The hurried reader will find an executive summary in Dutch, French and English at the end of the Discussion Chapter.

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CHAPTER 2

OUT-OF-HOURS CARE: A PROFILE ANALYSIS OF PATIENTS ATTENDING THE EMERGENCY DEPARTMENT AND THE GENERAL PRACTITIONER ON CALL.

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Accepted for publication by BMC Family Practice on October 26th, 2010

ABSTRACT

Background

Overuse of emergency departments (ED) is of concern in Western society and it is often referred to as 'inappropriate' use. This phenomenon may compromise efficient use of health care personnel, infrastructure and financial resources of the ED. To redirect patients, an extensive knowledge of the experiences and attitudes of patients and their choice behaviour is necessary. The aim of this study is to quantify the patients and socio-economical determinants for choosing the general practitioner (GP) on call or the ED.

Methods

Data collection was conducted simultaneously in 4 large cities in Belgium. All patients who visited EDs or used the services of the GP on call during two weekends in January 2005 were enrolled in the study in a prospective manner. We used semi-structured questionnaires to interview patients from both services.

Results

1611 patient contacts were suitable for further analysis. 640 patients visited the GP and 971 went to the ED. Determinants that associated with the choice of the ED are: being male, having visited the ED during the past 12 months at least once, speaking another language than Dutch or French, being of African (sub-Saharan as well as North African) nationality and no medical insurance. We also found that young men are more likely to seek help at the ED for minor trauma, compared to women.

Conclusions

Patients tend to seek help at the service they are acquainted with. Two populations that distinctively seek help at the ED for minor medical problems are people of foreign origin and men suffering minor trauma. Aiming at a redirection of patients, special attention should go to these patients. Informing them about the health services' specific tasks and the needlessness of technical examinations for minor trauma, might be a useful intervention.

OUT-OF-HOURS CARE: A PROFILE ANALYSIS OF PATIENTS ATTENDING THE EMERGENCY DEPARTMENT AND THE GENERAL PRACTITIONER ON CALL.

BACKGROUND

Overuse of emergency departments (ED) is of concern in Western society and it is often referred to as 'inappropriate' use.[1-6] Patients assess their medical problems with worries and interpretations in their own context and may decide to seek help independently from referral or triage systems.[7, 8] Although there is some consensus of doctors and nurses concerning the perception of 'emergency', important differences were found between the perception of patients and clinical staff.[9, 10] Patients' perceptions of an emergency do not necessarily correspond with clinical interpretations made by health care providers.[11] What is or is not an 'emergency' can lead to different interpretations of 'appropriate' and 'inappropriate use' of ED.

Inappropriate use may compromise efficient use of health care personnel, infrastructure and financial resources of the ED.[12] Inefficient use also threatens timely treatment of serious medical conditions at the ED.[13, 14] The opinion to redirect patients, however, is hampered by the discrepancies in appreciation between consumers, health care providers and financial backers as to the value of primary and secondary care services. Therefore the top down approach alone is insufficient as a solution. An extensive knowledge of the experiences and attitudes of patients and their choice behaviour is necessary. Services must pay attention to this knowledge to align out of hours care to people's preferences, in order to attract patients to the most efficient service.[15]

We therefore, in a prospective study, compared populations of patients during out-of-hours at both secondary care services (emergency departments, EDs) and primary care services (general practitioners (GPs) on call). The aim was to quantify the patients and socio-economic determinants associated with choosing the GP on call or the ED. We also detailed reasons that patients mentioned for choosing a particular service.

METHODS

CONTEXT

Belgian health care is characterized by free entrance to primary, secondary and tertiary care facilities. There is no gatekeeper role of general practitioners (GP) and no need for referral.[16] Physicians are most often paid on a 'fee for service' basis. Patients have obligatory medical insurance by which certain medical care is reimbursed. Out of pocket payment accounts for approximately 25% of health expenses.[16] For primary care, patients pay directly, while for secondary care, patients receive billings afterwards. At the time of the study co-payment systems at the ED were not compulsory and not in common use. Patients can be registered with a GP of their choice, but this is not

obligatory to have access to all health care facilities. In Belgium, almost 99% of the population is covered with compulsory health insurance.[16, 17]

Providing 24 hours coverage is a legal obligation of GPs in Belgium.[18] GPs organise out-of-hours care in rotation systems. This service is organised by local general practitioner organisations. In these small scale organisations, GPs on call usually work from their private practices. Most of the local GP organisations use a phone number which immediately leads to the out-of-hours care facility. Patients have to find out for themselves which GP is available and where the practice is located. Prior telephone contact is not necessary; patients can walk in without appointment. There is no telephone triage; no consultation over the telephone is performed. Patients can come to the doctor's practice or ask the GP for a home visit.[16] Since 2003, in some regions in Belgium, the first general practitioner cooperatives (GPC) emerged.

MATERIALS

Data collection was conducted simultaneously in 4 large cities in Belgium (Antwerp, Ghent, Brussels, Charleroi). All patients who visited EDs or used the services of the GP on call during two weekends in January 2005 (Saturday 12AM until Sunday 12AM) were enrolled in the study in a prospective manner.

Directors of hospitals and primary care services were individually informed of the project and their participation was secured. The GPs on call and the services in the hospitals were regularly contacted by the principal investigator. Ethical approval was acquired for all services.

A semi-structured questionnaire was developed, based on literature, and piloted for this study. It comprised 6 domains and 39 questions. (see appendix at the end of this chapter) Senior medical students were trained to interview the patients at the various data collecting sites. They performed face-to-face interviews at the ED and telephone interviews with the GP patients after the doctor's visit. At the ED patients were asked to participate at the moment of entrance and data were collected immediately thereafter. As GP services were in many cities, and offered by more than one GP per region, we decided to collect data from these services by phoning immediately on the data of visit. GPs asked all patients whether they were willing to participate. If they agreed, the telephone number of the patient was registered in order to be contacted by the interviewer after the GP consultation.

For each patient the following data were collected about the consultation: demographic information (sex, age, postal code), date and hour of consultation, the Reason For Encounter (RFE), the diagnosis and whether or not subsequent hospitalisation was necessary. Also the manner by which they came to the medical service (self-referral, physician's referral, ambulance, other) was registered. To assess the process of choice we also asked how they found the telephone number and address of the service, who made the decision to seek help at that service, what was their knowledge concerning the payment system, whether there had been earlier contacts with out- of-hours services and whether they had considered looking for help elsewhere. At the end of the interview the socio-economic status (family, nationality, language, income/financial situation, insurance) was registered. Patients who refused to participate were only asked for their

characteristics (age, sex) and the RFE. When possible we also assessed the doctor's diagnosis and whether the patient was hospitalised or not after the doctors' examination. Data of non-participants were only used to assess case-load but not for further analysis.

After data collection, the researchers used ICPC2 to recode RFE and diagnosis. The variable 'minor trauma' was collected by searching the data manually and adding the code A80 when trauma was mentioned in the RFE. When a A80 code in the RFE was combined with a S18 (skin lesion) or an ICPC2 code concerning contusions and abrasions in the diagnosis, we included the case as 'minor trauma'.

DATA COLLECTION AND ANALYSIS

Data were analysed using SPSS 16.0. We compared absolute numbers of contacts for each ICPC2 chapter between ED and GP contacts. Due to missing data concerning diagnosis in the data of Brussels and Charleroi, we restricted the descriptive analysis for the variables RFE and diagnosis to the data of Antwerp and Ghent.

We used uni-variant analysis with odds ratios (OR) and 95% confidence intervals (CI) where applicable. Nominal variables were compared with chi²-tests, whereas Mann Whitney tests were applied for the comparison of mean ages.

Binary logistic regression analysis with service choice (GP or ED) as the dependent variable was used to compare patient and socio-economic determinants between both patient populations, computing odds ratios with their 95% CI. The choice of the determinants, relevant for this multivariate analysis was based on literature.[4, 19, 20]

ETHICAL APPROVAL

Ethical approval of this study was given by the Ethical Committees of the Universities of Antwerp, Ghent and Leuven: A04-77.

RESULTS

DESCRIPTIVE

A total of 1970 patients contacted one of the services and were eligible for inclusion at the four sites. 359 (18.2%) patients refused to participate. Reasons for refusal were documented in 27 (0.07%) cases: patient died (n=2), the patient is an unaccompanied child (n=19) or the patient was not able to participate (n=6). 1611 patient contacts were suitable for further analysis, 640 in the GP population and 971 ED users. Main patient characteristics are listed in table 1.

	GP	ED
Gender (% men)	289/638 (45.3%)	492/968 (50.8%)
Mean age	35.7 years, SD 45.9	32.2 years, SD 23.3
Registered with a GP (% yes)	584/638 (91.5%)	754/967 (78.0%)
Used ED at least once during past 12 months (% yes)	185/634 29.1%)	379/960 (39.5%)
Employed (% yes)	354/622 (56.9%)	487/955 (51.0%)
First language Dutch or French (both national Belgian languages) (% yes)	580/639 (90.8%)	747/968 (77.2%)
Nationality:		
- **Belgian**	526/640 (82.2%)	642/968 (66.3%)
- **African**	20/640 (3.1%)	129/968 (13.3%)
- **Other**	94/640 (14.7%)	197/968 (20.4%)

Table 1: main patient characteristics at the GP services and the ED.

Refusal rate of study participation was significantly lower in the GP visitors (GP: 113 refusals (15%), ED: 246 refusals (20%)). The mean age (33.6 y, Standard Deviation (SD) 34.2) of the participants (N = 1611) was not significantly different from the mean age of the non-participants (N = 359) (38.0 y, SD 24.2) (P >0.05). Men were more likely to refuse participation than women did (refusals: male N = 177 (58.8%), female N = 124 (41.2%))(p<0.01). The relative numbers of subsequently hospitalised patients were significantly higher in the nonparticipants group compared to those in the participants group (hospitalised non-participants N = 64/225 (28.4%), hospitalised participants N = 206/1461 (14.1%)) (p < 0.01). The mean age of the patients that visited the GP on call is 35.7 (SD 45.9) years, which is significantly higher than the population at the ED (32.2 y, SD 23.3) (p<0.05).

In the next part of this results chapter, we will focus only on the group of patients who participated (n= 1611).

The item 'diagnosis' was missing in 49.4% of cases in the GP group (N = 640). In the ED group only 3.8% of this data were missing (N = 971). Therefore we limited the descriptive part on this specific item to the databases of Ghent and Antwerp, where registration of 'diagnosis' was performed as planned in the study design. Table 2 shows RFE and diagnosis chapters in both services. For the diagnosis, chapters L 'musculoskeletal' (21.6%) and S 'skin' (17.3%) were the most prominent at the ED services, while R 'respiratory' (36.8%) and D 'digestive' (20.2%) were most prominent at the GP services.

ICPC2 chapter	RFE			Diagnosis		
	GP service	**ED**	**Total**	**GP service**	**ED**	**Total**
Missing	2	1	3	14	2	16
General and unspecified	96	83	179	31	52	83
Blood, blood forming organs	1	0	1	1	4	5
Digestive	68	62	130	68	60	128
Eye	3	13	16	1	11	12
Ear	9	5	14	13	4	17
Circulatory	6	8	14	7	25	32
Musculoskeletal	33	119	152	27	106	133
Neurological	19	26	45	10	17	27
Psychological	6	17	23	7	19	26
Respiratory	72	47	119	124	56	180
Skin	17	58	75	21	78	99
Endocrine, metabolic, nutrition	0	0	0	0	3	3
Urological	2	6	8	8	8	16
Pregnancy, child-bearing, family planning	0	0	0	1	1	2
Female genital	0	3	3	1	2	3
Male genital	2	2	4	2	2	4
Social problems	1	0	1	1	0	1
Total	**337**	**450**	**787**	**337**	**450**	**787**

Table 2: Absolute numbers of patients visiting the ED or the GP with Reason For Encounter (RFE) and Diagnosis according to ICPC2 chapters (database of Ghent and Antwerp)

In the group of patients who decided to consult the GP (N = 640), 54 (8.4%) patients were not registered with a GP. In most cases the patient or a family member recommended calling the GP (93.2%). In this group of patients (N = 640), 105 (16.4%) initially considered going to the ED but decided to call the GP. 185 (28.9%) of the GP patients reported using the ED at least once during the past 12 months.

In the ED group (N = 971), 213 (21.9%) patients were not registered with a GP. In 86.6% of the cases (n = 841), the decision to go to the ED was taken by the patient or by a family member. In 8.0% of the cases (n = 78) someone else gave the advice to visit the ED (friends, neighbours ...). Of this group (this question was answered by N = 681), 86 (12.6%) patients contacted the GP on call before going to the ED. The question of by whom they were referred to the ED was answered by 968 participants. In 618 cases (63.8%) patients reported going to the ED on their own initiative. Other referral possibilities were: referred by their own family physician (n = 67, 6.9%), by the GP on call (n = 57, 5.9%) or by a specialist doctor (n = 48, 5.0%). 126 were brought in by ambulance (n = 99, 10.2%) or police (n = 27, 2.8%).

On Chi^2 analysis, we found that men are more likely to seek help at the ED for minor trauma, compared to women. (OR=1.329, 95% CI: 1.010-1.749) This difference is not significant at the GP services (OR= 0.820, 95% CI: 0.507-1.327).

ED (N = 971)	Trauma	Non-trauma	
Male	165	327	492
Female	131	345	476
Total	296	672	968
Chi² = 4.124, p = 0.0423 OR= 1.329, 95% CI: 1.010 – 1.749			

Table 3: Chi² analysis of trauma and non-trauma related RFE between men and women at the ED.

GP (N = 640)	Trauma	Non-trauma	
Male	32	257	289
Female	46	303	349
Total	78	560	638
Chi² = 0.655, p = 0.4185 **OR= 0.820, 95% CI: 0.507 – 1.327**			

Table 4: Chi² analysis of trauma and non-trauma related RFE between men and women at the GP services.

People at the ED were asked why they decided to seek help at the ED. In order of absolute numbers the reasons are shown in table 5.

Question: 'Why did you decide to seek help at the ED?' (more answers possible) (N = 971)	
Reason	**Absolute number of patients who checked the box (%)**
Accessibility	140 (14.4%)
Competence of personnel	110 (11.3%)
Proximity	107 (11.0%)
Open 24/7	88 (9.1%)
No knowledge of GP on call	70 (7.2%)
Family doctor not available	50 (5.1%)
No need for an appointment	39 (4.0%)
Not wanting to disturb the GP on call	26 (2.6%)
No need for immediate payment	10 (1.0%)

Table 5: Reasons for seeking help at the ED

Of the 971 patients who visited the ED in our study, 379 (39.3%) had used the ED during the past 12 months at least once, 48 (4.9%) of them more than 3 times.

GP OR ED? A BINARY LOGISTIC REGRESSION ANALYSIS.

We used binary logistic regression analysis with the use of the service (ED or GP) as dependent variable (GP being the reference category). Our best fitting model is described in table 6. We used 11 independent variables in the equation and six of them contributed significantly. Determinants that steered the choice in favour of the GP on call are: being female, having a family doctor and speaking Dutch or French (both national languages in Belgium). Determinants that advanced the choice for the ED are: being male, having visited the ED during the past 12 months at least once, speaking another language than Dutch or French, being of African (sub-Saharan as well as North African) nationality and lack of any medical insurance. Age, educational level and employment were not significant in this regression model.

	P value	OR	95,0% C.I. for OR	
			Lower	Upper
Sex male (female)	**0,049**	**1,249**	**1,001**	**1,559**
Not registered with GP (Yes)	**0,000**	**2,696**	**1,856**	**3,916**
Did not visit the ED past 12 months (Yes)	**0,001**	**0,675**	**0,533**	**0,855**
Education: No diploma or primary school	0,064			
Secondary school	0,870	0,972	0,691	1,367
University or High school	0,098	0,726	0,496	1,061
Age category (> 60y)	0,339			
0-14 y	0,918	1,021	0,693	1,503
15-59 y	0,283	1,211	0,854	1,716
Language (other than Dutch/French)	**0,006**			
French	**0,001**	**0,491**	**0,317**	**0,761**
Dutch	**0,007**	**0,522**	**0,326**	**0,836**
Unemployed (Employed)	0,844	0,973	0,744	1,274
Nationality (Belgian)	**0,000**			
African Sub-Saharan	**0,008**	**3,726**	**1,400**	**9,914**
North African	**0,001**	**2,885**	**1,513**	**5,501**
Turkish	0,164	1,891	0,771	4,638
Other nationalities	0,436	0,859	0,585	1,261
No medical insurance (Yes)	**0,032**	**3,231**	**1,106**	**9,442**
Constant	0,000	10,859		

Table 6: OR with 95% CI of independent variables in the equation with the choice for ED or GP as dependent variable (GP is the reference category, an OR > 1 is in favour of the ED). (Significant determinants are in bold)

'Income' (missing in 49.7% of cases) and 'family situation' were entered into the model but did not change the results significantly. Adding interaction terms 'nationality*language' or 'age*sex' did not ameliorate the model significantly either.

DISCUSSION AND CONCLUSION

In this prospective study we compared profiles of 1611 patients at EDs and GP out-of-hours services in urban areas. Determinants for choosing a service were gender, having a family GP, having used the ED at least once during the past 12 months, language, nationality and having medical insurance.

According to table 2, musculoskeletal problems were the most frequent RFE and diagnoses at the ED. When keeping in mind that most RFE and diagnoses in ICPC-chapter S 'skin' are wounds or other traumatic skin lesions, we count 14.8% in the RFE at the GP and 39.3% at the ED that can be categorised as '(minor) trauma'. The same results are found for diagnoses: respectively 14.2% and 40.9%.

LIMITATIONS OF THE STUDY

Some limitations of this study need to be addressed. We had to deal with the absence of strict catchment areas of both ED and GPs on call. Due to health service organisation in Belgium, people can seek help wherever they choose. As the areas are not well defined, numbers of GP contacts and contacts at the ED do not necessarily cover all patients seeking urgent care and are not necessarily adding up to one hundred per cent of medical consumption. For this reason we have to be careful in our conclusions concerning socio-economic minority groups at the ED, which may have come from the broader catchment areas, and this may lead to over interpretation of this particular group of patients.

We lacked information on diagnosis in approximately half of the GP cases, due to under-registration of these data in Charleroi and Brussels. Nevertheless, we compared our results to other studies and found very similar results in studies in France, Sweden and The Netherlands, therefore we presume satisfying validity of our data. [21-24]

We managed to obtain information on the income of patients in 50.3% of all cases. Including this variable in the binary logistic analysis leads to a less valid model and was therefore omitted. Because we assume that income and other socio-economic factors influence the patient's choice, it was rather unfortunate to have missing data on this item. In former research socio-economic factors have variable influence on choice behaviour, therefore it would have been very interesting to make conclusions about those items in this setting.[25-27] Future research using 'Geographic Information Systems (GIS)' describing socio-economic factors regionally, might elicit its role on choice behaviour.[28-30]

As severity of the medical problem was not included in the questionnaire, we have to take into account that we may not compare the reasons for seeking help at either one service in a valid way, for severity is a confounding factor. We may not conclude on 'appropriate' or 'inappropriate' use based on these findings, neither was this the scope of this study. We missed data on income. For this reason we intend to perform a new study in a qualitative design, in which it is more feasible to assess income and other socio-economic determinants.

Men are more likely to seek help at the ED, often with ICPC codes relating to minor trauma (OR for male patients seeking help for 'minor trauma' versus female patients: OR= 1.329, 95% CI: 1.010 – 1.749). This confirms results of former research in which specifically young men rather seek help at the ED for minor trauma, suggesting that they appear to link their problem to technical examinations.[31]The most frequently mentioned reasons for choosing the ED are similar to findings in a questionnaire study in the Netherlands.[32] As the results of our study are similar, this indicates that this group is relatively free to choose, whether the GP appears to take the role of a gatekeeper or not.

People who used the ED during the past 12 months tend to return to the ED, whereas people who being registered with a GP, tend to seek help in primary care during out of hours. This confirms that people tend to choose the service which they are already acquainted with, as we have shown in a questionnaire study in the general public.[2, 31, 33-35] On the other hand, as we did not ask about the seriousness of the medical problem, another possible explanation could be that patients, who have visited the ED during the past 12 months, have more serious illnesses than other patients or suffer complications of former and/or chronic illnesses. Until now literature describes a 'returning behaviour' to the service patients know, further research has to take the seriousness of the complaint and patients history into account, to clarify its role in the choice behaviour of the patient.

Patients of foreign nationality presented themselves significantly more at the ED, hence bypassing the GP services. Cultural identity has been suggested as one indicator for different behaviour in the health system.[26] As those patients are acquainted to the healthcare system of their country of origin, they have less knowledge about the accessibility and organisation of out-of-hours services in other countries. Therefore, one can imagine that the GP services are, due to their structure, not accessible enough, as information of the services is not communicated in their language. Different types of organisation exist; in some regions GPs organize out of hours services at GP cooperatives, whereas other regions switch every weekend between GPs on call in a certain sequence. Perhaps the GPs, who work from their private practice, are sometimes difficult to locate or harder to reach.

Although financial aspects are not significant in our model, for this part of the community they might be more critical. The fee for service at the GP service and direct payment, might act as a patient selector.[36] This finding needs further investigation to explore reasons for this phenomenon. A qualitative approach can be used to explore how this specific population can be reached and how health care can be organised to minimize disparities.

In our setting 39.7% of all enrolled patients used the GP out of hours care and 60.3% the ED. Of all ED users 63.8% went to the ED without any referral. These figures might be subject to the health system. In other West European countries e.g. the Netherlands, where GPs are gate keepers and patients cannot easily attend a medical service without referral or telephone contact this percentage of direct ED referral is 43%.[32, 37] Compared to research similar to ours, in The Netherlands and the UK, the number of ED

visitors is much higher in Belgium than it is elsewhere.[32] Another explanation for this phenomenon could be the lack of any kind of telephone triage as it exists in other countries. In Belgium patients not only have free choice of medical services, but also free access. There is no need for any telephone contact before entering care facilities. This excludes steering choice behaviour by telephone triage in the current health care system in Belgium.[38, 39] Implementation of triage systems in the future and research as to whether this might be a solution to redirect patients is therefore necessary.

One critical determinant is whether the patient has medical insurance.[27] Also in our study, people who do not have any medical insurance tend to go to the ED rather than to the GP. This finding could be explained by the current situation in this country where patients at the ED do not pay immediately and receive an invoice later on, while patients who go and see the GP need to pay directly. Studying socio-economic influences requires specific research, focusing on those regions where different minority groups are found. More research needs to be done concerning the influence of socio-economic factors as a driver for patient choice.

CONCLUSION

In this, and in another study made by our group, we found that, in general, patients prefer the type of out-of-hours service that they know and have experienced.[31] A large proportion of patients at the ED do report having a GP, thus encouraging people to have a GP would probably not directly influence behaviour during out of hours. Two populations that distinctively seek help at the ED for minor medical problems are people of foreign origin and young men suffering minor trauma. Therefore, taking care of minorities in society by informing them about the possibilities of medical services could help to reallocate patients to the appropriate service. Also informing young people about the needlessness of technical examinations for most injuries and the availability of GPs during out-of-hours, could redirect patient streams, without diminishing quality of care. More research needs to be done concerning the influence of socio-economic factors as a driver for patient choice.

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ACKNOWLEDGEMENTS

We thank all researchers who had a major contribution in this study, especially Catherine Gourbin MD, Didier du Boullay, MD, Reginald Moreels, MD, Laurence Kohn and Mark Leys.

We especially address special acknowledgements to the directors and staff of all participating hospitals and General Practitioner associations: Hôpital Civil de Charleroi, Hôpital Saint-Jean (Brussels), Hôpital Saint-Pierre (Brussels), A.Z. Sint-Lucas (Ghent), A.Z. Maria Middelares (Ghent), Universitair Ziekenhuis Gent (Ghent), A.Z. Jan Palfijn (Ghent), A.Z. Sint Erasmus (Antwerp), A.Z. Stuivenberg (Antwerp), Allo Santé (Charleroi), SOS Médecins (Brussels), Centrale Huisartsenwachtdienst van de region Gent, Centrale Huisartsenwachtdienst van de regio Antwerpen, Huisartsenwachtpost Deurne-Borgerhout (Antwerp).

Huisartsenwacht dienst		Locatie		N° enquêteur		N° Vragenlijst		

Contactgegevens patiënt-huisarts van wacht

CONTACT

Geslacht : 1❒ M 2❒ V

Geboortedatum : ...../...../..... **OF** **Leeftijd** ..... jaar

Adres :
Straat:..... **Huisnummer :**.....

Postcode :..... **Gemeente :**.....

Telefoon : /

Reden van consultatie?
.....
.....
.....

Datum en uur van de consultatie : datum :...../...../2005 **uur :**.....

Bereid tot deelname aan studie ?
1❒ Ja ⟶ ga verder met vragenlijst
2❒ Neen ⟶ vul onderstaande gegevens in i.v.m. al of niet verwijzing naar ziekenhuis en diagnose, en stop bevraging

Telefonische opvolging 1 : geen antwoord – 2 : bezet - 3 : afwezig - 4 : wenst niet deel te nemen - 5 : OK

1ste oproep **datum :** ..... **uur :** ..... **resultaat :**1❒ 2❒ 3❒ 4❒ 5❒
2de oproep **datum :** ..... **uur :** ..... **resultaat :** 1❒ 2❒ 3❒ 4❒ 5❒
3de oproep **datum :** ..... **uur :** ..... **resultaat :** 1❒ 2❒ 3❒ 4❒ 5❒

Huisbezoek noodzakelijk ? 1❒ Ja 2❒ Neen

Enkel indien de patiënt of iemand uit zijn omgeving niet telefonisch of thuis konden worden gecontacteerd
VRAGEN AAN DE ARTS DIE DE PATIËNTEN ONDERZOCHT

Werd de patiënt naar het ziekenhuis doorverwezen? 1❒ Ja 2❒ Neen

Wat was de waarschijnlijke of voorlopige diagnose op het ogenblik van de consultatie?
.....
.....
.....

VRAGENLIJST VOOR DE PATIËNT

CONSULTATIE

1. Hoe heeft u het oproepnummer van de huisartsenwacht gevonden?

1☐ via de huisarts of zijn automatisch antwoordapparaat
2☐ via de 1207
3☐ via de krant of een ander blad
4☐ telefonisch via de spoedgevallen
5☐ vroeger reeds getelefoneerd
6☐ andere (verklaar nader aub) .....

2. Heeft u een huisarts?

1☐ Ja
2☐ Neen

3. Wie heeft de beslissing genomen om de huisarts met wachtdienst te contacteren? *één enkel antwoord mogelijk*

1☐ de patiënt zelf
2☐ een familielid
3☐ een andere begeleider
4☐ een buur
5☐ een kennis
6☐ andere (verklaar nader aub) .....

4. Voor welk probleem heeft u de huisarts van wacht gecontacteerd?

.....
.....
.....
.....
.....

FORFAIT

5. Betaalt de patiënt die zich aanmeldt op de dienst spoedgevallen volgens u voor de consultatie en bijkomende onderzoeken die gedeeltelijk door het ziekenfonds terugbetaald worden ?

1❒ Ja
2❒ Neen
9❒ Weet het niet

6. Betaalt de patiënt die zich aanmeldt op de dienst spoedgevallen volgens u naast deze kosten in sommige gevallen ook een forfait (vaste som) die niet door het ziekenfonds terugbetaald wordt ?

1❒ Ja
2❒ Neen → **Ga naar vraag 10**
9❒ Weet het niet → **Ga naar vraag 10**

7. Denkt u dat dit forfait altijd wordt aangerekend door het ziekenhuis ?

1❒ Ja
2❒ Neen → **Ga naar vraag 9**
9❒ Weet het niet → **Ga naar vraag 9**

Indien de patiënt « neen » heeft geantwoord

8. Onder welke omstandigheden wordt dit bedrag volgens u niet aangerekend ?
meerdere antwoorden zijn mogelijk – spontane antwoorden

1❒ Niet alle ziekenhuizen rekenen dit forfait aan
1❒ Binnengebracht door een ziekenwagen
1❒ Binnengebracht door de politie
1❒ Patiënt werd verwezen door een arts (telefonisch of met verwijsbrief)
1❒ De consultatie op de dienst spoedgevallen wordt gevolgd door een hospitalisatie
1❒ Andere (verklaar u nader aub): .....
1❒ Weet het niet

9. Op hoeveel schat u dit bedrag? *één enkel antwoord mogelijk*

1❒ 0 - 10€
2❒ 10 - 20€
3❒ 20 - 50€
4❒ meer dan 50€
9❒ weet het niet

10. Heeft u, voor het huidige probleem, overwogen om rechtstreeks naar de spoedgevallen te gaan?

1☐ Ja
2☐ Neen → Ga naar vraag 12

Indien de patiënt « ja » heeft geantwoord

11. Waarom heeft u besloten om eerst de huisarts van wacht te contacteren?

.....

.....

.....

VOOR ALLE PATIENTEN

12. Heeft u in de laatste 12 maanden een spoedgevallendienst geconsulteerd?

1☐ Ja
2☐ Neen → Ga naar vraag 16

Indien de patiënt « ja » heeft geantwoord

13. Hoeveel maal? .....

14. **De laatste keer** dat u de spoedgevallen consulteerde, heeft u dan een forfait moeten betalen?

1☐ Ja → Ga naar vraag 16
2☐ Neen
9☐ Weet het niet → Ga naar vraag 16

Indien de patiënt geen forfait heeft betaald
Eén enkel antwoord mogelijk

15. Door wie werd u dan naar de spoedgevallendienst gezonden ?

1☐ eigen huisarts
2☐ huisarts van wacht
3☐ specialist
4☐ ziekenwagen
5☐ politie
6☐ op eigen initiatief
7☐ Andere (verklaar nader aub).....

16. Heeft u in de laatste 12 maanden, om dit forfait te vermijden, de spoedgevallendienst laattijdig of uiteindelijk niet geraadpleegd ?

1☐ Ja
2☐ Neen → Ga naar vraag 20
9☐ Kent het forfait niet → Ga naar vraag 20

Indien de patiënt « ja » heeft geantwoord

17. Heeft u in dit geval een andere arts geraadpleegd?

1☐ Ja
2☐ Neen → Ga naar vraag 20

Indien de patiënt « ja » heeft geantwoord

18. Welke arts heeft u dan geraadpleegd?
Eén enkel antwoord mogelijk

1☐ eigen huisarts
2☐ huisarts van wacht
3☐ specialist

19. Heeft de eigen huisarts, huisarts van wacht of de specialist u dan naar de spoedgevallen verwezen ?

1☐ Ja
2☐ Neen

VOOR ALLE PATIENTEN

20. Denkt u dat in bepaalde omstandigheden, om het gebruik van de dienst spoedgevallen te verminderen, het een goed idee is om een forfait aan te rekenen ?

1☐ Ja
2☐ Neen
9☐ Weet het niet

Waarom?.....
.....
.....

21. Vond de arts het **<u>in deze situatie</u>** noodzakelijk u naar spoedgevallen door te verwijzen voor verder advies of onderzoeken?

1❒ Ja
2❒ Neen

22. Heeft de arts een opname in het ziekenhuis aangevraagd?

1❒ Ja
2❒ Neen

23. Wat was de waarschijnlijke of voorlopige diagnose op het ogenblik van de consultatie?

.....
.....
.....

GEGEVENS VAN DE PATIËNT

24. Geboortedatum : ..../...../.....

25. Nationaliteit bij de geboorte : .....

26. Voertaal thuis : .....

27. Familiale situatie:

1❒ Gehuwd
2❒ Samenwonend (met of zonder kinderen)
3❒ Alleenwonend
4❒ Alleenstaande met minderjarige kinderen
5❒ Leeft met perso(o)n(en) ten laste
6❒ rustoord of rust- en verzorgingstehuis
7❒ Andere (verklaar nader aub) .....

28. Aantal personen in het gezin <u>ondervraagde inbegrepen</u> : .....

CHAPTER 3

USE OF OUT-OF-HOURS SERVICES: THE PATIENT'S POINT OF VIEW ON CO-PAYMENT. A MIXED METHODS APPROACH.

Hilde Philips

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Submitted Health Expectations

ABSTRACT

Introduction

In many countries out of hours care is offered by different health care services. General practitioners (GP) often tend to offer services in slight competition with emergency departments (ED). Patients' behaviour depends on a number of factors. In this study, we highlight the knowledge and ideas of patients concerning the co-payment system at the ED and in relation to other factors. In Belgium GPs are paid in a 'fee-for-service' system. Direct payment is most common. At the ED patients do not have to pay immediately, unless in hospitals where the co-payment system is implemented.

Methods

The study was performed in 2 large cities in Belgium. We used a mixed methods design, combining quantitative and qualitative research. During two weekends in January 2005, all patients using the emergency department or the general practitioners out of hours service, were invited for an interview with a structured questionnaire. A stratified random sample of patients participated in a semi-structured interview. Both methods add complementary data to answer the research questions.

Results

Most mentioned reasons for seeking help at the ED are: accessibility (15.0%), proximity (6.4%) and competence of the staff (5.6%). Reasons for choosing the GP are: GP is easy to find, minor medical problem or anxiety and confidence in the GP. The odds of not knowing the co-payment system are significantly higher in patients visiting the ED (OR 1.783; 95% CI: 1.493-2.129). Participants do not mention the payment system spontaneously. Mostly GP users recognize the problem of ED overuse. They suggested especially providing clear information about the tasks of the different services and about the payment system, to reduce ED overuse.

Conclusion and discussion

When intending to realise a shift of patient contacts for minor medical problems from ED to GP services, aiming at just one measure is no option. Implementing co-payment seems to be of little value but can cause adverse effects and might lead to inequity of care. Information campaigns aiming to address the entire population, through television stations or flyers, can clarify the role of each player in out-of-hours care.

USE OF OUT-OF-HOURS SERVICES: THE PATIENT'S POINT OF VIEW ON CO-PAYMENT. A MIXED METHODS APPROACH.

INTRODUCTION

Out of hours care is essential in a modern health system. In fact, regular services only cover about 60 hours in a week. More than half of the time has to be covered by out of hours services. Out of hours care aids the quality of health care by assuring continuity of care.

In many countries, out of hours care is offered by primary, secondary and even tertiary services. General practitioners (GPs) tend to offer services in slight competition with secondary and tertiary services in emergency departments (ED).[1]

In most European countries the use of ED for minor medical problems leads to an overuse of these services. The risk of inefficient use of personnel and overcrowding is of concern. It might threaten timely treatment of serious medical conditions at the ED.[2, 3] Inefficient use of resources complements this picture.[4, 5]

Since the 1990s, policy makers and physicians have tried to redirect patient flows of minor medical problems to primary care.[6-8] Making primary health care more accessible during out-of-hours by implementing general practitioner cooperatives (GPC) is one of the measures that may show effective over time.[9] However, the presence of a new service in primary care may not alleviate the demand in secondary care.[10] This can be explained by the fact that the presence of any (new) service probably also creates the need for it.[11, 12] Supply seems to induce demand.

Patient behaviour depends on a number of factors: previous experience with a service, communication skills of attending physicians, waiting times and accessibility of a service.[1, 13, 14] Imposing financial incentives on patients can be used to redirect patient fluxes.[15] The aim is to promote more efficient use of out-of-hours services. Different possibilities of 'direct cost-sharing' exist: co-payment (the user pays a fixed fee per item or service), co-insurance (the user pays a fixed portion of the total cost, the insurer pays the remaining proportion) and deductible (the user pays a fixed quantity of the costs, the insurer pays the remainder). In the discussion of implementing cost-sharing, different aspects have to be considered: efficiency aspects, potential health effects and equity effects.[16]

When consumers of care are held responsible, the question arises as to whether they are able to asses or estimate the degree of urgency of their medical problem and choose the appropriate care? [17, 18] Inappropriate patient delay in seeking medical care for serious conditions, because financial implications are unclear to them, can be introduced. Especially deprived patient groups can be disadvantaged.[15, 19, 20] The rationale for cost sharing is often based on the moral hazard argument, which states that individuals may overuse care if they do not share in its costs.[21] On the other side of the spectrum, the risk of overuse exists for the wealthy.[8, 22, 23]

This study was performed to clarify the role of co-payment in the decision process of patients. We focused on the following questions: 1) Are patients aware of co-payment systems? 2) Do they consider co-payment a useful tool to diminish inappropriate use of services? 3) Which measures do patients suggest that could work to diminish overuse of ED for minor medical problems? This way, we highlight the knowledge and ideas of patients concerning the co-payment system at the ED and in relation to other factors.

CONTEXT

This study was performed in an open access health care system, with pay for service. People have free access to both general practice and to the emergency department. In contrast to the ED, during weekends and public holidays, out of hours care is arranged by regional groups of general practitioners.

Any service can be attended without previous contact by telephone or referral.

People have access to the ED without a referral. They can also be referred by the GP on call or another physician and can also be brought in by ambulance or other emergency medical services.[24]

When consulting the GP on call, people pay directly. When visiting the ED, an invoice is sent later on. Some hospitals implement a supplementary co-payment at the ED; patients have to pay a fixed amount when using the ED without referral by a physician. Hospitals are free to choose whether or not to charge this fee.[25]

METHODS

The study was performed in Belgium in 2 large cities of Ghent and Antwerp (respectively approximately 250.000 and 500.000 inhabitants). We used a mixed methods design, combining quantitative and qualitative research. Both methods add complementary data to answer the research questions.

QUANTITATIVE PART

SUBJECTS

During two weekends in January 2005, (24 hours during each weekend: Saturday 12 am until Sunday 12 am), we invited all patients (or their escorts) who came to the ED and the GP out-of-hours service, to participate for the quantitative part.

INSTRUMENT

Participants were interviewed by trained medical students using a structured and previously piloted questionnaire (6 domains and 39 items). The interviews took place on the spot, before people were seen by a physician. We collected sex, age, reason for encounter (RFE), date and hour of consultation of all patients that used either service, whether they participated or not. No further questions were asked when participation was refused. People who agreed were enrolled for the complete interview, including following items: having a family physician, who decided and why a particular service was chosen, the nature of the medical problem, knowledge about the payment system and the use and amount of co-payment, having used one of the services in the past 12 months and what in their opinion could diminish the (inappropriate) use of ED. In the last section socio-demographic data was gathered: nationality, language usually spoken at home, marital status, level of education, employment, income and medical insurance. Finally, the attending physician was asked for the diagnosis and whether subsequent hospitalisation had been necessary.

ANALYSIS

Data gathering and statistical analysis were performed using respectively SPSS 14.0 and SPSS 17.0. We used chi²-tests when comparing 2 or more nominal variables. We did not include data of non-participants in the analysis.

QUALITATIVE PART

SUBJECTS

For the qualitative part we randomly asked patients or attendants who agreed to participate for the quantitative interview, whether they also wanted to take part in a semi-structured interview. We selected a purposeful sample, based on an equal distribution of: GP and ED visitors, male/female, child/adult/aged, socio-economic characteristics and severity of the problem.

GP service users were visited in the week following the consultation. An appointment was made and a trained interviewer (researcher) visited the patients at home and used a semi-structured questionnaire in a face to face interview which took between 30 and 45 minutes. ED visitors were, after they gave permission, interviewed on the spot.

INSTRUMENT

We used a 6 item questionnaire which was piloted in Antwerp at the ED and at the GP out-of-hours service. The sub questions were explicitly used when participants did not mention these items spontaneously.

Item	Question	Sub questions
Item 1	Socio-demographic data	Age Profession Nationality Language Marital status Number of children at home Medical insurance
Item 2	Reason for encounter	Medical complaint How long did the problem exist? Why seek help now?
Item 3	Knowledge about the used service	How did you know about the service? Did you ever use it before? Who decided?
Item 4	Reason for choosing that service	Accessibility Medical factors Financial factors Organisational factors Advice of peers
Item 5	Experience	Former use of this service? What was the experience? How often did you use this service? Did you consider seeking help at the other service?
Item 6	Payment system	What do you know about the payment system? Ever paid a co-payment amount? Would co-payment reduce the number of ED visitors? What would be efficient to diminish unnecessary ED use?

Table 1: semi-structured questionnaire used in the qualitative part of the study.

ANALYSIS

With the participant's permission, the conversation was recorded on minidisc. The interview was conducted with attention to the non-verbal communication of the participants. Interesting data was subsequently recorded by the interviewer as field notes. Interviews were transcribed verbatim and subsequently independently encoded by two researchers (PH and RR). After consensus in coding, categories were allocated. They

analysed the data by constant comparison, using a content analysis approach. Most striking citations per question were highlighted. Since with the last of 21 interviews, no new ideas or labels were added, we concluded data saturation was achieved.[26-28]

RESULTS

CHARACTERISTICS OF THE RESPONDENTS

QUANTITATIVE ANALYSIS

Out of 985 out-of-hours service users, 198 (20.1%) refused participation, with 787 cases remaining in the analysis.

Total		N = 787
Service	ED GP	450 337
Sex	Male Female Not registered	405 380 2
Age patient	Mean (SD) Range (Min – max) Missing	35.42 (24.70) 0 – 93 35
Employment	Yes No Missing	403 354 30
Health insurance	Yes No Missing	750 19 18
Nationality	Belgian African Sub-Saharan North African Turkish Other Missing	677 8 24 19 56 3
Language usually spoken at home	Dutch French Other European Other African Other Missing	663 20 52 25 23 4
Marital status	Married or living with partner Single Single with dependents Others (home for the retired...) Missing	507 121 55 89 15
Family Doctor	Yes No Missing	709 75 3
Knowledge about different payment systems at the GP service and at the ED	Yes No Missing	565 59 163
Knowledge about co-payment	Yes No Missing	305 476 6

Table 2: Socio-demographic data of the participants of the quantitative part

The medical reasons for seeking help at either service are represented in table 3. At the GP services, the most common reasons are found in ICPC2 chapters A (general and unspecified), R (respiratory) and D (digestive). At the ED the 3 most common ICPC2 chapters are: L (musculoskeletal), A (general and unspecified) and D (digestive).

ICPC 2 chapter 'reason for encounter' RFE	GP service (%)		ED (%)		Total
A: General and unspecified	96	(28.5)	83	(18.4)	179
B: Blood, blood forming organs	1	(0.3)	0	(0)	1
D: Digestive	68	(20.2)	62	(13.8)	130
F: Eye	3	(0.9)	13	(2.9)	16
H: Ear	9	(2.7)	5	(1.1)	14
K: Circulatory	6	(1.8)	8	(1.8)	14
L: Musculoskeletal	33	(9.8)	119	(26.4)	152
N: Neurological	19	(5.6)	26	(5.8)	45
P: Psychological	6	(1.8)	17	(3.8)	23
R: Respiratory	72	(21.4)	47	(10.4)	119
S: Skin	17	(5.0)	58	(12.9)	75
U: Urological	2	(0.6)	6	(1.3)	8
X: Female Genital	0	(0)	3	(0.7)	3
Y: Male Genital	2	(0.6)	2	(0.4)	4
Z: Social Problems	1	(0.3)	0	(0)	1
Missing	2	(0.6)	1	(0.2)	3
Total	337		450		787

Table 3: Medical reasons for seeking help at the GP service and at the ED (quantitative study)

QUALITATIVE ANALYSIS

We recruited a purposeful sample of 21 patients: 12 at the ED and 9 at the GP services. The characteristics of the patients are described in table 4.

Total		N = 21
Service	ED GP	12 9
Sex	Male Female	8 13
Mean age patient (Y)	32.3 (min 1 – max 71)	
Mean age interviewee (Y)	41.2 (min 19-max 71)	
Profession	employee self employed housewife student retired unemployed	11 1 3 1 2 3
Additional insurance at the mandatory health insurance	insurance for hospital care extra private insurance	13 1
Nationality	Belgian	21
Language usually spoken at home	Dutch French/Dutch Moroccan language	18 2 1
Marital status	married or living with partner divorced living at home with parents single missing data	15 3 1 1 1
Number of children at home	no children 1 child 2 children 3 children or more missing data	7 6 3 3 2

Table 4: characteristics of the participants.

There were no large differences in the medical reasons for presenting at the ED or the GP service. At the ED most reasons were minor trauma (ICPC2 chapters L and S). Other problems were: coughing (R), stomach pains/vomiting (D) and psychiatric problems (P). At the GP people presented with minor trauma (L and S), fever (A), coughing (R) and stomach pains/vomiting (D). These reasons are similar to those found in the qualitative part. (Table 3)

DID PATIENTS KNOW ABOUT THE PAYMENT SYSTEM AND WERE THEY AWARE OF CO-PAYMENT SYSTEMS AT THE ED?

QUANTITATIVE STUDY

In total 565 (71.8%) respondents answered they knew the payment system. The question was responded positive more frequently in the GP service than in the ED. (GP : 248/337, 73.6%; ED : 317/450, 70.4%, $p > 0.05$) The question of their knowledge concerning the co-payment system was answered positively in 305 cases (38.8%). (GP : 175/337, 51.9%; ED : 130/450, 28.9%, $p < 0.01$) Few respondents correctly estimated the amount of co-payment. (GP: 55/337, 16.3%; ED: 32/450, 7.1%; $p < 0.01$) The difference between the knowledge of the co-payment and the amount that is charged is significant between the GP and the ED users.

	TOTAL N = 787	**GP (N = 337)**	**ED (N = 450)**
'I know the payment system'	565 (71.8%)	248 (73.6%)	317 (70.4%)
'I know the co-payment system'	305 (38.8%)	175 (51.9%)	130 (28.9%)
Knows the correct amount	305 (38.8%)	55 (16.3%)	32 (7.1%)

Table 5: knowledge about the payment system, the co-payment and the amount in both patient groups.

QUALITATIVE STUDY

The participants of the interviews were asked 3 questions: 'do you know the co-payment system? When is the co-payment charged? And what is the amount?'. Out of 21 participants 9 people did not know anything about the payment system at the ED (6 GP users, 3 ED users). 9 participants mentioned being aware of the co-payment system at the ED (3 GP users, 6 ED users), but none of them knew the amount that had to be paid.

WHICH FACTORS INFLUENCED THE CHOICE OF A PARTICULAR OUT-OF-HOURS SERVICE?

QUANTITATIVE STUDY

In the questionnaire 9 questions were included to assess perception and former experience at the ED. The 3 most mentioned reasons for choosing the ED are: accessibility, proximity and competence of the staff. (table 6)

Reason for choosing ED	Absolute number (%) N = 450
Accessibility	68 (15)
Proximity	29 (6.44)
Competence of the staff	25 (5.55)
Does not know GP on call	18 (4.00)
GP not available	17 (3.77)
Don't want to disturb GP on call	10 (2.22)
No need for appointment	6 (1.33)
24/24	18 (0.04)
No immediate payment	0

Table 6: Reasons for choosing the ED

QUALITATIVE STUDY

All the different factors that steer help-seeking behaviour are classified in four categories: accessibility of the service, the medical problem itself, the waiting time between the first contact and the moment of seeing a physician, professionalism and availability of technical examinations.

Reasons for seeking help at the ED rather than at the GP service are summarized in table 7.

Category	Specific reason (number of times mentioned)
Accessibility	Our own GP is not available A (known) specialist doctor is available (e.g. paediatrician) ED is easily accessible Not knowing that there is a GP on call
Medical problem	I was worried it was neurological Pain became unbearable Need for X-rays GP referred me to the ED School director sent them to the ED
Waiting time	Waiting time is acceptable
Professionalism/technical equipment	Competence of the staff/quality of care Availability of X-rays Good reputation of hospital Bad experience with GP on call

Table 7: Reasons for preferring ED rather than GP in the qualitative study.

Some of the reasons that were mentioned do not fit any category. As one patient stresses that he has the right to choose which service he uses.

> *'I did not hesitate and went to the ED, even if it did not seem necessary afterwards... I decide and no-one else.'*

Reasons why people prefer to seek help at the GP service instead of the ED are illustrated in table 8.

Category	Specific reason (number of times mentioned)
Accessibility	Always somebody available Short distance Possibility of home visits for elderly Easy to find Our own GP was not available
Medical problem	A known medical problem (chronic disease) Choice depends on severity of the problem Minor medical problem Anxiety
Waiting time	Waiting time is acceptable Waiting time is only important in case of severe pain
Professionalism/technical equipment	GP can decide whether there is a need for X-rays Confidence in the GP Good experience with GP on call Competence of the staff 'You can divulge more to a GP'

Table 8: Reasons for preferring GP rather than ED in the qualitative study.

Home visits and availability are mentioned as important characteristics of GP out-of-hours care. Severity, anxiety and acquaintance with a certain medical problem help in the decision process. In general these patients are confident in the competence of the GP. Some patients are also convinced of the role of the GP as a 'gatekeeper' in out-of-hours care.

> *'You can tell a GP more about your problem; he has a broader insight into the problem'*

> *'I always go to the GP on call. If necessary he can refer us to the ED'*

Waiting time is a factor that is mentioned in a ambiguous way concerning the ED; both opinions are mentioned: 'you get help quickly at the ED' and 'you have to wait a long time at the ED'.

In general the GP out-of-hours services are experienced as having shorter waiting times than the ED does.

DO PATIENTS CONSIDER CO-PAYMENT A USEFUL TOOL TO DIMINISH INAPPROPRIATE USE OF SERVICES?

QUANTITATIVE STUDY

On the question 'did you ever postpone a visit to the ED because of the co-payment system?' 4 participants (0.5%) answered positively. (GP: 2 and ED: 2)

The odds of not knowing about the co-payment system were significantly higher in people visiting the ED than in people who used the GP service. (OR 1.783; 95%CI: 1.493 – 2.129)

QUALITATIVE STUDY

People did not mention the payment or co-payment system spontaneously when reflecting on what influenced their choice. We only received reactions concerning this when the interviewer specifically asked about their knowledge concerning the payment system and whether or not this was of any influence in their choice. None of them thought the payment system had an influence on their decision.

> *'The payment was of no influence on my decision. When I think my illness is serious, not a temperature of 38°C, but really serious, you must go to the ED.'*

On the other hand people were concerned that for 'other' people, a co-payment system could be a problem. Quotes were only made in the third person, expressing that co-payment would not be a problem for themselves but perhaps for other patients, minority groups or needy people.

> *'No, that would not change anything for me, but I have private insurance. I can imagine for other people with low budgets ... that could be different...'*

> *'My sister once had lower back pain. She wanted to go to the ED, but I told her about the co-payment and she did not go...'*

When we asked them their opinion about the overuse of the ED and alternatives to diminish this, a minority of the respondents, mostly GP visitors, recognized the problem. They also agreed with taking measures against misuse of these services.

> *'Of course this is necessary! Emergency departments are there for emergencies, the name speaks for itself, doesn't it! You do not have to go there to seek help for a cold or a small wound!'*

> *'Yes, I understand. In the end, the staff at the ED has to take care of the patients who really need help. When they start to take care of people who do not need*

immediate care, in a way that is... taking physicians away from people who really need them. So eh...'

On the other hand, we found respondents at the ED who replied that, in their opinion the ED have got a primary care function and therefore have to attend to small medical problems.

'When something happens during the weekend, I go straight to the ED. During weekdays, I always go to my family physician. The GP on call..., I will never call him again!'

Which measures do patients suggest that could help to diminish overuse of ED for minor medical problems?

Finally, participants were asked if they had any suggestions to diminish the overuse of ED. Most of the suggestions considered were, information for patients about: tasks and possibilities of the different services and the amount of the co-payment and when it is imputed.

'In my opinion, it is quite unpleasant, when entering this ED service; you never know how much you will have to pay afterwards. It is all very dim!'

'Maybe a poster at the entrance of the ED might do, giving notice about the kind of problems you can seek help for at the ED and at the GP services or by giving messages of public interest using commercial spots on television. Perhaps family physicians could play a role in this information-process.'

What kind of medical problems can a GP deal with and when do they most certainly have to seek help at the ED? Respondents feel that the GPs and the staff of the ED have an important role in informing patients. Also public media was mentioned for broadcasting radio or television spots. Leaflets and posters at the GPs praxis and at the ED can help too.

One patient suggested that a general practitioner cooperative would be interesting, because of the easy access and the continuous presence of a GP. This would make primary care as accessible during out-of-hours as the ED.

DISCUSSION

FINDINGS

In this study we used two research methods to obtain more insight into patients awareness of payment systems during out of hours care. We also assessed the influence of co-payment on their choice. We received complementary data using the quantitative and qualitative design of our study and triangulated results. We conclude that patient knowledge is largely incomplete. Furthermore, co-payment seems not to be an important driver for patient choice.

The quantitative part enabled us to assess a 48 hour sample at the GP out-of-hours service as well as at the ED in two urban regions. Our sample of the population is small but valid. We did not find differences in the medical reasons for seeking help at either one service compared to former research in Belgium and other countries.[29-31] 'Musculoskeletal' problems take the lead at the ED, whereas 'general and unspecified' problems are number one at the GP service. Reasons for seeking help at one or another service are similar to what we can find in literature. The most common reasons for using the ED are; accessibility, proximity, and competence of the staff. Other research adds 'the opinion that X-rays will be necessary' and 'the continuous availability of a doctor' as supplementary arguments. Also the reasons for seeking help at the GP services are very comparable to these studies: minor medical problem/choice depends on the severity of the problem, GP can refer if necessary/GP can decide whether there is a need for x-rays, easy to find, confidence/you can divulge more to a GP.[22, 31, 32] Moreover, our results are consistent between the quantitative and qualitative part of our study.

To diminish overcrowding, most studies described measures to change the financial and organisational aspects of EDs.[33] Rarely the patients perceptions, ideas or concerns were studied.[34] Former research elicits their need for information about the different tasks of the services, reorganisation and accessibility of primary care during out-of-hours and triage.[35-39] In our study we highlight the knowledge and ideas of patients about the co-payment system at the ED and in relation to other factors.

Only 11.1% of the participants made a correct estimate of the amount of the co-payment. None of the participants mentioned payment systems spontaneously during the interview. Moreover, when specifically asked about it by the interviewer, they all respond that the payment was of no interest in their choice. On the other hand, however, we can conclude in the quantitative study that the chance of not knowing about the co-payment system is almost twice as high at the ED as at the GP service. Striking citations could also be heard concerning 'other' people (a sister, 'needy people') who might be influenced in their choice because of financial implications. This stresses concerns when implementing financial measurements.

The majority of our respondents agreed with measures to diminish overuse of the ED. Most important seems to be that people should be well-informed, not only about cost-implementations but especially about the task profile of the different out-of-hours services. What kind of medical problems can a GP deal with and when do they most certainly have to seek help at the ED? Respondents feel that the GPs and the staff of the

ED have an important role in informing patients. Also public media was mentioned for broadcasting radio or television spots. Leaflets and posters at the GPs praxis and at the ED can help too.

LIMITATIONS

The limitations of our study are found in a possible selection bias.

Both questionnaires were edited and piloted in Dutch and French. Patients who did not speak either one of these national languages were excluded for the qualitative study. In the quantitative study, 100 participants (12.7%) admitted to speaking another language at home, but possessed enough knowledge of Dutch to be able to participate. Thus, we may not extrapolate our results to people who were, due to language problems, unable to participate. Another reason for bias based on language and nationality could be that minority groups are more likely to refuse a home visit after consulting the GP. It is well known that those people have other choice behaviour and encounter different problems than other people do and often receive a lesser quality of medical care due to language or cultural differences. Also accessibility of health care services is different.[40, 41] On the other hand, ethnic and racial minorities are exposed to different environmental and health risks, which also lead to other choice behaviour.[42] Research, specifically focused on these patient groups is therefore necessary.

Another type of selection bias can be caused by the location in which our study was performed. Our results might have been different in rural regions.[43] The services are organised in very different ways and differ between urban and rural regions. Some areas organise out-of-hours primary care in a GP cooperative, where secretarial offices, car and driver are available. Other regions only use a generic telephone number which leads directly to the GP on call. Analogue research has to be done, when aiming at conclusions for rural regions.

SUGGESTIONS

When intending to shift from ED to GP services for minor medical problems, aiming at just one measure is no option. Implementing co-payment seems to be of little value but can cause adverse effects and might lead to inequity of care. Information campaigns aiming to address the entire population, through television stations or flyers, can clarify the role of each player in out-of-hours care.[44] An important question to keep in mind is, how can we inform minority groups and pursue equity in medical out-of-hours care? More research will be necessary. Qualitative study designs will be most useful in clarifying the problems of this population.

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CHAPTER 4

EXPERIENCE: THE MOST CRITICAL FACTOR IN CHOOSING AFTER-HOURS MEDICAL CARE

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Accepted: Quality and Safety in Health Care

Qual Saf Health Care. 2010 April 29 [Epub ahead of print]

ABSTRACT

Introduction

In many countries a reassessment of after-hours primary care has become necessary. In particular centralised general practitioner cooperatives (GPC) have emerged. In this study we obtain consumers' preferences for after-hours medical care and predict the use of the new GPC.

Method

Based on the Theory of Reasoned Action (TRA), we developed a survey that was used at the Free Newborn and Child Health care Services (FNC-service) in Antwerp. Consumers were asked about their knowledge, experience and perceptions concerning the performance of different medical services.

Results

350 questionnaires were used for analysis. 98.6% of the respondents knew about the existence of the Emergency Department (ED) while the GPC was known by 81,7 % of the respondents. The main reasons for preferring ED over the other services were an easy access, good explanation by the doctor and a late due time of the payment. Respondents preferred the GPC mainly due to an expected shorter waiting time. Experience had a strong positive influence on choosing a particular after-hours medical service.

Conclusion

In our study we assessed consumers' preferences concerning after-hours medical care. The following items are crucial for choosing after-hours care: experience with the services, easy access to the service, explanation by the doctor about the illness and the treatment, and waiting time.

EXPERIENCE IS THE MOST DETERMINING FACTOR IN CHOOSING AFTER-HOURS MEDICAL CARE

INTRODUCTION

An overhaul of after-hours primary care has become necessary in many countries. In future the availability of primary care will decrease due to an overall decreasing number of general practitioners (GPs), feminization of the profession, working part-time and a decrease of young doctors choosing for general practice.[1-7] The overall result is an increasing workload for GPs. The concept of individual or small groups of GPs offering 24 hour care is no longer feasible.

Moreover the increase of the workload of Emergency Departments (ED) is remarkable. Emergency Departments show many characteristics of a primary care service and people visit the ED with problems which can be solved by a general practitioner. Inappropriate use of the ED may distract this service from real medical urgencies.[8-10]

In some countries there is a tendency to centralize after-hours services of general practitioners. The concept of large-scale GP Cooperatives (GPC) is almost uniformly used in the Netherlands[11], Denmark[12, 13], Norway[14] and in the UK[15-17]. Concerns have been raised as to whether large-scale GPC would lead to equally good patient care as the former small scale model.[18] It is of particular interest if there is free access to all the medical services and if the primary care can be easily bypassed. Large-scale GPC, when less appreciated by the patient, could lead to extra transfers of patients from general practice to secondary care alternatives, like the ED.

In Belgium, with a free access to emergency departments and most medical specialties, GPC have emerged. In this article, we analyse consumers' experiences with the available services, the importance of service attributes, their perceived performance and the intention to choose after-hours primary care in an urban area. Furthermore, using the model of the Theory of Reasoned Action (TRA), we make an assessment of preferences of consumers among the available services.[19]

Eliciting consumers' preferences of medical care is difficult, but may be studied using marketing techniques. In particular, the Theory of Reasoned Action (TRA) is well suited to give insights into consumer behaviour.[19-24] Hereby, the decision to adopt a particular kind of behaviour (intention to choose a service) 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).

Using this theory, we identified seven items based on a review of literature and verified them with (1) GP´s, (2) academic researchers and (3) patients; 5 related to the attitude and 2 related to the subjective norm, which steer behavioural intention. (figure 1)[25-28]

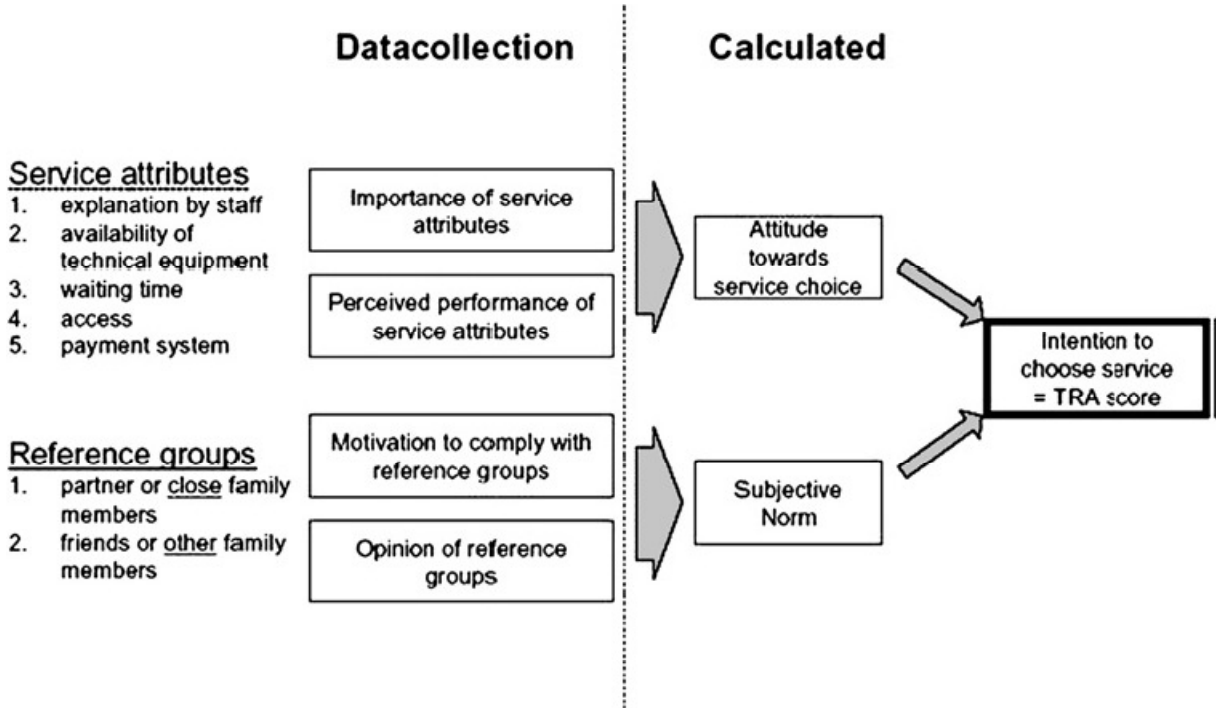

Figure 1: Survey items adapted to the Theory of Reasoned Action by Ajzen and Fishbein.[22]

According to TRA the attitude towards the intention to choose a service, is influenced by the importance of the 5 service attributes and the people's perceived performance of the different medical services concerning these 5 service attributes. The perceived performance depends partially on knowledge and prior usage of the services. On the other hand the opinion of the spouse (or close family members) and of friends (or other family members) will explain the subjective norm. This subjective norm is also influenced

by the motivation to comply with both reference groups.(figure 1) In our model, attitude towards the choice and the subjective norm have a quantifiable impact on the behaviour concerning decisions of consumers seeking medical care. Importance, perceived performance, motivation to comply and opinion of reference groups were scored by the respondents on a 7 point Likert scale.

We predict the service choice based on the "importance" and the "perceived performance" of the service attributes, as well as on "the motivation to comply with the reference groups" and the "opinion of the reference groups" using the formula in figure 2.

$$BI_{Service,r} = A_{Service,r} + SN_{Service,r}$$

Where:

$$A_{Service,r} = \sum_{i=1}^{5} \mathrm{ImpAtt}_{i,r} \mathrm{PerfAtt}_{i,\,\mathrm{service},\,r}$$

and

$$SN_{Service,r} = \sum_{i=1}^{5} \mathrm{OpiRefGroup}_{i,r} \mathrm{ComRefGroup}_{i,\,\mathrm{service},\,r}$$

$BI_{Service,r}$: behavioural Intention to choose service (=TRA score)
$A_{Service,r}$: attitude towards service choice of an individual respondent
$SN_{Service,r}$: subjective norm related to service choice of an individual respondent
r: individual respondents

$ImpAtt_{i,r}$: importance of the attribute
$PerfAtt_{i,Service,r}$: perceived performance of the attribute for a specific service
i: specific attitude, from 1 to 5

$ComRefGroup_{j,Service,r}$: motivation to comply with reference groups
$OpiRefGroup_{j,r}$: opinion of reference groups
j: specific normative belief, from 1 to 2

Calculation of the TRA score out of the *importance* of service attributes and the *perceived performance* of the service attributes (attitude towards service choice) in combination with the *motivation to comply* with reference groups and the *opinion* of reference groups (subjective norm). The number of items for attitudes (5) and the subjective norms (2) reflect their relative contribution to the overall score.

Figure 2: TRA formula to compute behavioural intention

METHOD

CONTEXT AND SAMPLING

The study was performed from February to June 2006 in a large city in Belgium (Antwerp). In this urban area, the country's first large scale GP Cooperative (GPC) started in June 2003; patients may visit the GPC, request this service for a home visit (GPHV), visit the Emergency Department (ED) or a paediatrician in the case of a child involved (PD). Patients have free access to all services.

As in all European cities, large foreign communities exist and in Antwerp the non-Belgian community represents 25.3% of the entire population in 2006. To minimize selection bias, our aim was to cover the broad range of nationalities in this region. We therefore approached all consumers at the Free New born and Child health care service (FNC-service) in Antwerp. In 2005 this service covered 97% of the entire new-born population in the city.[29] Although we only reach a specific part of the population (respondents with young children) we know that these people frequently use out-of-hours care.[30]

INSTRUMENT

Because people may take other decisions in choosing medical services when children are involved, we developed a questionnaire based on two scenarios; the 'adult' scenario ("You have a visit on a Saturday night from a friend or relative who will stay the night at your home. During the night, the visitor wakes up and feels unwell, in which case you decide to look for medical assistance"), and the 'child' scenario ("It is Sunday morning. Your three-year-old child has a fever. You already gave him a medicine to lower the fever. It helped but the fever is coming back. So you decide to look for medical assistance").[27] Respondents were allocated alternating to either one scenario. The questionnaire was developed and piloted in three different languages (Dutch, English and Arabic) of which the consistency was checked by means of backward-translation. The questionnaire was administered between February and June 2006. All visitors of the FNC-service were requested to participate. Trained interviewers offered the parents a questionnaire which had to be filled out on a laptop and if needed, extra assistance was offered.

Firstly, the survey asked in four items for experience (knowledge and usage) with after-hours services. Respondents had to score 'never heard of', 'never used', 'used once' and 'used several times' for each of the different after-hours services offered: ED, GPC, GPHV and PD.

Secondly, the participants were asked to evaluate the importance of the attributes and the motivation to comply with reference groups on a 7 point scale (from '1 unimportant' to '7 'important' at the extremes).

The third part checked the respondents opinion about seven items concerning each type of service included. The answers were rated on a 7-point scale (7 'fully agree' – 6 'rather agree' – 5 'slightly agree' – 4 'neutral/don't know' – 3 'slightly disagree' – 2 'rather disagree' – 1 'fully disagree'), measuring the perceived performance of service attributes

and opinions of the reference groups. In figure 3 an example of this part of the questionnaire is given.

We would like to know your opinion about the following statements. On this page all the statements are related to the **emergency department of the hospital**.
Check the box that corresponds most with your opinion.

	fully agree	rather agree	slightly agree	neutral don't know	slightly disagree	rather disagree	fully disagree
At the emergency department of the hospital the required examinations can be done quickly.	☐	☐	☐	☐	☐	☐	☐
At the emergency department of the hospital the technical equipment (for medical photos, blood tests, etc) is quickly available.	☐	☐	☐	☐	☐	☐	☐
The emergency department of the hospital is easy to reach.	☐	☐	☐	☐	☐	☐	☐
At the emergency department of the hospital I will **not** have to pay immediately.	☐	☐	☐	☐	☐	☐	☐
My partner (or some other relative) will decide to call on the emergency department for this kind of emergency.	☐	☐	☐	☐	☐	☐	☐
My friends and family will not support the use of the emergency department of the hospital.	☐	☐	☐	☐	☐	☐	☐
For an appointment at the emergency department of the hospital I will have to wait long.	☐	☐	☐	☐	☐	☐	☐
The doctor at the emergency department of the hospital will give me a clear explanation about my health problem and the therapy.	☐	☐	☐	☐	☐	☐	☐

Figure 3: Example of the seven items asking for the perceived performance and opinions of the reference groups, in this example concerning the ED.

Finally, the respondents answered on 19 questions concerning their socio-demographic status.

ANALYSIS

Data were analysed using SPSS 13.0. Descriptive statistics of the socio-demographic data of our sample and knowledge and use of the different services were calculated. Means, standard deviations (SD) and 95% confidence intervals (CI) were used for quantitative variables, frequencies and percentages for categorical variables. We applied one-way ANOVA with the adequate post-hoc comparison (Dunnett C for equal error variances and Tukey HSD for non-equal error variances of the service attribute evaluation) to investigate the means of the perceived performance of the services. The Chi-square test for contingency tables was used for comparing proportions. Statistical significance of results is reported as p-values.

Following the TRA approach, we computed the respondents' individual TRA score per service and identified the service choice based on the highest TRA score. This was considered the first choice. The accumulation of the first choices over all respondents

resulted in the preference shares for ED, GPC, GPHV and PD. Similar to market shares it illustrates in percentages the shares of all patients adopting one of the offered services. Moreover, we checked for the significant differences between TRA scores to estimate the strength of the service preference.

In order to explain the reasons for the first choice, a multi-group discriminant analysis was also applied. The dependent variable was the chosen service while experience and socio-demographic items were the explanatory ones. Moreover, a regression analysis estimated what determines the differences between services. The socio-demographics and the experience items as well as the perceived performance of service attributes and the opinions of the reference groups were used to predict the differences between the services.

SOCIO-DEMOGRAPHICS OF THE SAMPLE

Data were collected at 3 FNC-services. Non-participation (49.6% of all visitors) was mainly due to language problems or no interest to participate.

350 questionnaires were used for analysis. The distribution of scenarios was 52.6% 'adult' scenario and 47.4% 'child' scenario (table 1).

	'Adult' scenario		'Child' scenario	
Questionnaire language				
Dutch	165		159	
English	16		6	
Arabic	3		1	
Sum	184		166	
Mean age (SD)	31 y (5.94)		31 y (6.03)	
Marital status				
Married or living together with one child	42.93%		51.81%	
Married or living together with two or more children	45.11%		34.34%	
Single with one child	6.52%		5.42%	
Single with two or more children	2.17%		2.41%	
Other	3.26%		6.02%	
Mean number of family members (SD)	3.60 (1.28)		3.52 (1.12)	
Mean number of children (SD)	1.67 (0.94)		1.65 (1.00)	
Foreign origin	44.02%		44.58%	
Who filled out the questionnaire?				
Mother	74.46%		68.67%	
Father	20.11%		22.89%	
Others	5.43%		8.44%	
Was the questionnaire filled out without assistance?				
Yes	82.07%		88.55%	
Degree of Education	%	Cum%	%	Cum%
No degree or only primary education	5.43	5.43	2.41	2.41
Only lower secondary education	10.33	15.76	10.24	12.65
Higher secondary education	47.83	63.59	41.57	54.22
Higher non-university	17.39	80.98	22.89	77.11
University or post-university	11.41	92.39	17.47	94.58
Don't know	7.61	100	5.42	100
Compulsory health insurance*	95.11%		95.78%	
Total N	350			

Table 1: Sample size, questionnaire language and socio-demographics over both scenarios

* In Belgium almost 99% of the population is covered by compulsory health insurance.[31] Larger cities can differ from national data because of the presence of refugees, asylum seekers and immigrants.

EXPERIENCE

The experience in terms of knowledge ('Never heard of') and use ('Never used', 'Used once' and 'Used several times') did vary across the services. The GPC was not known by 18.3% of the 350 respondents whereas only 1.4% never heard of the Emergency Department. During the past 12 months, 62.3% of the respondents used the ED at least once. Of all respondents, 34.9% already used the GPC at least once. Overall, the lack of experience is higher for the GPC and the GP home visit (GPHV) than for the other two services. The experience with the paediatrician is highest among all services, especially the repeated use. (Figure 4)

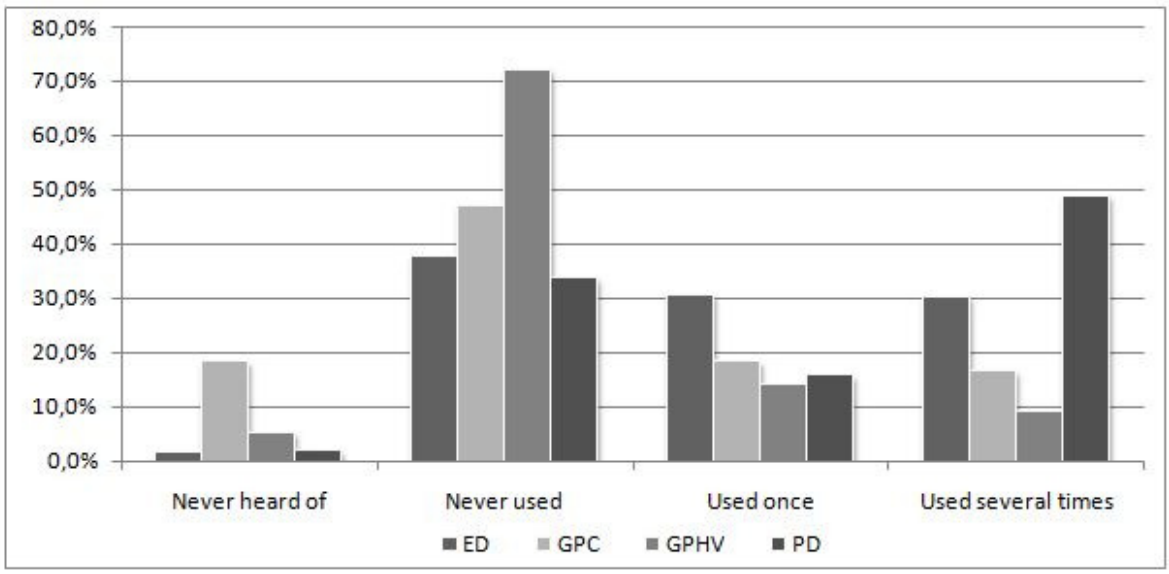

Figure 4: Experience with after-hours services: overall frequencies.

The experience varied significantly in between the 'adult' and the 'child' scenario for the ED (independent samples t-test: p=.002) and GPHV (p=.018) but not for the GPC (p=.216). The PD was only available in the 'child' scenario. Due to the mixed results and different choice options, in the following sections each scenario is analysed is separately and interpretation of the results synthesised.

THEORY OF REASONED ACTION: BEHAVIOURAL INTENTION TO CHOOSE A SERVICE, BASED ON ATTITUDES AND THE SUBJECTIVE NORM.

In both scenarios, people were asked to rate importance and perceived performance for their attitude concerning medical after-hours care of different services on a 7-point scale,

as well as motivation to comply with reference groups and opinion of reference groups. (Fig 1)

Both scenarios:

Importance of attribute / motivation to comply	'adult' scenario (n = 184)		'child' scenario (n = 166)	
	Mean	95% CI	Mean	95% CI
Explanation	6.86	6.76 to 6.96	6.83	6.75 to 6.91
Immediate tech. examination	6.33	6.21 to 6.45	6.28	6.13 to 6.43
Waiting time	6.29	6.15 to 6.44	6.15	5.96 to 6.34
Access	6.23	6.06 to 6.39	6.31	6.15 to 6.47
Payment	4.84	4.53 to 5.14	4.89	4.59 to 5.19
Partner/close family members	5.23	4.93 to 5.52	5.90	5.69 to 6.11
Friends/other family members	4.02	3.71 to 4.33	4.28	3.97 to 4.59

Table 2: importance of service attribute and motivation to comply: mean and 95% CI

'Adult' scenario:

Perceived performance / opinion of reference group	ED		GPC		GPHV	
	Mean	95% CI	Mean	95% CI	Mean	95% CI
Explanation	5.73	5.53 to 5.93	5.18	4.99 to 5.38	5.26	5.06 to 5.46
Immediate tech. examination	5.51	5.33 to 5.68	4.68	4.50 to 4.85	4.54	4.35 to 4.73
Waiting time	3.27	3.00 to 3.54	3.93	3.72 to 4.15	3.60	3.37 to 3.83
Access	5.86	5.66 to 6.13	5.21	5.01 to 5.42	5.01	4.79 to 5.22
Payment	4.85	4.55 to 5.16	3.84	3.60 to 4.08	3.07	2.80 to 3.34
Partner/close family members	4.95	4.69 to 5.22	4.59	4.37 to 4.81	4.30	4.06 to 4.54
Friends/other family members	4.63	4.36 to 4.89	4.50	4.26 to 4.74	4.32	4.09 to 4.56

Table 3: perceived performance and opinion of reference group in 'adult' scenario: mean and 95% CI

Perceived performance / opinion of reference group	Significance of mean differences		Homogeneity of variances	Post-hoc comparisons for mean differences*		
	F-Value	P-Value		ED - GPC	ED-GPHV	GPC-GPHV
Explanation	8.698	.000	.230T	0.55 (.000)	0.47 (.003)	-0.08 (.855)
Immediate tech. examination	32.870	.000	.872 T	0.83 (.000)	0.96 (.000)	0.14 (.543)
Waiting time	7.670	.001	.000 D	-0.67 (.001)	-0.33 (.128)	0.34 (.120)
Access	17.937	.000	.031 D	0.65 (.000)	0.86 (.000)	0.21 (.352)
Payment	7.046	.001	.000 D	1.02 (.000)	1.78 (.000)	0.77 (.000)
Partner/close family members	7.046	.001	.015 D	0.36 (.099)	0.65 (.001)	0.29 (.211)
Friends/other family members	1.497	.225	.004 D	0.13 (.760)	0.30 (.198)	0.18 (.568)

Applied post-hoc test: TTukey HSD, DDunnett C

*P-values in parentheses

Table 4: ANOVA results for perceived performance and motivation to comply in the 'adult' scenario

'Child' scenario:

Perceived performance / opinion of reference group	ED		GPC		GPHV		PD	
	Mean	95% CI	Mean	95% CI	Mean	95% CI	Mean	95% CI
Explanation	5.60	5.38 to 5.81	5.17	4.99 to 5.36	5.49	5.29 to 5.70	6.38	6.23 to 6.53
Access	5.95	5.76 to 6.15	5.11	4.91 to 5.32	5.01	4.78 to 5.25	5.00	4.74 to 5.26
Immediate tech. examination	5.60	5.42 to 5.78	4.38	4.22 to 4.55	4.26	4.05 to 4.46	5.38	5.19 to 5.57
Waiting time	3.41	3.13 to 3.69	4.02	3.82 to 4.22	3.54	3.31 to 3.77	3.37	3.10 to 3.64
Payment	4.77	4.46 to 5.07	3.54	3.31 to 3.78	2.87	2.60 to 3.15	2.75	2.47 to 3.04
Partner/close family members	4.67	4.38 to 4.96	4.33	4.07 to 4.58	4.28	4.03 to 4.54	5.11	4.82 to 5.40
Friends/other family members	4.84	4.57 to 5.12	4.63	4.41 to 4.86	4.64	4.38 to 4.90	5.27	4.98 to 5.56

Table 5: perceived performance and opinion of reference group in 'child' scenario: mean and 95% CI

Perceived performance / opinion of reference group	Significance of mean differences		Homo-geneity of varian-ces	Post-hoc comparisons for mean differences*					
	F-Value	P-Value		ED - GPC	ED - GPHV	ED - PD	GPC - GPHV	GPC - PD	GPHV - PD
Explanation	27.600	.000	.000D	0.42 (.003)	0.10 (.880)	-0.78 (.000)	-0.32 (.095) *	-1.20 (.000)	-0.89 (.000)
Immediate tech. examination	53.433	.000	.041D	1.22 (.000)	1.34 (.000)	0.22 (.345)	0.12 (.787)	-1.00 (.000)	-1.12 (.000)
Waiting time	5.711	.001	.000D	-0.61 (.003)	-0.13 (.880)	0.04 (.995)	0.48 (.036)	0.66 (.001)	0.17 (.761)
Access	16.251	.000	.000D	0.84 (.000)	0.94 (.000)	0.95 (.000)	0.10 (.920)	0.11 (.892)	0.01 (.999)
Payment	43.336	.000	.000D	1.22 (.000)	1.89 (.000)	2.01 (.000)	0.67 (.004)	0.79 (.000)	0.12 (.930)
Partner/close family members	7.675	.000	.004D	0.34 (.295)	0.39 (1.99)	-0.44 (.111)	0.04 (.996)	-0.78 (.000)	-0.83 (.000)
Friends/other family members	4.998	.002	.000D	0.21 (.682)	0.20 (.701)	-0.43 (.109)	-0.01 (.999)	-0.64 (.004)	-0.63 (.005)

Applied post-hoc test: TTukey HSD, DDunnett C

*P-values in parentheses

Table 6: ANOVA results for perceived performance and motivation to comply in the 'child' scenario

IMPORTANCE OF SERVICE ATTRIBUTES

The results are similar for both the 'adult' and the 'child' scenario. The most important factor for assessing a service is 'the explanation given by the doctor about the disease and its treatment'. The variables 'technical examination', 'waiting time' and 'access to the service' can be grouped as second most important since the difference in their average importance rating is not significant (mean score between 6.23 and 6.33 for the adult scenario and between 6.15 and 6.31 for the child scenario). The least important factor is 'immediate payment or payment afterwards'. (Table 2)

PERCEIVED PERFORMANCE OF SERVICE ATTRIBUTES

Both scenarios

In general the ED is more appreciated than the GPC in terms of 'explanation', 'access', 'immediate technical examination' and 'payment'. On the other hand people perceive the GPC better considering 'waiting time'. The GPC is considered better than the paediatrician and the home visit in 'payment' and 'waiting time'. Consumers expect better explanation during a consultation at the ED. Also the paediatrician is expected to give better explanation. Both services are also superior to GPC and GPHV in a prompt examination due to the availability of technical equipment.

'Adult' scenario

The attributes 'access' to the service and 'explanation' by the doctors show the highest performance across all services (table 3). Investigating the differences between the services at a significance level exceeding .95 by means of a one-way ANOVA shows following results: the perceived performance of 'access' was rated highest for the emergency department. 'Access' also scored highest for the GPC although lower than for the ED. At the ED 'explanation' scores 5.73 (95% CI: 5.53 to 5.93). 'Waiting time' is perceived slightly better at the GPC than at the ED, while 'technical examination' scores significantly higher at the ED, compared to the GPC and the GPHV. ED is superior to the other services in all criteria except for 'waiting time'. (Table 4)

'Child' scenario

In the 'child' scenario we find similar results. The attribute which scores highest on perceived performance is 'explanation'. Here the highest expectations go to the paediatrician. (Table 5) The ANOVA results in table 6 show at a significance level exceeding .95, that ED is perceived better than GPC in 'immediate technical examination', 'payment', 'access' and 'explanation', while the latter is superior in 'waiting time'. The comparison of ED and PD shows significant advantages for ED in 'payment', and 'access' and a lead for PD in 'explanation'. Moreover, the results of the group comparison indicate an overall preference for both these services.

MOTIVATION TO COMPLY

In order to compute the TRA-score we obtained the motivation to comply with the reference groups (partner and friends). In both scenarios consumers consider the partner as more influential for the decision than the friends. (Table 2)

OPINION OF REFERENCE GROUPS

Consumers in the 'adult' scenario believe that partners assess ED higher than GPHV. (Table 3) When children are involved respondents assume that both reference groups would recommend PD over GPC and GPHV. (Table 5)

SERVICE CHOICE: OVERALL SCORE USING TRA AND COMPARISON OF THE SERVICES

Based on the TRA formula (figure 2) we computed the respondents' individual TRA scores per service. Consequently we are able to rank the different services for every respondent. The TRA approach assumes that patients decide for the service with the highest score. Afterwards we computed the score means over all respondents. In order to interpret the power of the margins we also checked the significances of difference between the scores. The number of items for attitude (5) and the subjective norms (2) reflect their relative contribution to the overall score.

Consumers rate – on average – ED higher than GPC, while there is no significant difference in the evaluations of GPC and GPHV. (Table 7) When children are involved, also the paediatrician is preferred over GPC and GPHV. (Table 8) The dominance of the ED and PD is consistent over both scenarios, indicating the external validity of the results.

	Significance of mean differences		Homogeneity of variances	Post-hoc comparisons for mean differences*		
	F-Value	P-Value		ED - GPC	ED-GPHV	GPC-GPHV
TRA Score	17.342	.000	.157T	16.359 (.001)	25.336 (.000)	8.977 (.100)

*P-values in parentheses

Applied post-hoc test: TTukey HSD, DDunnett C

Table 7: ANOVA results for TRA Score in the 'adult' scenario

	Significance of mean differences		Homogeneity of variances	Post-hoc comparisons for mean differences*					
	F-Value	P-Value		ED - GPC	ED - GPHV	ED - PD	GPC - GPHV	GPC - PD	GPHV - PD
TRA Score	15.552	.000	.003D	22.092 (.000)	28.553 (.000)	8.160 (.297)	6.461 (.507)	-13.932 (.015)	-20.393 (.000)

*P-values in parentheses

Applied post-hoc test: TTukey HSD, DDunnett C

Table 8: ANOVA results for TRA Score in the 'child' scenario

Full model

According to the TRA, the highest score determines the service preference for each patient. In addition we also examined the strength of this commitment. Therefore we computed the score per service among the participants who prefer a particular service (the preference share), and the significance of differences between the preferred and the other services. When the TRA score for two or more, we excluded cases when no clear first could be determined, i.e. two or more services had equal highest TRA score. It reduced the sample size for both scenarios by 16 ('adults': 10; 'children': 6) to 334.

The preference shares confirm the expected preference for 'emergency department'. Of all patients, 63% in the 'adult' scenario and 47% in the 'child' scenario would choose the ED. (Table 9)

Service	'adult' scenario	'child' scenario
ED	63%	47%
GPC	19%	31%
GPHV	18%	13%
PD	------	9%
Total	100%	100%

Table 9: Preference share for both scenarios

We then applied a multi-group discriminant analysis. The dependent variable was the chosen service while experience (figure 4) and socio-demographic items (table 1) were the explanatory ones. The cross-validated classification results did not show any improvement compared with the naive classification. However, further analysis of the preference shares by means of two group discriminant and regression analysis indicates a strong impact of experience on the service selection while none of the other variables seems to influence the preference significantly. Therefore, we investigated the relation between preference and experience further. Since experience is nominally coded (0: 'Never heard of' and 'Never used'; 1: 'Used once' and 'Used several times'), cross-tabs and Chi2-test to check for dependency between the variables were applied.

The results for the both scenarios suggest that patients with experience in a specific in the GPC have a higher likelihood to choose that service.

The Chi2-Test (n=174, df=1) shows dependency between experience and preference for ED (Chi2= 2.80, sig=.094), the GPC (Chi2= 12.42, sig=.000) and GPHV (Chi2= 3.54, sig=.060) at a .10 level. When children are involved in the choice we also notice

correlations between experience and the service choice. The Chi2-Test (n=160, df=1) points out dependency between experience and preference for GPC (Chi2= 9.53, sig=.002) and PD (Chi2= 10.20, sig=.001) at a .01 level, but not for ED (Chi2= 0.66, sig=.417) and GPHV (Chi2= 0.01, sig=.949).

Restricted model

Since experience is a strong predictor for the GPC choice we restricted the model by using only GPC-experienced respondents (having visited the GPC at least once: 'adult' scenario: n=70, 'child' scenario n=52). Firstly, the ANOVA results for TRA score show that, the differences between the results of the most preferred services are neither for the 'adult' (ED-GPC: Diff. in TRA score: 0.53, p=.997) nor for the 'child' scenario (ED-GPC: Diff. in TRA score: 1.45, p=.998; GPC-PD: Diff. in TRA score: 6.47, p=.876) significant at a .05 level. This indicates that patients do not have a strong preference for ED or PD over GPC once the GPC has been experienced.

Furthermore, the influence of 'experience' is illustrated in the choice ('preference share') of the GPC-experienced respondents (having visited the GPC at least once). For descriptive purpose, table 10 displays the first service choice for the restricted model: the preference for GPC is stronger ('adult' scenario: 19% to 31%, p=.020); 'child' scenario: 13% to 25%, p=.065) than in the unrestricted study population. The p-value for the 'child' scenario is slightly above the common critical level of .05 which can be explained by the low number of GPC experienced. However, overall findings support the trend towards GPC once the service was experienced. We expect also for the other services a positive impact of experience on choice, but we limit our analysis to the newly established GPC as the focal point of our study.

'adult' scenario preference shares			
Service	full sample (a)	GPC experienced (b)	Difference: (b) – (a)*
ED	63%	49%	- 14% (.108)
GPC	19%	31%	+ 12% (.034)
GPHV	18%	19%	+ 1% (.747)
'child' scenario preference shares			
Service	full sample (a)	GPC experienced (b)	Difference: (b) – (a)*
ED	47%	44%	- 3% (.905)
PD	31%	27%	- 4% (.720)
GPC	13%	25%	+ 12% (.065)
GPHV	9%	4%	- 5% (.140)

*p-value of significance test of means in parenthesis

Table 10: Preference shares for the different services: full sample versus GDPS experienced sample

DISCUSSION AND CONCLUSION

Although overall results show that people prefer the ED when in need for medical after-hours care, this study also confirms that people are loyal to the service they have experience with. Experience indeed is the most important factor to choose a service. People having experienced the new GPC once, tend to return to the service. Research in the UK, using other methodologies, also concluded that the loyalty for the GPC increases when having used it once.[25, 32]

The overall results concerning importance and perceived performance are very similar for both scenarios, indicating a high validity of the questionnaire. The most important attribute is 'explanation', meaning that the doctor gives information about the illness and the treatment. This is confirmed by other researchers: having a doctor who listens, takes time and gives explanation are seen as key elements for successful general practice.[25, 26, 33, 34] As ED is the most preferred service, our study shows that the main reasons for choosing ED are 'sufficient explanation' and 'easy access'. Consumers also expect immediate technical examination at the ED and when visiting a paediatrician. Compared to the ED and the paediatrician, we found that 'waiting time' is the most appreciated attribute at the GPC.

We used the FNC-services and we acknowledge our results may be biased to parents with young children. However, in Belgium this young population is known to use medical services more than other groups.[27] Using this strategy we were able to acquire a reasonable cross-section of the population of the city. In this setting, 44% of our participants were of foreign origin (foreign nationality currently or at birth). Compared with data of the municipality, 26.8% of the citizens are of foreign origin, indicating this population was relatively over-represented in our study. Also the level of education differs from data in Belgium. Our respondents had a cumulative percentage of a degree of lower secondary education or less of 14.3%. In 2004 data of Flanders mention about 18% of people aged 25-34 years old, having a degree of lower secondary education or less.[35] In our respondents we do still lack the group of foreign citizens who do not understand the Dutch, English or modern Arabic language and have a lower educational level. Further qualitative study designs for instance by interviewing stakeholders, who represent these groups, could be used to get more insight in these communities. In this case contacting imams, spokesmen and youth services of these communities, may help clarifying the research question for these specific sub-populations.

Experience has a strong positive influence on choosing a particular after-hours medical service. Especially for the new GPC, we can conclude that people who have experienced it before are more likely to choose it again. The doctor working at that service needs to

offer a clear explanation about the illness and its treatment. To strengthen this effect, the service has to be easily accessible and waiting time must be reduced.

If health authorities want to alter patterns of consumers of medical care by setting up new GPC's, the first concern has to be to inform people about all the available after-hours services, their specific aims and tasks. To increase the choice for GPC, authorities need to focus on current non-users of the GDPS and increase their trial rate for this new service. Subsequently the GPC should ensure the experience with the service is positive, because this facilitates the choice for the same service when in need for help.

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CHAPTER 5

PREDICTING THE PLACE OF OUT-OF-HOURS CARE – A MARKET SIMULATION BASED ON DISCRETE CHOICE ANALYSIS

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ABSTRACT

Background

Increasing cost pressure and changing customer needs in the healthcare sector have led to new delivery models for primary care. Researchers and practitioners need to establish innovative methods to obtain insights into customer preferences and effectiveness of healthcare services.

Aim

This study reveals the crucial decision criteria of patients in choosing out-of-hours services and provides a projection of a future market share of the newly established central out-of-hours service, called General Practitioner Cooperative.

Design

A computer-aided discrete choice experiment was conducted in 2006.

Method

Respondents were 350 patients at 3 Free Newborn & Child health care services in Antwerp, Belgium and decided for a service when confronted with a medical emergency in an out-of-hours case; two scenarios called 'adult' and 'child', describing the persons requiring medical assistance, were used to increase generalizability.

Results

The two most important attributes were 'explanation by the doctor' and 'waiting time' while the others - 'availability of technical equipment', 'ease of access', 'type of consultation' and 'payment method' - were of less importance. The market share projections predict that the new General Practitioner Cooperative will capture about one third of the market ('adult': 39.1%, 'child': 31.3%), ahead of the emergency department, the second most preferred service ('adult': 32.7%, 'child': 30.7%).

Conclusions

This study quantifies the adoption of a new medical service. As a result, it extends current research approaches on eliciting and matching customer needs and assists policy makers in establishing adequate service capacities.

PREDICTING THE PLACE OF OUT-OF-HOURS CARE – A MARKET SIMULATION BASED ON DISCRETE CHOICE ANALYSIS

INTRODUCTION

The aging society, increasingly demanding customers and cost pressures have steered most recent health care reforms in developed countries.[1] The objective of improving health system efficiency through cost reduction while at the same time increasing customer satisfaction is the focus of the transformations. To ensure a better decision making during these reforms, policy makers need to obtain a better understanding of customer preferences and the effectiveness of existing and new healthcare services.[2, 3]

With regard to primary care in out-of-hours situations, there is a trend to use hospital emergency rooms (ER) for standard and less urgent problems resulting in poorer service for actual emergency cases.[4] At the same time, the decreasing number of general practitioners and their deep concerns about out-of-hours workload and 24 hours availability have led to an increasing workload and great dissatisfaction among the remaining general practitioners. Policy makers attempted to address this trend by organizing out-of-hours care in a more structured and feasible way.[5] Ultimately, this led to a stronger centralization of primary care centres in various European countries. As the development of the centralized general practitioner (GP) services has been induced by supply rather than demand conditions, little is known on how well new healthcare services meet existing health care needs.[5, 6] Yet, particularly in countries with a free choice option on various medical healthcare services such as England, Sweden, Belgium, Germany and France, it is important to assess the alternatives' relative effectiveness as it determines their adoption. An alternative way to ensure adoption, i.e. through restricting access to some services has been unpopular with patients, professionals and policy makers as this reduced accessibility and quality of primary care in many European countries.[7]

Several studies on the use of and satisfaction with GP centers have been conducted.[5, 8-10] The majority of these studies are based on the assumption that greater satisfaction and loyalty will be reached if patients give high assessments of all individual service elements such as treatment quality, waiting time and accessibility. However, this approach is lacking in estimation of trade-offs between the service elements which would describe patients' behaviour in a more realistic way.[3] Furthermore, context dependent questions, such as 'why do people prefer one service over another' or 'what is the impact of the new service on the competition' are not answered. Nevertheless, they are important from a scientific as well a practitioner' point of view and warrant further research.[11, 12]

General research on new services reports a 40% failure rate indicating the intricacy in their development and launch.[13] Crucial factors hereby are a lack of unique customer benefit compared with existing services and the setting of unrealistic market potential and adoption goals.[14] An accurate market assessment is suggested to support better predictions of the demand and service-customer fit.[15]

Therefore, this study investigates critical decision criteria in choosing out-of-hours care and the effectiveness of a new out-of-hours service through a market share prediction. Firstly, the critical characteristics of an out-of-hours healthcare service are identified and the relative importance of the attributes in the decision process estimated. Secondly, a market simulation predicts how well the newly established GP centre (General Practitioner Cooperative: GPC) matches these needs and hence, how it will be adopted in comparison to the alternatives of the emergency department (ER), a house visit by a general practitioner (HV) or a paediatric consultation (PD). The result gives policy makers valuable information on the effectiveness of a new medical service to adjust its design and capacity before the final roll-out when changes are more costly.[16]

METHODOLOGY

Discrete Choice Experiments (DCEs) are a popular instrument in healthcare economics (e.g. [2, 17, 18]) to determine how individuals make trade-offs in choosing competing services. It is based on the premise that consumers assess the value of a service by combining the separate amounts of values assigned to each service attribute. Moreover, it assumes that the value is not directly observable but only the overall choice. Consumers can best provide judgment on objects formed by a combination of attributes rather than on each separate attribute.[17] It is more realistic because respondents are confronted with decisions similar to the ones they face in their daily lives.[12, 19] Evaluating bundles of attributes increases not only the realism but also the complexity for respondents. Earlier studies emphasized restricting the number of attributes and choice tasks depending on the applied method.[18]

DCEs allow understanding of the relative importance of one attribute with respect to the overall utility and to what extent a desirable attribute level can compensate for a less acceptable level of another attribute.[19] The availability of tools such as market simulators to measure economic outcomes is another reason for the popularity of DCE.[20] A market simulator allows forecasts of how patients might react when a new service is introduced into an existing market.

The market simulation based on DCEs comprises four steps: establishing the attributes and levels; choosing alternative scenarios to present; establishing and estimating preferences; and simulating market behaviour.[9, 16, 18]

We received ethical approval of this study by the Ethical Committee of the University of Antwerp in September 2005.(record nr A 05 45)

ATTRIBUTES AND LEVELS

We identified a pool of different attributes and their levels based on a review of medical and services literature (e.g., [3, 5, 11, 20, 21, 22]). Afterwards, we conducted semi-structured interviews with informants, i.e. GPs, academic researchers and patients, to verify, prioritize and refine the service characteristics that were used for the simulation of market behaviour. Several iterations rounds led to our final, limited set of attributes and levels that were realistic, tradable and comprehensible (Table 1).[23]

Attributes	Levels
Type of consultation	Hospital emergency department - ER General practitioner Cooperative - GPC Home visit by the general practitioner on duty - HV Paediatrician – PD (in 'child' scenario)
Waiting time between first contact or call and consultation	Less than 30 minutes Between 30 and 90 minutes More than 90 minutes
Information about health problem and therapy	Doctor does not give enough information Doctor gives enough information
Accessibility of the service	Location and phone number are not known Location and phone number are known
Availability of technical equipment	Available Not available
Method of payment	Immediate payment Deferred payment (sent by invoice)

Table 1: Service attributes and levels

SCENARIOS

The next step concerns the context for the patients. To increase the generalizability and robustness of our findings, we used two scenarios called 'adult' and 'child' to describe the situations and persons requiring medical assistance during the weekend (see the Appendix I for the complete scenario descriptions). Both scenarios were presented to the participants in an alternating way.(see Appendix II for the complete discrete choice questionnaire of the 'child' scenario)

Data was collected by means of full-profile choice questions. Hereby, every respondent was confronted with two randomly created combinations of all 6 attributes on one scenario and had to choose one of the two profiles.

PREFERENCES

DCE assumes that individuals strive for utility maximization: when confronted with a set of choices, each being a combination of several alternatives, consumers will choose the alternative giving the maximum value. A homogenous preference structure over the entire population is assumed, which allows aggregating the data obtained. A multinomial logit model using maximum likelihood estimation is applied for the estimation of the part-worths.[24] The estimated part-worths represent the fractional utilities of the different attributes and levels.[18]

The multinomial logit model assumes that the probability of choosing an option is proportional to the relative utilities of the options:

$$P_{k,c} = \frac{e^{V_{k,c}}}{\sum_{k} e^{V_{k,c}}}$$

The utility V can be expressed as:

$$V_{k,c} = \sum_{i=1}^{6} \beta^{i} D_{k,c}^{i}$$
$$= \beta^{Cons} D_{k,c}^{Cons} + \beta^{Wait} D_{k,c}^{Wait} + \beta^{Tequ} D_{k,c}^{Tequ} + \beta^{Expl} D_{k,c}^{Expl} + \beta^{Acce} D_{k,c}^{Acce} + \beta^{Paym} D_{k,c}^{Paym}$$

Following symbols are used:

k : specific profile of a medical service

c : choice set consisting of several alternatives (= profiles)

$P_{k,c}$: choice probability of profile k in choice set c

$V_{k,c}$: systematic component of utility of profile k in choice set c

i : attributes ('*type of consultation*','*waiting time*','*technical equipment*', 'exp*lanation*','*access*',' *payment*')

β^{i} : partworth of attribute i

$D_{k,c}^{i}$: Dummy for attribute level of the profile k

The computer-based questionnaire was set up with Sawtooth Software SSI WEB Internet System 3.0.1. It contained sections about the experience with the services and the socio-demographics. Afterwards, every respondent answered on 10 DCE questions. A pilot study in December 2005 tested the questionnaire and led to a minor revision of the attribute and level formulations. A trained medical student was available to give support when participants were not able to handle the computer based survey themselves.

MARKET SIMULATION

In DCE, as applied here, part-worths are estimated by means of multinomial logit model, of which the Independence of Irrelevant Alternatives (IIA) is assumed. This assumption is often criticized as being unrealistic. The Sawtooth SMRT 4.20 Market simulator estimates choice shares by means of the Randomized First Choice method. This method is reported to be robust for IIA problems.[20] The parsimony and predictive validity, illustrated in earlier medical studies makes the Randomized First Choice especially suited for research with policy implications.[25]

The market simulator requires firstly the input of the estimated part-worths representing the customer preferences. Secondly, we need to identify the real market performance of the services. For the discrete attributes 'type of consultation' and 'payment' there are objective level values of the actual service performance available. For the other attributes, the real performance might be in between the two levels. We assume linearity of the part-worths and interpolate them. The expert opinion of eight doctors who are familiar with all services supplied us with the actual service performance. In order to increase the validity we choose doctors with different main occupations (4 doctors from GPC and ER respectively). Finally, we predicted the market shares under the assumption of full market information and equal awareness for all services. A subsequent sensitivity analysis estimates market share changes resulting from a change of one attribute or one service at a time. This analysis is useful for decision makers in health policy because the results demonstrate the impact of adjustments in service designs.[6]

RESULTS

GENERAL STATISTICS

Data was collected from people waiting at three free health care centres for new born and children (FNC) in Antwerp, Belgium. The wide coverage of this FNC service, namely 97% of all new born in the region, minimizes a potential selection bias of the respondents.[26] We used computer-assisted surveys with support permanently available which resulted in 350 fill-out questionnaires. Non-participation (49.6% of all visitors) was mainly due to language problems (18.8%), lack of interest to participate (13.8%) or no time (5.0%). 4 out of 5 respondents filled out the questionnaire without assistance. While the number of respondents of foreign origin (44.3%) does not fully

match the share in the entire city (26.8%), it corresponds with the neighbourhood of the new GPCs. Table 2 contains more details on the socio-demographics:

	Adult scenario	Child scenario
Questionnaire language		
Dutch	165	159
English	16	6
Arab	3	1
Sum	184	166
Mean age (years)	31	31
Gender		
Male	19.6%	23.5%
Female	80.4%	76.5%
Marital status		
Married or living together with one child	42.9%	51.8%
Married or living together with two or more children	45.1%	34.3%
Single with one child	6.5%	5.4%
Single with two or more children	2.2%	2.4%
Other	3.3%	6.0%
Mean number of family members	3.60	3.52
Mean number of kids	1.67	1.65
Foreign origin	44.0%	44.6%
Total sample	350	

Table 2: Socio-demographic statistics

PART-WORTHS

The Tables 3 and 4 present the estimation of the part-worths of the levels and their statistical significances. The Chi-Squares of both models are well above the critical value for a .01 significance level. It indicates that respondents' choices are significantly affected by the various attributes and levels. A comparison of the levels of both scenarios shows similarities in the significances. The levels of the dimensions 'Technical equipment available', 'Explanation', 'Waiting time' and 'Easy access' are all highly significant ($p<0.01$), except for the waiting time level '30 to 90 min'. The attribute 'payment' is only significant ($p<0.05$) in the 'adult' scenario. The levels of 'type of consultation' show statistically significant results for GPC ($p<0.05$) and for 'PD' ($p<0.01$). The latter is only available in the 'child' scenario.

Attribute	Level	Part-worth[1]	Standard Error	Significance	Attribute Importance
Type of consultation	ER	-0.007	0.078		6.6%
	GPC	-0.113	0.053	*	
	HV	0.120	0.079		
Technical equipment available	Yes	0.263	0.053	**	14.9%
	No	-0.263	0.053	**	
Explanation	Enough	0.631	0.041	**	35.8%
	Not enough	-0.631	0.041	**	
Waiting time	< 30 min	0.447	0.056	**	25.7%
	30 to 90 min	0.013	0.053		
	> 90 min	-0.459	0.055	**	
Easy access	Yes	0.214	0.038	**	12.2%
	No	-0.214	0.038	**	
Payment	Immediately	-0.083	0.038	*	4.7%
	Later	0.083	0.038	*	
Log-likelihood for this model	-1050.4				
Degrees of freedom	8				
Model chi-square	450.0**				
****p<0.01; *p<0.05**					

Table 3: part-worths 'adult' scenario

[1] Part-worths are zero centered, as opposed to selecting one arbitrary part-worth to be zero.

Attribute	Level	Part-worth2	Standard Error	Significance	Attribute Importance
Type of consultation	ER	0.079	0.095		11.9%
	GPC	-0.155	0.064	*	
	HV	-0.187	0.097		
	PD	0.263	0.067	**	
Technical equipment available	Yes	0.236	0.048	**	12.5%
	No	-0.236	0.048	**	
Explanation	Enough	0.728	0.045	**	38.5%
	Not enough	-0.728	0.045	**	
Waiting time	< 30 min	0.443	0.058	**	23.8%
	30 to 90 min	0.014	0.055		
	> 90 min	-0.457	0.060	**	
Easy access	Yes	0.212	0.041	**	11.2%
	No	-0.212	0.041	**	
Payment	Immediately	-0.039	0.041		2.1%
	Later	0.039	0.041		
Log-likelihood for this model: **-908.0**					
Degrees of freedom: 9					
Model chi-square 454.3**					
****p<0.01; *p<0.05**					

Table 4: part-worths 'child' scenario

Visualization increases readability and allows for easier interpretation of the part-worths (Figure 1 and 2):

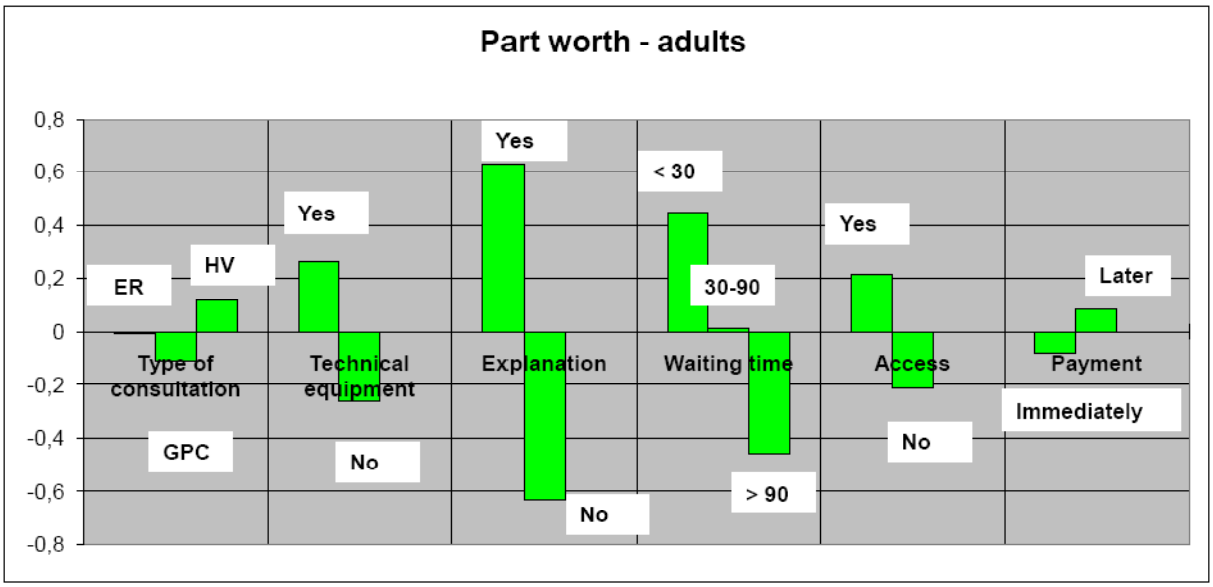

Figure 1: Visualisation of the part-worths of the adult scenario

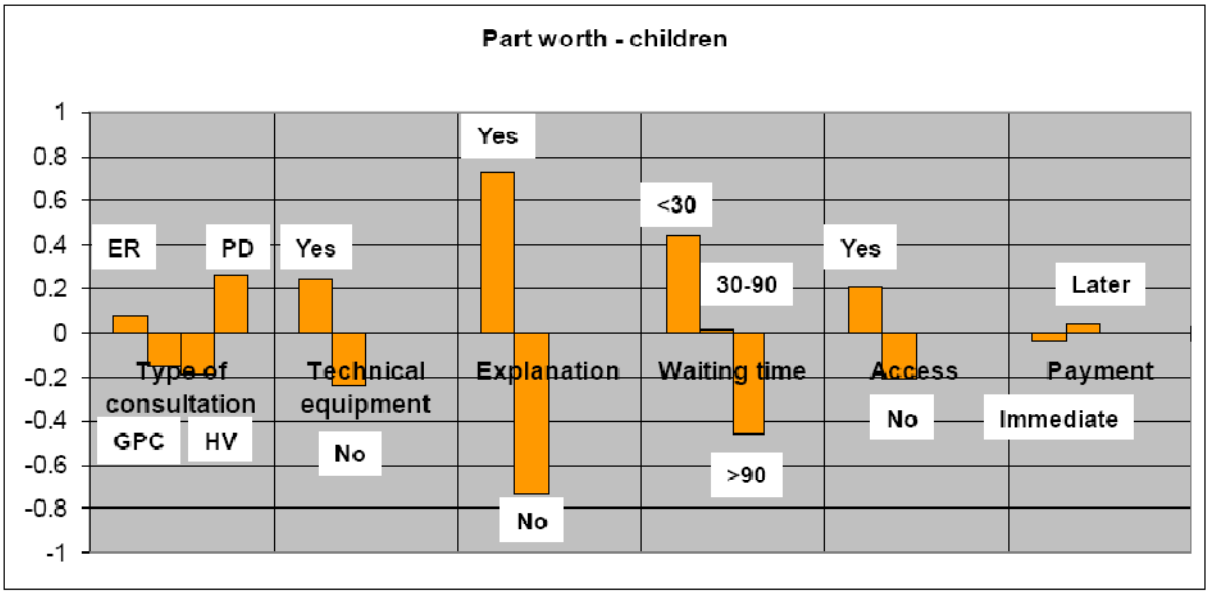

Figure 2: Visualisation of the part-worths of the child scenario

The fractional utilities of both scenarios show a high degree of similarity leading to a greater generalizability and confidence in the analysis. The size of the part-worths indicates the intensity and the sign shows the direction in which a change of the attribute changes the overall utility. The attributes' relative importance as indicated in Table 3 and 4 allows for an easier interpretation of the results.

Patients considered the 'Explanation' about the problem and the treatment as the most important factor in the choice of service ('adult': 35.8%; 'child': 38.5%), followed by the waiting time for consultation ('waiting time': 'adult': 25.7%; 'child': 23.8%). These two characteristics secured approximately two thirds of the variability in utilities observed. The third important attribute is the availability of technical equipment ('adult': 14.9%; 'child': 12.5%). The accessibility of the services ('adult': 12.2%; 'child': 11.2%) is the fourth most important dimension in the adult context but only ranked fifth if a child was involved. The type of consultation is on the fifth ('adult': 6.6%) and fourth position respectively ('child': 11.9%). The least important service characteristic is the method of payment contributing only 4.7% ('adult') and 2.1% ('child') to the judgment.

MARKET SHARES

The part-worths provide us with the input for the market share simulator. As mentioned above, we used experts to estimate real market performance of the different services as the second input for the market simulation. Table 5 presents the experts' evaluation of all attributes per service collected on a 7-item scale.

	Type of Consul-tation	Waiting time	Technical Equipment	Access	Explana-tion	Payment***
Adult	ER	3.1	5.8	6.6	4.6	7.00
	GPC	6.1	3.4	6.4	6.1	1.00
	HV	4.0	3.5	5.9	5.9	1.00
Child	ER	3.3	5.9	6.8	5.3	7.00
	GPC	6.3	3.2	6.4	6.1	1.00
	HV	4.1	3.7	6.0	6.1	1.00
	PD	3.4	4.8	3.0	6.1	1.00

* Scale with the extremes: 7 (positive) to 1 (negative)

** ME total: Mean of all 8 doctors

*** For the attribute 'payment' we choose actual levels as they are available.

Table 5: Real market performance of the services , expert opinions

We use Randomized First Choice method to calculate the market shares (Table 6).

	Market shares	
Service	'Adult' scenario	'Child' scenario
ER	32.7 %	30.7 %
GPC	39.1 %	31.3 %
HV	28.2 %	13.4 %
PD	n/a	24.6 %
Total	100 %	100 %

Table 6: Market shares estimates

In the simulated service choice GPC (39.1%) is preferable to ER (32.7%) and HV (28.2%) in the 'adult' scenario. When the patient was a child, the GPC (31.3%) and ER (30.7%) was the service most chosen, followed by PD (24.6%) and HV (13.5%).

Our sensitivity analysis showed that a 10% improvement in the performance assessed by the experts would lead to higher increases in market share for 'explanation' ('adult': 4.6%; 'child': 4.8%) followed by 'waiting time' (3.4%; 3.8%). The impact of improvement in access (1.4%; 1.5%) and availability of technical equipment (0.6 %; 0.5%) are less pronounced. As the attribute 'payment' is binary coded, a relative change is not applicable. Instead, we estimate the impact of switching from an immediate to a deferred payment model. The market share of a new GPC service would increase by 4.8% and 2.9% respectively.

DISCUSSION

The purpose of this study is to quantify how a new service, namely the GPC service, matches customer needs and thus contributes to the literature on configuration and planning of new medical services.

In the following paragraphs we discuss various issues and identify future research opportunities regarding (1) the methodology and study design, (2) the part-worths' estimation and attribute importance and (3) the market simulation in medical research.

METHODOLOGY AND STUDY DESIGN

In previous research DCE proved to be a reliable and useful tool for eliciting patients' preferences in healthcare [3, 27] as it simulates patients' decisions based on specific scenarios. In our study, we split our sample in two contexts ('adult' and 'child') in order to improve the generizability of the study's findings. The part-worths and the related market shares are consistent in both settings. For a future study, adding scenarios that differ also in the severity of sickness and situations for assistance might give further insight into the topic.

A further limitation of the study concerns the sample. Three quarters of the respondents were women, waiting at the Free New born and Child health care services. Although the share is similar to earlier studies in healthcare [10], future investigations might examine the effect of gender on this particular service.

PART-WORTH ESTIMATION AND ATTRIBUTE IMPORTANCES

This research builds on earlier studies and intends to represent a more complete range of attribute bundles. The satisfactory explanation about the treatment by the doctors proved to be the most important attribute, followed by 'waiting time', 'availability of technical equipment' and 'accessibility' of the service. The least important and only insignificant attribute is the payment terms, suggesting that an immediate payment, which is required at GPC, PD and HV, is not perceived as especially negative. It is not entirely unexpected, since the amount to be paid remains equal. While we carefully selected and validated the service attributes, DCE only allows integrating a limited set of attributes to keep the judgment manageable for respondents. Additional service attributes or psychological cues may also play a role in service choice and might be subject to future studies.

The quality of the doctors' advice accounts for more than one third ('adult': 35.8%; 'child': 38.5%) of the decision. The high importance of the attribute 'explanation' is in line with results from healthcare industry as well as the services marketing field: competence, listening, communication and understanding of the customers by the doctor/frontline personnel have been identified as highly important for the quality of the service.[10, 21] Researchers have often used questionnaires that directly ask patients about attributes' importance and satisfaction with models of primary care.[12, 17] In spite of an overall consistency with our findings, the lack of traditionally functioning markets, favors indirect methods to elicit preferences such as choice-questions in DCE.[18] Particularly advantageous for our study; DCE allows estimating shares of yet unknown services.

In the course of the data analysis we also tested for customer segments and the effect of socio-demographics on the utilities. Apparently, patients' characteristics such as income, age and foreign origin do not substantially affect the utilities. However, a future research approach may investigate preference heterogeneity more in detail.

MARKET SIMULATION

Previously, researchers identified the need for predicting the demand for new services as it is highly relevant for capacity planning, maximization of adoption rates and cost assessment of the alternatives.[5, 19, 28] The prediction of demand demonstrated a high choice share for the GPC service ('adult': 39.1%; 'child': 31.3%) making it the preferred service offer. The ER is the second most chosen option, followed by the PD in the 'child' scenario and the HV as the least chosen. The shift in services' use suggest better use of resources as ER is regarded as the least efficient option in delivering primary care [29]. The higher than expected market share of the GPC might partly be explained by an

overestimation of the GPC service by the experts. It similarly occurs in new product development in other industry sectors; we limited this effect by using experts with different medical professions. The sensitivity analysis reveals that the adoption of the new GPC service would particularly benefit from improvements in GP's explanation and accessibility.

At present, there is strong dominance of the ER and the PD in the healthcare industry.[5] Our research illustrates that in the future the new GPC service might be preferred to ER and PD. It is in line with the suggestion that experience in a medical service is positively related to its usage.[30] Consequently, we can predict a major shift towards the GPC once the service is actually known and used. In order to enhance 'user' adoption, strategies are required to increase awareness and to communicate advantages, intended use and accessibility of the yet little known GPC service.

MANAGERIAL IMPLICATIONS

From a managerial perspective, our findings are important because they offer the possibility to prioritize and quantify the decision criteria in a health care system. They demonstrate how a negative performance in one characteristic might be substituted by another which is useful for future services' reconfiguration. Another value of this study lies in the prediction of the choice of alternatives for health systems with a free choice option. It allows healthcare providers, who are increasingly made accountable for the expenditures, more accurate and reliable service capacity planning. Future research could combine DCE results with the cost of different attribute bundles in order to find optimal cost-effectiveness [11] which was beyond the scope of this study.

CONCLUSIONS

In conclusion, this paper demonstrates a rigorous way to estimate patients' preference pattern and to predict their service adoption behaviour. It provides a more powerful approach than the pure analysis of single decision criteria in order to design complex new medical services. Evidently, the design of the newly established GPC matches customer preferences for healthcare services, and the GPC can be a well-perceived alternative to ER, PD or HV in an out-of-hours situation.

APPENDIX

APPENDIX I: SCENARIOS

"Adult" scenario:

You have a visit on a Saturday night from a friend or relative who will stay the night at your home. During the night, the visitor wakes up and feels unwell. So you decide to look for medical assistance.

"Child" scenario:

It is Sunday morning. Your three-year-old child has a fever. You gave him already a medicine to lower the fever. It helped but the fever is coming back. So you decide to look for medical assistance.

In de volgende enquête gaan wij uw voorkeur voor medische hulpverlening na **wanneer uw eigen arts niet bereikbaar is**. Het invullen van deze enquête zal ongeveer 15 minuten tijd vragen. Het is belangrijk dat u de vragenlijst volledig afwerkt, gelieve dus **niet te stoppen** voor u alle vragen heeft beantwoord. Deze enquête is anoniem en uw antwoorden worden volledig anoniem verwerkt zodat uw privacy niet geschonden wordt. **Indien een vraag niet helemaal duidelijk is, aarzel dan niet om een woordje uitleg te vragen.**

Alvast dank voor uw bereidwillige medewerking!

In deze enquête wordt verondersteld dat de volgende situatie zich voordoet:
Het is zondagochtend. Uw kindje van drie jaar heeft koorts. U gaf reeds een koortswerend middel, dit heeft wel geholpen maar de koorts komt terug. U zoekt daarom medische hulp.

Hou deze situatie voor ogen voor het ganse verloop van de volgende enquête

Klik met behulp van de muis het bolletje aan dat overeenstemt met jouw antwoord.

In welke mate maakte u het voorbije jaar gebruik van

	Nooit van gehoord	Niet gebruikt	1 maal gebruikt	Meermaals gebruikt
Spoeddienst in ziekenhuis	○	○	○	○
Huisartsenwachtpost	○	○	○	○
Huisbezoek van arts met wachtdienst	○	○	○	○
Kinderarts	○	○	○	○

De **spoeddienst van het ziekenhuis** is een afdeling in het ziekenhuis waar steeds een dokter aanwezig is. Mensen die plots een ernstige ziekte of aandoening krijgen en snel behandeld moeten worden, kunnen er terecht.

Een **huisartsenbezoek van een arts met wachtdienst** houdt in dat een zieke persoon de huisarts die van wacht is, kan opbellen en deze dokter zal thuis langskomen om de zieke te onderzoeken.

Een **kinderarts** is een arts die gespecialiseerd is in ziektes en aandoeningen waar kinderen vaak aan lijden. Deze dokter behandelt voornamelijk kinderen.

In 2003 werd de **huisartsenwachtpost** in Deurne opgericht. Patiënten kunnen er terecht tijdens weekends en op feestdagen wanneer de eigen arts afwezig is. In de huisartsenwachtpost is er steeds één arts aanwezig, een andere arts gaat op huisbezoek. De artsen werken er nauw samen met de spoeddiensten van de ziekenhuizen, zodat deze onmiddellijk voor assistentie kunnen zorgen.Van elke raadpleging krijgt de eigen huisarts een verslag.

Klik met de muis het bolletje aan dat het meest met uw mening overeen stemt.

Bent u het eens of oneens met de uitspraak?

Stel **bijvoorbeeld** dat de volgende stelling gegeven is:

"Het weer in België is zeer goed."

Voorbeeld

Uw mening hierover wordt best weergegeven door het woord:	volledig eens	eerder eens	lichtjes eens	neutraal geen mening	lichtjes oneens	eerder oneens	**volledig oneens**	
eens	○	○	○	○	○	○	⊙	oneens

wil zeggen dat u het hier **volledig oneens** mee bent.

Selecteer 'neutraal/geen mening' indien u geen uitspraak kan doen over één van deze vragen.

Ga nu op dezelfde wijze tewerk en geef uw mening op de volgende vragen.

Hoe belangrijk is voor u de wachttijd tussen het eerste contact met een hulpverlener en de eigenlijke raadpleging of huisbezoek?

belangrijk	○	○	○	○	○	○	○	onbelangrijk

Hoe belangrijk is het voor u om een goede uitleg over de ziekte en de behandeling te krijgen?

belangrijk	○	○	○	○	○	○	○	onbelangrijk

Hoe belangrijk is de gemakkelijke bereikbaarheid van de dienst voor u?

belangrijk	○	○	○	○	○	○	○	onbelangrijk

Hoe belangrijk is voor u de onmiddellijke beschikbaarheid van toestellen voor medische foto's, bloedonderzoek,...?

belangrijk	○	○	○	○	○	○	○	onbelangrijk

Hoe belangrijk zijn verschillende betalingswijzes voor u?

belangrijk	○	○	○	○	○	○	○	onbelangrijk

Hoe belangrijk is uw partner (of een andere verwante) bij het kiezen van de hulpdienst ?

belangrijk	○	○	○	○	○	○	○	onbelangrijk

Hoe belangrijk is de mening van uw vrienden en verwanten over de verschillende soorten van medische hulpdiensten ?

belangrijk	○	○	○	○	○	○	○	onbelangrijk

Hoe belangrijk is het voor u dat de nodige medische analyses snel kunnen uitgevoerd worden ?

belangrijk	○	○	○	○	○	○	○	onbelangrijk

Wat denkt u over volgende uitspraken? De uitspraken op deze pagina gaan over de **spoeddienst van het ziekenhuis**.
Duid met behulp van de muis het bolletje van uw keuze aan.

	volledig eens	eerder eens	lichtjes eens	neutraal geen mening	lichtjes oneens	eerder oneens	volledig oneens
Voor een consultatie op de spoeddienst in een ziekenhuis zal ik lang moeten wachten.	○	○	○	○	○	○	○
Op de spoeddienst van het ziekenhuis zullen de vereiste onderzoeken snel uitgevoerd worden.	○	○	○	○	○	○	○
Mijn kennissen/familie zullen mij afraden de spoeddienst van het ziekenhuis te consulteren.	○	○	○	○	○	○	○
De spoeddienst van een ziekenhuis is steeds gemakkelijk bereikbaar.	○	○	○	○	○	○	○
Op de spoeddienst van het ziekenhuis zal ik **niet** onmiddellijk hoeven te betalen.	○	○	○	○	○	○	○
Mijn partner (of een ander familielid) zal de voorkeur geven aan de spoeddienst	○	○	○	○	○	○	○
Op de spoeddienst van het ziekenhuis zijn technische toestellen (medische foto's, bloedonderzoek...) voldoende snel beschikbaar.	○	○	○	○	○	○	○
De arts op de spoeddienst van het ziekenhuis zal mij een duidelijke uitleg over mijn klacht en de behandeling geven.	○	○	○	○	○	○	○

Wat denkt u over volgende uitspraken? De uistpraken op deze pagina gaan over de

huisartsenwachtpost.
Ga opnieuw op dezelfde wijze tewerk.

	volledig eens	eerder eens	lichtjes eens	neutraal geen mening	lichtjes oneens	eerder oneens	volledig oneens
Voor een consultatie in de huisartsenwachtpost zal ik lang moeten wachten	☐	☐	☐	☐	☐	☐	☐
De huisartsenwachtpost is steeds gemakkelijk bereikbaar.	☐	☐	☐	☐	☐	☐	☐
De arts in de huisartsenwachtpost zal een duidelijke uitleg over mijn klacht en de behandeling geven.	☐	☐	☐	☐	☐	☐	☐
Mijn partner (of een ander familielid) zal de voorkeur geven aan de huisartsenwachtpost in dit soort situatie.	☐	☐	☐	☐	☐	☐	☐
Mijn kennissen/familie zullen mij afraden de huisartsenwachtpost te consulteren.	☐	☐	☐	☐	☐	☐	☐
In de huisartsenwachtpost zijn technische toestellen (medische foto's, bloedonderzoek,...) voldoende snel beschikbaar	☐	☐	☐	☐	☐	☐	☐
In de huisartsenwachtpost zullen de vereiste onderzoeken snel uitgevoerd worden.	☐	☐	☐	☐	☐	☐	☐
Voor een consultatie in de huisartsenwachtpost zal ik **niet** onmiddellijk hoeven te betalen.	☐	☐	☐	☐	☐	☐	☐

Volgende

Geef uw mening over volgende uitspraken. De uitspraken op deze pagina gaan over de

huisarts met wachtdienst.
Ga opnieuw op dezelfde wijze tewerk.

	volledig eens	eerder eens	lichtjes eens	neutraal geen mening	lichtjes oneens	eerder oneens	volledig oneens
Na een huisbezoek zullen de vereiste technische onderzoeken snel uitgevoerd worden.	☐	☐	☐	☐	☐	☐	☐
Na een huisbezoek van de arts zijn technische toestellen (medische foto's, bloedonderzoek,...) voldoende snel beschikbaar.	☐	☐	☐	☐	☐	☐	☐
Mijn partner (of een ander familielid) zal de voorkeur geven aan een bezoek aan huis van de huisarts met wachtdienst voor dit soort situatie.	☐	☐	☐	☐	☐	☐	☐
Ik zal de huisarts die op huisbezoek komt **niet** onmiddellijk hoeven te betalen.	☐	☐	☐	☐	☐	☐	☐
Ik zal lang moeten wachten voordat de huisarts met wachtdienst mij een huisbezoek brengt.	☐	☐	☐	☐	☐	☐	☐
De huisarts met wachtdienst is telefonisch steeds gemakkelijk oproepbaar.	☐	☐	☐	☐	☐	☐	☐
Mijn kennissen/familie zullen mij afraden de huisarts met wachtdienst om een huisbezoek te vragen.	☐	☐	☐	☐	☐	☐	☐
De huisarts die op huisbezoek komt zal mij een duidelijke uitleg over mijn klacht en de behandeling geven.	☐	☐	☐	☐	☐	☐	☐

Wat is uw mening over volgende uitspraken? De uitspraken op deze pagina gaan over de **kinderarts**.
Ga opnieuw op dezelfde wijze tewerk.

	volledig eens	eerder eens	lichtjes eens	neutraal geen mening	lichtjes oneens	eerder oneens	volledig oneens
Mijn partner (of een ander familielid) zal de voorkeur geven aan de kinderarts in dit soort situatie.	☐	☐	☐	☐	☐	☐	☐
Bij de kinderarts zijn technische toestellen (medische foto's, bloedonderzoek,...) voldoende snel beschikbaar.	☐	☐	☐	☐	☐	☐	☐
Bij de kinderarts zullen de vereiste onderzoeken snel uitgevoerd worden.	☐	☐	☐	☐	☐	☐	☐
Mijn kennissen/familie zullen mij afraden de kinderarts te consulteren.	☐	☐	☐	☐	☐	☐	☐
Voor een consultatie bij de kinderarts zal ik lang moeten wachten.	☐	☐	☐	☐	☐	☐	☐
De kinderarts is steeds gemakkelijk bereikbaar.	☐	☐	☐	☐	☐	☐	☐
Ik zal de kinderarts **niet** onmiddellijk hoeven te betalen.	☐	☐	☐	☐	☐	☐	☐
De kinderarts zal mij een duidelijke uitleg over mijn klacht en de behandeling geven.	☐	☐	☐	☐	☐	☐	☐

Zijn er nog andere zaken die uw keuze beïnvloeden, wanneer u de eigen arts niet kan bereiken? Gelieve in onderstaand tekstveld in te vullen welke zaken hierin een rol spelen.

Er worden u 10 verschillende situaties aangeboden waarin u kan kiezen tussen 2 verschillende vormen van hulpverlening. Lees telkens de twee blauwe vakken aandachtig door van boven naar beneden. Maak dan pas uw keuze voor de mogelijkheid die u het meest ligt.

We herinneren u even aan de situatie die eerder uitgelegd werd:
Het is zondagochtend. Uw kindje van drie jaar heeft koorts. U gaf reeds een koortswerend middel, dit heeft wel geholpen maar de koorts komt terug. U zoekt daarom medische hulp.

Maak in de situaties die nu volgen telkens uw keuze door onderaan het passende bolletje aan te duiden met behulp van de muis.

Vorm van consultatie	Huisbezoek van arts met wachtdienst	Huisbezoek van arts met wachtdienst
Tijd tussen eerste contact en advies	Meer dan 90 minuten	Minder dan 30 minuten
Info ivm klacht en behandeling	Arts geeft voldoende informatie	Arts geeft onvoldoende informatie
Bereikbaarheid van de dienst	Ligging of telefoonnummer zijn gekend	Ligging of telefoonnummer zijn gekend
Technische ondersteuning	Technische toestellen (medische foto's, bloedonderzoek,...) niet beschikbaar	Technische toestellen (medische foto's, bloedonderzoek,...) niet beschikbaar
Betalingswijze	Onmiddellijke betaling	Onmiddellijke betaling
	○	○

We herinneren u even aan de situatie die eerder uitgelegd werd:
Het is zondagochtend. Uw kindje van drie jaar heeft koorts. U gaf reeds een koortswerend middel, dit heeft wel geholpen maar de koorts komt terug. U zoekt daarom medische hulp.

Maak in de situaties die nu volgen telkens uw keuze door onderaan het passende bolletje aan te duiden met behulp van de muis.

Vorm van consultatie	Consultatie in huisartsenwachtpost	Consultatie bij kinderarts
Tijd tussen eerste contact en advies	Meer dan 90 minuten	Minder dan 30 minuten
Info ivm klacht en behandeling	Arts geeft onvoldoende informatie	Arts geeft onvoldoende informatie
Bereikbaarheid van de dienst	Ligging of telefoonnummer zijn niet gekend	Ligging of telefoonnummer zijn niet gekend
Technische ondersteuning	Technische toestellen (medische foto's, bloedonderzoek,...) niet beschikbaar	Technische toestellen (medische foto's, bloedonderzoek,...) niet beschikbaar
Betalingswijze	Betaling via factuur achteraf	Betaling via factuur achteraf
		

We herinneren u even aan de situatie die eerder uitgelegd werd:
Het is zondagochtend. Uw kindje van drie jaar heeft koorts. U gaf reeds een koortswerend middel, dit heeft wel geholpen maar de koorts komt terug. U zoekt daarom medische hulp.

Maak in de situaties die nu volgen telkens uw keuze door onderaan het passende bolletje aan te duiden met behulp van de muis.

Vorm van consultatie	Consultatie op spoeddienst	Consultatie in huisartsenwachtpost
Tijd tussen eerste contact en advies	Meer dan 90 minuten	Minder dan 30 minuten
Info ivm klacht en behandeling	Arts geeft voldoende informatie	Arts geeft onvoldoende informatie
Bereikbaarheid van de dienst	Ligging of telefoonnummer zijn niet gekend	Ligging of telefoonnummer zijn niet gekend
Technische ondersteuning	Technische toestellen (medische foto's, bloedonderzoek,...) beschikbaar	Technische toestellen (medische foto's, bloedonderzoek,...) niet beschikbaar
Betalingswijze	Onmiddellijke betaling	Onmiddellijke betaling
		

We herinneren u even aan de situatie die eerder uitgelegd werd:
Het is zondagochtend. Uw kindje van drie jaar heeft koorts. U gaf reeds een koortswerend middel, dit heeft wel geholpen maar de koorts komt terug. U zoekt daarom medische hulp.

Maak in de situaties die nu volgen telkens uw keuze door onderaan het passende bolletje aan te duiden met behulp van de muis.

Vorm van consultatie	Huisbezoek van arts met wachtdienst	Huisbezoek van arts met wachtdienst
Tijd tussen eerste contact en advies	Minder dan 30 minuten	Meer dan 90 minuten
Info ivm klacht en behandeling	Arts geeft voldoende informatie	Arts geeft onvoldoende informatie
Bereikbaarheid van de dienst	Ligging of telefoonnummer zijn niet gekend	Ligging of telefoonnummer zijn gekend
Technische ondersteuning	Technische toestellen (medische foto's, bloedonderzoek,...) niet beschikbaar	Technische toestellen (medische foto's, bloedonderzoek,...) niet beschikbaar
Betalingswijze	Onmiddellijke betaling	Betaling via factuur achteraf
		

We herinneren u even aan de situatie die eerder uitgelegd werd:
Het is zondagochtend. Uw kindje van drie jaar heeft koorts. U gaf reeds een koortswerend middel, dit heeft wel geholpen maar de koorts komt terug. U zoekt daarom medische hulp.

Maak in de situaties die nu volgen telkens uw keuze door onderaan het passende bolletje aan te duiden met behulp van de muis.

Vorm van consultatie	Consultatie op spoeddienst	Consultatie bij kinderarts
Tijd tussen eerste contact en advies	Meer dan 90 minuten	Tussen 30 en 90 minuten
Info ivm klacht en behandeling	Arts geeft onvoldoende informatie	Arts geeft voldoende informatie
Bereikbaarheid van de dienst	Ligging of telefoonnummer zijn gekend	Ligging of telefoonnummer zijn niet gekend
Technische ondersteuning	Technische toestellen (medische foto's, bloedonderzoek,...) beschikbaar	Technische toestellen (medische foto's, bloedonderzoek,...) beschikbaar
Betalingswijze	Betaling via factuur achteraf	Betaling via factuur achteraf
		

We herinneren u even aan de situatie die eerder uitgelegd werd:
Het is zondagochtend. Uw kindje van drie jaar heeft koorts. U gaf reeds een koortswerend middel, dit heeft wel geholpen maar de koorts komt terug. U zoekt daarom medische hulp.

Maak in de situaties die nu volgen telkens uw keuze door onderaan het passende bolletje aan te duiden met behulp van de muis.

Vorm van consultatie	Consultatie in huisartsenwachtpost	Consultatie op spoeddienst
Tijd tussen eerste contact en advies	Meer dan 90 minuten	Tussen 30 en 90 minuten
Info ivm klacht en behandeling	Arts geeft onvoldoende informatie	Arts geeft onvoldoende informatie
Bereikbaarheid van de dienst	Ligging of telefoonnummer zijn gekend	Ligging of telefoonnummer zijn niet gekend
Technische ondersteuning	Technische toestellen (medische foto's, bloedonderzoek,...) niet beschikbaar	Technische toestellen (medische foto's, bloedonderzoek,...) beschikbaar
Betalingswijze	Onmiddellijke betaling	Onmiddellijke betaling
		

We herinneren u even aan de situatie die eerder uitgelegd werd:
Het is zondagochtend. Uw kindje van drie jaar heeft koorts. U gaf reeds een koortswerend middel, dit heeft wel geholpen maar de koorts komt terug. U zoekt daarom medische hulp.

Maak in de situaties die nu volgen telkens uw keuze door onderaan het passende bolletje aan te duiden met behulp van de muis.

Vorm van consultatie	Consultatie op spoeddienst	Consultatie in huisartsenwachtpost
Tijd tussen eerste contact en advies	Minder dan 30 minuten	Meer dan 90 minuten
Info ivm klacht en behandeling	Arts geeft onvoldoende informatie	Arts geeft voldoende informatie
Bereikbaarheid van de dienst	Ligging of telefoonnummer zijn gekend	Ligging of telefoonnummer zijn niet gekend
Technische ondersteuning	Technische toestellen (medische foto's, bloedonderzoek,...) beschikbaar	Technische toestellen (medische foto's, bloedonderzoek,...) beschikbaar
Betalingswijze	Onmiddellijke betaling	Betaling via factuur achteraf
	○	○

We herinneren u even aan de situatie die eerder uitgelegd werd:
Het is zondagochtend. Uw kindje van drie jaar heeft koorts. U gaf reeds een koortswerend middel, dit heeft wel geholpen maar de koorts komt terug. U zoekt daarom medische hulp.

Maak in de situaties die nu volgen telkens uw keuze door onderaan het passende bolletje aan te duiden met behulp van de muis.

Vorm van consultatie	Consultatie bij kinderarts	Consultatie in huisartsenwachtpost
Tijd tussen eerste contact en advies	Minder dan 30 minuten	Meer dan 90 minuten
Info ivm klacht en behandeling	Arts geeft voldoende informatie	Arts geeft onvoldoende informatie
Bereikbaarheid van de dienst	Ligging of telefoonnummer zijn gekend	Ligging of telefoonnummer zijn niet gekend
Technische ondersteuning	Technische toestellen (medische foto's, bloedonderzoek,...) beschikbaar	Technische toestellen (medische foto's, bloedonderzoek,...) niet beschikbaar
Betalingswijze	Betaling via factuur achteraf	Betaling via factuur achteraf
		

We herinneren u even aan de situatie die eerder uitgelegd werd:
Het is zondagochtend. Uw kindje van drie jaar heeft koorts. U gaf reeds een koortswerend middel, dit heeft wel geholpen maar de koorts komt terug. U zoekt daarom medische hulp.

Maak in de situaties die nu volgen telkens uw keuze door onderaan het passende bolletje aan te duiden met behulp van de muis.

Vorm van consultatie	Consultatie op spoeddienst	Consultatie in huisartsenwachtpost
Tijd tussen eerste contact en advies	Minder dan 30 minuten	Minder dan 30 minuten
Info ivm klacht en behandeling	Arts geeft onvoldoende informatie	Arts geeft onvoldoende informatie
Bereikbaarheid van de dienst	Ligging of telefoonnummer zijn gekend	Ligging of telefoonnummer zijn gekend
Technische ondersteuning	Technische toestellen (medische foto's, bloedonderzoek,...) beschikbaar	Technische toestellen (medische foto's, bloedonderzoek,...) niet beschikbaar
Betalingswijze	Betaling via factuur achteraf	Betaling via factuur achteraf
		

We herinneren u even aan de situatie die eerder uitgelegd werd:
Het is zondagochtend. Uw kindje van drie jaar heeft koorts. U gaf reeds een koortswerend middel, dit heeft wel geholpen maar de koorts komt terug. U zoekt daarom medische hulp.

Maak in de situaties die nu volgen telkens uw keuze door onderaan het passende bolletje aan te duiden met behulp van de muis.

Vorm van consultatie	Consultatie bij kinderarts	Consultatie in huisartsenwachtpost
Tijd tussen eerste contact en advies	Minder dan 30 minuten	Tussen 30 en 90 minuten
Info ivm klacht en behandeling	Arts geeft voldoende informatie	Arts geeft voldoende informatie
Bereikbaarheid van de dienst	Ligging of telefoonnummer zijn gekend	Ligging of telefoonnummer zijn niet gekend
Technische ondersteuning	Technische toestellen (medische foto's, bloedonderzoek,...) beschikbaar	Technische toestellen (medische foto's, bloedonderzoek,...) beschikbaar
Betalingswijze	Onmiddellijke betaling	Betaling via factuur achteraf
		

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CHAPTER 6

WHAT'S THE EFFECT OF THE IMPLEMENTATION OF GENERAL PRACTITIONER COOPERATIVES ON CASELOAD? PROSPECTIVE INTERVENTION STUDY ON PRIMARY AND SECONDARY CARE.

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Published: BMC Health Services Research 10(1): 222

ABSTRACT

Introduction

Out-of-hours care in the primary care setting is rapidly changing and evolving towards general practitioner 'cooperatives' (GPC). GPCs already exist in the Netherlands, the United Kingdom and Scandinavia, all countries with strong general practice, including gatekeepers' role. This intervention study reports the use and caseload of out-of-hours care before and after implementation of a GPC in a well subscribed region in a country with an open access health care system and no gatekeepers' role for general practice .

Methods

We used a prospective before/after interventional study design. The intervention was the implementation of a GPC.

Results

One year after the implementation of a GPC, the number of patient contacts in the intervention region significantly increased at the GPC (OR: 1.645; 95% CI: 1.439-1.880), while there were no significant changes in patient contacts at the Emergency Department (ED) or in other regions where a simultaneous registration was performed. Although home visits decreased in all general practitioner registrations, the difference was more pronounced in the intervention region (intervention region: OR: 0.515; 95% CI: 0.411-0.646, other regions: OR: 0.743; 95% CI: 0.608-0.908). At the ED we observed a decrease in the number of trauma cases (OR: 0.789; 95% CI: 0.648-0.960) and of patients who came to hospital by ambulance (OR: 0.687; 95% CI: 0.565-0.836).

Discussion and conclusion

One year after its implementation more people seek help at the GPC, while the number of contacts at the ED remains the same. The most prominent changes in caseload are found in the trauma cases. Establishing a GPC in an open health care system, might redirect some patients with particular medical problems to primary care. This could lead to a lowering of costs or a more cost-effective out-of-hours care, but further research should focus on effective usage to divert patient flows and on quality and outcome of care.

WHAT'S THE EFFECT OF THE IMPLEMENTATION OF GENERAL PRACTITIONER COOPERATIVES ON CASELOAD? PROSPECTIVE INTERVENTION STUDY ON PRIMARY AND SECONDARY CARE.

INTRODUCTION

From the nineties, general practitioner cooperatives (GPC) were established in many European countries, as a new alternative for the organisation of out-of-hours medical care by general practitioners. Various models exist across health care models. Although we do not have a clear-cut definition of 'appropriate use' or 'inappropriate use' of the ED, it has been argued that many medical problems presented at the ED could easily be managed in a primary care setting.[1,2] Many studies report overuse of the ED for primary care medical problems.[3-11] One objective therefore may be to redirect patients from secondary care to primary care.[12] This could be a cheaper alternative and may in turn preserve funds dedicated to health care.

Common objectives for implementation of GPC are to relieve the burden of being on call for GPs, caused by a shortage of GPs, the increasing workload and dissatisfaction among GPs because of the lack of separation between work and private life.[13] Until now, most studies compared differences between different models of services, e.g. concerning accessibility and location.[14-17]

Only a few studies assessed the impact of an intervention at the level of the implementation of a GPC in a before/after design.[13, 18]

The focus of the present study is on the patient fluxes to primary and secondary care during out-of-hours services. This study was performed in Belgium, which shows free access to primary and secondary care, no gatekeepers' role for the general practitioner (the GP does not control referral or access to secondary care) and a fee for service system. Large-scale GPC are being introduced from 2003 onwards. We assess the research question: What is the impact of the implementation of a general practitioner cooperative on the use and caseload of out-of-hours primary and secondary care?

METHODS

We used a prospective before/after study design. The intervention was the implementation of a GPC in the Turnhout region of Belgium.

INTERVENTION REGION

One of the characteristics of Belgian health care is the free access in primary care as well as in secondary and tertiary care. Also during out-of-hours, patients have a free choice between the general practitioner on call or the ED of a hospital. They do not need any referral by a physician. There is no need for any telephone contact before turn in to

either one service. GPs are obliged to offer continuity of care. Recently GPs choose to implement GPCs (as in our intervention region in Turnhout) aiming a decrease in inappropriate use of EDs. Before the implementation of the GPC, GPs worked in a rota arrangement and organised out-of-hours care from their own practices. Patients had to inform themselves which GP was available and where his practice was located; they had the possibility to go to the doctors' practice or to ask the doctor on a home visit. There was no telephone triage. No consultation over the telephone was performed. The GPC re-organised all of the 100 GPs in that region and centralised the location for out-of-hours primary health care in one centrally located practice. That way the GPC is more accessible and recognisable for the whole region, in contrast to the former situation when the GP on call was at a different location at every turn. The GPC is open from Saturday 8 am until Monday 8 am and on public holidays, but not during weekdays. Three GPs are continuously present at the GPC for consultations; two other GPs are responsible for the home visits. The GPC is well-equipped, not only for dealing with urgent medical problems but also to be able to handle wound care and minor trauma. GPs on call have to report figures of all patient contacts to the local GP organisation. The Turnhout region shows tight boundaries, meaning that all patients living in Turnhout region seek help in one of the two hospitals with ED facilities in the city centre or at the GP service. More than 98% of the referrals by physicians in this region, are made to these two hospitals.[19]

SEASONAL EFFECTS

To allow the monitoring of other effects on caseload (seasonal epidemiologic changes, awareness of changing primary health care during out-of-hours, changing payment systems at the ED) , we used two regions to function as 'control' groups. These were chosen in regions where no GPC existed and where no GPC was planned; this is the case in suburbs of two other large cities (Ghent and Antwerp).

In these regions, GPs still work on an individual base, out of their own practice in a rota arrangement during weekends and public holidays. The regional union of GPs decides upon the sequence of the on-call rota on a regular basis. In this study, the GPs on call had to be able to register patient contacts and most of them used electronic patient records for this purpose. GPs that did not use electronic patient records filled out a registration form, which were collected by the research assistant.

Due to vague boundaries of the catchment areas of the hospitals in these other regions, enrolling patients at the ED would not provide us with valid information about case-load. (fig 1) The data of ED in this region were not used. The GPs were included for descriptive reasons, to estimate the changes over the same time period.

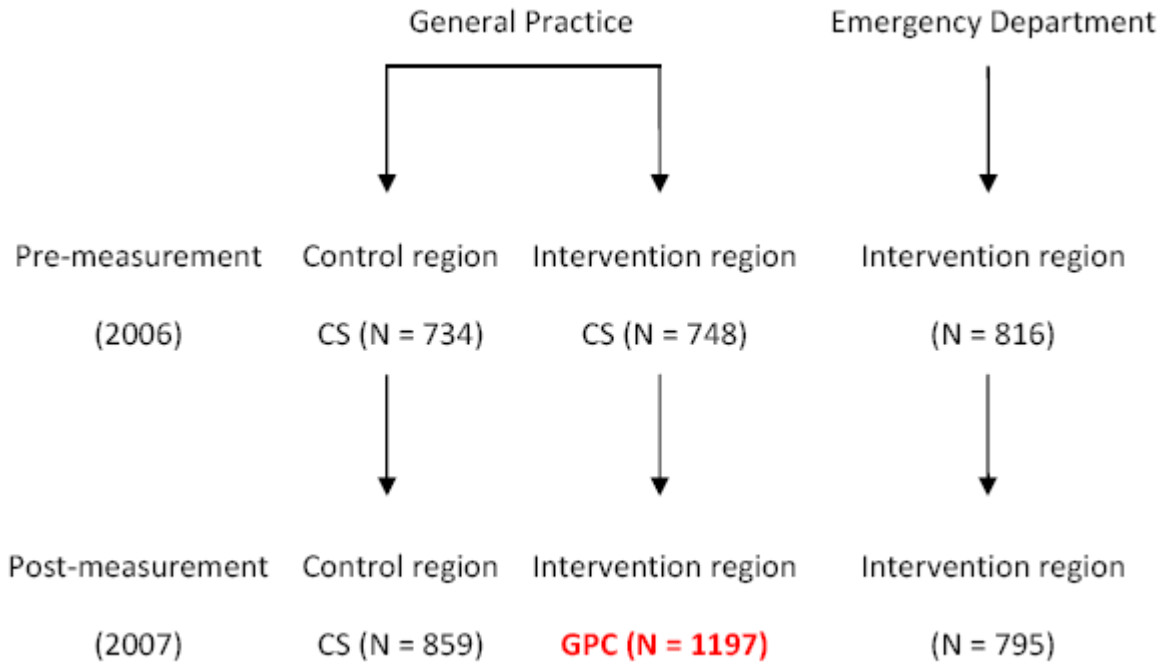

Fig. 1: Pre- and post-measurement in general practice and emergency departments.
(CS: GP out of hours care using the Classical System, GPC: GP out of hours care at the new General Practitioner Cooperative)

INSTRUMENT

We introduced identical forms for the patient registration at the ED and for the GPs on call. These forms could easily be filled out by the staff at the ED as well as by the GP on call. We piloted two months before the actual registration started and some small changes (lay-out, formulation of questions) in consensus with the users (GPs and the ED) were adapted.

Our first data collection was performed in 2006 (during two months, data from 9 weekends), two months before implementation of the GPC, and in 2007 (during the same two months, data from 9 weekends), one year after starting the GPC. For the second registration at the GPC, an electronic medical record system was used.

Besides patient characteristics (age, sex and zip-code), date, hour and type of the patient contact, we also registered clinical data: i.e. reason for encounter (RFE), physical examination, technical investigations and diagnosis.

To optimise participation, a research assistant contacted the GPs on call on a weekly basis in case of any problems filling out the forms. The EDs were visited on a monthly basis to collect the data and provide registration forms. Telephone calls to key persons on a regular basis also stimulated participation. To assess workload in the other participating regions, all routine patient data was collected using an MS Access

registration tool for GP out-of-hours care. Validity of the first measurement data was checked by the number of registrations during the same period the year before our study.

DATA COLLECTION AND ANALYSIS

We studied all patient contacts at the ED in both hospitals and with the GPs on call in the intervention region. During the same period we also registered the patient contacts of GPs on call in the other two regions. Data collection was performed starting from Saturday 8 a.m. until Monday 8 a.m. Personal data of the patients was removed from the records. Subsequently all registration forms were coded for 'reason for encounter' (RFE) and 'diagnose/diagnostic hypothesis' using the International Classification of Primary Care, 2nd edition (ICPC2) by the first author. When two or more complaints or diagnoses were mentioned, the one interpreted as the most important was used. For instance a patient presenting himself with fever and diarrhoea was registered as having diarrhoea to be as specific as possible. After coding, the forms were enrolled in an MS Access or MS Excel database.

We used SPSS 14.0 for final data collection and analysis. We used uni-variant analysis with odds ratios and 95% confidence interval where applicable. We used Chi²-tests when comparing 2 or more nominal variables. Mann Whitney tests were used for comparison of mean ages. For several analyses we categorized age data in 5 categories (<12y, 12-19y, 20-64y, 65-79y, >79y).

RESULTS

WORKLOAD

During both registration periods all 5149 patient contacts were included in the study: 2298 during the pre-measurement period (2006) and 2851 during the post-measurement period (2007). Patients enrolled in the registration of the intervention region were included based on zip-code. In the intervention region, cases belonging to other zip-codes were excluded from the database, this was necessary to compare pre- and post-measurement data.

In the intervention region, the number of patient contacts at the GPC during the second period increased significantly compared to the contacts with the GP on call in the first period (both including consultation and home visits) (OR: 1.645; 95% CI: 1.439-1.880). Although the total number of GP contacts in the other regions also increased, the difference was significantly larger in the intervention region (OR: 1.370; 95% CI: 1.198-1.565). The patient contacts at the ED did not change significantly over the same period. (Fig 1)

PATIENT CHARACTERISTICS

Age

Using the Mann-Whitney Test, there was a significant difference in mean age of the patients between the GP intervention group and the other GP groups, which persisted from the pre-measurement to the post-measurement ($p<0.01$). The mean ages were respectively 37.2y and 36.2y in the intervention region, whereas it was 44.0y and 40.8y respectively in the other regions. We did not find significant shifts in mean age concerning GP or ED choice in the intervention region.

Sex

In general, more women seek help at the primary care settings, whereas men represent the majority of ED visitors (pre- measurement $chi^2= 36.087$, $p<0.01$; post-measurement $chi^2= 25.260$, $p<0.01$). We found no significant differences within the groups between the pre- and post-measurement.

TYPE OF CONTACT

In table 1 we describe the evolution of the type of contact at the ED. There was no significant difference in patients who came on 'self-referral', between the pre- and post-measurement. We found significant changes between pre- and post-measurement in the group of patients who were referred by a physician (general practitioner or specialist) or who came in by ambulance. The first group significantly increased (OR= 1.446; 95% CI: 1.196-1.749), whereas the second significantly decreased (OR= 0.687; 95%CI: 0.565-0.836).

	Emergency Department			
	Self referral	Referral by a physician	By ambulance	Total
Pre-measurement	587 (72%)	94 (12%)	134 (16%)	815
Post-measurement	578 (73%)	127 (16%)*	86 (11%)**	791
Total	1165	221	220	1606

Table 1: Changes in the number of the different types of contact at the emergency department between pre- and post-measurement: * significant increase ($p<0.05$), ** significant decrease ($p< 0.05$)

The type of contact with the GPs also changed. The absolute number of home visits remained the same but relatively decreased compared to the consultations (intervention region OR= 0.515; 95%CI: 0.411-0.646 and other regions OR= 0.743; 95%CI: 0.608-0.908). In the other regions the relative number of home visits also decreased significantly, but not as prominent. (Table 2)

	Type of GP contact			
		Consultation (%)	Home visit (%)	Total amount of contacts
Intervention region	Pre-measurement	520 (73%)	194 (27%)	714
	Post-measurement	1004 (84%)*	193 (16%)**	1197
	total	1524	387	1911
Other regions	Pre-measurement	404 (55%)	330 (45%)	734
	Post-measurement	529 (62%)*	321 (38%)**	850
	total	933	651	1584

Table 2: Evolution of the type of GP contacts: * significant increase (p<0.05), ** significant decrease (p< 0.05)

When we consider age in 5 categories we find significant changes over time in the type of GP contact. In the intervention region there is a significant shift from home visits to consultations for all age categories except for the '+79 years of age'. In the other regions, a similar shift was only found in the youngest age category, while the other categories did not change significantly. (table 3)

	Intervention region Consultation/home visit Post-measurement/pre-measurement	other regions Consultation/home visit Post-measurement/pre-measurement
< 12 y	OR: 5.924 95% CI: 1.178-29.800	OR: 4.714 95% CI: 1.845-12.044
12-19 y	OR: 5.886 95% CI: 1.033-33.538	OR: 1.056 95% CI: 0.245-4.540
20-64 y	OR: 1.838 95% CI: 1.313-2.571	OR: 1.291 95% CI: 0.807-2.065
65-79 y	OR: 1.930 95% CI: 1.045-3.565	OR: 2.187 95% CI: 0.692-6.910
> 79y	OR: 1.875 95% CI: 0.618-5.690	OR: 2.459 95% CI: 0.297-20.340

Table 3: odds ratio's for 5 age-categories, concerning differences in type of GP contact in the pre-and post-measurement. Significant differences are represented in bold.

CASE LOAD USING ICPC2 HEADINGS

All patient contacts were coded by ICPC2. For some ICPC headings significant differences between the pre- and post-measurements exist.

REASON FOR ENCOUNTER (RFE)

For both, GP and ED, the most frequently used ICPC2-headings were: A (general and unspecified) (27.2%), D (digestive) (14.9%) en R (respiratory) (14.4%).

Of all the GP patient contacts the 3 most used ICPC2-headings were: R (respiratory)(18.5%), A (general and unspecified) (18.2%) and D (digestive) (17.5%). At the ED, the 'top 3' was: A (general and unspecified) (47.2%), S (skin) (10.3%) and L (musculoskeletal) (9.4%).

Over time, the ICPC2-heading 'K' (circulatory), increased significantly at the ED. (OR: 1.743; 95% CI: 1.006-3.022) An analogue increase was found in ICPC2-headings 'P' (psychological problems) (OR: 1.971; 95% CI: 1.086-3.579) and 'L' (musculoskeletal) (OR: 1.971; 95% CI: 1.086-3.579).

We observe for RFE 'trauma-related complaints' (A80, A81 and A84) a significant decrease at the ED (table 4). Although the major part of people with trauma prefers ED, the case load at the GPC almost doubled (but not significantly) for these ICPC codes.

	Pre-measurement	Post-measurement	
GP other regions	36 (7.4%)	45 (9.1%)	OR: 0.993 95%CI: 0.595-1.463
GP intervention region	54 (11.1%)	108 (21.9%)	OR: 0.786 95%CI: 0.559-1.104
ED	397 (81.5%)	340 (69.0%)	OR: 0.789; 95%CI: 0.648-0.960
Total	487	493	

Table 4: proportional differences in case load of 'trauma related complaints' in the reason for encounter (RFE). Significant differences are represented in bold.

DIAGNOSIS

The top 3 of diagnostic ICPC2-headings in the entire database (GP and ED) were: R (respiratory) (19.2%), L (musculoskeletal) (17.5%) and S (skin) (15.8%). For the overall GP patient contacts we found: R (respiratory) (22.9%), D (digestive) (15.5%) and L (musculoskeletal) (13.7%). At the ED, the top 3 percentages are: L (musculoskeletal) (30.2%), S (skin) (28.6%) and R (respiratory) (6.6%). Here again, few headings differ between the pre- and the post-measurement.

ICPC2-heading 'D' (digestive) decreased significantly in the intervention region at the GPC (OR: 0.748; 95% CI: 0.577-0.971). Also ICPC2-heading P (psychological problems) decreased at the GPC in the post-measurement (OR: 0.424; 95% CI: 0.241-0.747). There were no significant differences in these headings in the other regions or at the ED.

At the ED the total amount of cases with the diagnosis in ICPC2-heading 'S' (skin) or 'L' (musculoskeletal) significantly decreased (OR: 0.578; 95% CI: 0.470-0.711), while there was no difference in the group of GPs, neither in the control, nor in the other regions. (Table 5)

	Pre-measurement	Post-measurement	Total
Diagnoses ICPC2-heading S (skin) or L (musculoskeletal)	342 (41.9%)	234 (29.4%)	576
Other diagnoses	474 (58.1%)	561 (70.6%)	1035
	816	795	1611

Table 5: Evolution of the case-load of cases with ICPC2heading 'L' or 'S' in the diagnosis at the ED ($p<0.01$).

TECHNICAL EXAMINATIONS

We assessed the number of technical examinations and used all cases where any technical examination was mentioned (blood- or urine analysis, swabs taken for culture, radiology (RX, CT, echo-graph, ECG)). Either the handling physician performed the examination himself or referred the patient for further technical examination. At the ED more than 60% of the patients received at least one technical examination, whereas the highest percentage in the GP groups was 5.6%.

DISCUSSION

To our knowledge, this study is the first to report the results of the implementation of a new GPC in an open access health care system. Caseload of the GP was doubled while there was no significant decrease of patient turnover at the ED. We also describe changes in patient contacts; consultations, home visits and ICPC2 codes for RFE and diagnosis.

We simultaneously collected data at GP services in other regions, where no GPC was established. Although not completely matched and lacking data of ED in the other regions, this methodology is probably the most feasible design to study changes in caseload when establishing a GPC. In the original study design we considered a time series study over 3 years' time. However, due to changing software program at one of the hospitals, we were not able to collect comparable data during the third year. Therefore this design was not feasible.

In Belgium, all patients have free access and free choice during out-of-hours between the GP on call as well as to the ED of a hospital. GPs do not have a gatekeepers' role and entrance to health care is possible without referral by a physician or prior telephone contact. The possibility of a telephone consult or treatment by a practice nurse, as it is known in the Netherlands for instance, does not exist. In most regions, there are no defined regional catchment areas. Patients can easily seek help in a neighbouring village or city.

We chose Turnhout region as our study domain. This city has a well-defined catchment area, meaning that GPs as well as both hospitals cover the same region with negligible overlap with neighbouring regions. This enabled us to obtain a valid view on caseload at

the GP and the ED. We included other regions in the neighbourhood of the cities of Ghent and Antwerp to have some account for changes like seasonal influences on epidemic changes or changes in patients' awareness of the use of out-of-hours services. Unfortunately including a control region for the ED was not feasible, because regions with tight boundaries are scarce. Secondly, there were (at the time of our study) no uniform information technology systems at the EDs in hospitals in Belgium. Similar to former research, we observed an increase of patient contacts at the GPC over a one year period.[12, 18, 20, 21] However, in contrast with the studies performed in the Netherlands and the UK, we did not observe a significant decrease in patient numbers at the ED. This may be explained by the free access in the health care system in Belgium. The GPC was implemented without any changes or restrictions in accessibility to the ED. Moreover, the use of a service may be driven by the availability of this service, which is called the 'push-strategy'.[22-24] Although in our study, the number of patients seeking help at the ED after referral by a physician increased, the number of self-referrals stayed 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 a GPC. On the other hand, there was a significant decrease in the number of patients who came to the ED by ambulance, which (in this country) can be called without any referral by a doctor. (table 1) Possibly, the presence of a GPC could lead to more efficient use of ambulances by creating an accessible and recognisable alternative when people are anxious or worried.

Currently there is a trend in this country, decreasing the share of home visits also during normal working hours.[21, 25] In this study, this effect also occurs during out-of-hours and seems to be accelerated after implementation of a GPC. The decrease of home-visits was observed for all age categories, except for the very elderly. Home visits are necessary for this age group because of diminished mobility and are also the strength of general practice care.[26] The amount of home visits to the very elderly does not change significantly after establishing a GPC. This might indicate that equity for the elderly is also accomplished at the GPC.

There is a significant decrease at the ED covering RFE on circulatory (K) and psychological (P) problems. On the other hand digestive (D) and psychological (P) diagnosis decreased at the GPC. We have no explanation for this. We also observed a significant decrease in 'trauma' cases at the ED, whereas the contacts with wound- or trauma related diagnoses ('L' and 'S' diagnoses) slightly increased at the GPC. We might hypothesise that the presence of the GPC lowers the threshold to seek medical advice from a GP, also for minor trauma. One of the aims of the GPC is dealing with minor trauma and wound-care by being well-equipped. Accessibility has improved due to the fixed, central and recognisable location of the GPC in the city. The results seem to affirm that patients tend to recognise the role of the GP in these types of medical problems.

In this study we found a large amount of technical examinations at the ED. We could expect lower costs when more trauma cases could be dealt with at the GPC. Future research is needed to study the difference in costs due to a possible difference in assessment of the same medical problem at the GPC and the ED. Also outcome data in terms of health benefit should be investigated between services.

More is needed to realize effective shifts of patients from the ED to the primary care setting during out-of-hours services. A more explicit image of primary health care is needed, as stated in the latest WHO report.[27] Thanks to our former research in which we studied patients' preferences, we can confirm this need also in Belgium. In this

specific health care system, centrally delivered information to patients about the tasks and skills of GPs, is necessary. A first-time contact of high-quality influences patient attitudes positively. From former research we know that people prefer a doctor who informs them about the illness and the treatment in a clear way. If this condition is met, patients tend to return to the service they are familiar with.[28] In the same subject we look out for the results of another study we performed in Belgium, using discrete choice analysis. This methodology is adopted from management studies and was already used in medical research by several authors.[29, 30]

The GPC is not available during weekdays. Therefore changing behaviour in patients might be more difficult. In future research, a comparison in patient choice during weekdays or weekends can clarify whether establishing a GPC during weekdays is a useful option. It certainly would clarify the role and organisation of out- of- hours healthcare for the users.

Although we observed that starting a GPC does not immediately lead to patient fluxes away from the ED (total amount of patient contacts at the GPC increased while remaining the same at the ED), further research needs to be done to see if it does actually lead to better quality of care and patients satisfaction, with respect for equity.

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ACKNOWLEDGEMENTS

Our special thanks go to the general practitioners and specialists in the region of Turnhout, the management and medical staff of the Emergency Departments of both hospitals Sint Elisabeth and Sint Jozef and of the HVRT (Huisartsenvereniging Regio Turnhout), who enabled this study. (van Deuren M., Aendekerk Jos, Boermans Jos)

Also thanks to Brouns J. MD and Aendekerk Jos for assisting with the electronic data collection. We also thank all the participating GPs of Have (HuisArtsen Vereniging Evergem), Huisartsenvereniging Merksem and HRM (Huisartsen Regio Mortsel) working in the other regions. Special thanks to the board of these societies: Brouns J. MD, Goris J.MD, Verhelst W. MD and Putzeys T. MD.

CHAPTER 7

DISCUSSION

This thesis focuses on the changing landscape in the Belgian out-of-hours primary care services. Using different study designs we gathered new insights in how patients or consumers of care deal with new primary care services. In this discussion we will shortly describe the context of our work and we pay special attention to the newly established General Practitioner Cooperatives (GPC). We summarize our studies and discuss these in the broader context of the literature and recent developments. GPCs can also play a role in medical education. Finally we suggest adapting out-of-hours services not only to the needs of doctors or policy makers, but also to the needs of the patients.

INTRODUCTION

Among the reasons to start this thesis was the changing landscape in out-of-hours primary care services in Belgium. The implementation of the first GPC in Deurne-Borgerhout triggered the need for research on this topic. Doctors and policy makers had, although some resistance existed, great expectations on the effect of the establishment of these new services. Several reasons led to a rearrangement of out-of-hours primary care: the diminishing number of general practitioners, the increasing workload and overcrowding at the emergency departments (ED), the desire of general practitioners to search for a better balance between work and private life and the increasing feeling of being unsafe during home visits, especially in large cities. GPCs were regarded as a solution for these problems. Inspiration was found in other European countries such as the United Kingdom, Denmark and The Netherlands.[1] In these countries similar reasons lead to the establishment of GPCs. Although very different Health Care Models, the problems doctors dealt with during out-of-hours in other countries, were very similar to the Belgian situation. Overcrowding of the ED has been mentioned for decades in literature, in Europe as well as in the United States. [2-4] 'Misuse' or 'inappropriate' use of ED is one of the most important reasons for the high 'input' at the ED.[5, 6] Often patients seeking help for primary care problems cause this 'overcrowding'. Overcrowding of the ED not only results in an inefficient use of financial and human resources, it also implicates the danger of reacting inappropriately on urgent medical problems.[7-12]

In Western European countries, different models of GPC exist.[13] Due to different health care organization in these countries, research shows different findings across health care settings. In the Netherlands, working in a GPC resulted in improved job satisfaction for the GPs in combination with an improvement in patient satisfaction.[14-16] The gatekeeper role of the GP was enhanced.[17-19] Cost-efficiency was studied in different settings. When the GPC was integrated in the ED, cost-effectiveness was enhanced because of sharing of infrastructure (facilities and personnel) between services.[20] Also, Denmark has a long standing tradition of out-of-hours primary care in GPC.[21, 22] An enhancement of cost effectiveness was realized, but patient satisfaction slightly diminished. More patient contacts were dealt with by telephone advice as in this country telephone calls are answered by a physician, who decides upon telephone advice, consultation or a home visit for the patient.[23] The decreasing number of patient contacts with primary care during out-of-hours after the establishment of GPC did not result in an increase in the use of casualty wards.[24]

Since 2003, out-of-hours care is, also in Belgium, increasingly offered in large scale General Practitioner (out-of-hours) Cooperatives (GPC).[25] At present, this service is offered to one in ten citizens of Flanders.[26] The reasons for establishing GPC were very similar to those in other countries. On the other hand, due to large differences in Belgian health care compared to other Western European countries, research results of other countries cannot be applied to this country without caution.[27] Belgian health care is characterized by free access to primary, secondary and tertiary care facilities. There is no gatekeeper role for GPs and no need for referral. Physicians are most often paid on a 'fee for service' basis. During out-of-hours, patients can choose between primary care facilities and the ED of a hospital. Another important difference with our neighbouring countries is the fact that in Belgium, legally and ethically, every patient who contacts a

physician has to be seen by a physician. In Belgium it is uncommon that a practice nurse or assisting personnel takes care of the patient or even triages the telephone calls.

This thesis focuses on out-of-hours primary care in the changing landscape of Belgium. We first felt the need to describe the situation in out-of-hours primary care and at the ED and we focused on case-load and patient characteristics in both services. The findings of this first project enabled us to design further investigations. Subsequently we focused on consumers' behaviour based on the Theory of Reasoned Action and on Discrete Choice Analysis. Using these study designs, we predicted (future) market shares of primary care services and EDs. To clarify the role the implementation of a GPC plays in patient out-of-hours fluxes, a natural experiment (prospective interventional study design) was used in the Turnhout study (a small city in the Flemish region of Belgium).

Before we discuss pros and cons of the thesis, we will briefly answer the research questions that are more elaborately described in the papers, which are embodied in the chapters.

CHAPTER 2

This chapter reports a study to measure case-load at the emergency departments and at the general practitioners services during out-of-hours in four major cities in Belgium; Antwerp, Ghent, Brussels and Charleroi.

1) *What is the case-load at emergency departments and at the primary care services during weekends?*

During weekends and public holidays, more patients were seen at the ED than at the GP services (ED n=971, GP n=640). Self-referrals to the ED were very prominent (63.8%).

2) *What are the socio-economical determinants of people seeking help at either service?*

Some determinants that advanced the choice for the ED were: being male, having visited the ED during the past 12 months at least once, speaking another language than Dutch or French, being of African nationality and having no medical insurance. Determinants favouring GP care were: being female, having a family doctor and speaking Dutch or French.

3) *What are the reasons for the choice of service?*

Minor trauma is the most common reason for encounter (RFE) and diagnosis at the ED. Once people have experienced GP facilities, they tend to use these in the future. People of foreign origin are less aware of the Belgian health care system. A clear description of tasks for both general practitioners and emergency departments is indispensable. To redirect patient fluxes from the ED to the GP facilities, information about health services needs to be provided to the public. Young men suffering minor trauma can be informed about the proper use of technical examinations.

CHAPTER 3

In this chapter we studied the impact of co-payment for out-of-hours care on emergency departments, in both ED and GP facilities. We used a mixed methods approach: a questionnaire study and face-to-face interviews.

The scope of the study was to examine whether implementing a co-payment system in ED was a useful intervention to cause a shift from ED to primary care during out-of-hours.

At the time of the study, the inning of co-payments (€ 12.50) was not compulsory. Hospitals were free to charge at their discretion.

4) *Are patients aware of co-payment systems?*

Patients, especially those visiting the ED, were often not aware of the co-payment system.

5) *Do they consider co-payment a useful tool to diminish inappropriate use of services?*

Respondents never mentioned the payment system spontaneously as being of any influence on their choice behaviour.

6) *Which measures do patients suggest to diminish overuse of ED for minor medical problems?*

Patients especially suggested providing clear information about the tasks of the different services and about the payment system, to reduce ED overuse.

We found that the co-payment system, at the time of study used in Belgium for people using the ED 'inappropriately' (leaving a flexibility to the provider and set at 12,5 Euro), is not efficient when aiming to shift patient fluxes to GP services. Citizens are not aware of the payment system, let alone the co-payment at some EDs. Healthcare professionals seem to be most aware of the importance of maintaining equal access for everyone in need of health care.[28] Co-payment can introduce inequity of care. We have clues that this is the case as the share of non-Belgium citizens and non-insured was larger at the EDs (no direct payment) compared to the GP services (direct payment during the consultation).

CHAPTER 4

In this chapter we studied 'consumer behaviour', the a-priori attitudes people have before they enter the medical system as a patient. The theory behind this study was that people can highlight particular reasons for their choices when they are not (yet) in need of any medical care. This study was performed two years after the introduction of large scale General Practitioner (out-of-hours) Cooperative (GPC), in Deurne-Borgerhout, a suburb of Antwerp, Belgium.

We used the 'Theory of Reasoned Action', which is well suited to give insights into consumer behaviour.[29] This technique enabled us to calculate the intention to certain behaviour from the importance and perceived performance of different attributes.

7) *What are the consumers' experiences with out-of-hours services?*

Most people knew the ED and 62.3% of the respondents used the ED at least once during the past twelve months. 34.9% of the participants used the new GPC at least once and 18.3% was unaware of this new service.

8) *What is the importance of the different service attributes, what is the perceived performance of the services and what is the intention to choose?*

We found that 'explanation about the disease and the treatment' is the most important attribute. As in chapter two, experience with either one service has a strong positive influence on choosing a particular out-of-hours facility. At the ED, the second most important is 'easy access', while 'waiting time' is most important at the GP service.

In conclusion, it is most important that the doctor gives clear information about the disease and its treatment. To strengthen this effect, the service has to be easily

accessible and waiting time must be minimal. A service that meets these expectations is very likely to be used again.

CHAPTER 5

In this chapter a 'Discrete Choice Experiment' was used to predict consumer behaviour. The data, collected in Chapter 4, was also used for this purpose. Consumers can best provide judgment on objects formed by a combination of attributes rather than on each separate object attribute.[30] This study also allowed us to calculate future market shares because these relate to consumers attitudes.

9) *What are the critical characteristics of an out-of-hours health care service and what is the relative importance of the attributes in the decision process?*

Patients considered the 'explanation' about the disease and its treatment as the most important factor in the choice of a service, followed by 'waiting time' for the consultation. These two attributes explain approximately two thirds of the choice behaviour.

10) *How does the newly established general practitioner cooperative match these needs?*

This study enabled us to estimate the 'market share' of either primary care services, when changing one or more attributes. We estimated the market share the new GP cooperative would have and concluded that the new service particularly would benefit from improvements in GP's explanation and accessibility. Consequently we can predict a major shift towards the GPC once the service is actually known and used. In order to enhance user adoption, strategies are still required to increase awareness within the general public.

CHAPTER 6

In chapter 6, we studied the impact of establishing a GPC. These cooperatives are established by general practitioners and funded for their infrastructure by the Federal Government. GPs from a particular region on call work at this cooperative, which is established in a central location in the region. Patients can consult a physician without an appointment or prior telephone contact. Home visits are offered. In Flanders, GPC services are available from Friday evening until Monday morning and at present one in ten inhabitants of Flanders rely on such services. This new service replaced the former rota system in which GPs worked from their private practices.[26]

The study was performed in Turnhout, a district in the northern part of Belgium. In this region, nearly perfect overlap exists between catchment areas of the GPC and the hospitals, allowing us to study case load at EDs and GP out-of-hours services in a natural before/ after experiment.

11) *What is the impact of the implementation of a general practitioner cooperative on the use and caseload of out-of-hours primary and secondary care?*

We found that the number of patients seeking help at the new primary care facility increased as compared to the former rota system. On the other hand, the number of patients seeking help at ED remained stable over a period of one year. Although no shift from ED to primary care was observed, we did identify a significant decrease in the number of trauma cases at ED and the number of patients who came to hospital by ambulance. Also, the trend of the diminishing number of home visits was more pronounced after organizing the out-of-hours care at the GPC.[31]

CHAPTER 7

WHAT THIS THESIS ADDS: PROS AND CONS

In the on-going discussion of changing out-of-hours care with the aim of redirecting patients or consumers of care from the ED towards primary care, three important players are involved: health care professionals, policy makers and the users of care. Interventions in health care systems are a delicate matter in which these three partners are involved. Also the peculiarities of the health system need to be taken into account. In this thesis we highlight the use, expectations and experiences of patients alongside the changing primary care landscape in Belgium. This thesis is also a first step in the evaluation of the GPCs in Belgium. It was not possible to create perfect conditions for scientific research, which is often the case in health services research. This is the reason why we need to describe some strengths but also weaknesses of our work.

INFORMATION ABOUT THE ILLNESS AND EXPECTED WAITING TIME

Clear insights in patients and consumer needs and choices would help to design better and more efficient out-of-hours care. We assessed consumer behaviour with methodologies from marketing and sociology, which had not been performed before in Belgium. Our results match the findings of similar research that was performed in the UK, which showed the most important variable in patients' choices was whether the doctor seemed to listen.[32] In our study, the wording of the question was slightly different and we found that consumers of care expect the physician to give a clear explanation about the sickness and its treatment (an importance between 35% and 38%). Also waiting times account for 25% of the importance in our model and play a more prominent role when a service can manage a waiting time of 30 minutes or less. Although we used subjective measures for estimating the importance of waiting times and we did not measure it chronometrically, we can advise to watch over waiting times and if possible limit them to 30 minutes. It has also been suggested that informing people about the expected waiting time results in a better patient satisfaction.[33, 34] Based on our research we can also advise general practitioners who choose to rearrange out-of-hours care into GPC, to attune their services by listening to and informing their patients.

IMPLEMENTING ALTERNATIVE PAYMENT SYSTEMS

We studied the patient's perception of the role the payment system plays in the decision process. At the time of the study, most participants were not aware of the payment system and the existence of co-payment at the ED. A striking observation was that people agree that the payment might have an inhibitory effect on help seeking behaviour

for 'the general public', although this was never reported spontaneously in the interview study (chapter 3) Nevertheless, we observed that direct co-payment (at 12,5 Euro during the period of he study) at the EDs does not influence their choice behaviour. Also in our discrete choice experiment, the payment system only accounts for 2.1% to 4.7% of the importance, so plays a very little role in the decision process. In conclusion, one might think that the decision to work in a fee for service system or by invoice later on, will not have a great impact on patients choice. Based on literature however, we have reason to believe that direct payment systems can lead to inequity of care because of delay in the help seeking process.[35-37]

In Belgium, GPs and their practices can choose the payment system they wish.[38] At present, all GP cooperatives work in the fee for service payment model. This payment scheme model allows exemptions for people who have insufficient cash money. They can have their bill sent directly to their medical insurance.[39] This way, for certain patient groups third party payment can be used, also at the GPC. At present we informally observe an increase in favour of this exemption, but we are unaware of its magnitude. The direct payment system at the GPC contrasts to hospital services, where there is no direct billing. For people with lower incomes, this might influence behaviour in the long run. Flexible payment systems like direct billing to insurers might be a solution to enhance equity of care. To foresee unwanted side effects the reimbursement of physicians (GPs and at EDs) during normal working hours must be taken into consideration. Indeed, if free services are offered after-hours, this might redirect patients away from regular office hours, where patients need to pay. This might deter overall quality of primary care services.

WITH RESPECT FOR EQUITY

We experienced great difficulty in gathering socio-economic data of patients seeking help at the ED or the GP out-of-hours services. The lack of in depth socio-economic data is a limitation of our study on the profile analysis of patients attending the ED and the GP on call. We found some arguments to expect that socio-economic minorities show different behaviour. For instance people of foreign origin (African identity), people who do not speak one of the national languages and patients without medical insurance, seem to prefer to seek help at the ED (chapter 2).

From literature we know that socio-economic determinants do play a role in the decision process to seek medical help during out-of-hours.[37, 40] Not only financial disadvantages but also accessibility and availability of health care services are significant barriers. This opens the discussion on 'equity of care', which is one of the cornerstones of quality of health care.[41] Research on socio-economic characteristics of patients or consumers of care is very specific and delicate. In the studies of chapters 2 and 3 we tried to get information about socio-economic items and we used indirect questions. Still it showed that we were not able to achieve great participation and we had a great deal of missing data. Probably in our experiment in chapters 4 and 5, the setting at the Free New-born and Child service was not the most appropriate setting to study the socially deprived population. We chose this specific setting to cover the large number of foreign inhabitants, aiming at a broad range of different cultures and societies to have a stratification of the population of the inner city of Antwerp. Doing so we however, we

might have missed the financially and socially disadvantaged. Although this service claims that if offers services to 97% of the population with new-born children, we do not have numbers of the usual follow-up of this service. Also there could have been a selection bias towards young families with children, hence relatively excluding the older subpopulations.

To involve socio-economic minorities in research on out-of-hours primary care, is a difficult matter and of major concern. All study methods seem to have their own specific shortages. Nevertheless, this type of studies is of great importance.

One option could be using a similar design as we used in the Discrete Choice Experiment (chapter 5). We must include the option of not seeking any medical help at all or waiting until the service they are acquainted with is available. The difficulty is to find a setting where socially deprived people can easily be approached. Useful information can be found by consulting social 'street workers', who work in close contact with these subgroups.

Another option is the study design that is used by 'De Gezondheidsenquête'. Again one can question whether the aimed for population is covered entirely, but the method of questioning, using 'stepwise' strategies, is far more acceptable. However, it can also be argued that this will lead to some selection bias, so underreporting.

Qualitative study designs can be of further help. Indirect strategies to detect drivers for behaviour among key-persons of specific minorities can help to clarify these issues. Useful information can be collected to work out a perfect setting to collect data from this important population in large cities, diminishing the risk of selection bias.

Meanwhile, taking care of accessibility and availability seems to be of great importance. In certain countries this is compromised by restricting home visits by GPCs.[37, 40] Offering home visits is one of the strengths of Belgian primary care, during working hours as well as during out-of-hours. Compared to other countries, where home visits are less common, Belgian GPs offer this service on simple request. Whether or not this enhances equity has to be studied. One can imagine that home visits target more the vulnerable elderly, one of the sub-groups that need special attention in the equity debate.

DATA COLLECTION AND TRANSFER

GPCs in Belgium have emerged since 2003. We had the possibility to study the influence on patient fluxes by implementing a GPC in 2006 in the Turnhout study (chapter 6). Only small differences of patient fluxes were observed. The shortcomings of this study are the short study period, the lack of a valid control region and the fact that it was infeasible to measure degree of urgency and clinical outcome. A longer study period would rule out the effect of 'the push strategy' in which we see that implementing a new service also creates a demand, and would enable to study `steady state' patient fluxes. In Denmark even the opposite effect emerges. Due to the triage system that is used at the GPC, caseload at the GPC during out-of-hours diminished, creating the fear that perhaps more patients sought medical help at the ED. Thanks to performative IT services, researchers could demonstrate that case load at the ED remained stable.[24] To facilitate similar data collection we strongly recommend installing uniform software systems at GPC sand EDs to enable comparative studies.

The use of Information Technology (IT) in primary health care in Belgium is of concern. GP are legally obliged to report medical data during out-of-hours to the family physician of the patient. They have to report the number of patients they treated during their on call duty to the local GP organization. For this purpose some GPs use a uniform software registration system provided by Domus Medica, known as the 'Domus Medica Mailer'. GPs are not obliged to use this software and often register patient contacts on written forms, making data collection for study purposes rather difficult. Also during normal working hours, registration by GPs in Belgium is still susceptible to further improvement.[42-44] Also EDs were not using uniform registration systems at the time of our study. At present, they are evolving to systems like 'e-care'-software systems, enhancing the option of data gathering and exchange.

Only very recently, a new impulse was given by E-health, which is a federal body aiming to facilitate electronic data transfer between health providers.[39] At present, E-Health facilitates the setup of regional information hubs in the two communities. This can allow rapid implementation of projects aiming to offer accessibility of patient data. For instance, essential data of the medical record (so called SUMEHR data) can be real-time transferred to such a regional hub, allowing the GP cooperatives and ED to use these data.[39] At present, E-Health along with groups of General Practitioners (for instance Domus Medica, the scientific organization of GPs in Flanders) are looking at possibilities to join efforts. A quick improvement could be the data transfer between GPs, the GPC and ED of one or more regions, to improve the electronic continuity of care and identify 'overuse'.

AVENUES FOR FUTURE WORK

One of the most important goals for future work encompasses the need to ensure quality of medical health care (clinical effectiveness and equity), while aiming to minimize inappropriate use. This is a difficult exercise because of the lack of clear definition of what is or is not 'inappropriate' use of ED. Patient opinions tend to differ from medical personnel and even between medical personnel and payers of care this discussion is on-going.[45] Essential is high quality and cost-efficient out-of-hours care, with feasible workload for GPs and EDs. Decreasing medical workforce both in primary and secondary care and monetary constraints will become more important. We formulate some suggestions for future work in the next paragraphs.

CONVERGENCE RATHER THAN COMPETITION

In Belgium, the classic division in primary, secondary and tertiary care is being redesigned at present. One example is the 'zorgtrajecten/trajects des soins' project, in which within and between primary and secondary care, new patterns of care are presented. Rather than competitively fishing in the same pool of patients, health care facilities tend to evolve into partnerships. We need to build models in which GPC and ED grow into complementary services rather than being competing services.

One solution might be the integration of GPC and ED. In the Netherlands, these structures are found to be efficient in redirecting patients to primary care with a decrease of caseload at the ED. Even a more efficient distribution of health care problems between

the ED and the GPC was realized.[46] The GPC can profit from the facilities of the ED (personnel, workplace, transport). On the other hand, the ED and hospital might benefit from decreasing workload for the personnel and increased safety for ED patients (shorter waiting time, less delay in providing needed care).[47-49]

INFORMING PEOPLE

Consumers tend to use health care facilities from the users point of view, which does not necessarily overlap with the organizational intentions. Their attitudes can be very different from the point of view of doctors and governments, as we have shown in a number of studies.

Informing the population about the different out-of-hours services and their tasks, is one of the most important measures to encourage people to seek help at the GPC for primary care problems. Special attention can be paid to people of foreign origin, who are not familiar with our health care system. Also young men suffering small trauma can be redirected to primary care while informing them about the appropriateness of technical examination and the role of the general practitioner to decide whether further investigation is necessary. Patients mention the use of television spots, information in local papers, by pharmacists and certainly by the GPs themselves as effective information dissemination.[50]

The effects of large scale information campaigns to inform the patients about appropriate use of health care facilities (i.e. when to choose GP or hospital based services) have been studied.[51] More specific research is needed to test which are the best strategies to inform minority groups, i.e. patients of foreign origin. Qualitative research can explore the immediate effects of such public campaigns. Projects, specifically aiming at minority groups have to be set up.

QUALITY OF CARE

The changing landscape in out-of-hours care enhances the need for an evaluation and improvement of quality of care. Quality has many dimensions, such as safety, access to care, clinical effectiveness, patient centeredness, timeliness, equity, efficiency and continuity. We suggest addressing these dimensions in future work. Quality of care for instance, can be studied by checking the use of and adherence to practice guidelines.

SUSTAINABILITY OF GPCS

Other countries actually use triage systems. Experiments are needed to introduce auxiliary personnel such as nurses and assistant physicians, in task delegation in the out-of-hours services of GPCs in Belgium. This appears to be of great urgency, as the workload is increasing and the work force of general practitioners is also declining in normal working hours.

Until now, most GPCs in Belgium are implemented in urban or semi-urban regions. Organizing out-of-hours primary care in rural regions is also needed, but for this, structural funding from the federal government is lacking at present. In these areas this may lead to a different problem relating the possibility of inequity, such as distance to facilities.[52]

IMPLICATIONS FOR MEDICAL CURRICULUM AND VOCATIONAL TRAINING

We already mentioned three players in the field of rearranging out-of-hours health care facilities: patients, health care professionals and policy makers. In fact we forgot the educational dimension. The new out-of-hours services can play a specific and important role in the education of future health care workers. As Boelen et al. states: 'In light of increasing fragmentation, the current health system must be substituted by a true systems vision along with political will to create a unity of action between the five main stakeholders, namely: policy-makers, health care service managers, professionals and professional associations, academic institutions including medical schools, and civil society. Such synergy can only be established if the partners share the same commitment to core values such as quality, equity, relevance and cost-effectiveness in the health care field. Through its functions of providing education, training, research, and services, the medical school has the potential to induce reflection and stimulate action leading to a more coherent, effective, and equitable health system and policies.'[53]

Facilities like GPCs offer many teaching opportunities for medical students and for postgraduate training. Probably working at a GPC during vocational training, can promote discussion and collaboration between primary and secondary care trainees, facilitating the complementary work they will do in their professional careers. The opportunity to work at a GPC during vocational training also offers possibilities to learn.

FINALLY

Outcome studies are needed to discover if GP and ED services can work complementary. Why not study the effect of having the GPC and ED in one location? In our country, this may help to reduce the mismatch of services and patient needs, and will reduce the share of inappropriate use of these services.

New directions for out-of-hours primary care are necessary, as is shown in our surrounding countries and in this thesis. The European context is important to learn from examples in other countries such as reorganization of services, triage systems and quality improvement.

In this thesis we especially focused on the patient as a central player when changing out-of-hours health care organization. We are convinced that adapting changes in health care services demands a clear insight in what the users of the services expect and prefer. This is the only way that behaviour can be modified.

'Rather than vainly attempting to make the patients appropriate to the service, future initiatives should concentrate on making the services more appropriate to the patient.'
(Murphy 1998)[54]

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SAMENVATTING

Hoofdstuk 1 Voorheen werd de verdeling van de wachtdiensten georganiseerd door de huisartsenwachtkringen. Iedere huisarts werd ingeschakeld in een beurtrol systeem waarbij de arts zelf vanuit de eigen praktijk werkte, met eventueel telefoon- of secretariaatsondersteuning van de echtgeno(o)t(e) of een familielid. Hoewel in vele huisartsenkringen de wachtdienst nog steeds op dergelijke wijze georganiseerd wordt, dient een her organisatie van de wachtdiensten zich aan. Dit is te wijten aan een veranderend 'landschap' in de huisartsgeneeskunde (bv. vervrouwelijking van het beroep, meer artsen die deeltijds wensen te werken, jonge huisartsen die tijdens de eerste vijf jaar van hun carrière het beroep als huisarts stopzetten, veroudering van het huisartsenbestand, studenten die eerder andere specialisatieopleidingen verkiezen dan huisartsgeneeskunde en een toenemende onveiligheid tijdens huisbezoeken, voornamelijk in grotere steden).

Ons onderzoek startte kort na de oprichting van de eerste HWP in België, met name de Huisartsenwachtpost in Deurne-Borgerhout in juni 2003.

Het Belgisch gezondheidszorgsysteem wordt gekenmerkt door een vrije toegang tot de eerste, tweede en derdelijns medische hulpverlening. De huisartsen hebben geen 'poortwachtersrol' en verwijzing naar andere hulpverleners is niet noodzakelijk om specialistische hulp te zoeken. Er is een trend om meer en meer hulp te zoeken op de spoedgevallendiensten van de ziekenhuizen en dit vaak met kleinere medische problemen die net zo goed door de huisarts met wachtdienst opgevangen kunnen worden.

In deze thesis brengen we verslag uit van vijf onderzoeken (11 onderzoeksvragen) met betrekking tot de hulpverlening buiten de kantooruren in België. We kijken hierbij vooral naar de ervaringen, keuzes en het gedrag van de patiënten of 'consumenten' van de medische hulpverlening. We bestuderen de werkbelasting op spoedgevallendiensten en tijdens de huisartsenwachtdiensten. Tenslotte bekijken we de verandering van werkbelasting bij huisartsen en spoeddiensten wanneer een huisartsenwachtpost opgericht wordt.

In **hoofdstuk 2** beschrijven we de werkbelasting van huisartsen met wachtdienst en spoedgevallendiensten in 4 grote Belgische steden: Antwerpen, Brussel, Charleroi en Gent. We meten patiënten aantallen bij de huisarts of op de spoedgevallendienst en beschrijven de karakteristieken van deze patiëntengroepen. Het 'oneigenlijk' gebruik van spoedgevallendiensten delen we met andere West-Europese landen. De determinanten die de keuze voor de spoedgevallendienst bevorderen zijn: van het mannelijk geslacht zijn, gedurende de voorbije 12 maanden minstens één keer gebruik gemaakt hebben van de spoedgevallendienst, gezinnen waarbij de meest gesproken taal thuis een andere taal dan Frans of Nederlands is, van Afrikaanse nationaliteit zijn en het ontbreken van enige vorm van ziekteverzekering. De top 3 van de diagnoses bij de huisarts vinden we terug in volgende ICPC hoofdstukken: R (luchtwegen), D (maagdarmstelsel) en A (algemeen en niet gespecificeerd). Op de spoedgevallendienst luidt deze top 3 als volgt: L (musculoskeletaal), S (huid) en D (maagdarmstelsel).

Opvallend is dat twee populaties voornamelijk hulp zoeken voor mineure medische problemen op de spoedgevallendienst: mensen van vreemde afkomst en jonge mannen met kleine trauma's. Informatie verschaffen over de taken en opdrachten van de verschillende hulpdiensten en jonge mensen erop wijzen dat technische onderzoeken meestal niet nodig zijn voor kleine traumatologie, kunnen misschien een gedragswijziging bevorderen.

Hoofdstuk 3: Gebruik makend van een 'mixed method' studie design, schatten we het impact van de invoering van forfaitaire betalingssystemen op de spoedgevallendiensten op het 'oneigenlijk' gebruik in. We gebruiken hiervoor vragenlijsten en face-to-face interviews en bevragen patiënten op spoedgevallendiensten en huisartsenwachtdiensten over hun kennis en mening wat betreft betalingssystemen. We onderzoeken waarom ze de voorkeur geven aan een bepaalde vorm van hulpverlening en wat hun keuze beïnvloedt. De frequentst genoemde redenen om voor de spoedgevallendienst te kiezen zijn: toegankelijkheid (15.0%), nabijheid (6.4%) en competent personeel (5.6%). Redenen om voor de huisartsenwachtdienst te kiezen zijn: de huisarts is gemakkelijk te vinden, voor kleine medische problemen, ongerustheid over een bepaald symptoom en vertrouwen hebben in de huisarts. De kans dat patiënten die hulp zoeken op de spoedgevallendienst geen voorkennis hebben over het betalingssysteem is significant hoger dan bij de patiënten die de huisartsenwachtdienst gebruiken (OR 1.783; 95% CI: 1.493-2.129). Het betalingssysteem wordt door geen enkele deelnemer spontaan vermeld als een mogelijke factor die hun keuze zou kunnen beïnvloeden. De meeste deelnemers die gebruik maakten van de huisartsenwachtdienst zijn zich ervan bewust dat de spoedgevallendienst vaak gebruikt wordt voor mineure klachten. Ze suggereren zelf om patiënten beter te informeren over de taken van de verschillende hulpverleners en over de kosten die eraan verbonden zijn, wanneer het 'oneigenlijk' gebruik van de spoedgevallendienst teruggedrongen moet worden. We concluderen dat het invoeren van forfaitaire betalingssystemen (in casu € 12.50) weinig of geen invloed heeft op de keuze van de patiënt, maar we moeten ons bovendien bewust zijn van mogelijke effecten op toegankelijkheid van ons gezondheidszorgsysteem.

Hoofdstuk 4: Dit hoofdstuk rapporteert een deelstudie die is gebaseerd op de 'Theory of reasoned Action'. Het onderzoek werd uitgevoerd op de consultaties van Kind en Gezin in Deurne en Borgerhout. Ouders van jonge kinderen werden er bevraagd over hun kennis, ervaringen en percepties over het functioneren van de verschillende soorten hulpverlening buiten de kantooruren. 98.6% van de deelnemers kent de spoedgevallendienst, de huisartsenwachtpost is gekend bij 81.7% van de deelnemers. In de keuze van hulpverlening tijdens wachtdiensten zijn volgende items cruciaal: ervaring met een bepaalde vorm van hulpverlening, gemakkelijke toegang tot de hulpverlening, uitleg die de arts geeft over de ziekte en de behandeling ervan en de wachttijd.

In **hoofdstuk 5** benaderen we opnieuw 'consumenten' van zorgverlening. In dit onderzoek wordt de deelnemers een computergestuurde enquête aangeboden onder de vorm van een 'Discrete Choice Experiment'. Deze methodologie werd aanvankelijk gebruikt in marketing onderzoek. De discrete keuze analyse biedt de onderzoekspopulatie een meer realistische methode om keuzes te maken tussen verschillende soorten van hulpverlening. De 'attributen', noodzakelijk voor dergelijke enquêtes, werden gegenereerd uit de wetenschappelijke literatuur over keuzeprocessen

voor hulpverlening buiten de kantooruren. Deelnemers werden bevraagd aan de hand van 2 fictieve scenario's. Elke deelnemer kreeg 10 maal de keuze tussen twee lichtjes verschillende soorten van hulpverlening. Door de niveaus van de verschillende attributen 'at random' te variëren, wordt het mogelijk de belangrijkste criteria in het keuzeproces aan te duiden. De twee belangrijkste criteria in de keuze zijn: 'informatie van de arts over de ziekte en de behandeling ervan' en 'wachttijd'. De andere attributen waren minder belangrijk in het keuzeproces, namelijk: beschikbaarheid van technisch onderzoek, toegankelijkheid, soort hulpverlening en betalingssysteem.

Deze methodologie laat toe het mogelijke marktaandeel van de huisartsenwachtposten te berekenen. In de veronderstelling dat de gebruikers van de zorgverlening de HWP beter leren kennen, zou het marktaandeel ervan 39.1% kunnen bedragen. Hierbij verschuift de spoedafdeling naar de tweede plaats met 32.7%. Wanneer we een verschuiving van patiëntcontacten van de spoedgevallendienst naar de huisartsenwachtdienst beogen moeten we vooral aandacht schenken aan informatie verschaffen aan de patiënten en bewaken van aanvaardbare wachttijden.

In **hoofdstuk 6** bestuderen we de invloed van het oprichten van een huisartsenwachtpost op het aantal patiëntcontacten op de wachtpost en op de spoedgevallendienst. Hiervoor gebruiken we een prospectief, interventioneel onderzoek met voor- en nameting. Dit onderzoek werd uitgevoerd in Turnhout, waar destijds een huisartsenwachtpost gepland werd in november 2006. We verzamelden gegevens in de zomermaanden voor het starten van de HWP en tijdens dezelfde maanden één jaar later. Turnhout is een regio waarin de hulpverlening duidelijk afgebakend is. Nagenoeg alle patiënten die door de huisartsen uit de regio verwezen worden gaan naar de spoedgevallendiensten van de twee ziekenhuizen in de stad. Een 100 tal huisartsen neemt deel aan de lokale wachtdiensten. Uit de resultaten van dit onderzoek blijkt dat het aantal patiëntcontacten op de huisartsenwachtpost significant toeneemt na de oprichting van de HWP (OR: 1.645; 95% CI: 1.439-1.880), terwijl er geen significante verschillen optreden op de spoedgevallendienst. We bemerken wel een significante daling van het aantal traumatologische klachten op de spoedgevallendienst (OR: 0.789; 95% CI: 0.648-0.960) en van het aantal patiënten dat met de ziekenwagen naar de spoedgevallendienst gevoerd werden (OR: 0.687; 95% CI: 0.565-0.836). Uit deze eerste studie in België kunnen we concluderen dat door het oprichten van een HWP in een gezondheidssysteem met vrije toegang, een verschuiving van patiëntcontacten kan plaatsvinden voor specifieke problemen. Mogelijkerwijs zou dit kunnen leiden tot een daling van de kosten of een meer kosteneffectieve organisatie van hulpverlening buiten de kantooruren. Verder onderzoek zal moeten uitwijzen of er een wijziging van patiëntcontacten plaatsvindt en of de kwaliteit van zorgverlening hierdoor al dan niet gewijzigd wordt.

In **hoofdstuk 7** formuleren we de conclusies van onze onderzoeksvragen en suggesties voor verder onderzoek.

Het is belangrijk de bevolking duidelijk te informeren over de verschillende taken van de hulpverleners die buiten de kantooruren beschikbaar zijn wanneer we mensen trachten te motiveren om voor eerstelijnspathologie gebruik te maken van de huisartsenwachtdiensten. Hierbij dienen we extra aandacht te besteden aan patiënten van vreemde origine, die vaak niet vertrouwd zijn met het Belgische gezondheidszorgsysteem. Ook jonge mannen met kleine traumatologie kunnen geheroriënteerd worden naar de huisartsenwachtdienst, wanneer we ze informatie

verschaffen over het al dan niet noodzakelijk zijn van verder technisch onderzoek en de rol van de huisarts in dit beslissingsproces. Verder onderzoek zal nodig zijn om na te kijken welke strategie het best werkt om deze populaties te informeren.

We hebben gezien dat patiënten trouw zijn aan die hulpverlener die ze kennen en waar ze ervaring mee heeben. We weten ook dat patiënten het op prijs stellen dat de arts hen duidelijk informeert over de ziekte en de behandeling ervan. Ze verwachten aanvaardbare wachttijden en liefst informatie over hoe lang ze ongeveer zullen moeten wachten. Organisatoren van huisartsenwachtposten kunnen met deze voorkeuren alvast rekening houden.

De rol van de verschillende betalingssystemen blijft wat onduidelijk. Vermoedelijk heeft het invoeren van een forfait op de spoedgevallendiensten geen ontradend effect. Bovendien moeten we ons bewust zijn van de mogelijke risico's die dergelijke maatregelen kunnen hebben op sociaal zwakkere populaties.

Aangezien het aantal huisartsen daalt en de werkbelasting buiten kantooruren toeneemt, dient een her organisatie van de wachtdiensten zich aan. Momenteel wordt hulpverlening door wachtposten in Vlaanderen voorzien voor 1 op 10 burgers.

In andere landen worden verschillende systemen aangewend, maar wordt vooral ook veel aandacht aan triage systemen besteed. Verder onderzoek zal ook bij ons moeten uitwijzen of het inzetten van bijkomend personeel, verpleegkundigen of arts-assitenten, een oplossing kan bieden in de werkbelasting van de artsen. Dergelijk onderzoek is van belang, aangezien ook tijdens de normale werkuren het aantal artsen daalt waardoor de werkbelasting toeneemt.

Verder is wetenschappelijk onderzoek naar de 'outcome' van onze zorgverlening noodzakelijk, om na te gaan of onze eerstelijnszorg wel degelijk een betrouwbaar en volwaardig alternatief kan bieden voor de opvang van de patiënten op de spoedgevallendiensten. Kunnen beide vormen van hulpverlening complementair aan elkaar bestaan? Dit soort onderzoek is noodzakelijk om uitspraak te kunnen doen over kosteneffectiviteit.

Als complementaire vormen van hulpverlening, kan onderzocht worden of het zinvol is huisartsenwachtposten nabij de spoedgevallendiensten te plaatsen. Mogelijkerwijs kan dit helpen om de mis match van de hulpverlening en de behoeften van de patiënten op elkaar af te stemmen en op die manier het oneigenlijk gebruik terug te dringen.

De allerbelangrijkste invalshoek voor verder onderzoek om 'oneigenlijk gebruik' terug te dringen, zal zijn, het bewaken van gelijkheid en kwaliteit van de hulpverlening. Dit is een blijft een moeilijke oefening wegens het gebrek aan een duidelijke definitie van 'oneigenlijk' gebruik.

RÉSUMÉ

Notre **1er chapitre** offre au lecteur une brève introduction concernant le contexte et le but de cette thèse. Notre but est de décrire l'accès aux soins en dehors des heures ouvrables, également dans ce que l'on appelle les «postes de gardes de médecine générale (PGMG)». C'est dans ce chapitre que vous retrouverez les questions de recherche de cette thèse.

Dans un passé bien récent l'organisation des soins en dehors des heures ouvrables était tout simplement la responsabilité d'un cercle local de médecine générale. Chaque médecin local y participait avec l'aide de son épouse ou d'un autre membre de la famille qui s'occupait du téléphone, ou même assumait le rôle de secrétaire. Quoique dans beaucoup de cercles pareils, l'organisation se fait de cette façon, une réorganisation des soins en dehors des heures ouvrables s'impose. Les causes ? En premier lieu il y a un changement énorme en médecine familiale (ex. la profession qui se féminise de plus en plus, plusieurs médecins qui désirent travailler à mi-temps, des médecins jeunes qui décident de ne plus continuer leur métier au bout de 5 ans, le vieillissement des médecins pratiquants, des étudiants qui préfèrent la vie de spécialiste au lieu de celle du médecin de famille, et l'insécurité grandissante pendant les visites, ceci surtout dans les grandes villes).

Notre recherche a démarré peu après l'établissement de la 1ère PGMG en Belgique, à savoir celle de Deurne-Borgerhout, établie en 2003.

Notre système belge de sécurité sociale est caractérisé par son accès libre au 1er, 2ème et même 3ème échelon des soins médicaux. Les médecins de famille jouent un rôle marginal dans cette démarche. Une référence par le médecin généraliste n'est pas nécessaire pour demander l'aide des médecins spécialistes. Dans notre pays, la tendance existe également de s'adresser aux services d'urgence et ceci dans la plupart des cas pour des problèmes qui se solutionnent aisément à l'aide du médecin de famille.

Dans cette thèse nous nous sommes limités à décrire les éléments qui illustrent l'importance des paysages changeants en ce qui concerne 'les soins en dehors des heures ouvrables'. Nous rapportons 5 études (11 questions de recherche) dans lesquelles nous nous occupons surtout des expériences, des choix et du comportement des patients ou les 'consommateurs du traitement médical'. Nous étudierons la charge de travail dans les services d'urgence ainsi que dans les PGMG. En plus, on vous donnera une idée du changement dans la charge de travail lors de la mise en place d'une PGMG.

Le **Chapitre** 2 traite de la charge de travail, des services d'urgence et des médecins de famille pendant leurs services en dehors des heures ouvrables, durant 2 weekends en janvier 2005 et ceci dans 4 grandes villes belges, à savoir Anvers, Bruxelles, Charleroi et Gand. Notre but est de mesurer le nombre des patients qui s'adressent au médecin de famille ou au service d'urgence, ainsi que de décrire les caractéristiques des groupes de patients concernés. L'utilisation 'impropre' des services d'urgence est un souci que nous partageons avec chacun des pays européens. Le profil des patients qui choisissent de s'adresser à ce service est le suivant: appartenir au genre masculin, avoir fréquenté un service pareil les 12 derniers mois, la langue maternelle est autre que le français ou le

néerlandais, avoir une nationalité africaine et le manque total d'assurance maladie-invalidité. Le top 3 des diagnostics faits par le médecin de famille se retrouve dans les chapitres ICPC et sont les suivants: R (respiratoire), D (digestif) et A (général et non-spécifié). Au sein d'un service d'urgence ce top 3 se révèle être différent, à savoir : L (musculo-squelettique), S (peau) et D (digestif).

Ce qui saute à l'œil est que surtout 2 populations cherchent de l'aide pour des plaintes mineures dans les services d'urgences, à savoir des gens d'origine allochtone et des jeunes hommes qui souffrent de traumas mineurs. Il est donc clair que ces deux groupes méritent notre attention spéciale. Afin de modifier leur comportement vis à vis des services d'urgence il peut se révéler nécessaire de leur informer davantage sur les responsabilités des services d'urgence. Surtout parmi les jeunes gens, il faudrait expliquer que pour des traumatologies mineures, dans la plupart des cas, des recherches techniques ne sont pas à l'ordre du jour.

Le **Chapitre** 3 : En utilisant une étude du type 'mixed method', nous estimons l'impact de l'introduction de systèmes de paiement forfaitaire sur l'utilisation impropre des services d'urgence. Afin d'obtenir des résultats, nous utilisons des enquêtes et des interviews individuels. En plus nous nous informons auprès des patients fréquentant le service d'urgence ainsi qu'au service de garde sur leur connaissance et opinion concernant les systèmes de paiement forfaitaire. Nous essayons de déterminer pourquoi ils s'adressent à un tel service, ce qui influence leur choix et quels sont les critères qui sont décisifs. Les motivations les plus fréquentes en faveur des services d'urgence sont: l'accessibilité (15,0%), la proximité (6,4%) et la compétence du personnel (5,6%). Les motivations de choisir pour le service de garde des médecins de famille sont: le médecin de famille se retrouve aisément, pour des problèmes mineurs on s'adresse vers lui, l'inquiétude à propos d'un symptôme bien déterminé et la confiance que l'on fait au médecin de famille. La probabilité que des patients, s'adressant au service d'urgence, ne soient pas au courant des systèmes de paiement est significativement plus élevée que parmi ceux qui s'adhèrent au service de garde de médicine générale (OR 1.783; 95% CI: 1.493-2.129). Pour aucun des participants le système de paiement n'est un facteur qui déterminera leur choix ou décision. Une majorité des participants utilisant le service de garde des médecins de famille, se rend bien compte du fait que souvent le service d'urgences est sollicité pour des plaintes mineures. Dans le cadre de diminuer l'utilisation impropre, ce sont eux-mêmes qui suggèrent de mieux informer les patients sur les tâches des services différentes et sur les frais générés par ces services. Nous constatons qu'une éventuelle introduction d'un système de paiement forfaitaire (in casu € 12.50) n'aura point d'influence sur le choix que fera le patient. En plus ; il faut être bien conscient du fait que ceci pourrait ouvrir la porte vers un accès inégal de nos services de santé.

Dans le **chapitre 4** nous allons prédire le comportement des 'consommateurs' des soins en dehors des heures ouvrables. Ceci sera fait à base de leur(s) attitude(s). Nous avons consciemment porté notre choix sur l'interrogation du 'consommateur'. Ceci afin d'établir une différence entre les gens qui au moment de l'enquête avaient déjà fait un choix et d'autres qui -au même moment - n'avaient (pas encore) de problème de santé. Cette recherche a été basée sur la 'Theory of Reasoned Action'(TRA). Notre enquête a eu lieu lors des consultations de l'Office de la Naissance et de l'Enfance (ONE ou 'Kind & Gezin')

à Deurne et à Borgerhout. On y a interrogé des parents de jeunes enfants au sujet de leur connaissance, expériences et perceptions concernant les différents genres des soins en dehors des heures ouvrables. 98,6% des interrogés sont familiarisés avec le service d'urgence, par contre le PGMG n'est connue que par 81,7% parmi eux. Les critères les plus importants selon lesquels ils établissent leur choix entre le service de garde ou le service d'urgence sont les suivants: l'expérience dans le passé avec un de ces services, l'accès facile et la disponibilité, l'explication que donne le médecin sur la maladie, ainsi que le traitement et le temps passé dans la salle d'attente.

Notre **5ième chapitre** est également consacré au 'consommateur' des services de soins. Dans cette recherche, on envoie aux participants une enquête digitale sous forme de 'Discrete Choice Experiment'. L'origine de cette méthodologie remonte aux recherches de marketing. Cette 'discrete choice experiment' offre à la population sujet de recherche, une méthode plus réaliste pour établir un choix entre les différentes organisations des soins médicaux. Pour cette enquête particulière, on a besoin de 'paramètres'. On les a générés de la littérature scientifique sur les procédés de choix concernant le service des soins en dehors des heures ouvrables. Les participants ont été questionnés à l'aide de 2 scénarios fictifs. Chaque participant était obligé de porter un choix entre deux genres d'aide, qui ne diffèrent entre eux que dans les détails. Ils recevaient chacun 10 paires de scénarios. En variant arbitrairement les niveaux des différents paramètres, il est possible d'indiquer les critères les plus importants dans l'établissement de choix. Les critères les plus importants se révèlent être alors: 'l'information du médecin sur la maladie et la thérapie qui en suit' et 'le temps d'attente'. D'autres paramètres moins importants dans le procédé de choix: l'accès à la technologie médical, l'accessibilité, le genre d'aide et le système de paiement.

Cette méthodologie nous permet donc d'insérer dans le modèle les prestations réelles des différentes sortes de soins organisés. Par conséquent il nous est possible de calculer la part de marché des PGMG. Tout en supposant que les utilisateurs deviennent plus familiarisés avec le système des PGMG, leur part de marché pourrait atteindre 39,1%. Dans cette situation le service d'urgence se retrouve en deuxième position avec une part de marché de 32,7%. Donc : si c'est notre but de transférer certains patients du service d'urgence vers les PGMG, il sera nécessaire de bien nous concentrer sur deux aspects, à savoir : bien informer les patients et maintenir des temps d'attente acceptables.

Le **chapitre 6** traite de l'influence de l'implantation d'une PGMG sur la fréquentation par les patients du service d'urgence et de cette PGMG. Pour cette recherche nous avons fait appel à une méthode prospective et interventionnelle où l'on a comparé la situation antérieure avec celle d'après. Cette recherche a été effectuée à Turnhout, où en novembre 2006 l'on avait envisagé d'installer une PGMG. Nous avons rassemblé nos données pendant l'été avant l'installation de la PGMG ainsi que pendant la même période un an plus tard. Turnhout se situe dans une région où le service de secours est bien défini. Pratiquement tous les patients de cette région qui sont renvoyés par leur médecin de famille au service d'urgence, ne s'adressent qu'à l'un des deux hôpitaux de la ville. A peu près 100 médecins de famille participent dans un système de médecine de garde. Les résultats montrent qu'après l'implantation de la PGMG le nombre de consultations chez le médecin de famille connaît une croissance significative (OR: 1.645; 95% CI: 1.439-1.880), tandis que les consultations au niveau des services d'urgence restent quasiment stables. Cependant on remarque que les plaintes traumatologiques dans les services d'urgence connaissent une baisse importante (OR: 0.789; 95% CI: 0.648-0.960), ainsi que les transports en ambulance (OR: 0.687; 95% CI: 0.565-0.836). Que

peut-on conclure de cette première étude belge? Notamment que l'implantation d'une PGMG au sein d'un système de soins à accès libre, ouvre des opportunités pour transférer certains patients avec certains problèmes spécifiques vers les PGMG. Ceci ouvre également des perspectives pour un assainissement financier et – par conséquent – une gestion plus favorable des frais d'une organisation des soins en dehors des heures ouvrables. Une recherche plus détaillée aura pour but de déterminer si un changement dans le genre de contacts se manifeste, et si la qualité du service des soins est influencée par ce changement.

Le **Chapitre 7** nous mène à formulation de nos conclusions. En outre nous suggérons certains problèmes qui pourraient faire l'objet d'une recherche plus profonde.

Il y a plusieurs manières d'étudier les soins en dehors des heures ouvrables. Nous étions particulièrement intéressés dans cette matière, suite au nombre décroissant de médecins de famille, la demande croissante d'aide de base dans les services de secours et le sur chargement de ces services à cause de l'utilisation impropre. Cette thèse vous présente un rapport de cinq recherches (11 questions de recherche) qui traitent du fonctionnement des soins en dehors des heures ouvrables en Belgique. Pour l'instant ceci sollicite notre attention particulière, étant donné l'évolution actuelle des services de garde vers des PGMG. A propos de cette dernière initiative, on peut assumer qu'un Flamand sur dix y a déjà accès.

Afin de motiver les gens de s'orienter vers les PGMG pour des pathologies simples, il est important de leur informer sur les différentes tâches des services de secours actifs en dehors des heures ouvrables. Sous cet angle, il nous faut bien prêter attention aux patients d'origine allochtone, qui ne sont souvent pas familiarisés avec le système belge des soins de santé. Egalement les jeunes (hommes) souffrants d'une traumatologie mineure peuvent être réorientés vers la PGMG, à condition que nous leur fournissions en effet l'information sur la nécessité ou non d'examens techniques complémentaires et le rôle du médecin de famille dans cette prise de décision. Afin de décider sur la façon d'informer cette population, une autre recherche s'imposera. Des méthodes de recherche qualitative seront probablement les plus efficaces quand on désire mesurer l'effet de campagnes publiques informatives.

Etant donné la diminution du nombre de médecins de famille et, par conséquent, l'augmentation du travail en dehors des heures de service, une réorganisation s'impose. A l'étranger plusieurs systèmes différents sont en vigueur, mais on prête également beaucoup d'attention à un système de tri. D'autres recherches auront pour but de déterminer si une solution pourra se présenter sous forme d'engagement de personnel supplémentaire, notamment des infirmiers ou des médecins-assistants, afin de faire diminuer la pression de travail pour les médecins de famille. Une recherche pareille est importante, puisque également pendant les heures de service le nombre de médecins de famille diminue, ce qui augmente leur pression de travail.

Toutefois il est nécessaire d'élaborer de la recherche scientifique sur le 'outcome' de nos services de soins. Ceci pour déterminer si nos soins primaires forment en effet une alternative fiable et complète pour l'accueil des patients au sein d'un service d'urgence. Les deux formules, peuvent-elles être complémentaires? Ce genre de recherche est nécessaire afin de décider sur l'effectivité des frais.

Comme on parle de deux formules de secours complémentaires, il est certainement un défi de les organiser et installer l'une près de l'autre. Il est fort probable que ceci évitera que le patient ne sait ni où ni à qui s'adresser et entraînera par conséquence une diminution de l'utilisation 'impropre'.

L'angle le plus important d'une recherche plus approfondie afin de limiter l'utilisation 'impropre' sera de veiller sur l'égalité et la qualité du service d'aide. Etant donné que le concept 'utilisation impropre' n'est pas défini, ceci restera un exercice délicat.

EXECUTIVE SUMMARY

Chapter 1 provides a brief introduction into the scope of this thesis. We describe the field of out-of-hours care and the newly established General Practitioner Cooperatives (GPC). Subsequently we present the research questions of this thesis.

Formerly, out-of-hours care by general practitioners was organised in rotation systems by local general practitioner (GP) organisations. GPs on call work from their private practices. The doctor's wife or another family member provides assistance if needed. Due to a changing landscape (i.e.feminisation of the profession, more doctors working part time, GPs quitting the profession during their first five years in practice, aging of the GP corps, students prefer careers in medical specialties, other than general practice and safety problems during home visits in larger cities) reorganisation of out-of-hours care becomes on the agenda. Our research started short after the implementation of the first General Practitioner Cooperative (GPC) in Deurne-Borgerhout in June 2003.

Belgian health care is characterized by free entrance to primary, secondary and tertiary care facilities. There is no gatekeeper role of general practitioners (GP) and no need for referral to other services. People tend to increasingly seek help at emergency departments (ED), often passing by the primary care services with minor medical problems.

In this thesis we address a number of issues that relate to the changing landscape of out-of-hours primary medical care services in Belgium. We focus on the experiences, choices and behaviour of the patients or consumers of care. We studied case-load at EDs and in primary care facilities and estimated the changes the establishment of a GPC might induce.

Chapter 2 describes case-load at primary care facilities and EDs during 2 weekends in 2005 in 4 major cities in Belgium: Antwerp, Brussels, Charleroi and Ghent. The aim of this study is to estimate the number and characteristics of patients at either service. Overuse or 'inappropriate use' of ED is of concern in Western society. The determinants that advanced the choice for the ED are: being male, having visited the ED at least once during the past 12 months, speaking another language than Dutch or French, being of African nationality and lack of medical insurance. Top 3 diagnoses at the GP services were in ICPC headings: R (respiratory tract), D (digestive) and A (general and unspecified), whereas at the ED: L (musculoskeletal), S (skin) and D (digestive).

Two populations that distinctively seek help at the ED for minor medical problems are people of foreign origin and young men suffering minor trauma. Special attention should go to these patients, informing them about the health services' specific tasks and the appropriateness of technical examinations for minor trauma.

Chapter 3 delineates a study which was performed during the same study period as chapter 2. In order to estimate the impact co-payments systems might have on 'inappropriate use' of ED we developed a mixed methods study design. Using questionnaires and face-to-face interviews, we asked patients at primary care services and EDs about their knowledge and ideas about payment systems in medical health care.

We explored why they choose one or another service and what influenced them. Most mentioned reasons for seeking help at the ED are: accessibility (15.0%), proximity (6.4%) and competence of the staff (5.6%). Reasons for choosing the GP are: GP is easy to find, minor medical problem, anxiety and confidence in the GP. The odds of not knowing the co-payment system are significantly higher in patients visiting the ED (OR 1.783; 95% CI: 1.493-2.129). Participants do not mention the payment system spontaneously. Mostly GP users recognize the problem of ED overuse. They suggested especially providing clear information about the tasks of the different services and about the payment system, to reduce ED overuse. Implementing co-payment seems to be of little value but can cause adverse effects, as for instance it might lead to inequity of care.

In chapter 4 we studied the attitudes and predict behaviour of 'consumers' of out-of-hours care. Deliberately differentiating this from the 'patient', who is at that time subject to medical care. The aim of this study is to estimate the choice behaviour when not (yet) in need of any medical treatment at that specific moment. Based on the Theory of Reasoned Action (TRA), we developed a survey that was used at the Free Newborn and Child Health care Services (FNC-service) in Antwerp. Consumers were asked about their knowledge, experience and perceptions concerning the performance of different medical services. 98.6% of the respondents knew about the existence of the Emergency Department (ED) while the GPC was known by 81, 7 % of them. The following items are crucial for choosing after-hours care: experience with the services, easy access to the service, explanation by the doctor about the illness and the treatment, and waiting time.

In chapter 5 again 'consumers' of care were approached. This time we offered them a computer- aided discrete choice experiment, a methodology which was initially used in marketing research. This study design enables respondents to choose in a more realistic way between different health services. The questionnaire is based on attributes, which were selected by studying former research on the subject. Based on two fictional scenario's we offered all respondents 10 questions in which they could choose between two different services of health care. By changing the levels of the different attributes of each service randomly, we were able to find out the most important decision criteria. The two most important attributes were 'explanation by the doctor' and 'waiting time' while the others - 'availability of technical equipment', 'ease of access', 'type of consultation' and 'payment method' - were of less importance.

Entering the 'real performance' of the services in the model, we were able to predict market share projections of the newly established GPC. Assuming that consumers gradually get to know the new service, the simulated market share for the GPC will be 39.1%. The ED shifts to the second place with a market share of 32.7%. Aiming a shift of patients with minor medical problems from the ED to the GPC, special attention should be paid to 'explanation by the doctor' and 'waiting time'.

In chapter 6, we studied the influence of establishing a GPC on patient fluxes. We set up a prospective interventional study in a before/ after design. The study was performed in Turnhout were a GPC was planned to start in November 2006. Data collection was performed during the summer before the GPC started and during the same months one year later. In Turnhout region, two hospitals provide ED care and about 100 GPs are enrolled in the primary care on call services. In this study we found that: one year after the implementation of a GPC, the number of patient contacts significantly increased at

the GPC (OR: 1.645; 95% CI: 1.439-1.880), while there were no significant changes in patient contacts at the Emergency Department (ED). At the ED we observed a decrease in the number of trauma cases (OR: 0.789; 95% CI: 0.648-0.960) and of patients who came to hospital by ambulance (OR: 0.687; 95% CI: 0.565-0.836). In conclusion we can state that, establishing a GPC in an open health care system, might redirect some patients with particular medical problems to primary care. This could lead to a lowering of costs or a more effectively out-of-hours care, but further research should focus on effective usage to divert patient flows and on quality and outcome of care.

In chapter 7 we formulate the conclusions of our studies and suggest some interesting questions for further research.

Several reasons led to the need for research in the field of out-of-hours primary care. Among these were the diminishing number of general practitioners, the increasing number of primary care pathology at the emergency departments (ED) and overcrowding at the ED. This thesis reports five studies (in all 11 research questions) related to out-of-hours primary medical care in Belgium. This is especially valuable as a new era in general practice has evolved in which out-of-hours care of GPs is, at present, offered to one in ten citizens of Flanders in large scale General Practitioner (out-of-hours) Cooperatives (GPC).

Probably informing the population about the different out-of-hours services and their tasks is one of the most important measures to encourage people to seek help at the GPC for primary care problems. Special attention can be paid to people of foreign origin, who are not familiar with our health care system. Also young men suffering small trauma can be redirected to primary care when informing them about the appropriateness of technical examination and the role of the general practitioner to decide whether further investigation is necessary. Specific research is needed to test best strategies to inform minority groups. Qualitative research might be suitable to explore the immediate effects of such public campaigns.

As the number of full time equivalent GPs is declining and their out-of-hours workload seems to increase, reorganisation of their work is inevitable. Other countries use different strategies and have indeed triage systems. Experiments are needed to study if auxiliary personnel like nurses and assistant physicians can play a role in task delegation in the out-of-hours services of GPCs. This seems urgent as the work force of general practitioners is also declining in normal working hours.

Outcome studies are necessary to compare quality and outcome of primary care and ED care and certainly experiments are needed to see if both services can act complementary. This will enable us to provide further data for deciding upon cost-effectiveness and division of tasks of primary and secondary care services. Long term research on patient fluxes with outcome assessment needs to be set up. Why not study the effect of having the GPC and ED in one location? This may help to reduce the mismatch of services and patient needs, and will decline the share of in-appropriate use of these services.

One of the most important goals for future work encompasses the need to ensure equity and quality of medical health care and at the same time aiming to change inappropriate

use. This is a difficult exercise because of the lack of clear definition of what is or is not ‘inappropriate’ use of ED.

ACKNOWLEDGEMENTS/DANKWOORD

Een doctoraat schrijven…. Ik kan er een boek over schrijven. Inderdaad, zoals ik al zo vaak gehoord heb, het IS een unieke ervaring. Op vele vlakken zelfs. Uiteraard in eerste instantie op wetenschappelijk gebied. De mogelijkheid die je krijgt om je zo te verdiepen in een onderwerp wat je écht interesseert. De kans te krijgen om met onderzoek bezig te zijn en de lange weg te mogen afleggen van idee tot artikel. Ik heb er zo van genoten! Maar je leert ook organiseren. Je leert plannen én je leert hoe je één en ander recht moet zetten wanneer je je planning verknoeid hebt. Je leert samenwerken, maar je leert ook écht helemaal alleen te werken, geconcentreerd, 'van de planeet af' als het ware. Je leert allerlei vaardigheden; van telefoneren tot skypen, van MS Word tot de meest exotische lay-out programma's. Je giet op den duur elke tekst die je moet schrijven in 5 hoofdstukken: inleiding, methode, resultaten, discussie en besluit. Zelfs je boodschappenlijst probeer je na verloop van tijd op die manier te ordenen. Je verzint meer nieuwe onderzoeken dan je er ooit nog zal kunnen uitvoeren en zoekt de meest relevante designs om tóch weer eens iets nieuws te bestuderen. Je wil overal een 'back-up' van maken en je kent je laptop op den duur van binnen en van buiten, beter zelfs dan dat je je eigen levenspartner kent (bij wijze van spreken).

Maar niet alleen dat. Je leert ook veel mensen kennen en je leert ook jezelf kennen. Je doet ook veel mensenkennis op. En ik moet eerlijk zeggen: 'dat viel me reuze goed mee'.

Je hoort telkens wel de uitspraak 'alleen had ik dat niet gekund' of 'het was niet realiseerbaar zonder de hulp van anderen'. Welja, misschien is dat nog wel bijna de belangrijkste boodschap. Dit doe je niet alleen en dat is maar goed ook! De ervaring om in overleg te treden, te leren van elkaar, elkaars meningen en ideeën te respecteren en duidelijke afspraken te maken en je eraan te houden…. Zijn zeer waardevolle dingen, niet alleen om een doctoraatsthesis te schrijven. Dat is iets wat je leert en waar je een grote dosis levenswijsheid uithaalt. Een onderzoek wordt uiteindelijk afgerond, al dan niet met een kersverse 'research-agenda'. Maar wat ik geleerd heb van mijn collega's, begeleiders, medeauteurs, familie en vrienden… dat stopt niet na de thesisverdediging.

Bij het schrijven van dit dankwoord ben ik teruggegaan in de geschiedenis. Hoe is het allemaal eigenlijk gelopen? Wie heeft mijn pad gekruist waardoor dit allemaal begonnen is?

En dan valt de groep mensen die hier hun steentje toe hebben bijgedragen al snel uiteen in twee groepen. De, laat het ons maar 'structurele groep' noemen en de 'professionele groep'. Met de eerste bedoelen we dan iedereen die de 'structuur' geboden heeft om mij deze kansen te bieden en met de tweede groep bedoelen we die mensen die heel het wetenschappelijke en/of organisatorische gedeelte mee op zich genomen hebben. Beide groepen zijn mekaar waard in belangrijkheid. Beiden zijn onmisbaar.

Vooraleer tot de 'professionele groep' over te gaan, eerst een woordje over de 'structurele groep'. Ik ben namelijk een geluksvogel geweest! Ik heb een heleboel kansen gekregen. Als die er niet geweest waren, dan had dit werk hier nu niet gelegen, dat is evident. En die kansen die heb ik gekregen van mensen die mij gesteund hebben in de keuzes die ik maakte. Dankzij hun hulp heb ik dit tot een goed einde kunnen brengen. Inhoudelijk hebben ze dan waarschijnlijk wat minder bijgedragen, maar ondersteunend

des te meer. Uiteraard zijn dit mijn partner Kurt, die menig weekend aan zijn neus zag voorbijgaan. Vele avonden alleen heeft mogen doorbrengen en heel wat nukkigheden heeft mogen opvangen. Telkens even rustig, luisterend en moedgevend aanwezig heeft hij een zeer waardevolle bijdrage geleverd aan dit werk. Ook mijn beide ouders hebben mij niet alleen vanaf het begin mee gesteund, maar ook blijvend gemotiveerd om door te zetten; al van voor er sprake was van wetenschappelijk onderzoek, tijdens de studies geneeskunde, bij het opstarten van mijn praktijk en later inderdaad, bij mijn allereerste stapjes bij het deelnemen aan de wetenschappelijke activiteiten op het Centrum Huisartsgeneeskunde. Kurt, mama, papa, van harte dank hiervoor!

Combineren met de dagdagelijkse praktijk was weer een andere uitdaging. Gelukkig kon ik rekenen op meerdere collega's om af en toe in te springen. Aanvankelijk Patrick Paternoster, nadien zeker ook Philippe Ryckebosch. Ook twee collega huisartsen die hun huisartsenopleiding in onze praktijk hebben gedaan, hebben hun steentje bijgedragen: Delphine Delaere en Tine Dietvorst. En de recentste jaren en vooral de voorbije weken heb ik uitgebreid beroep kunnen doen op mijn collega in de praktijk Vibeke Hessen, die zeer begripvol en welwillend geholpen heeft om 'de laatste loodjes' mee op te vangen. Ieder van jullie: hartelijk dank.

Maar aan de andere kant had ik ook een sterke drijvende kracht op het Centrum Huisartsgeneeskunde.

En dan denk ik in eerste instantie aan Paul Van Royen en Joke Denekens die ik wil danken omdat ze mij vanaf 1997 mee gesteund, geholpen en aangemoedigd hebben om aan wetenschappelijk onderzoek te doen. Ze hebben mij de mogelijkheid geboden om opleiding te volgen en geleidelijk aan deel te nemen aan verschillende onderzoeksprojecten. Ik heb niet alleen veel van hen geleerd, maar ook veel opportuniteiten aangereikt gekregen.

Stilaan mocht ik deelnemen aan grotere projecten en ik had toen het genoegen om samen te kunnen werken met Barbara Michiels. Ik wil haar daarom zeker ook danken voor alles wat ze me geleerd heeft. Zij bezit de eigenschap om op een heel eenvoudige, rustige en bescheiden manier iemand iets uit te leggen zoals niemand anders dat kan. Dankzij Barbara heb ik ook de smaak te pakken gekregen om 'met cijfertjes' bezig te zijn, waardoor 'statistiek' wat tot dan toe toch een beetje een angstaanjagende term was geweest, heel aantrekkelijk werd.

En toen ging er weer een ander balletje aan het rollen. Ik was ondertussen lid geworden van het bestuur van onze huisartsenkring in Deurne, de toenmalige HDWB, waar ik voor het eerst kennismaakte met de term 'huisartsenwachtpost'. Onze toenmalige en ook nog huidige voorzitter Roger Renders was immers de drijvende kracht achter de eerste huisartsenwachtpost in België. Ik maakte kennis met de andere bestuursleden die stuk voor stuk al minstens even enthousiast met deze materie omsprongen, zodat ik hun belangstelling wel moest volgen. Toen er op een bepaald moment aan een rapport over het functioneren van de wachtpost gewerkt werd, kreeg ook ik de kans hieraan deel te nemen. Roger Renders, Philippe Ryckebosch, Peter Janvier, Ludo d'Hondt, Cécile Tambour, Els Heyvaert, Werner Vleugels, Raymond Joosen en ook Lut Van Nisselrooy, Johan Brouns en Jef Goris ; dankjewel voor de toffe en leerrijke samenwerking. En ook

dank om mij de mogelijkheid te bieden om onderzoek te starten rond huisartsenwachtposten.

De volgende stap werd gezet door mijn promotor Roy Remmen, die ondertussen goed begrepen had dat huisartsenwachtposten geen stille dood zouden sterven en we dus als universitair huisartsencentrum ons steentje zouden moeten bijdragen tot wetenschappelijk onderzoek over deze nieuwe dienstverlening. Roy, dankjewel dat je mij toen, samen met Paul, de kans hebt gegeven om deel te nemen aan onderzoek over spoedgevallendiensten en huisartsenwachtdiensten in het kader van een KCE project. Het is dankzij deze opportuniteit dat we de verdere lijn van ons onderzoek over huisartsenwachtposten hebben kunnen vastleggen.

Opnieuw heb ik hier een zeer aangename samenwerking kunnen ervaren met Peter De Paepe, Walter Buylaert, Catherine Gourbin en Didier Du Boullay, waaruit ook later nog waardevolle contacten gebleven zijn. Peter en Walter, jullie wil ik extra danken voor de samenwerking en nuttige overlegmomenten dankzij de welke de artikels die op dit onderzoek gebaseerd zijn, tot stand zijn kunnen komen.

Dankzij de contacten met de Faculteit Toegepaste Economische Wetenschappen had ik ook de mogelijkheid om kennis te maken en samen te werken met Diana De Graeve, Marcel Weverbergh en Dominik Mahr. Dankzij hen hebben wij kennis kunnen maken met nieuwe onderzoekdsdesigns voor de medische wereld. We werden aanvankelijk betrokken bij onderzoek van Lieve Geluykens, dankzij het welk ons onderzoek op Kind en Gezin tot stand gekomen is. Diana, Marcel en Dominik, dankjewel voor deze unieke ervaring die ik als arts heb kunnen meemaken. Vaak leven we als lid van verschillende faculteiten op een universiteit een beetje 'naast' elkaar. De samenwerking met jullie heeft een zeer boeiende nieuwe uitdaging betekend voor ons en heeft geleid tot mooie onderzoeksresultaten. Hopelijk vinden we elkaar in de toekomst nog voor gemeenschappelijke projecten. In ditzelfde onderzoek mag ook de bijdrage van Bernard Van Caillie van Kind en Gezin niet ontbreken. Dankzij overleg met hem en de regioverantwoordelijken van Kind en Gezin, hebben we dit onderzoek kunnen realiseren. Aan Bernard Van Caillie, alle regioverpleegkundigen en alle vrijwilligers van de vestigingen van Kind en Gezin in Deurne en Borgerhout; hartelijk dank voor jullie gemotiveerde, blijvende inzet om van dit onderzoek mee een geslaagd project te maken.

Natuurlijk vraagt wetenschappelijk onderzoek van veel meer mensen een bijdrage dan van de onderzoekers en de bedenkers alleen. We hebben gedurende de voorbije 6 jaar beroep kunnen doen op heel veel welwillende mensen werkzaam als huisarts, spoedarts, spoedverpleegkundige, secretaresse… Zo dank ik Lut Van Nisselrooy die destijds als toenmalige secretaresse, het onderzoek over de artsentevredenheid op de huisartsenwachtpost van Deurne-Borgerhout mee ondersteund heeft. Opnieuw dank ik Roger Renders, en ook het toenmalig en huidig bestuur van de HKBD (huisartsenkring Deurne-Borgerhout) en HDB (huisartsenwachtpost Deurne-Borgerhout) voor de medewerking en het ter beschikking stellen van gegevens bij verschillende deelonderzoeken. Ik dank ook Jef Goris en Johan Brouns die mij destijds zeer zorgvuldig geholpen hebben bij het verzamelen van gegevens. Ook wisten zij de wachtkringen en het bestuur van hun regio te motiveren patiëntcontacten te registreren. Ook Theo Putzeys en Walter Verhelst wil ik om dezelfde reden danken. Ik begrijp dat zij soms heel veel inspanning hebben moeten leveren om hun 'achterban' te motiveren goed te registreren. En uiteraard ook de huisartsenkring van Turnhout die ons bij de oprichting van hun huisartsenwachtpost ingeschakeld hebben om een voor- en nameting uit te

voeren. Leo Geudens, Marc Teblick, Martine van Deuren en alle leden van het bestuur van de HVRT (Huisartsenvereniging Turnhout), dankuwel!

Dank ook aan alle deelnemende huisartsen uit hogergenoemde wachtregio's. Het is niet mogelijk jullie allemaal met naam te noemen, maar ieder van jullie heeft een even belangrijke bijdrage aan onze onderzoeksresultaten geleverd. Zonder jullie medewerking hadden we nooit de werkbelasting van de huisarts met wachtdienst kunnen documenteren.

Uiteraard zouden vele registraties ook niet gelukt geweest zijn zonder de welwillende medewerking van onze collega's op de spoedgevallendiensten van de verschillende ziekenhuizen die deelnamen. Ik denk in eerste instantie aan Diederik Viskens en François Gijsenbergh die bereid waren om mee te werken aan onderzoek op de spoedgevallendiensten van respectievelijk ZNA Sint Erasmus en ZNA Stuivenberg. Ook in de regio Turnhout mochten we op enthousiaste medewerking rekenen van Herman Meeuwis, Marc Bronckaers, (diensthoofden spoedgevallendienst) en Jos Aenderkerk en Jos Boermans , (hoofdverpleegkundigen van de spoedgevallendienst) van de Turnhoutse ziekenhuizen Sint Elisabeth en Sint Jozef. Dank ook aan alle huisartsen, alle artsen in opleiding in de ziekenhuizen en alle verpleegkundigen die destijds meegeholpen hebben aan onze registraties in de regio Turnhout. Dankzij de medewerking van jullie allemaal hebben we voor het eerst in België kunnen nagaan wat het effect is van het implementeren van een huisartsenwachtpost.

Naast mijn promotor en co-promotor wens ik de leden van de doctoraatscommissies, Prof. Bart Van den Eynde, Prof. Philippe Beutels, Prof. Joke Denekens, Prof. Dirk Ramaekers en Dr. Sara Willems, te danken voor het doornemen van de teksten en de verrijkende correcties en adviezen die gegeven werden.

Ik dank Maggie Wilkinson, die als native speaker alle teksten heeft doorgenomen om al mijn fouten tegen die mooie Engelse taal te corrigeren. Tot op de allerlaatste dag heb ik beroep op haar kunnen doen. Dank voor de vlotte en leuke samenwerking, Maggie! Maggie, thanks!

Mijn broer Paul mag ik hier zeker niet vergeten, die zorgvuldig de Franstalige samenvatting voor zijn rekening genomen heeft. Dankjewel broer! En dank ook aan Louis Ferrant, die als huisarts werkzaam is in Brussel en deze samenvatting nog eens grondig bekeken heeft vanuit 'artsenoogpunt'. Dankjewel Louis.

Voor het geduld dat ze gehad hebben bij het lay-outen en drukken van de tekst en bij het samenstelling van de cover van dit boek, wil ik zeker ook Lucky Van Gasse en Anita Muys niet vergeten. Dank voor jullie geduld en mooie resultaat!

David McIntyre dank ik om zijn goedkeuring te geven voor het gebruik van de foto op de cover, die zijn verdienste is. Thank you, David!

Wat ik zeker nog wil vermelden is dat ik me de voorbije jaren enorm gesteund heb gevoeld door alle medewerkers van het centrum huisartsgeneeskunde. Verschillende medewerkers hebben mij dankzij een advies, dankzij het doorsturen van een interessant artikel, via een kort overleg of gewoon tijdens een informeel ontspannend gesprek geholpen om vol te houden. Dank jullie allemaal! En vooral ook dank aan Chris Monteyne en Cil Leytens die zelfs op momenten dat het allemaal heel snel moet gaan, rustig, georganiseerd, weloverwogen en zelfs nog altijd met de nodige humor, gerealiseerd krijgen wat soms onmogelijk lijkt. Giannoula, jij hebt de recentste jaren met mij gedeeld in hetzelfde bureau. Al hebben we al heel veel plezier gemaakt, tegelijkertijd heb ik van jou ontzettend veel geleerd, waardevolle adviezen gekregen en vooral ook veel steun ondervonden. Dankjewel, allemaal!

En ten slotte wil ik toch nog heel specifiek een woordje richten tot mijn co-promotor, Paul en mijn promotor, Roy:

Paul, dankjewel dat je mij vanaf 1997 alle kansen aangeboden hebt om mijn droom, die ik toch wel had, om aan wetenschappelijk onderzoek te doen aan onze dienst, waar te maken. Ik heb veel kunnen leren van jou en heel wat opleiding over onderzoek kunnen volgen dankzij jou. Ik herinner me nog momenten dat ik ergens kop noch staart aan kreeg of grondig vastliep en jij er toch altijd wel was om een advies te geven en te helpen of zelfs de zaak heel grondig mee door te nemen en bij te sturen. Ook voor jouw bijdrage aan dit werk, vanaf het prille begin tot aan de eindmeet, ben ik je enorm dankbaar!

Roy, ik kan me geen betere promotor bedenken dan jij. Jij doet de naam 'promotor' echt eer aan en zeker omdat in dat woord het stukje 'motor' zit. Het is eigenlijk onbeschrijflijk hoe jij me de voorbije jaren hebt weten motiveren om nieuwe zaken aan te pakken, moeilijkheden niet uit de weg te gaan, door te zetten en dingen af te maken. Je bereikbaarheid en beschikbaarheid zijn fenomenaal geweest. En tot het laatste lettertje toe wat er op papier moest komen, bleef je bereid om alles nog een keertje na te lezen, te corrigeren, aan te passen of in te korten. Een formidabele inzet! Dankjewel Roy, dat jij mijn 'motor' geweest bent in dit project en deze unieke ervaring!