



UvA-DARE (Digital Academic Repository)

Dutch general practitioners in a time of change : studies on out-of-hours and GP hospital care

Moll van Charante, E.P.

Publication date

2007

Document Version

Final published version

[Link to publication](#)

Citation for published version (APA):

Moll van Charante, E. P. (2007). *Dutch general practitioners in a time of change : studies on out-of-hours and GP hospital care*.

General rights

It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

Disclaimer/Complaints regulations

If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: <https://uba.uva.nl/en/contact>, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.

Dutch general practitioners in a time of change
Studies on out-of-hours and GP hospital care

Eric P. Moll van Charante



The research described in Chapters 8 and 9 was funded by the Health Care Insurance Board.

The printing of this thesis was financially supported by the Department of General Practice (Division of Clinical Methods & Public Health), Academic Medical Centre/University of Amsterdam.

Lay-out and printing: Uitgeverij Buijten & Schipperheijn, Amsterdam
ISBN 978-90-9021904-2

Cover: photo by Simonka de Jong, with help and permission of Meditaxi (Jan Kalkman).

Photographs Appendix 2: with permission of the Kennemer Gasthuis and Wolter Dijkma (GP hospital)

Copyright © Eric P. Moll van Charante, Amsterdam, the Netherlands, e.p.mollvancharante@amc.uva.nl

No part of this publication may be reproduced in any form or by any means without written permission of the author.

Dutch general practitioners in a time of change
Studies on out-of-hours and GP hospital care

ACADEMISCH PROEFSCHRIFT

ter verkrijging van de graad van doctor

aan de Universiteit van Amsterdam

op gezag van de Rector Magnificus

prof. dr. J.W. Zwemmer

ten overstaan van een door het college voor promoties ingestelde commissie,

in het openbaar te verdedigen in de Aula der Universiteit

op dinsdag 29 mei 2007, te 14:00 uur

door

Eric Peter Moll van Charante

geboren te Naarden

Promotiecommissie

Promotores: Prof. dr. P.J.E. Bindels
Prof. dr. N.S. Klazinga

Overige leden: Prof. dr. K. van der Meer
Prof. dr. R. Huijsman
Prof. dr. W.A. van Gool
Dr. A. Wiegman
Drs. J.S.K. Luitse

Faculteit der Geneeskunde

*Aan Simonka,
Timo & Noah*

Contents

CHAPTER 1	9
General Introduction	
Studies on out-of-hours care	
CHAPTER 2	27
Introduction of the GP cooperative in Almere: effects on the demand for and supply by GP care	
CHAPTER 3	37
Nurse telephone triage in out-of-hours GP practice: determinants of independent advice and return consultation	
CHAPTER 4	53
Out-of-hours demand for GP care and emergency services: patients' choices and referrals by general practitioners and ambulance services	
CHAPTER 5	69
Self-referrals to the A&E Department during out-of-hours: patients' motives and characteristics	
CHAPTER 6	87
Patient satisfaction with large-scale out-of-hours primary health care in the Netherlands: development of a postal questionnaire	
CHAPTER 7	103
Patients evaluate accessibility and nurse telephone consultations in out-of-hours GP care: determinants of a negative evaluation	
Studies on GP hospital care	
CHAPTER 8	117
The first general practitioner hospital in the Netherlands; towards a new form of integrated care?	
CHAPTER 9	129
A cost study of a general practitioner hospital in the Netherlands	

CHAPTER 10	139
General discussion of the results and their implications for Dutch General Practice	
Summary	159
Samenvatting	167
Dankwoord	175
List of affiliations of co-writers	181
List of Publications	185
Curriculum Vitae	189
APPENDIX 1	193
Postal Questionnaires for telephone consultation, centre consultation and home visit (Chapters 6&7)	
APPENDIX 2	213
Photographs	

chapter

1

General Introduction

Introduction

This thesis focuses on the changing role and position of the Dutch general practitioner (GP) by studying two innovative organisations of GP care: the GP cooperative (out-of-hours care) and the GP hospital (clinical care).

During the second half of the 20th century, Dutch General Practice acquired a strong position within the organisation of primary health care. Factors that facilitated this development were the requirement for patients with public insurance to register with one local GP (since 1941)¹, an explicit definition of the GP's gatekeeping role from the government (1974)², and the introduction of a clear task definition for all GPs by the Dutch Society of General Practitioners (1982)³. The Netherlands is one of twelve European countries in which the GP acts as a gatekeeper to secondary, specialist care.⁴ In the course of the 1990s, a general feeling of overburdening had developed among GPs resulting from a gradual yet substantial increase in tasks and demands over the years.⁵ Various factors contributed to this development, such as the introduction of preventive medicine and an increase in patient demand and managerial tasks. Growing concerns were expressed about the GP's ability to remain the kingpin within primary health care.⁶⁻⁹ At the same time, while gaining control of the care supply chains, insurance companies showed a lively interest in alternative strategies to provide care for categorical patient groups with chronic diseases, e.g. in conjunction with hospital outpatient clinics, rather than with the GPs. Thus, it appeared that GPs were no longer sure of their central place within primary care, unless they would take up the challenge to redefine their role to meet the changing demands and reorganise themselves accordingly.

For both settings a short review of the (inter)national literature will now be presented, followed by the research questions and the potential relevance of the studies. Finally, the outline of the thesis will be summarised.

Out-of-hours provision of GP care

International perspective

Since the 1960s many GPs in the UK stopped providing personal 24-hour care to patients and subcontracted much of it to commercial deputising services, i.e. commercial companies employing doctors to provide out-of-hours care.¹⁰ This withdrawal from the personal provision of out-of-hours care was fuelled by feelings of rising and inappropriate demand,¹¹⁻¹³ fatigue,¹⁴ stress,¹⁵ and concerns about personal safety.¹⁶ Contractual arrangements were changed to allow GPs greater freedom in choosing how to provide out-of-hours care.¹⁷ Supported by additional public funding, this encouraged the development of various models of care. Most GPs engaged in small locum groups (generally 5-10 GPs) providing out-of-hours care through a rota system. Over time, similar developments were observed in Australia.^{18;19}

In the early 1990s, an important new shift took place in both the UK²⁰ and Denmark²¹ from the small locum groups or deputising services towards large-scale organisations like GP cooperatives. Currently, there appears to be significant diversity in healthcare systems offering primary care to patients outside normal office hours. A literature review identified seven common organisational models.¹⁹ These are (1) GPs taking care of their own patients, (2) rota system of small locum groups, (3) deputising services, (4) GP cooperatives, (5) hospital emergency departments, (6) primary care centres (that patients can attend on an ad-hoc basis) and (7) telephone advice & help lines (where patients receive telephone advice on what to do or where to go during out-of-hours). These telephone consultations have developed, in part, as a response to the increased demand for GP and Accident and Emergency (A&E) services. Although some telephone consultation is still provided by doctors,²² the majority of calls is now handled by qualified nurses using computer-based clinical decision support systems. This reflects changes in the role of the nurse in recent years and the move towards nurses undertaking some tasks previously performed by doctors.²³ One of the largest telephone consultation systems in operation is NHS (National Health Service) Direct; this is a 24-hour nurse-led telephone advice system based in the UK, which aims to help callers self-manage problems and reduce unnecessary demands on other NHS services.²⁴ While in the UK many models of care exist in parallel, out-of-hours GP care in the Netherlands appears to be more homogeneous, mainly consisting of GP cooperatives.

In 2004, the NHS committed additional funding for a new pay-for-performance programme for family practitioners, which also gave them the opportunity to opt out of their out-of-hours care for six percent of their gross yearly income.²⁵ A recent questionnaire among GPs revealed that no less than two thirds of them was considering to stop providing out-of-hours care.²⁶ Therefore, in the coming years GPs may lose their leading role to Primary Care Trusts (PCTs) who will organise this service themselves or will subcontract commercial deputy services to this end.²⁷

The Dutch situation

From small to large scale

In parallel with the UK and Australia, most Dutch GPs took care of their own patients during out-of-hours until the 1960s, indicating that they were on call most of the time.²⁸⁻³⁰ The only exception was one GP cooperative in The Hague that had been set up under the Nazi occupation in 1941 and still functions today. In the course of the 1960s, an increasing number of locum groups (generally 6 to 8 GPs) were formed to provide out-of-hours primary care to their joint patients using a rota system. Initially, this system was used to reduce the workload during weekends, but eventually it was extended to all evenings and nights.

Following the out-of-hours developments in the UK³¹ and Denmark²¹, Dutch GPs decided to take a next step towards the large-scale organisation of out-of-hours primary care in the late 1990s. Perhaps this sudden reform was sparked by the introduction of a new GP cooperative in IJmuiden (region of Velsen) in 1996, when the closure of a small hospital led to an innovative form of integrated care between the local hospital and the Regional Association of GPs.³² Within five years, most Dutch GPs followed suit.^{33:34} That is, they set up GP cooperatives that are, as a rule, located close to the hospital, yet operate independently from it. Currently there are more than 130 GP cooperatives in the Netherlands that cover over 90 percent of the Dutch population, generally with 40 to 120 full-time participating GPs serving populations of 50,000 up to 500,000 people. The number of hours that GPs had to be on call dropped significantly, from approximately 19 to 4 per week; this was shown to be associated with an increase in job satisfaction.³⁵ GPs also perceived improvements on other aspects that had been identified as problematic, like a better separation between work and private life. Important differences between the former rota system and the current organisation of GP cooperatives are shown in Box 1.³⁶

Box 1. Features of call rotations and GP cooperatives in the Netherlands (old versus new system of out-of-hours care)³⁶

Call Rotations	GP Cooperatives
5 to 10 GPs	40 to 120 GPs
Small-scale handling of 10,000 to 20,000 patients within distances up to 5 km.	Large-scale handling of 50,000 to 500,000 patients within distances up to 20-30 km.
Service delivered from small private practices throughout the city or region.	Mostly situated near or within a hospital.

Access daily from 5 pm to 8 am. On the weekend from 5 pm on Friday to 8 am on Monday.	Access daily from 5 pm to 8 am. On the weekend from 5 pm on Friday to 8 am on Monday.
Access via the patients' own GP's telephone number.	Access via a single regional telephone number.
GP uses own car with standard equipment.	Chauffeurs in recognisable GP cars, which are fully equipped (e.g. oxygen, infusion drip, automatic defibrillation).
Use of written patient records for communication between GPs.	ICT support, including electronic patient files, electronic feedback to GPs, and online connection to the GP car.*
GP or his/her spouse answering the telephone.	Triage nurses on the telephone (i.e. GP nurses or hospital nurses).
A mean of 19 hours on call per week.	A mean of 4 hours on call per week.

ICT - information and communication technology

* Level of ICT support differs per setting

Telephone triage

Similar to the UK, out-of-hours triage in the Netherlands is initially performed through telephone contact with practice assistants (or nurses) who receive, assess and manage incoming calls from patients.^{23;37} The call management options include provision of information and advice as well as referral to a GP or the A&E services. By and large, the telephone assistants decide on the subsequent type of contact when a patient's call is passed through to the GP: a telephone call to the patient, a centre consultation or a home visit.

During their shift at the cooperative, GPs are expected to authorise the content of all telephone contacts that are handled by telephone assistants. Some cooperatives in the Netherlands prefer a more prominent role for the GP in telephone triage and advice. They have therefore created the special function of 'telephone doctor' for a GP who is continuously present in the call centre, provides advice and feedback to telephone assistants and takes over in complex cases.³⁸

While only few GP cooperatives make (experimental) use of computerised telephone advice systems (TAS),³⁴ telephone assistants nationwide have access to a broad set of written protocols, developed by the Dutch College of General Practitioners,³⁹ for most acute

problems. In 2004, the Dutch Health Care Inspectorate published a critical review of the Dutch GP cooperatives, calling for improvement on aspects of accessibility and telephone triage.⁴⁰

Collaboration between GP and hospital services

Since the Dutch GP acts as a gatekeeper to secondary care, patients visiting the Accident and Emergency Department (AED) are as a rule required to have a referral from the GP to utilise hospital services. However, it appears that in daily practice many patients skip the GP and attend the AED without referral (so-called 'self-referrals').⁴¹ Main reasons that patients gave for self-referring were convenience, lack of timely access to primary care providers, and the perception that radiography was necessary.

Currently, Dutch health policymakers, insurance companies and other actors in the field propagate the integration of GP and A&E services by using one triage system, as this would offer a chance to improve the effectiveness and quality of care at a lower cost. Patient organisations seem to favour these developments, as they believe that many patients with an urgent out-of-hours problem feel indecisive about whom they should contact: the GP, the AED or the ambulance service. A small number of GP cooperatives have meanwhile decided to integrate their services with the local AED to form one out-of-hours centre;⁴² many others are still considering their position.

While in the UK GPs may be giving up their central role in the provision of out-of-hours care, the Dutch College of General Practitioners (NHG) and the Dutch Association of General Practitioners (LHV) have recently formulated a renewed mission statement on the content and tasks of general practice.⁴³ In this statement, personal continuity of care is considered to be a hallmark of GP care. Thus, the 24-hour responsibility of GPs to care for their patients is recognised as one of the cornerstones of general practice.

Aim and relevance of the studies on GP cooperatives

The purpose of these studies is to gain insight into the different aspects of out-of-hours primary care that are related to the tasks and responsibilities of the GPs and their position within the out-of-hours care provision. These aspects are related to overall patterns of demand, changes in care utilisation, telephone triage and return consultations, patients' motives for visiting the AED and their opinions on different aspects of the care provided by the GP cooperatives.

Better knowledge of overall out-of-hours demand could be of use in the current effort to come to a more coherent organisation of all out-of-hours urgent primary care. Understanding the process of decision-making by telephone assistants could lead to improvements in their support decision systems and, ultimately, to both higher levels of independence and lower levels of GP workload. Finally, evaluating patients' views could also lead to improvements in the quality of care and/or the organisation as a whole.

Research Questions GP cooperative(s)

1. What is the overall in- and out-of-hours demand for GP care and has this demand been affected by the introduction of GP cooperatives?
2. Which determinants are related to nurse telephone consultations and to subsequent return consultations to the GP after nurse telephone advice?
3. What is the overall out-of-hours pattern of use of GP and A&E services?
4. What are self-referrals' motives to visit the AED and how do their characteristics compare to patients contacting the GP cooperative?
5. To develop a reliable postal questionnaire on patient satisfaction for wide-scale use of patients contacting their GP out-of-hours cooperative.
6. To what extent are patient- or GP-cooperative-related determinants associated with a negative patient evaluation on accessibility and telephone advice?

Research settings GP cooperative(s)

The study on out-of-hours demand that was performed before and after the introduction of a GP cooperative took place in the city of Almere (Question 1). This city was founded in 1974 and currently has around 170,000 inhabitants. Its modern primary care organisation contains 22 healthcare centres providing daytime GP care. Before the introduction of one centrally located GP centre, GPs provided out-of-hours care from three healthcare centres, all of which included a pharmacy.⁴⁴ They were aided by a telephone call centre that passed most calls on to the GP, and by a nurse (every location) for assistance on low complex accidents.

In the fall of 1996, one of the locations of the Kennemer Gasthuis (Zeeweg hospital, IJmuiden) had to close due to new regulations that had made the number of beds of this hospital redundant in the area. While some divisions were redirected to the remaining two locations in Haarlem and others were closed altogether, the outpatient clinics were kept in place to ensure access for the local population of Velsen (62,000 people). In this period, the hospital board invited all 26 regional GPs working in this area (organised in the *Regionale Huisartsen Vereniging IJmond*) to embark in an experimental GP cooperative.^{32;45} To this end, the AED was rebuilt to suit the needs of a large-scale organisation of primary care, yielding rooms and facilities similar to the GP surgeries. Feeling responsible for patients seeking first aid at the former AED location, the hospital board proposed to support the organisation with eight AED nurses, all of whom had already worked there for a sustained period of time. Most of the GPs in Velsen worked in single or double practices, but there were also two healthcare centres with three or more GPs. The study in the municipality of Velsen was used to answer the Research Questions 2, 3 and 4.

In the patient satisfaction study (Question 5), all 105 GP cooperatives in the Netherlands were invited to participate in the study through widespread advertisements in a national

Chapter 1

medical paper. Between March 2003 and June 2004 this resulted in the participation of 26 GP cooperatives, serving around a quarter of the total Dutch population. Two GP cooperatives were excluded due to logistical problems. The study on the determinants of a negative evaluation (Question 6) was performed using these data, extended with an additional two GP cooperatives (n=26).

GP hospitals

International perspective

GPs caring for patients within a hospital may be an unfamiliar phenomenon in the Dutch healthcare system but has been described in many other Western countries. Overall, there are beds that are part of a primary care setting and beds that are part of a secondary care setting (i.e. hospital). Primary care beds are common within the healthcare systems of the UK,⁴⁶ Norway⁴⁷ and Finland,⁴⁸ while secondary care beds are mainly seen in the United States,⁴⁹ Canada⁵⁰ and Australia.⁵¹ Since the first Dutch GP hospital that is described in this thesis mostly resembles the situation with primary care beds, the introduction of this subject will be limited to this type of provision. Furthermore, resulting from the long-standing British experience (and studies), the description of these beds will be limited to the literature from the UK. A more comprehensive literature review of all hospital bed settings can be found elsewhere.⁵²

Currently, there are 471 GP hospitals (also called community hospitals) throughout the UK, containing over 18,000 beds. They are the residue of more than 600 cottage hospitals that were developed between 1850 and 1930. Originally these cottage hospitals were intended for care for the local population living in remote areas to provide ‘a place identical to home differing only in cleanliness, warmth, proper hygiene, and absence of overcrowding.’⁵³ Nowadays they are still located close to the community and at some distance (14 miles on average) from the District General Hospitals (DGHs), and harbour a limited number of beds (33 on average, IQR 20-50).⁴⁶ Around one in five GPs has access to community hospital beds where they are primarily responsible for admission and discharge of patients, often in collaboration with specialists.

GP hospitals play a major role in the rehabilitation process and also offer palliative and respite care, health promotion, and diagnostic (e.g. X-ray), acute, emergency (e.g. minor injury unit) and therapeutic (e.g. physiotherapy) services.⁵⁴⁻⁶⁰ Outpatient clinics are available in two thirds of the GP hospitals. Although GP hospitals seem to occupy an uneasy middle ground between the primary and secondary care sectors, it appears, after prolonged discussions over the years,⁶¹⁻⁶⁵ that they will play a prominent role in the hospital building programmes over the decades to come.^{46;66}

Aim and relevance of the studies on the GP hospital

The aim of the studies on the first GP hospital in the Netherlands is to describe the type of patients being admitted, its substitute function, and the overall costs. With a growing elderly population, there will be an increasing need for intermediate care facilities in which GPs may play a central role.

Research Questions GP hospital

1. What are the characteristics of the patients that are admitted to the GP hospital in IJmuiden?
2. What is the substitute function of the GP hospital with regard to the provision of hospital, nursing home and home care?
3. What are the costs of care within the GP hospital and could this care facility be cost-saving?

Research setting: GP hospital in IJmuiden (Velsen)

In the fall of 1996, closure of the Zeeweg hospital in IJmuiden instigated the start of an experimental first GP hospital in the Dutch healthcare system (see also ‘research settings’ before).^{32;45;67} The objective of this GP hospital was to ensure the continuity of low clinical care for the local population through a cooperative effort of GPs, nurses and specialists. An important incentive to come to this integrated form of care was the hospital board’s wish to remain the main hospital provider for the local population of Velsen.

The former hospital ward (now called GP hospital) consisted of 20 beds divided into three categories.⁵² *GP beds* were intended for patients that would otherwise have been referred by the GP to either the DGH or the acute beds of a nursing home, and for patients in need of home care beyond the maximum care level that could be provided. *Rehabilitation beds* were indicated for post-operative patients in their last phase of clinical rehabilitation. These beds were allocated through specialist consultations with the GP hospital’s head nurse from one of the other two DGH locations. Similarly, *nursing home beds* were used for patients who were transferred from one of these DHG locations in anticipation of a vacancy in a nursing home.

During working hours laboratory and radiodiagnostic facilities were available in the GP hospital and specialists from the outpatient clinics in this same location could be consulted by the GPs. Paramedical aid was provided from the other two DGH locations. During out-of-hours the acute care for patients in the GP hospital was provided by one of the GPs working in the GP cooperative that was located in the same building.

In the years after the introduction of the GP hospital, the initiative was reproduced in two other Dutch places, one with a similar setting (closure of a local hospital, other hospital care at some distance) and one that was located in a complex with homes of elderly people and a primary health care centre.

Outline of the thesis

This thesis describes the outcomes of various studies that focussed on the changing role and position of GPs in two new organisations of GP care: the GP cooperative (Chapters 2 through 7) and the GP hospital (Chapters 8 and 9).

Chapter 2 explores the overall demand, both in- and out-of-hours, as well as the division of tasks between GP and assistant or nurse before and after the introduction of a GP cooperative.

Chapter 3 aims to explore which determinants are associated with nurse telephone advice alone and with subsequent return consultations to the GP.

Chapter 4 focuses on the overall out-of-hours patterns of use of general practice and A&E services.

Chapter 5 describes the motives of self-referrals to visit the AED and compares their characteristics to patients contacting the GP cooperative.

Chapter 6 presents the development of a postal questionnaire for wide-scale use by patients contacting their out-of-hours GP cooperative and the results of a national survey.

Chapter 7 explores the association between negative patient evaluation of nurse telephone consultations and characteristics of patients and GP cooperatives.

Chapter 8 describes the type of patients being admitted to the first Dutch GP hospital and its substitute function.

In Chapter 9, a cost analysis of the GP hospital beds is performed, comparing these costs to the main alternatives: home care and hospital care.

Finally, in Chapter 10, a general discussion is presented.

References

1. Van Herk R. Artsen onder druk. Over kwaliteitsbeleid van medische beroepen. Hoofdstuk 4: De regulering van het medische beroep in Nederland (p 119-182) [Thesis]. Erasmus Universiteit Rotterdam; 1997.
2. Naar een sterkere eerste lijn? Deel 1: Het overheidsbeleid. Utrecht: NIVEL, 1987.
3. Commissie Takenpakket. Basistakenpakket van de huisarts. Een rapport van de commissie Takenpakket van de LHV. Uitgebracht als bijlage bij Medisch Contact, 1982.
4. Boerma WG, Van der Zee J, Fleming DM. Service profiles of general practitioners in Europe. European GP Task Profile Study. *Br J Gen Pract* 1997; 47(421):481-486.
5. Moll van Charante E, Delnoij D, IJzermans CJ, Klazinga N. Van spelverdeler tot speelbal? De veranderende rol en positie van de Nederlandse huisarts. *Huis Wet* 2002; 45:70-75.
6. Van der Werf G, Reenders K. Haalt de huisarts 2020? Drie scenario's voor de toekomst. *Medisch Contact* 1998; 53(36):1126-1128.
7. Van Santen H. Een nieuwe kijk op de functie van huisarts. Afgeslankt takenpakket en samenwerking bieden nieuwe kansen. *Medisch Contact* 2000; 55(4):127-128.
8. Post D. De veranderende positie van de huisarts in de 21ste eeuw (2). Naar een nieuw concept voor de gezondheidszorgstructuur. *Tijdschrift voor Huisartsgeneeskunde* 2001; 18(5):176-180.
9. Delleman H, Fennema M, Kemeling H. Masterplan tot behoud van de huisartsenzorg in Nederland. *Medisch Contact* 2001; 56(5):186-188.
10. Hallam L. Primary medical care outside normal working hours: review of published work. *BMJ* 1994; 308(6923):249-253.
11. Salisbury C. Visiting through the night. *BMJ* 1993; 306(6880):762-764.
12. Cubitt T, Tobias G. Out of hours calls in general practice: does the doctor's attitude alter patient demands? *Br Med J (Clin Res Ed)* 1983; 287(6384):28-30.
13. Lockstone DR. Night calls in a group practice. *J R Coll Gen Pract* 1976; 26(162):68-71.
14. Pitts J. Hours of work and fatigue in doctors. *J R Coll Gen Pract* 1988; 38(306):2-3.
15. Cooper CL, Rout U, Faragher B. Mental health, job satisfaction, and job stress among general practitioners. *BMJ* 1989; 298(6670):366-370.
16. Hobbs FD. Violence in general practice: a survey of general practitioners' views. *BMJ* 1991; 302(6772):329-332.
17. NHS Executive. National Health Service (general medical services) amendment regulations 1996: transfer of out of hours responsibility/practice complaints procedures. Leeds: NHS Executive, 1996.
18. Jessopp L, Beck I, Hollins L, Shipman C, Reynolds M, Dale J. Changing the pattern out of hours: a survey of general practice cooperatives. *BMJ* 1997; 314(7075):199-200.
19. Leibowitz R, Day S, Dunt D. A systematic review of the effect of different models of after-hours primary medical care services on clinical outcome, medical workload, and patient and GP satisfaction. *Fam Pract* 2003; 20(3):311-317.
20. Hallam L, Cragg D. Organisation of primary care services outside normal working hours. *BMJ* 1994; 309(6969):1621-1623.
21. Olesen F, Jolles JV. Out of hours service: the Danish solution examined. *BMJ* 1994; 309(6969):1624-1626.
22. Christensen MB, Olesen F. Out of hours service in Denmark: evaluation five years after reform. *BMJ* 1998; 316(7143):1502-1505.

23. Bunn F, Byrne G, Kendall S. The effects of telephone consultation and triage on healthcare use and patient satisfaction: a systematic review. *Br J Gen Pract* 2005; 55(521):956-961.
24. Department of Health. Raising standards for patients: new partnerships in out-of-hours care. An independent review of GP out-of-hours services in England. London: Stationery Office, 2000.
25. Doran T, Fullwood C, Gravelle H, Reeves D, Kontopantelis E, Hiroeh U, Roland M. Pay-for-performance programs in family practices in the United Kingdom. *N Engl J Med* 2006; 355(4):375-384.
26. Bostock N. UK GPs happiest with out-of-hours pay. *GP News*, September 2005.
27. Petri H. Nieuw model Britse eerste lijn. *Med Contact* 2006; 61(2):72-74.
28. Van Eijk JTM, Gubbels J, de Koningh AGJ, Van der Meer K, Van Noort J. General practice out-of-hours care in the Netherlands (I). [De weekenddienst van huisartsen in Nederland (I)]. *Med Contact* 1978; 33(17):22.
29. Van Eijk JTM, Gubbels J, de Koningh AGJ, Van der Meer K, Van Noort J. General practice out-of-hours care in the Netherlands (II). [De weekenddienst van huisartsen in Nederland (II)]. *Med Contact* 1978; 33(37):41.
30. Van Eijk JTM, Gubbels J, Van der Meer K. General practice out-of-hours care in the Netherlands (III). [De weekenddienst van huisartsen in Nederland (III)]. *Med Contact* 1978; 33(73):78.
31. Hallam L. Out of hours primary care. *BMJ* 1997; 314(7075):157-158.
32. Peters R. Transmurale zorg Velsen. *Medisch Contact* 1996; 51(50):1620-1621.
33. Post J. Grootschalige huisartsenzorg buiten kantooruren [Thesis]. Groningen; 2004.
34. Van Uden CJ. Studies on general practice out-of-hours care [Thesis]. Maastricht; Maastricht University, 2005.
35. Giesen PHJ, Haandrikman LGR, Broens S, Schreuder JLM, Mokkink HGA. GP cooperatives: does the general practitioner benefit from them? [Centrale huisartsenposten: wordt de huisarts er beter van?]. *Huisarts Wet* 2000; 43(12):508-510.
36. Van Uden CJ, Giesen PH, Metsemakers JF, Grol RP. Development of Out-of-Hours Primary Care by General Practitioners (GPs) in the Netherlands: From Small-call Rotations to Large-scale GP Cooperatives. *Fam Med* 2006; 38(8):565-569.
37. Lattimer V, George S, Thompson E, Thomas E, Mullee M, Turnbull J, Smith H, Moore M, Bond H, Gasper A. Safety and effectiveness of nurse telephone consultation in out of hours primary care: randomised controlled trial. The South Wiltshire Out of Hours Project (SWOOP) Group. *BMJ* 1998; 317(7165):1054-1059.
38. Busser G, Giesen P. A spider in a web: the telephone doctor in the large-scale GP cooperative. [Een spin in het web: de telefoonarts, een nieuwe functie in de grootschalige huisartsenpost.]. *Med Contact* 2002; 57:1353-1355.
39. NHG-Telefoonwijzer voor triage en advies. [National guidelines for triage and advice]. Utrecht: NHG, 2002; available at www.nhg.artsennet.nl.
40. GP cooperatives in the Netherlands: new structures with many teething troubles [Huisartsenposten in Nederland: nieuwe structuren met veel kinderziekten]. The Hague: Dutch Health Care Inspectorate, April 2004.
41. Kulu-Glasgow I, Delnoij D, de Bakker D. Self-referral in a gatekeeping system: patients' reasons for skipping the general-practitioner. *Health Policy* 1998; 45(3):221-238.
42. Van Uden CJ, Winkens RA, Wesseling GJ, Crebolder HF, Van Schayck OC. Use of out of hours services: a comparison between two organisations. *Emerg Med J* 2003; 20(2):184-187.
43. Future view on General Practice. [Project Toekomstvisie Huisartsenzorg. Huisartsenzorg in 2012: 'Medische zorg in de buurt']. Utrecht: LHV/NHG, March 2002.

44. Ebbens E, de Bruijne M. Geneeskundige zorg buiten kantooruren in Almere. *Huisarts Wet* 2000; 43(12):511-513.
45. Peters R. Curatieve netwerkorganisatie. Naar een integratie van huisartsenzorg in het ziekenhuis. *Medisch Contact* 2001; 56(27/28):1076-1079.
46. Seamark DA, Moore B, Tucker H, Church J, Seamark C. Community hospitals for the new millennium. *BMJ* 2001; 51:125-127.
47. Aaraas I. The Finnmark general practitioner hospital study. Patient characteristics, patient flow and alternative care level. *Scand J of Prim Health Care* 1995; 13(4):250-256.
48. Jones R. General practitioner beds in Finland--lessons for the UK? *J R Coll Gen Pract* 1987; 37(294):28-30.
49. Weiss BD. Full clinical Departments of Family Practice: Their relationship to hospital privileges in University Hospitals. *J Fam Pract* 1985; 20(4):389-892.
50. Johnston MA, Tweedie T, Premi JN, Shea PE. The role of the family physician in hospital. *Can Fam Physician* 1980; 26:215-220.
51. Schattner P, Dunt D. General practitioner involvement in non-procedural medicine in public hospitals in Melbourne, Australia. *Fam Pract* 1989; 6(2):141-145.
52. Moll van Charante EP, IJzermans CJ, Hartman EE, Voogt E, Hanekamp LA, Van den Berg B, Bindels PJE. The GP hospital in IJmuiden; a descriptive study [De Huisartsenkliniek in IJmuiden; een inventariserend onderzoek]. Chapter 7 (p187-198). Funded by the Health Care Insurance Board. Ridderkerk: Ridderprint, 2001.
53. McConaghey RM. The evolution of the cottage hospital. *Med Hist* 1967; 11(2):128-140.
54. Cavenagh AJ. Contribution of general practitioner hospitals in England and Wales. *BMJ* 1978; 2(6129):34-36.
55. Grant JA. Contribution of general practitioner hospitals in Scotland. *BMJ Clin Res Ed* 1984; 288(6427):1366-1368.
56. Sichel GR, Hall DJ. The place of general practitioner hospitals in the organization of hospital services. *Health Trends* 1982; 14(2):21-23.
57. Thorne CP, Seamark DA, Lawrence C, Gray DJ. The influence of general practitioner community hospitals on the place of death of cancer patients. *Palliat Med* 1994; 8(2):122-128.
58. McGilloway S, Mays N, Kee F, McElroy G, Lyons C. The role of the general practitioner hospital in inpatient care. *Ulster Med J* 1994; 63(2):176-184.
59. Jones RH. Acute medicine in a general practitioner hospital. *J R Coll Gen Pract* 1982; 32(237):245-247.
60. Blair JS, Grant J, McBride H, Martin A, Ross RT. Casualty and surgical services in Perthshire general practitioner hospitals 1954-84. *J R Coll Gen Pract* 1986; 36(289):359-362.
61. Department of Health and Social Service. A hospital plan for England and Wales, 1962.
62. Shaw CD. General practitioner hospitals: coming or going? [editorial]. *BMJ Clin Res Ed* 1984; 288(6428):1399.
63. Tucker H. The role and function of community hospitals. Kings Fund Project Paper No. 70. London, Kings Fund, 1987.
64. Grant JA. Community hospitals--time to come off the fence. *J R Coll Gen Pract* 1989; 39(323):226-227.
65. Ramaiah S. Community hospitals in the new NHS [editorial]. *BMJ* 1994; 308(6927):487-488.

66. Ritchie LD, Robinson K. Community hospitals: new wine in old bottles? *Br J Gen Pract* 1998; 48:1039-1040.
67. Moll van Charante EP, IJzermans CJ, Bindels PJE. Huisartsbedden in een ziekenhuis; een transmuraal experiment in IJmuiden. *Med Contact* 2000; 55(14):502-504.

part



Studies on out-of-hours care

chapter

2

**Introduction of the GP cooperative
in Almere:**

***effects on the demand for
and supply by GP care***

PCE van Steenwijk-Opdam, EP Moll van Charante, E Ebbens, PJE Bindels

Accepted in *Huisarts & Wetenschap*

Summary

Objective

To obtain insight into the effect of the introduction of a GP cooperative on the GP workload, the division of tasks between GPs and assistants or nurses, and the total demand for out-of-hours GP care.

Methods

The total healthcare use is analysed based on contact registrations during 3 months in 6 consecutive years, starting two years prior to the introduction of the GP cooperative. For each period contact rates are calculated, per type of contact (telephone call, centre consultation, home visit) and per type of care provider (GP, practice assistant, nurse).

Results

After the introduction of the GP cooperative, GP workload dropped from 39 to 13 hours per month. With the introduction of telephone triage approximately 25% of all calls were handled by the telephone assistant alone. There was a significant decrease in the percentage of telephone consultations (from 31 to 13; difference 18, 95%CI 17-20) and home visits (from 16 to 7; difference 9, 95%CI 8-10) by GPs over the first two years. The percentage of nurse contacts significantly increased from 13% to 17% in the first year and then remained stable.

Overall, there was no change in demand both in- and out-of-hours after the introduction of the GP cooperative.

Conclusion

The reorganisation of out-of-hours GP care has led to a reduction in GP workload through a simultaneous decrease in numbers of monthly shifts and task delegation, without affecting the overall in- and out-of-hours demand.

Introduction

Following the examples in the UK¹ and Denmark², Dutch provision of out-of-hours primary health care has shifted from practice-based services towards large-scale general practitioner (GP) cooperatives.³ These changes were fuelled mainly by an increasing demand for out-of-hours care and the GP's desire to reduce the workload during out-of-hours practice.⁴ In the meantime approximately 138 GP cooperatives have been set up in the Netherlands with a combined reach of more than 90% of the Dutch population. Since the introduction of the GP cooperatives the workload for GPs appears to have decreased. Telephone triage is performed by practice assistants or nurses; they decide whether or not to handle the call themselves, to put the patient in contact with the GP, or to refer the patient to the Accident & Emergency Department (AED).⁵

An earlier study in Rotterdam showed an increase in out-of-hours demand after the introduction of a GP cooperative.⁶ In Denmark an initial decrease in the total contact rate was reported in the years following the national switch to GP cooperatives.⁷ Insight into the demand for care may facilitate an optimal supply of out-of-hours health care professionals. In this article we try to answer the question whether the introduction of the GP cooperative in Almere (2002) has affected the demand for GP care, both in- and out-of-hours, and the extent to which the tasks of the GP have been transferred to practice assistants or nurses within the GP cooperative.

Methods

Setting

Almere is a city with approximately 166,000 inhabitants. Primary health care is provided from 22 healthcare centres; together with four nursing homes these 22 centres form the 'Care Group Almere' (*Zorggroep Almere*). In addition, there are four independent GP surgeries, as well as one hospital, the Flevo hospital.

Prior to the centralisation of the GP services in 2002 out-of-hours care was provided from three healthcare centres, each including a pharmacy. In these locations a nurse was also present to offer basic first aid services. A central telephone service would pass on all telephone calls to the GP without selection; the GP would then call the patient back.

Since 25 February 2002 all out-of-hours care is offered from one location: the GP cooperative close to the Flevo hospital.

The GPs are supported by practice assistants who perform the telephone triage and a nurse who is present for the treatment of small injuries, wound checkups and urinary tract problems. The night watch – one GP with a service car and chauffeur – who was introduced in 1997, has remained, even after 2002, and is on duty from midnight onwards for all of Almere.⁸

Data from the Computerized Medical Records (CMR)

Contact data from the GP cooperative are based on the CMR system Medicom (Pharmapartners, Oosterhout) that is used both in- and out-of-hours by all GPs of the Zorggroep Almere. Anonymous contact data were extracted from the CMR system from 25 February until 25 May in the years 2000 through 2005. A call that started with the practice assistant but was ultimately handled by the GP or nurse was considered as one contact. Telephone contacts for making appointments were not included in the total number of patient contacts. Contacts of patients registered with the independent GPs were not included either (approximately 6.5%) because data about the daytime care of these patients were not available. Passers-by were also excluded (<1%).

Analysis

For every research year, the contact rates per 1000 patients registered with the Zorggroep were calculated. The contacts were classified by period (during in- and out-of-hours), by type of contact (telephone call, centre consultation, home visit) and by type of care provider (GP, practice assistant, nurse). Effects in relation to the year preceding the GP cooperative (2001) were investigated with the Chi square test for two proportions and for trend. A possible effect on the contact frequency from patients who recently moved to Almere was analysed separately (Oneway ANOVA with Bonferroni correction). Confidence intervals were set at the 95% level. All analyses were carried out using SPSS version 10.5.

Results

Between the year 2000 and 2005 the population of Almere grew with almost 25%, from 133,416 to 166,097 inhabitants. The number of GPs on call fell from 8 to 3, as did the number of hours on call per GP per month (from 39 to 13)(Table 1). The distribution of demand for GP care remained stable throughout these years: 93% of all contacts took place in the daytime and 7% out-of-hours (Table 2). The demand during in- and out-of-hours fluctuated over the years without showing any trend.

In the first year after the start of the GP cooperative (2002-3) the percentage of telephone consultations by the GP decreased from 31.4% to 20.2% of all contacts (difference 11.2%; 95%CI 10.3-12.7%), as did the percentage of contacts leading to a home visit, from 16.1% to 9.1% (difference 7.0%; 95%CI 6.1-8.0%) (Figures 1 and 2). In the second year (2003-4) both percentages decreased significantly again – the telephone consultations to 12.5% (difference 7.7%; 95%CI 6.4-8.3%) and the home visits to 7.3% (difference 1.8%; 95%CI 0.8-2.3%). After that they remained stable. The percentage of consultations by the GP remained stable throughout the years (2000-2005). The rate of independently handled telephone contacts by the practice assistant increased from 22.1% at the start in 2002 to 27.9% in

Table 1. Organisation of out-of-hours GP care before and after the introduction of the GP cooperative on 25 February 2002

	Period						
	1999	2000	2001	2002	2003	2004	2005
GPs with the <i>Zorggroep Almere</i> :							
Number	86	109	150	147	144	143	138
Total FTE	63.8	68.6	81.1	85.9	86.5	87.6	90.3
Independent GP practices			4				4
Number (FTE)			4 (4FTE)				8(±6FTE)
		Before 25 February 2002			After 25 February 2002		
Number of locations for out-of-hours GP care in Almere		3			1		
Service pharmacy		3 (1 per location)			1		
Number of GPs on call							
-weekdays 5pm-midnight		8			3		
-weekend 8am-midnight		8			3		
-all nights from midnight-8am		1 GP + chauffeur			1 GP + chauffeur		
-number of GPs stand-by		1			1		
Duration of service per GP							
-during the week		7 hours			7 hours		
-weekend		16 hours			8 hours		
Average number of hours on duty per GP per month		39			13		
Nursing staff		Until 10 pm			Until 11 pm		
Call management		3 (1 per location)			2 on 1 location		
-weekend: 8am-11pm;		Central telephone service			2 practice assistants		
-weekdays: 5pm-11pm							
-all days between 11pm-8am		Central telephone service			1 practice assistant		

2003 (difference 5.9%; 95%CI 4.3-6.5%) and then fell back to 22.8% in 2005 (difference over two years 5.1%, 95%CI 3.9-6.3%). On average the practice assistants gave a telephone advice alone in approximately 25% of all telephone contacts. The percentage of nurse contacts declined somewhat in 2002 and increased significantly in 2003, from 12.7% to 17.0% (difference 4.3%; 95%CI 3.4-5.3%) and remained stable in the subsequent years.

Table 2. Patient contacts during in- and out-of-hours

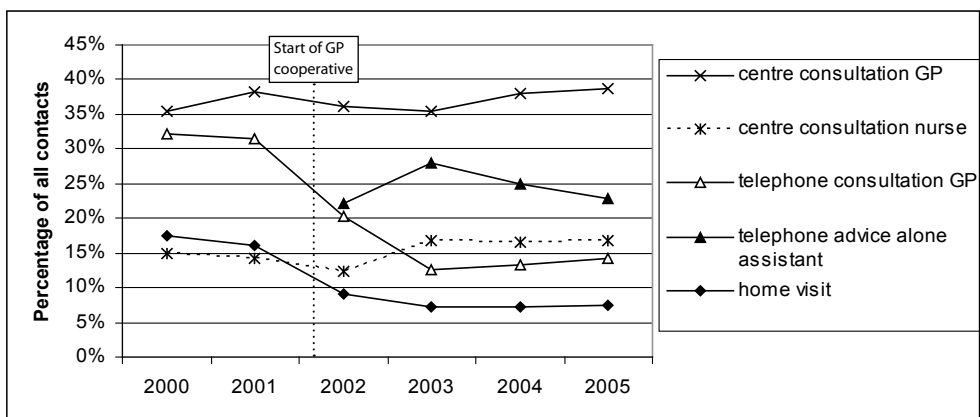
Size of the *Zorggroep* population, the total number of patient contacts per 1000 patients registered with the *Zorggroep* divided into out-of-hours care and daytime care. Contact data over the periods 25 February-25 May (in the years 2000 through 2005).

Year	<i>Zorggroep</i> population	Total		Out-of hours			Daytime		
		Number of patients	Contact rate per 1000 patients per year*	Number of patients	Contact percentage of all contacts	Contact rate per 1000 patients per year*	Number of patients	Contact percentage of all contacts	Contact rate per 1000 patients per year*
2000	133416	131961	4074	9214	7.0	283	122747	93.0	3790
2001	142246	134823	3920	8898	6.6	253	125925	93.4	3667
2002	153091	147032	3972	10773	7.3	284	136259	92.7	3687
2003	160178	147079	3758	10531	7.2	269	135890	92.4	3490
2004	163457	148575	3795	9534	6.4	234	139041	93.6	3561
2005	166097	157782	3953	10518	6.7	253	147264	93.3	3699

* corrected for difference in number of weekend days and holidays in the research years

Figure 1. Contact rates per 1000 patients registered with the *Zorggroep* per year

Contacts with the GP cooperative for all six consecutive years by type of health professional (GP, practice assistant, nurse) and type of contact (telephone contact, centre consultation, home visit), expressed as the percentage of the total number of contacts.



Patients registered less than four years with the *Zorggroep* have a statistically significant higher contact frequency than patients registered longer (Oneway ANOVA $F=32.8$; $p<0.001$) (Figure 3). However, the annual influx of newly registered patients roughly remained the same during the entire research period.

Figure 2. Out-of-hours contacts divided by type of contact

Overall contact rate per 1000 patients per research year, divided into the rates of telephone consultations (GP and practice assistant combined), centre consultations (GP and nurse combined) and home visits.

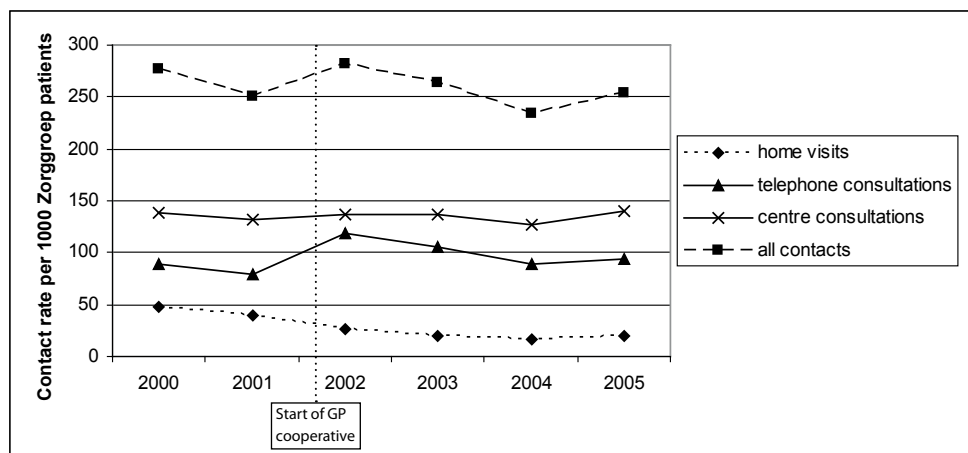
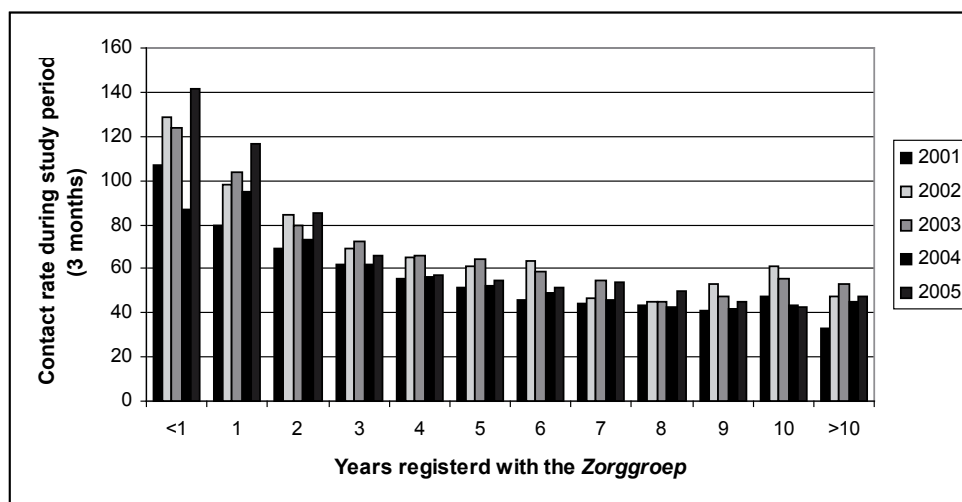


Figure 3. Contact rates per 1000 registered patients for all 3-month study periods between 2001-2005 in relation to the number of years registered with the *Zorggroep*



Discussion

The introduction of one single GP cooperative in Almere does not seem to have affected the in- or out-of-hours demand for GP care. However, while the shift from three to one locations yielded a reduction in the number of hours on call by GPs, it was also accompanied by a more efficient use of professionals. Fewer GPs provide care to more patients at the same time and are supported by practice assistants and nurses. As the total out-of-hours contact rate per 1000 registered patients remained the same, there was a clear decline in the number of telephone contacts and home visits by the GP.

It is not clear to what extent these results can be extrapolated to other GP cooperatives in the Netherlands as the organisation of primary health care in Almere (mainly health centres) and demographic characteristics of the population (many young families) is different from many other areas. Moreover, prior to the start of the GP cooperative in Almere expansion to three locations had in fact already taken place (while one GP was already providing night-time care for all of Almere), so that the switch to one single GP cooperative involved less expansion than in most other regions. Another special feature of Almere is the presence of a nurse for small injuries.

A remarkable finding seems to be that the newly registered patients have a higher care consumption that continues up until the third year of registration. In theory, an unbalanced population growth over the research years could mask a possible effect of the introduction of the GP cooperative. However, the influx of new patients and its effect on the out-of-hours demand remained stable throughout the research years. Even if the influx of new patients is left aside and only the contacts of patients registered for four years or more are analysed, no effect is seen on the introduction of the GP cooperative. The reasons behind this higher consumption of the newly registered patients are unknown.

Contrary to previous Dutch⁶ and Danish studies⁷, the introduction of the GP cooperative in Almere does not seem to have affected the out-of-hours demand for GP care. In the Dutch study the researchers indicated that the increase in out-of-hours demand might result from an overestimation due to underregistration in the period preceding the GP cooperative. In Denmark, on the other hand, Christensen et al. found a decrease in the total number of contacts (11%) after the national switch to GP cooperatives, although this effect had disappeared after a few years.

In the Netherlands there seems to be a large variability among the GP cooperatives in the percentage of telephone contacts performed by the practice assistant or nurse (25-36%) or GP (11-17%), consultations at the GP cooperative (34-63%), and home visits (7-15%).^{9,10} Only a few European studies have reported on the effects of telephone triage.^{5,7,11} In the UK, nurses were shown to provide a telephone advice alone in approximately 50% of all calls, whereas in Almere this was around 25% only. Perhaps the British telephone nurses were able to achieve a larger measure of independence on the telephone because of the telephone advice system (TAS) that they used.¹² The extent to which the number of home

visits reduced after the introduction of telephone triage was also described in other countries, although the percentage of home visits before the introduction of the cooperatives appeared to be higher in the UK and Denmark (up to 46%). Conversely, there were many more consultations at the GP cooperative in Almere than in most British and Danish GP cooperatives

Future research

This study primarily describes the quantitative effects of the expansion in out-of-hours health care provided by the GP on work pressure, division of tasks, and out-of-hours demand. Further research is necessary to investigate the safety, efficacy and quality of telephone triage in GP cooperatives.

Conclusion

The introduction of the GP cooperative in Almere has had no effect on the demand for GP care during in- or out-of-hours. The reorganisation of out-of-hours GP care in Almere has, however, led to a more efficient use of professionals as a result of a shift of the telephone triage to the practice assistant and a clear decrease in the number of telephone consultations and home visits by the GP.

References

1. Hallam L. Primary medical care outside normal working hours: review of published work. *BMJ* 1994; 308(6923):249-253.
2. Olesen F, Jolleys JV. Out of hours service: the Danish solution examined. *BMJ* 1994; 309(6969):1624-1626.
3. Van Uden CJ, Giesen PH, Metsemakers JF, Grol RP. Development of Out-of-Hours Primary Care by General Practitioners (GPs) in The Netherlands: From Small-call Rotations to Large-scale GP Cooperatives. *Fam Med* 2006; 38(8):565-569.
4. Giesen PHJ, Haandrikman LGR, Broens S, Schreuder JLM, Mokkink HGA. GP cooperatives: does the general practitioner benefit from them? [Centrale huisartsenposten: wordt de huisarts er beter van?]. *Huisarts Wet* 2000; 43(12):508-510.
5. Bunn F, Byrne G, Kendall S. The effects of telephone consultation and triage on healthcare use and patient satisfaction: a systematic review. *Br J Gen Pract* 2005; 55(521):956-961.
6. de Bakker DH, Grielen SJ, Prins B. Werklastvermindering en tevreden patiënten. Grootchalige dienstenstructuur voor huisartsen. *Med Contact* 1999; 54(39):1328-1331.
7. Christensen MB, Olesen F. Out of hours service in Denmark: evaluation five years after reform. *BMJ* 1998; 316(7143):1502-1505.
8. Ebbens E, De Bruijne M. Geneeskundige zorg buiten kantooruren in Almere. *Huisarts Wet* 2000; 2000; 43(12):511-513.

Chapter 2

9. Post J. Large scale out-of-hours GP care [Grootschalige huisartsenzorg buiten kantooruren]. Groningen; 2004.
10. Van Uden CJ. Studies on general practice out-of-hours care. Maastricht; 2005.
11. Lattimer V, George S, Thompson F, Thomas E, Mullee M, Turnbull J, Smith H, Moore M, Bond H, Gasper A. Safety and effectiveness of nurse telephone consultation in out of hours primary care: randomised controlled trial. The South Wiltshire Out of Hours Project (SWOOP) Group. *BMJ* 1998; 317(7165):1054-1059.
12. Crouch R, Dale J, Patel A. Ringing the changes: developing, piloting and evaluating a telephone advice system in accident and emergency and general practice settings. London: Department of General Practice and Primary Care; King's College School of Medicine and Dentistry; 1996.

chapter

3

Nurse telephone triage in out-of-hours GP practice:

determinants of independent advice and return consultation

EP Moll van Charante, G ter Riet, S Drost,
L van der Linden, NS Klazinga, PJE Bindels

BMC Fam Pract 2006; 7:74.

Abstract

Background

Nowadays, nurses play a central role in telephone triage in Dutch out-of-hours primary care. The percentage of calls that is handled through nurse telephone advice alone (NTAA) appears to vary substantially between GP cooperatives. This study aims to explore which determinants are associated with NTAA and with subsequent return consultations to the GP.

Methods

For the ten most frequently presented problems, a two-week follow-up cohort study took place in one cooperative run by 25 GPs and 8 nurses, serving a population of 62,291 people. Random effects logistic regression analysis was used to study the determinants of NTAA and return consultation rates. The effect of NTAA on hospital referral rates was also studied as a proxy for severity of illness.

Results

The mean NTAA rate was 27.5% – ranging from 15.5% to 39.4% for the eight nurses. It was higher during the night (RR 1.63, 95%CI 1.48–1.76) and lower with increasing age (RR 0.96, 95%CI 0.93–0.99, per ten years) or when the patient presented >2 problems (RR 0.65; 95%CI 0.51–0.83). Using cough as reference category, NTAA was highest for earache (RR 1.49; 95%CI 1.18–1.78) and lowest for chest pain (RR 0.18; 95%CI 0.06–0.47). After correction for differences in case mix, significant variation in NTAA between nurses remained ($p < 0.001$). Return consultations after NTAA were higher after nightly calls (RR 1.23; 95%CI 1.04–1.40). During first return consultations, the hospital referral rate after NTAA was 1.5% versus 3.8% for non-NTAA (difference -2.2%; 95%CI -4.0% to -0.5%).

Conclusion

Important inter-nurse variability may indicate differences in perception on tasks and/or differences in skill to handle telephone calls alone. Future research should focus more on modifiable determinants of NTAA rates.

Background

Over the last decades, the organisation of out-of-hours primary health care in many countries has shifted from practice-based services to large-scale general practitioner (GP) cooperatives.¹⁻³ These changes were fuelled mainly by an increasing demand for out-of-hours care and the GP's desire to reduce the workload during out-of-hours practice. In recent years, a similar development has taken place in the Netherlands.⁴ There are currently more than 130 GP cooperatives in the Netherlands, generally with 40 to 120 full-time participating GPs, which cover over 90% of the entire Dutch population and serve between 50,000 and 500,000 people.

Similar to the UK, out-of-hours triage in the Netherlands is initially performed through telephone contact with nurses who receive, assess and manage incoming calls from patients.⁵ The call management options include the provision of information and advice as well as referral to a GP or Accident and Emergency (A&E) service. By and large, telephone nurses decide on the subsequent type of contact, the moment at which a patient's call is passed through to the GP: a telephone call to the patient, a centre consultation, or a home visit. While only very few Dutch GP cooperatives make (experimental) use of computerized telephone advice systems (TAS),⁶ nationwide telephone nurses do have access to a broad set of written protocols for most acute problems, developed by the Dutch College of General Practitioners. During their shift in the out-of-hours centre, GPs are subsequently expected to authorise the content of all telephone contacts handled by the nurses.

Various studies have focussed on the safety and effectiveness of the nurse telephone consultation.^{5,7,8} They found a substantial decrease in GP workload without an increase of adverse events, like hospital admissions or deaths. However, within the Netherlands alone, substantial differences in NTAA rates were observed among GP cooperatives, ranging from around 25 to 36 percent.^{9,10} Perhaps this indicates a lack of agreement on the precise role of the telephone nurse, or differences in the extent to which nurses made use of the available, previously mentioned protocols.¹¹ Earlier studies have also reported a substantial variability among nurses both without (US) and with the support of TAS (UK).¹²⁻¹⁴ O'Cathain et al. found that some of the inter-nurse variability was explained by the length of their clinical experience and the type of software used.¹⁵ Overall, little is still known about the determinants that are associated with NTAA. Similarly, it is unknown which determinants are associated with return consultations to the GP after NTAA. Such information could prove valuable in the discussion on the professional role and position of the telephone nurse in the triage process during out-of-hours primary care.

We studied the contacts that resulted in an NTAA for the ten most frequently presented problems. Aim of the study was to explore which determinants are related to NTAA (1) or to subsequent return consultations after NTAA (2), and to describe to which extent hospital referral rates are affected by NTAA (3).

Methods

Setting

The GP cooperative in the coastal city of IJmuiden participated in the study. Serving a population of 62,291 people with 25 GPs and 8 nurses, it has a well-defined area, variable socio-demographic characteristics, and access to electronic medical records for all GP practices (all contacts in- and out-of-hours). The GP cooperative operates from 5 pm until 8 am from Monday to Friday and 24 hours during the weekends. Apart from 11 pm until 8 am when only one GP is on call, two GPs work alongside, one making home visits and one taking care of centre consultations and telephone calls. They are supported by one nurse, who performs the telephone triage as described before. The service is located in the former Accident and Emergency (A&E) Department of a small district hospital that had to close in 1996 and was subsequently used to harbour the GP cooperative.

Subjects and data collection

Between 1 November 2002 and 1 March 2003, all incoming calls taken by nurses were registered. Contact information was entered on a specially prepared form. It was completed by the nurses (advice alone) or GPs (all other contacts) and was used to collect demographic data, presented problems (up to a maximum of three), contact managed by nurse or GP, diagnosis (only one, made by GP) and management (nurse or GP). The International Classification of Primary Care (ICPC) was used to code the presented problem(s), diagnoses and management.¹⁶ Prior to this study, all data were anonymised, coded and entered into the computer, using SPSS version 11.5.

In total, 4,902 calls were registered. Next, 2,160 (44.1%) contacts on the ten most frequently presented problems were selected from this database: fever, cough, vomiting, shortness of breath, earache, general abdominal pain, sore throat, lower abdominal pain, headache, and chest pain. Between February and June 2005, retrieval and retrospective data collection of these cases took place from the electronic medical records in IJmuiden. It appeared that 1421/2160 (65.8%) contacts were first presentations, whereas 573/2160 (26.5%) contacts were in fact follow-up contacts of earlier presentations during surgery hours or out-of-hours consultations. Another 166/2160 (7.7%) contacts were excluded due to inaccessibility of records or other reasons, which made it impossible to obtain follow-up data. Also excluded were accidents and injuries, even though they did represent a top-ten problem, but most of these patients showed up without calling the cooperative in advance (38.0%) and passed the telephone nurse by.

The 1421 first presentations were made by 1324 patients, 1243 of whom attended the service only once (93.9%).

A follow-up period of two weeks was chosen, because virtually all return consultations that were found during a pilot (n=351) fell within this period of time (92% within one week). Return consultations were only registered for patients who subsequently contacted

a GP for the same problem(s). Information was collected on the time to first return consultation (days) and referral to the hospital (yes/no).

Analysis

Main outcomes in this study were (1) determinants of NTAA during first out-of-hours contact, (2) subsequent return consultations after NTAA, and (3) differences in hospital referral rates at first return consultation after NTAA or GP contact. We used random effects logistic regression analysis with nurses as a random intercept. NTAA (yes/no) was the dependent variable for the first research question. The ten most frequently presented problems were modeled as dummy variables using cough as the reference category. These were kept in the model at all times. The initial set of independent variables at the patient level included sex, age, type of insurance (public or private), social deprivation (yes/no, area defined by the local council), time of contact (day and evening versus night), number and type of presented problems, and traveling distance to the GP cooperative. At the nurse level the initial set of independent variables included sex and characteristics of experience: length of clinical experience (defined as 'total number of years worked in jobs for which a nursing qualification was required', dichotomized into <20 years or more); variety of experience (measured by the number of clinical specialties which the nurse had worked in, dichotomized into ≤ 3 or more),¹⁵ and experience in GP practice (yes/no). We did not investigate cross-level interactions, given the limited number of nurses and the lack of convincing theories on mechanisms of action. We made the model more parsimonious by removing non-significant variables, but only if they did not materially (>10%) alter the regression coefficients of significant associations and if the likelihood ratio test¹⁷ indicated a non-significant change in the model's fit (at a two-sided $p > 0.05$). For the second research question the approach was identical but return consultation after NTAA (yes/no) was the dependent variable. Odds ratios were converted to relative risks (RR) to facilitate interpretation.¹⁸ Confidence intervals were set at the 95% level. All analyses were carried out using Stata statistical software (Release 9.2, Stata Corporation, College Station, TX).

Results

Nurse telephone consultations of initial contacts

A flow chart of all initial contacts and return consultations is shown in Figure 1. Out of 1421 calls, 391 (27.5%) were handled by a nurse alone versus 1030 (72.5%) resulting in a GP contact. GPs provided telephone advice ($n=173$, 16.8%), centre consultations ($n=675$, 65.5%), or home visits ($n=182$, 17.7%).

During initial telephone triage, the nurses referred one patient to the A&E services themselves. Another 102 hospital referrals took place via the GP, 2.3% after telephone contact, 6.7% after a centre consultation and 29.1% after a home visit ($p < 0.01$ for all differences).

Figure 1. Flow chart of all initial contacts and return consultations

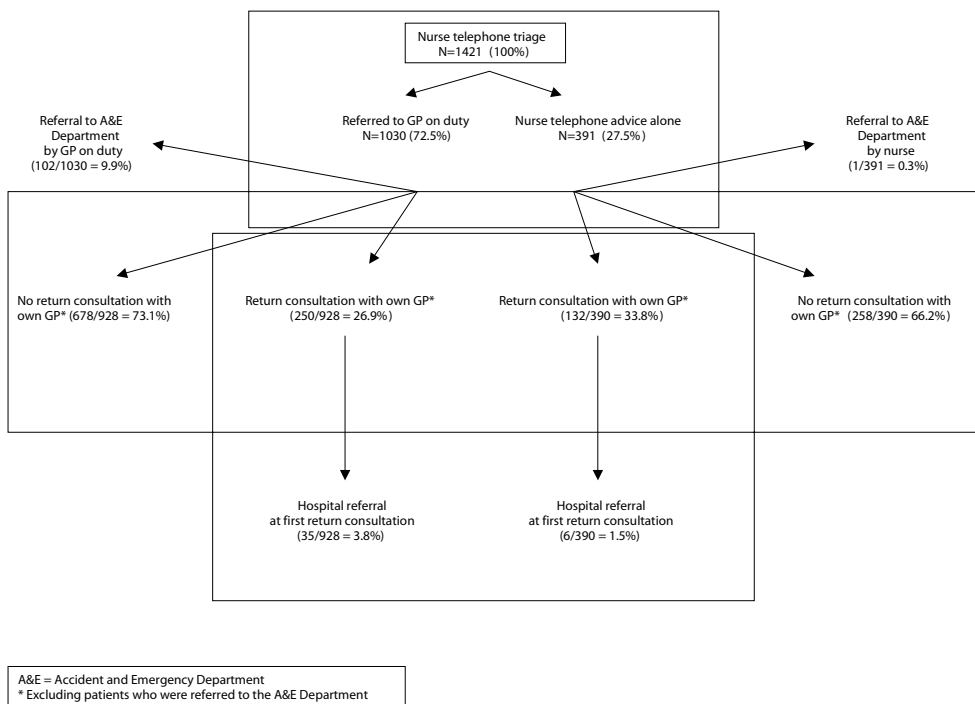


Table 1 shows the proportions of calls handled by the nurse alone and proportions of subsequent return consultations (sex, age groups, time of day and number of problems). NTAA was given more frequently in the lower age groups, during the night, and when the number of presented complaints was less than three. Finally, the proportions of presented problems that were handled through NTAA ranged from 5.4% for chest pain to 47.9% for earache.

The group of eight nurses had a mean 21 years (range 13-27) of clinical experience. While three nurses had worked in more than three specialities, three had previously worked in a GP surgery.

Table 2 shows the initial set of variables and those that were retained in the final regression model. Nightly calls, earache, and vomiting were positively associated with NTAA (RR>1). Increasing age, >2 problems presented, chest pain, localised abdominal pain and shortness of breath were negatively associated with NTAA (RR<1). No associations were found with sex, type of insurance, social deprivation, or distance to the GP cooperative, or nurses' sex or prior clinical experience (20 years or more (y/n), more than three specialities (y/n), experience in GP practice (y/n)).

Table 1. Number (valid %) of calls handled by the nurse alone and subsequent (first) return consultations

	Total number of calls		Handled by nurse alone			
	n	(%)	Initial triage		First return consultation*	
	n	(%)	n	(%)	n	(%)
Sex						
Male	659	(46.4)	180	(27.3)	66/179	(36.9)
Female	762	(53.6)	211	(27.7)	66/211	(31.3)
Age group (yrs)						
0-4	444	(31.3)	148	(33.3)	56/148	(37.8)
5-14	211	(14.9)	67	(31.8)	20/67	(29.9)
15-24	99	(7.0)	32	(32.3)	10/32	(31.3)
25-44	256	(18.0)	67	(26.2)	16/67	(23.9)
45-64	179	(12.6)	34	(19.0)	14/34	(41.2)
>65	231	(16.3)	43	(18.6)	16/42	(38.1)
Time of day						
Day (8 am-5 pm)	515	(36.6)	120	(23.3)	37/120	(30.8)
Evening (5 pm-11 pm)	641	(45.5)	154	(24.0)	46/154	(29.9)
Night (11 pm-8 am)	252	(17.9)	114	(45.2)	49/113	(43.4)
Number of problems						
1	334	(23.5)	103	(30.8)	38/103	(36.9)
2	598	(42.1)	184	(30.8)	61/184	(33.2)
3	489	(34.4)	104	(21.3)	33/103	(32.0)
Total	1421	(100.0)	391	(27.5)	132/390	(33.8)

* Percentage of initial triage, excluding patients who were referred to the hospital during their first out-of-hours contact

The median number of contacts per nurse was 188 (IQR 147 to 301). The average percentage of NTAAAs across all presented problems ranged from 15.5% to 39.4% for the eight nurses (Figure 2). This amount of between-nurse variability can also be expressed as the intra-class correlation (ICC), that is, the percentage of all variation in the NTAA rates that is due to differences between the nurses.

After fitting the most parsimonious model, the proportions of calls with NTAA showed significant variability between the nurses ($p < 0.001$) justifying random-effects analysis. Figure 2 shows how this adjustment brings the individual NTAA rates closer to the overall mean (27.5%), although considerable, unexplained inter-nurse variability remains.

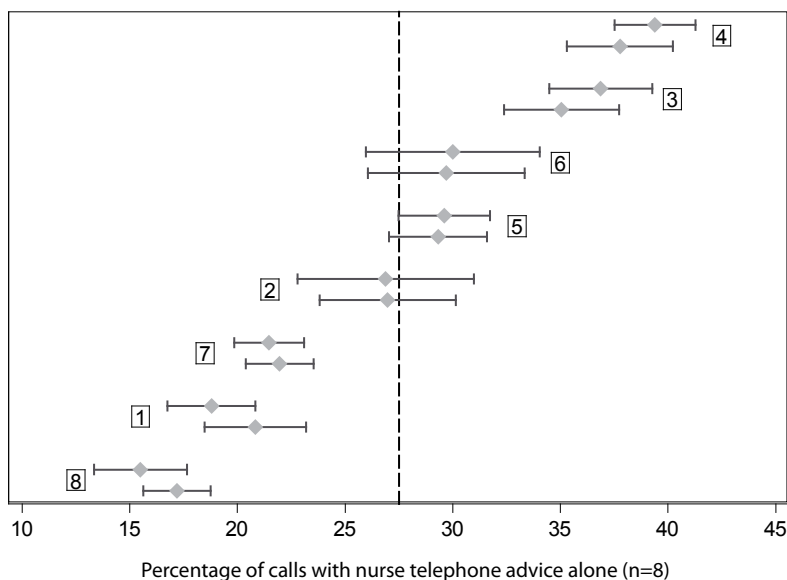
Table 2. Relative risks (RR) for determinants of nurse telephone consultation alone (NTAA) and return consultations after NTAA or after GP contact. Univariable and multivariable associations (95% CI).

	Nurse telephone advice alone (NTAA)		Return consultations		
	Univariable associations	Multivariable model	After NTAA Univariable associations	After NTAA Multivariable model	After GP contact Multivariable model
Patient characteristics	RR (95%CI)	RR (95%CI)	RR (95%CI)	RR (95%CI)	RR (95%CI)
Male	1.00 (ref)		1.00 (ref)		
Female	1.00 (0.84-1.19)	-	0.85 (0.61-1.14)	-	-
Public insurance	1.00 (ref)		1.00 (ref)		
Private insurance	1.02 (0.84-1.22)	-	1.01 (0.73-1.34)	-	-
Non-deprived area	1.00 (ref)		1.00 (ref)		
Deprived area	0.90 (0.75-1.08)	-	0.88 (0.64-1.17)	-	-
Distance per 5 km*	1.03 (0.78-1.31)	-	1.38 (0.94-1.83)	-	-
Age per 10 yrs**	0.92 (0.90-0.95)	0.96 (0.93-0.99)	0.99 (0.94-1.05)	1.02 (0.99-1.05)	1.02 (1.00-1.04)
Day or evening	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
Night	1.52 (1.37-1.65)	1.63 (1.48-1.76)	1.33 (1.07-1.58)	1.23 (1.04-1.40)	1.28 (1.13-1.41)
1 or 2 problems presented	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
3 problems presented	0.65 (0.52-0.82)	0.65 (0.51-0.83)	0.91 (0.63-1.25)	1.01 (0.82-1.16)	0.95 (0.86-1.03)
Cough	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
Chest pain	0.17 (0.07-0.45)	0.18 (0.06-0.47)	#	#	0.81 (0.56-1.00)
Localised abdominal pain	0.36 (0.17-0.75)	0.35 (0.16-0.74)	1.22 (0.74-1.43)	#	1.50 (1.18-1.74)
Shortness of breath	0.44 (0.25-0.76)	0.41 (0.22-0.74)	1.21 (0.79-1.46)	1.21 (0.58-1.88)	0.90 (0.71-1.06)
Generalised abdominal pain	0.92 (0.58-1.39)	0.86 (0.53-1.32)	0.23 (0.07-0.70)	0.62 (0.29-0.92)	1.34 (1.09-1.53)
Sore throat	1.17 (0.80-1.62)	1.34 (0.92-1.82)	0.83 (0.41-1.38)	0.91 (0.55-1.24)	0.95 (0.77-1.09)
Fever	1.22 (0.89-1.59)	1.17 (0.83-1.56)	0.92 (0.54-1.36)	1.00 (0.66-1.31)	1.06 (0.90-1.17)
Headache	1.33 (0.96-1.73)	1.40 (1.00-1.81)	0.22 (0.08-0.64)	0.61 (0.31-0.90)	0.80 (0.56-0.96)
Vomiting	1.39 (1.10-1.68)	1.44 (1.20-1.63)	0.25 (0.11-0.54)	0.62 (0.39-0.85)	0.90 (0.73-1.02)
Earache	1.51 (1.30-1.68)	1.49 (1.18-1.78)	0.93 (0.56-1.36)	0.99 (0.69-1.27)	0.94 (0.75-1.07)

	Nurse telephone advice alone (NTAA)		Return consultations		
	Univariable associations	Multivariable model	After NTAA Univariable associations	After NTAA Multivariable model	After GP contact Multivariable model
Experience < 20 years	1.00 (ref)		1.00 (ref)		
Experience ≥ 20 years	1.02 (0.79-1.29)	-	0.86 (0.59-1.19)	-	n.a.
No. of specialities ≤ 3	1.00 (ref)		1.00 (ref)		
No. of specialities > 3	0.97 (0.73-1.25)	-	1.23 (0.95-1.51)	-	n.a.
No experience in GP practice	1.00 (ref)		1.00 (ref)		
Experience in GP practice	0.98 (0.70-1.32)	-	1.29 (1.03-1.55)	-	n.a.

GP = general practitioner; ref = reference category; * distance to GP cooperative, reference 0-1 kilometre; ** reference 0 years; age and distance were modelled as continuous variables; # numbers too low for analysis; n.a. = not applicable

Figure 2. Variability in the percentage of calls dealt with by nurse telephone advice alone (NTAA rate) among eight nurses working in a Dutch GP cooperative



NTAA rates (dots) and their 95% confidence limits (lines) for each of eight nurses. The upper lines indicate the unadjusted NTAA rates for each nurse, whereas the bottom lines indicate the rates adjusted for age, time of contact, and number and type of presented problems. Note that the adjustment brings the rates closer to the overall mean (27.5%, dotted vertical line). The numbers in the boxes represent the nurse identification numbers.

Return consultations: determinants and hospital referrals

After NTAA, 33.8% (132/390) of the patients returned to the GP within the first two weeks of the out-of-hours contact (Fig. 1). A nightly contact was positively associated with a return consultation, while headache and vomiting were negatively associated with a return consultation after NTAA (Table 2). Again, return consultation rates were not found to be associated with sex, insurance type, social deprivation, travelling distance to the GP cooperative, or nurses' sex or prior clinical experience. Since the number of 132 (out of 390) patients returning after NTAA was too low to allow complete adjustment for case-mix differences (being divided across 8 (nurses) times 10 (types of problems)), no variability could be detected between the nurses with regard to the proportions of return consultations.

The return consultation rate for patients who had had out-of-hours contact with the GP was 26.9% (250/928)(Fig.1). Determinants of return consultations after these GP contacts are presented in Table 2 for global comparisons only. Interestingly, a nightly contact was also associated with a higher return consultation rate, while general abdominal pain showed the clearest differences between NTAA and GP consultation.

Finally, the median time to first return consultation appeared to be shorter after NTAA than after a GP contact: one and two days, respectively (log rank test $p=0.0041$). Also, during the first return consultation with the GP, patients who had received NTAA were less often referred to the hospital than those who had initially come into contact with a GP: 1.5% (6/390) versus 3.8% (35/928) (difference -2.2%; 95%CI = -4.0% to -0.5%). Overall, patients who contacted the GP cooperative during the night were more likely to be referred to the hospital than during the day or evening (10.3% (26/252) versus 6.5% (75/1156); difference 3.8%; 95%CI = -0.2% to 7.8%).

Discussion

In this study, various determinants of NTAA and return consultations were found. Telephone nurses appeared most confident in providing advice to parents of young children and in addressing problems like earache, vomiting, and cough while they were more cautious when more than two problems were presented or when the presented problem involved chest pain, localised abdominal pain or shortness of breath. During the night, the nurses were more likely to provide NTAA compared to the day or evening. After correction for these factors, significant variability among the eight nurses remained. The probability of return consultations appeared to be associated mainly with after midnight calls and the type of presented problem. The patients who were referred to the GP by the nurse were more likely to be referred to the hospital, both during their first out-of-hours contact and first return consultation.

The GP cooperative studied had the advantage of an unequivocal accessibility of electronic

medical records for both in- and out-of-hours consultations. However, one needs to bear in mind that the cooperative studied was somewhat different from most others as it was located in a former A&E Department rather than a primary care centre and had employed former A&E nurses rather than practice nurses. Moreover, since the number of nurses who participated in this study was rather small, the results may not be generalisable to other GP cooperatives. Nevertheless, there are many similarities between our results and those from another Dutch study regarding overall demand and NTAA rate,¹⁹ which increases the likelihood that the results from both studies may be applicable to other areas of the country.

Another limitation of the study is that the collection of follow-up data took place more than two years after the initial data collection. Fortunately, since the GPs keep their electronic medical records (EMR) for a period of at least ten years after patients have died or moved elsewhere, the number of missing data remained very limited. Compared to the EMR, there appeared to be a general underestimation of the prospectively registered contacts of 2.1% (data not shown; mainly contacts concerning repeat prescriptions), indicating that the overall reliability of the first contact data is satisfactory. However, GPs or practice nurses may not always have entered information in the EMR when patients re-contacted their surgery in the daytime, although we believe that the financial incentive to claim all surgery contacts will have limited the number of missing data.

In this study, no quantification could be given for differences in severity of illness within the types of studied problems, leaving some room for residual confounding. Furthermore, the higher onward hospital referral rate after GP contacts compared to NTAA may indicate a higher level of complexity, but this association is perhaps confounded by the GPs' cautiousness and higher propensity to refer patients to the hospital who revisit their surgery after an out-of-hours contact with a fellow GP.

Finally, the small number of nurses in this study allowed for the inclusion of only a few nurse-related characteristics, such as length of clinical experience (both in- and outside the GP practice) or variety of experience.¹⁵ Nevertheless, in addition to being important in explaining differences in clinical behaviour between nurses (as illustrated by NTAA), these or similar variables may also be amenable to modification through continuing education. Further research including larger numbers of nurses is needed to explore the effect of nurse-related features on the provision of telephone advice.

Although various studies have described the process of telephone triage in out-of-hours primary care services,^{5;7;8} factors related to the NTAA process or the extent of inter-nurse variability has, in our opinion, received little attention.^{11;15;20} Nevertheless, while inter-nurse variability may indicate fields of disagreement on task definition among nurses, determinants of NTAA could also contribute to defining its domain.

Studies from the UK have indicated that through the use of telephone advice systems (TAS),⁶ telephone nurses can safely handle up to 50% (or more) of the incoming calls.^{5;7;8}

This suggests that the use of such systems may facilitate a substantial increase in Dutch NTAA rates, although its effects on inter-nurse variability¹⁵ and return consultations have yet to be established. As Wachter et al. have also pointed out, it should not simply be assumed that (intensified) use of telephone triage protocols will standardise care and the consistency of these protocols needs to be validated before safe dissemination for general use can take place.²¹ We found that nurses handled a larger proportion of calls alone at night than during the day and evening. While after midnight calls are thought to be of a more serious nature,²² as is perhaps supported by our finding that more patients were referred to the hospital during the night than during the day and evening, we would have expected the NTAA rate to go down during the night. At least two mechanisms may, in combination, be responsible for this finding: explicit instruction to triage more strictly or implicit perception of a higher threshold to consult the GP who may have been asleep or out on a visit. More research is needed to answer the question whether nurses take on more complex cases during nightly calls and to study to what extent this affects the quality and safety of care.²³

In this study we found that 33.8% of the patients returned for a consultation with the GP after NTAA, with a median return time of one day. Interestingly, only 26.9% of the patients returned following a GP contact (difference 6.9%; 95%CI 1.4–12.4), after a median period of two days. If the nurses handle the more straightforward, simple cases and refer the more complex cases to the GP (as is supported by the differences in hospital referral rates during first out-of-hours contact and first return consultation), it may seem counter-intuitive that the patients return both earlier and more often to the GP after talking to the telephone nurse. Perhaps this reflects that nurses distinguish between problems that need immediate attention and problems that can wait until the surgery hours, thereby referring some of the patients back to their own GP as has been suggested before. On the other hand, this may also have been the result of a lower confidence in, or reassurance by, the telephone nurses^{24–26} or some degree of discontent due to a mismatch between the care expected (e.g. a home visit) and the care received (telephone advice).^{27;28}

Given the large variation in independent NTAA rates in the literature, the professional role of telephone nurses needs to be further defined. In this process, a more comprehensive use of telephone advice systems may increase NTAA rates and decrease inter-nurse variability, resulting in a higher overall effectiveness of nurse telephone triage.^{15;29} Nevertheless, no matter what decision support systems nurses may rely on, telephone triage appears to be a very complex procedure that requires specific skills.^{30–32} These skills should become part of ongoing educational training programs that make nurses more aware of their professional role and boundaries,^{33;34} the limitations imposed by lack of visual cues,³⁵ and the strengths and limitations of their decision support systems.³⁶ Perhaps more attention should also be paid to issues like reassurance,²⁴ care expectancy,²⁷ or the possibility to talk to a doctor (like telephone doctors).²⁸ In doing so, training may lead to higher levels of confidence and a more positive attitude³⁷ and, ultimately, to a higher quality and safety of telephone triage and consultation.^{38;39}

Conclusion

In this study, various determinants of NTAA and return consultations were found. However, important inter-nurse variability may indicate differences in perception on tasks and/or differences in skill to handle telephone calls alone. Further discussion is needed to define the optimal role of the nurse in the telephone triage while future research should focus more on modifiable determinants of NTAA rates.

Competing interests

The author(s) declare that they have no competing interests.

Authors' contributions

EMC planned the design of the study, collected the first contact data, took part in the analysis and led the writing of the paper. GR analysed the data, made substantial contributions to the figures and tables and was involved in drafting the manuscript. SD and LL collected the data and were involved in drafting the paper. NSK took part in drafting the paper. PB made substantial contributions to the study design and interpretation of data as well as to drafting the paper. All authors read and approved the final version of the manuscript.

Acknowledgements

The Department of General Practice of the Academic Medical Centre covered the expenses made during data collection and analysis. We thank all nurses, GPs, and staff members of the GP cooperative for participating in the study. The authors would also like to express their gratitude to Mildred Beeldman for her sustained help with the data collection and coding of the problems presented.

References

1. Hallam L: Out of hours primary care. *BMJ* 1997; 314:157-158.
2. Jessopp L, Beck I, Hollins L, Shipman C, Reynolds M, Dale J: Changing the pattern out of hours: a survey of general practice cooperatives. *BMJ* 1997; 314:199-200.
3. Christensen MB, Olesen F: Out of hours service in Denmark: evaluation five years after reform. *BMJ* 1998; 316:1502-1505.
4. Van Uden CJ, Giesen PH, Metsemakers JF, Grol RP: Development of out-of-hours primary care by general practitioners (GPs) in The Netherlands: from small-call rotations to large-scale GP cooperatives. *Fam Med* 2006; 38:565-569.
5. Bunn F, Byrne G, Kendall S: The effects of telephone consultation and triage on healthcare use and patient satisfaction: a systematic review. *Br J Gen Pract* 2005; 55:956-961.
6. Crouch R, Dale J, Patel A: Ringing the changes: developing, piloting and evaluating a telephone advice system in accident and emergency and general practice settings. London: Department of General Practice and Primary Care, King's College School of Medicine and Dentistry; 1996.
7. Lattimer V, George S, Thompson F, Thomas E, Mullee M, Turnbull J, Smith H, Moore M, Bond H, Glasper A: Safety and effectiveness of nurse telephone consultation in out of hours primary care: randomised controlled trial. The South Wiltshire Out of Hours Project (SWOOP) Group. *BMJ* 1998; 317:1054-1059.
8. Thompson F, George S, Lattimer V, Smith H, Moore M, Turnbull J, Mullee M, Thomas E, Bond H, Glasper A: Overnight calls in primary care: randomised controlled trial of management using nurse telephone consultation. *BMJ* 1999; 319:1408.
9. Post J: Grootchalige huisartsenzorg buiten kantooruren [Large-scale out-of-hours GP care in the Netherlands]. In PhD Thesis University of Groningen, The Netherlands; 2004.
10. Van Uden CJ: Studies on general practice out-of-hours care. [Thesis] Maastricht, Maastricht University, 2005.
11. Mayo AM, Chang BL, Omery A: Use of protocols and guidelines by telephone nurses. *Clin Nurs Res* 2002; 11:204-219.
12. Isaacman DJ, Verdile VP, Kohen FP, Verdile LA: Pediatric telephone advice in the emergency department: results of a mock scenario. *Pediatrics* 1992; 89:35-39.
13. Verdile VP, Paris PM, Stewart RD, Verdile LA: Emergency department telephone advice. *Ann Emerg Med* 1989; 18:278-282.
14. O'Cathain A, Webber E, Nicholl J, Munro J, Knowles E: NHS Direct: consistency of triage outcomes. *Emerg Med J* 2003; 20:289-292.
15. O'Cathain A, Nicholl J, Sampson F, Walters S, McDonnell A, Munro J: Do different types of nurses give different triage decisions in NHS Direct? A mixed methods study. *J Health Serv Res Policy* 2004; 9:226-233.
16. ICPC-2. International Classification of Primary Care Oxford: Oxford University Press; 1998.
17. Kleinbaum DG, Klein M: Logistic regression. A Self-learning text. New York: Springer; 2002.
18. Zhang J, Yu KF: What's the relative risk? A method of correcting the odds ratio in cohort studies of common outcomes. *JAMA* 1998; 280:1690-1691.
19. Van Uden CJ, Winkens RA, Wesseling GJ, Crebolder HF, Van Schayck OC: Use of out of hours services: a comparison between two organisations. *Emerg Med J* 2003; 20:184-187.
20. Dale J, Crouch R, Lloyd D: Primary care: nurse-led telephone triage and advice out-of-hours. *Nurs Stand* 1998; 12:41-45.

21. Wachter DA, Brillman JC, Lewis J, Sapien RE: Pediatric telephone triage protocols: standardized decisionmaking or a false sense of security? *Ann Emerg Med* 1999; 33:388-394.
22. McKinstry B: Out-of-hours care. What do registrars and their trainers see? A study in South-East Scotland. *Education for General Practice* 2000; 11:276-280.
23. Shekelle P, Roland M: Nurse-led telephone-advice lines. *Lancet* 1999; 354:88-89.
24. Payne F, Shipman C, Dale J: Patients' experiences of receiving telephone advice from a GP co-operative. *Fam Pract* 2001; 18:156-160.
25. Van Uden CJ, Zwietering PJ, Hobma SO, Ament AJ, Wesseling G, Van Schayck OC, Crebolder HF: Follow-up care by patient's own general practitioner after contact with out-of-hours care. A descriptive study. *BMC Fam Pract* 2005; 6:23.
26. Moll van Charante E, Giesen P, Mekkink H, Oort E, Grol R, Klazinga N, Bindels P: Patient satisfaction with large-scale out-of-hours primary health care in The Netherlands: development of a postal questionnaire. *Fam Pract* 2006; 23:437-443.
27. McKinley RK, Stevenson K, Adams S, Manku-Scott TK: Meeting patient expectations of care: the major determinant of satisfaction with out-of-hours primary medical care? *Fam Pract* 2002; 19:333-338.
28. Giesen P, Moll van Charante E, Mekkink H, Bindels P, van den Bosch W, Grol R: Patients evaluate accessibility and nurse telephone consultations in out-of-hours GP care: Determinants of a negative evaluation. *Patient Educ Couns* 2007; 65:131-136.
29. Berwick DM: Controlling variation in health care: a consultation from Walter Shewhart. *Med Care* 1991; 29:1212-1225.
30. Foster J, Jessopp L, Dale J: Concerns and confidence of general practitioners in providing telephone consultations. *Br J Gen Pract* 1999; 49:111-113.
31. Car J, Sheikh A: Telephone consultations. *BMJ* 2003; 326:966-969.
32. Crouch R, Dale J: Telephone triage--how good are the decisions? (Part 2). *Nurs Stand* 1998; 12(35):33-39.
33. Higgs R, Blache G, Peters M, Armstrong E, Jessopp L: Telephone consultation requires appropriate training. *BMJ* 2003; 327:53.
34. Knowles E, O'Cathain A, Morrell J, Munro JE, Nicholl JP: NHS Direct and nurses--opportunity or monotony? *Int J Nurs Stud* 2002; 39:857-866.
35. Pettinari CJ, Jessopp L: "Your ears become your eyes": managing the absence of visibility in NHS Direct. *J Adv Nurs* 2001; 36:668-675.
36. O'Cathain A, Sampson FC, Munro JE, Thomas KJ, Nicholl JP: Nurses' views of using computerized decision support software in NHS Direct. *J Adv Nurs* 2004; 45:280-286.
37. Payne F, Harvey K, Jessopp L, Plummer S, Tylee A, Gournay K: Knowledge, confidence and attitudes towards mental health of nurses working in NHS Direct and the effects of training. *J Adv Nurs* 2002; 40:549-559.
38. Richards DA, Meakins J, Tawfik J, Godfrey L, Dutton E, Heywood P: Quality monitoring of nurse telephone triage: pilot study. *J Adv Nurs* 2004; 47:551-560.
39. Car J, Freeman GK, Partridge MR, Sheikh A: Improving quality and safety of telephone based delivery of care: teaching telephone consultation skills. *Qual Saf Health Care* 2004; 13:2-3.

chapter

4

**Out-of-hours demand for GP care
and emergency services:**

***patients' choices and referrals by general
practitioners and ambulance services***

EP Moll van Charante, PCE van Steenwijk-Opdam, PJE Bindels

Submitted

Summary

Background

Over the last five years, Dutch provision of out-of-hours primary health care has shifted from practice-based services towards large-scale general practitioner (GP) cooperatives. Only few population-based studies have been performed to assess the out-of-hours demand for GP and emergency care, including the referral patterns to the Accident and Emergency Department (AED) by GPs and ambulance services.

Method

During two four-month periods (five-year interval), a prospective cross-sectional study was performed for a Dutch population of 62,000 people. Data were collected on all patient contacts with one GP cooperative and three AEDs bordering the region.

Results

Overall, GPs handled 88% of all out-of-hours contacts (275/1000 inhabitants/year), while the AED dealt with the remaining 12% of contacts (38/1000 inhabitants/year). Within the AED, the self-referrals represented a substantial number of contacts (43%), although within the total out-of-hours demand they only represented 5% of all contacts. Self-referrals were predominantly young adult males presenting with an injury, nineteen percent of whom had a fracture. Compared to self-referrals, patients who were referred by the GP or brought in by the ambulance services were generally older and were more frequently admitted for both injury and non-injury ($p < 0.001$ for all differences).

Conclusions

The GP cooperative deals with the large majority of out-of-hours problems presented. Within the total demand, self-referrals constitute a stable, yet small group of patients, many of whom seem to have made a reasonable choice to attend the AED. The GPs and the ambulance services appear to be effectively selecting the problems that are presented to the AED.

Introduction

Following the UK and Denmark, over the last five years, Dutch provision of out-of-hours primary health care has shifted from practice-based services towards large-scale general practitioner (GP) cooperatives.^{1,2} There are currently more than 130 GP cooperatives in the Netherlands, generally with 40 to 120 full-time participating GPs, which cover over 90% of the entire Dutch population and serve between 50,000 and 500,000 people. Most GP cooperatives are known to lie in close proximity of the hospital. Although most GP cooperatives operate independently from the hospital, recently, some have decided to integrate with the local Accident & Emergency Department (AED), to form one out-of-hours emergency centre.³ One of the motives for this reorganisation was to prevent patients from self-referring themselves directly to the AED without first consulting the GP cooperative. Some authors have pointed out, that many of these so called self-referrals present with minor problems that can also be treated by a GP.^{4,5} This has led Dutch health policy makers to believe that integration of all out-of-hours services using one triage system will offer a chance to improve the efficiency and quality of care at a lower cost. Likewise, patient organisations have pointed out that patients find it increasingly difficult to determine to whom they should turn with their out-of-hours demand: the GP cooperative, the AED or the ambulance services.

Before major reorganisations are to take place, comprehensive data on overall out-of-hours care utilization should be provided, based on well defined populations. Interestingly, so far, only few studies have attempted to do so.^{3,6-11}

In this paper we describe the out-of-hours demand for a Dutch population of around 62,000 people. The objective of this study is (1) to determine the out-of-hours patterns of use of general practice and A&E services; (2) to compare AED visits by self-referrals, patients referred by the GP cooperative, and patients brought in by the ambulance services.

Methods

Setting

The GP cooperative in the coastal city of IJmuiden took part in the study. Within a well defined area (municipality of Velsen) it serves a population of around 62,000 people with a total of 25 GPs and 8 nurses. The age and sex distribution of the population studied appears to be fairly similar to that of the Dutch population (Supplementary Table).

During out-of-hours, all staff members have access to all electronic medical records for all GP practices. The GP cooperative operates from 5.00 pm to 8.00 am from Monday to Friday and 24 hours during the weekends. Apart from 11 pm to 8 am when only one GP is on call, two GPs work alongside, one making home visits and one taking care of centre consultations or telephone calls. They are supported by one nurse who receives, assesses,

and manages all incoming calls as described elsewhere.¹² She has access to a broad set of guidelines for most acute problems that were developed by the Dutch College of General Practitioners.

The service is located in the former AED of a small district hospital that had to close in 1996 and was subsequently used to harbour the GP cooperative.

Subjects and data collection

Between 1 November and 1 March 1997-8 and 2002-3 (two four-month periods), all incoming calls were registered by the telephone nurse. Contact information was entered on a specially prepared data collection sheet. It was completed by the nurses (advice alone) or GPs (all other contacts) and was used to collect demographic data, presented problems (up to a maximum of three), diagnosis (only one, made by GP) and management (by nurse or GP). The International Classification of Primary Care (ICPC) was used to code the presented problem(s), the diagnosis and management.¹³ Coding of all contacts was performed by two GP trainees and in case of uncertainty or dispute by an experienced GP who made the final decision. Passers-by from other regions were excluded.

For the same periods of time and population, a similar, retrospective data collection and coding took place using the hospital records for all patients from the population of Velsen who contacted one of the three AEDs bordering on the area. Patients who were referred to the AED after an initial contact with the GP cooperative were also analysed.

Similar to Brogan et al., annual rates were estimated by calculating the number of contacts over the study during each weekday evening and night and during each 24 hour period of weekends and bank holidays, and multiplying by 255 weekday evenings/nights and by 110 weekend or bank holiday 24 hour periods.⁸

Main outcome measures were: (1) overall contact rates and characteristics of all patient groups contacting the GP cooperative or AED (both periods combined); (2) differences in follow up management between different patient groups contacting the AED (self-referrals, referred by GP and brought in by ambulance services). The data were analysed in SPSS, version 12.0. Pearson's χ^2 test was used to test for differences in two by two tables, using a level of significance of $p < 0.05$.

Results

Patients' contacts with out-of-hours services

During the two four month periods within the study population there were 11,375 contacts with the GP cooperative (87.8%) and 1,584 contacts with the AED (12.2%)(Table 1). Between the two study periods the out-of-hours demand appeared to be fairly stable, showing no significant differences in overall demand for the GP cooperative or emergency services.

Table 1. Total out-of-hours demand in two periods of four months (Nov-Feb 1997/8 and 2002/3).

	1997/8			2002/3			Both periods combined		
	n	(%)	n/1000/yr	n	(%)	n/1000/yr	n	(%)	n/1000/yr
Contact with GP cooperative	5828	(88.2)	282.8	5547	(87.3)	267.1	11375	(87.8)	274.6
Telephone advice	2446	(37.0)	118.7	2295	(36.1)	110.5	4741	(36.6)	114.4
Centre consultation	2786	(42.2)	135.2	2622	(41.3)	126.3	5408	(41.7)	130.5
Home visit	596	(9.0)	28.9	626	(9.9)	30.1	1222	(9.4)	29.5
Contact with AED	776	(11.8)	37.7	808	(12.7)	38.9	1584	(12.2)	38.2
Referred by GP	326	(4.9)	15.8	338	(5.3)	16.3	664	(5.1)	16.0
Self-referral	333	(5.0)	16.2	344	(5.4)	16.6	677	(5.2)	16.3
Via ambulance services	109	(1.7)	5.3	115	(1.8)	5.5	224	(1.7)	5.4
Other (e.g. police/ unspecified)	8	(0.1)	0.4	11	(0.2)	0.5	19	(0.1)	0.5
Total number of out-of-hours contacts	6604	(100.0)	320.4	6355	(100.0)	306.1	12959	(100.0)	312.8

The total rate of out-of-hours contacts for the population studied was 313 per 1000 inhabitants per year (275 and 38 contacts per 1000 inhabitants for the GP cooperative and AED respectively).

Of those patients who contacted the GP cooperative in both periods combined (n=11,375), 4741 (41.7%) received a telephone advice, 5408 (47.5%) a centre consultation, and 1222 (10.7%) a home visit. Overall, around 10% of the patients visited the GP cooperative without calling the service in advance. The rate of calls resulting in a nurse telephone advice alone rose from 21.1% in the first period to 31.9% in the second period (p<0.001), leading to a reciprocal decrease in telephone consultations by the GPs from 20.9% to 9.5%.

Of those patients who contacted the AED in both periods combined (n=1584), self-referrals represented a substantial number of contacts (42.7%; 677/1584), however, within the total out-of-hours demand, they represented 5.2% (677/12959) of all contacts only.

Overall, women had more contacts with the GP cooperative while more men contacted the AED (Table 2). Children under five years accounted for more than three times the proportion of consultations at the GP cooperative compared with the AED, while young adults accounted for a high proportion of those attending the AED.

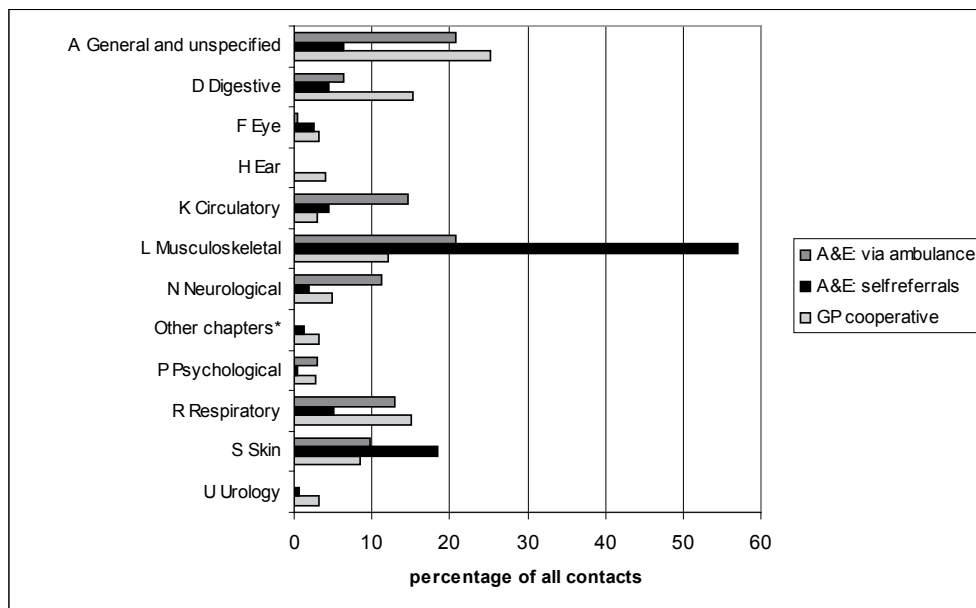
Table 2. Characteristics of patients presenting at the GP cooperative and AED (self-referrals and via ambulance services). Both out-of-hours periods combined.

	GP cooperative		AED self-referrals		AED via ambulance		Total demand	
	n	%	n	%	n	%	n	%
Male sex	5313	47	360	53	132	59	5819	47
Public insurance	7885	69	465	69	164	73	8527	69
Age groups								
0-4	2140	19	39	6	5	2	2184	18
5-14	1134	10	68	10	3	1	1205	10
15-24	1000	9	167	25	22	10	1189	10
25-44	2924	26	233	34	45	20	3202	26
45-64	1803	16	116	17	53	24	1972	16
>65	2374	21	54	8	96	43	2524	21
Day (8 AM - 5 PM)								
Day (8 AM - 5 PM)	4748	42	218	32	52	23	5022	41
Evening (5 PM - 11 PM)								
Evening (5 PM - 11 PM)	5042	44	370	55	118	53	5543	45
Night (11 PM - 8 AM)								
Night (11 PM - 8 AM)	1537	14	89	13	54	24	1682	14
Total	11375	100	677	100	224	100	12276	100

Problems presenting to GP cooperative and AEDs (Fig. 1)

Patients contacting the GP cooperative mainly presented with general and unspecified problems (25.1%), followed by digestive (15.3%), respiratory (15.1%) and musculoskeletal problems (12.0%) (Figure 1). Self-referrals at the AEDs predominantly presented with musculoskeletal (57.0%) or skin problems (18.5%), while those who were brought in by the ambulance services presented general and unspecified (20.8%), musculoskeletal (20.8%) or circulatory (14.7%) problems. The top ten problems that were encountered showed clear differences between the groups studied (Table 3). The GP cooperative was confronted with many questions regarding the medication (request for prescription or advice on medication use), while complaints like fever, cough, vomiting, shortness of breath and earache were also frequently reported. Self-referrals at the AED mainly presented with injury of the extremities and skin lacerations. Patients who came via the ambulance services frequently showed non-traumatic problems (chest pain, syncope, shortness of breath) as well as traumatic problems that were often related to street accidents (skin lacerations, head injury, general injury).

Figure 1. ICPC chapter of all presenting problems from patients contacting the GP or AED (self-referrals or via ambulance services) for both periods combined.



* Chapters B,T,W,X,Y and Z combined

Referrals to the AED

In total, the GPs referred 7.5% of the patients to the AED (853/11,375), although only 5.8% (664/11,375) eventually arrived in one of the three AEDs (Table 1). Further analysis from the electronic medical records revealed that the remaining 179 patients who were lost to follow up had either travelled to hospitals farther away (97/179, 54.2%) or never seemed to have gone at all (69/179, 38.5%), while 13 cases could not be retrieved (7.3%).

Presentations that were most likely to be associated with a referral to hospital were: chest pain, 120/292 (41.1%); shortness of breath, 116/642 (18.1%); and localised abdominal pain, 45/298 (15.1%). Of all 1972 injuries that were presented to the GP, 233 (11.8%) were referred to the hospital, while of all 9,315 non-injuries only 619 (6.6%) patients were referred (difference -5.2%, 95%CI -6.7% to -3.6%).

AED: self-referrals, patients referred by the GP and by the ambulance services (Table 4)

Compared to the GP cooperative, a higher proportion of male patients was seen in the AEDs ($p < 0.001$). Self-referrals had a lower mean age (33 yrs) than those who were referred by the GP (47 yrs) or the ambulance services (56 yrs) ($p < 0.001$ for all differences).

Table 3. Ten most frequently presented problems for GP cooperative, self-referrals (AED) and patients brought in by the ambulance services (both periods of four months combined). Totals from all presented problems (up to 3 per patient).

GP cooperative	n	%	AED: self-referrals			AED: ambulance services		
			n	%		n	%	
1. Fever	1549	7.9	1. Skin laceration/wound	90	12.4	1. Chest pain	29	10.9
2. Request for prescription	971	5.0	2. Hand/fingers	72	9.9	2. Syncope	29	10.9
3. Cough	863	4.4	3. Ankle	71	9.8	3. Shortness of breath	20	7.5
4. Vomiting	706	3.6	4. Wrist	69	9.5	4. Skin laceration	17	6.4
5. Shortness of breath	649	3.3	5. Knee	67	9.2	5. Head injury	12	4.5
6. Earache	625	3.2	6. Foot	46	6.3	6. Coma	11	4.2
7. Advice regarding medication	512	2.6	7. Shortness of breath	19	2.6	7. General injury	10	3.8
8. Skin laceration	471	2.4	8. Leg/thigh	18	2.5	8. Hip	10	3.8
9. Diarrhoea	451	2.3	9. Chest pain	16	2.2	9. Paresis/paralysis	8	3.0
10. Generalised abdominal pain	449	2.3	10. Arm	14	1.9	10. Leg/thigh	7	2.6
Total	19562	100.0		733	100.0		265	100.0

Table 4. AED: self-referrals, patients referred by the GP and patients brought in by the ambulance services (both periods of four months combined).

	Self-referral	Via GP	Via ambulance	Total
	n (%)	n (%)	n (%)	n (%)
Male	360 (53.2)	349 (52.6)	132 (58.9)	841 (53.7)
Mean age (sd)	32.7 (19.7)	47.0 (28.8)	55.6 (23.7)	42.0 (26.0)
Injury	537 (80.1)	226 (35.0)	92 (41.4)	855 (55.6)
Fracture	103 (19.2)	93 (41.2)	25 (27.2)	221 (25.8)
Admission	17 (3.2)	22 (9.7)	24 (26.1)	63 (7.4)
Appointment outpatient clinic	173 (32.2)	117 (51.8)	30 (32.6)	320 (37.4)
Referral to own GP	347 (64.6)	87 (38.5)	38 (41.3)	472 (55.2)
Non-injury	133 (19.9)	420 (65.0)	130 (58.6)	683 (44.4)
Admission	47 (35.3)	294 (70.0)	98 (75.4)	439 (62.6)
Appointment outpatient clinic	43 (32.3)	67 (16.0)	12 (9.2)	140 (20.0)
Referral to own GP	43 (32.3)	59 (14.0)	20 (15.4)	122 (17.4)
Total	677 (43.3)	664 (42.4)	224 (14.3)	1565 (100.0)

Valid %. Due to missing numbers (up to 18), columns do not always add up to their totals.

Most of the self-referrals to the AED presented with an injury (80.1%). This percentage was substantially lower among patients who were referred by the GP (35.0%) or the ambulance services (41.4%). Within the injury group, 19.2% of the self-referrals were found to have a fracture, compared to 41.2% of the GP referrals ($p < 0.001$) and to 27.2% of ambulance service referrals ($p = 0.078$). Similarly, fewer self-referrals with an injury were admitted (3.2%) than those who were referred by the GP (9.7%) ($p < 0.001$) or the ambulance services (26.1%) ($p < 0.001$). On the other hand, self-referrals were referred back to their GP (or received no specific advice to return at all) more often (64.6%) than patients who had been referred by the GP cooperative (38.5%) ($p < 0.001$) or the ambulance services (41.3%) ($p < 0.001$).

Although the percentage of non-injury among self-referrals was low (19.9%), the admission rate among these patients was substantially higher (35.3%) than among the patients with an injury (3.2%). Nevertheless, the admission rate among non-injury patients who had been referred by the GP was almost twice as high (70.0%) ($p < 0.001$) and even higher among those who had been brought in by the ambulance services (75.4%) ($p < 0.001$). Likewise, self-referrals with a non-injury were twice as likely to be referred back to their GP as the other two patient groups with non-injury ($p < 0.001$).

Supplementary Table. Age and sex of patients contacting the out-of-hours services, compared with the population of Velsen and the Dutch population (1st January 1998 and 2003).

	All out-of-hours contacts		Population city of Velsen*		Population of the Netherlands**							
	1997-8 n	2002-3 %	1997-8 n	2002-3 %	1997-8 n	2002-3 %						
Sex												
Male	2975	47.4	2830	47.1	29877	49.1	30627	49.2	7740074	49.4	8015471	49.5
Female	3286	52.4	3168	52.7	31013	50.9	31664	50.8	7914118	50.6	8177101	50.5
Missing	9	<1	8	<1								
Age bands (years)												
0-4	1244	19.8	940	15.7	4251	7.0	4086	6.6	969367	6.2	1022613	6.3
5-14	600	9.6	605	10.1	7247	11.9	8195	13.2	1913563	12.2	1987475	12.3
15-44	2287	36.5	2104	35.0	25353	41.6	24325	39.1	6951802	44.4	6858760	42.4
45-64	967	15.4	1005	16.7	13841	22.7	15360	24.7	3709741	23.7	4103268	25.3
65+	1172	18.7	1352	22.5	10198	16.7	10325	16.6	2109719	13.5	2220456	13.7
Total patients	6270	100.0	6006	100.0	60890	100.0	62291	100.0	15654192	100.0	16192572	100.0

* Data from local council of Velsen; ** Office for National Statistics (CBS).

Discussion

This study shows that the GP cooperative is the main provider of out-of-hours care for the population studied. Within the group of all patients who contacted the AED, self-referrals constituted a large group, although they only represented a small percentage of all out-of-hours demand. With nineteen percent fractures among the patients with injury and one third of non-injury patients being admitted to the hospital, a substantial part of self-referrals appeared to have made a reasonable choice to attend the AED. Finally, compared to the self-referrals, both the GP and the ambulance services appear to be an adequate filter to the AED services, referring patients with more fractures and resulting in more hospital admissions.

This study was based on a relatively small population and therefore the results may not be generalisable to other regions. Nevertheless, the population studied was similar to that of The Netherlands in terms of sex-age structure (Supplementary Table). Another limitation of the study was the relatively high percentage of patients visiting the GP cooperative without calling in advance (10%). Many of these patients presented with an injury (54%), suggesting some similarity with AED self-referrals (the GP cooperative being located in a former AED) and perhaps resulting in an underestimation of the population's overall AED self-referral rate. Nevertheless, even if most of these patients would have attended the AED, they still represent a small part of the overall demand only.

The data-collection was repeated after a somewhat arbitrary period of five years, because GPs were concerned that once the cooperative had become more widely known to the public, increasing numbers of patients would make use of its service. However, no such increase in demand was found, which is consistent with findings from a study in another Dutch city surveying five consecutive years of out-of-hours demand. Finally, the Winter period could have yielded a higher out-of-hours demand, although this effect is likely to have been small.^{14,15}

Our study findings appear to be similar to those found in a few other population based studies in the Netherlands.^{3,11} Nevertheless, one study in the city of Amsterdam found a substantially lower contact rate with the GP services (171/1000/yr) and higher contact rate with the AED (170/1000/yr). Even larger differences in demand for GP care were found between studies from the UK, Ireland, Denmark and Finland (ranging from 130/1000/yr in England to 533/1000/yr in Finland).^{14,16-18} International comparisons should be interpreted cautiously because of varying definitions of the out-of-hours period and differences in health service organisation. Salisbury et al. found that the variation in call rates between different British cooperatives could not be accounted for by local demographic features (age structure, deprivation, and rurality).¹⁴ Finally, although no literature review has been performed yet, self-referral rates to the hospital too appear to vary substantially across

some European countries (ranging from 57/1000/yr in one British study to 190/1000/yr in Denmark).^{8;10;19;20} Perhaps the enormous variation is in part explained by differences in the effectiveness of the gatekeeper. Boerma and others have shown, that while as a rule patients need a GP referral to make use of hospital services, all gatekeeping systems make an exception for emergencies that can be presented directly to the AED.²¹ This important leakage of gatekeeping systems may lead to variation in AED use, especially since the (perceived) availability of GP services varies from country to country.²²⁻²⁴

Various authors have expressed their concern about the overcrowding of AEDs as a result of high numbers of self-referrals.^{25;26} There has been much debate on how to redirect these allegedly 'inappropriate attenders' to the GP. However, without a clear definition of what constitutes an 'inappropriate attender', it seems not surprising that a wide variation (6-80%) was found in the literature,²⁷ and that others have cast doubt on the usefulness of the term itself.²⁸ In our study, with nineteen percent fractures among the injuries and thirty-five percent admissions among the non-injuries, at least the self-referrals emerge as a self-selected group with a severity level that appears to be higher than patients calling the GP cooperative, but still lower than those who were referred by the GP.²⁹ Also, in part, the care seems complementary: while 80% of the self-referrals presented with an injury, GPs also referred significantly more injury patients (11.6%) to the AED than patients without an injury (6.6%). Overall, many patients may have made reasonable choices when deciding which service to contact.^{9;30} Nevertheless, compared to the self-referrals, the GP and ambulance services provide an effective patient filter to the AEDs.

If GP cooperatives and AEDs are to further integrate their services, more research is needed on out-of-hours demand. Patient characteristics and their motives to attend to an AED as a self-referral or call the emergency services rather than contacting a GP cooperative need further elucidation before radical organisational changes are to be carried through.^{9;31-33} Also, more insight is needed into the triage activities of the regional ambulance services, both on the telephone and during field assessments, as they appear to overlap with both GP and AED services.³⁴

From the patients' perspective, having one national or regional emergency number and one out-of-hours emergency service for all problems presented may seem an obvious development. Although some studies have indicated that GPs working within the AED handle self-referrals equally safe with fewer use of resources,^{5;35} it is unclear whether integration of all services would become more efficient in terms of professional care and costs, as this may be more dependent on the size of the population the cooperative covers than the way the GP cooperative is organised, i.e. separated or integrated.³⁶ Moreover, except for the major cities, self-referrals not only represent a relatively small group in the total out-of-hours demand, many of these patients may have made a reasonable choice for AED services.^{9;30}

It is not unlikely that different, regional models of integration could evolve from local patient demand. In the Netherlands, a few integrated out-of-hours emergency centres are now operational,³ although many GP cooperatives and AEDs prefer to keep the provision as it is and focus on working together more closely.

GP cooperatives appear to deal with the large majority of all out-of-hours problems presented. Within the total out-of-hours demand, self-referrals at the AED constitute a small group of patients who, in part, seem to have made a reasonable choice of service. Compared to the self-referrals, GPs and ambulance services appear to make stronger selections of patients as is indicated by higher percentages of fractures and hospital admissions.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

EMC planned the design of the study, collected most of the data, took part in the analysis and led the writing of the paper. PSO contributed to the writing of the paper and drafted the figure. PB contributed to the design of the study, the analysis and to the writing of the paper. All authors read and approved the final version of the manuscript.

Acknowledgements

The Department of General Practice of the Academic Medical Centre covered the expenses made during data collection and analysis. We thank all nurses, GPs, and staff members of the GP cooperative for participating in the study. The authors would also like to express their gratitude to Mildred Beeldman, Patrick Jansen and Daan van Schooneveld for their help with the data collection and coding of the problems presented.

References

1. Hallam L. Primary medical care outside normal working hours: review of published work. *BMJ* 1994; 308:249-253.
2. Olesen F, Jolles JV: Out of hours service. the Danish solution examined. *BMJ* 1994; 309:1624-1626.
3. Van Uden CJ, Winkens RA, Wesseling GJ, Crebolder HF, Van Schayck OC. Use of out of hours services: a comparison between two organisations. *Emerg Med J* 2003; 20:184-187.
4. Murphy AW, Bury G, Plunkett PK, Gibney D, Smith M, Mullan E et al. Randomised controlled trial of general practitioner versus usual medical care in an urban accident and emergency department: process, outcome, and comparative cost. *BMJ* 1996; 312:1135-1142.
5. Dale J, Green J, Reid F, Glucksman E, Higgs R. Primary care in the accident and emergency department: II. Comparison of general practitioners and hospital doctors. *BMJ* 1995; 311:427-430.
6. Hallam L. Out of hours primary care. *BMJ* 1997; 314:157-158.
7. Williams BT, Dixon RA, Nicholl JP. Provision of first contact care out of hours in four urban areas in England. *Br Med J (Clin Res Ed)* 1985; 291:1689-1692.
8. Brogan C, Pickard D, Gray A, Fairman S, Hill A. The use of out of hours health services: a cross sectional survey. *BMJ* 1998; 316:524-527.
9. Avery AJ, Groom L, Boot D, Earwicker S, Carlisle R. What problems do patients present with outside normal general practice surgery hours? A prospective study of the use of general practice and accident and emergency services. *J Public Health Med* 1999; 21:88-94.
10. Carlisle R, Groom LM, Avery AJ, Boot D, Earwicker S. Relation of out of hours activity by general practice and accident and emergency services with deprivation in Nottingham: longitudinal survey. *BMJ* 1998; 316:520-523.
11. Giesen P, Franssen E, Mokkink H, Van den Bosch W, van Vught A, Grol R. Patients either contacting a general practice cooperative or accident and emergency department out of hours: a comparison. *Emerg Med J* 2006; 23:731-734.
12. Moll van Charante EP, ter Riet G, Drost S, Van der Linden L, Klazinga NS, Bindels PJ. Nurse telephone triage in out-of-hours GP practice: determinants of independent advice and return consultation. *BMC Fam Pract* 2006; 7:74.
13. ICPC-2. International Classification of Primary Care. Oxford: Oxford University Press; 1998.
14. Salisbury C, Trivella M, Bruster S. Demand for and supply of out of hours care from general practitioners in England and Scotland: observational study based on routinely collected data. *BMJ* 2000; 320:618-621.
15. Downing A, Wilson R. Temporal and demographic variations in attendance at accident and emergency departments. *Emerg Med J* 2002; 19:531-535.
16. Hansen BL, Munck A. Out-of-hours service in Denmark: the effect of a structural change. *Br J Gen Pract* 1998; 48:1497-1499.
17. Salisbury C. The demand for out-of-hours care from GPs: a review. *Fam Pract* 2000; 17:340-347.
18. Vehvilainen AT, Takala JK. Where have all the back pains gone? Changes in the reasons for requiring out-of-hours medical care from a centralized primary care centre after changing to a list system. *Fam Pract* 1996; 13:373-376.
19. Hull S, Jones IR, Moser K, Fisher J. The use and overlap of AED and general practice services by patients registered at two inner London general practices. *Br J Gen Pract* 1998; 48:1575-1579.

20. Vedsted P, Christensen MB. The effect of an out-of-hours reform on attendance at casualty wards. The Danish example. *Scand J Prim Health Care* 2001; 19:95-98.
21. Boerma WG. Profiles of General Practice in Europe. An international study on variation in the task of general practitioners. Maastricht; Maastricht University; 2003.
22. Boerma WG, Van der Zee J, Fleming DM. Service profiles of general practitioners in Europe. European GP Task Profile Study. *Br J Gen Pract* 1997; 47:481-486.
23. Anderson GF, Hurst J, Hussey PS, Jee-Hughes M. Health spending and outcomes: trends in OECD countries, 1960-1998. *Health Aff (Millwood)* 2000; 19:150-157.
24. Kulu-Glasgow I, Delnoij D, de Bakker D. Self-referral in a gatekeeping system: patients' reasons for skipping the general practitioner. *Health Policy* 1998; 45:221-238.
25. Fatovich DM. Emergency medicine. *BMJ* 2002; 324:958-962.
26. Derlet RW. Overcrowding in emergency departments: increased demand and decreased capacity. *Ann Emerg Med* 2002; 39:430-432.
27. Murphy AW. 'Inappropriate' attenders at accident and emergency departments I: definition, incidence and reasons for attendance. *Fam Pract* 1998; 15:23-32.
28. Richardson S, Ardagh M, Hider P. New Zealand health professionals do not agree about what defines appropriate attendance at an emergency department. *N Z Med J* 2006; 119: U1933.
29. Van Geloven AAW, Luitse JSK, Simons MP, Obertop H. Accident and Emergency Department: self-referrals and patients referred by the GP [in Dutch]. *Huisarts Wet* 2000; 43:516-517.
30. Nguyen-Van-Tam JS, Baker DM. General practice and accident and emergency department care: does the patient know best? *BMJ* 1992; 305:157-158.
31. Byrne M, Murphy AW, Plunkett PK, McGee HM, Murray A, Bury G. Frequent attenders to an emergency department: a study of primary health care use, medical profile, and psychosocial characteristics. *Ann Emerg Med* 2003; 41:309-318.
32. Rajpar SE, Smith MA, Cooke MW. Study of choice between accident and emergency departments and general practice centres for out of hours primary care problems. *J Accid Emerg Med* 2000; 17:18-21.
33. Singh S. Self referral to accident and emergency department: patients' perceptions. *BMJ* 1988; 297:1179-1180.
34. Dale J, Williams S, Foster T, Higgins J, Snooks H, Crouch R et al. Safety of telephone consultation for "non-serious" emergency ambulance service patients. *Qual Saf Health Care* 2004; 13:363-373.
35. Dale J, Lang H, Roberts JA, Green J, Glucksman E. Cost effectiveness of treating primary care patients in accident and emergency: a comparison between general practitioners, senior house officers, and registrars. *BMJ* 1996; 312:1340-1344.
36. Van Uden CJ, Ament AJ, Voss GB, Wesseling G, Winkens RA, Van Schayck OC et al. Out-of-hours primary care. Implications of organisation on costs. *BMC Fam Pract* 2006; 7:29.

chapter

5

**Self-referrals to the A&E Department
during out-of-hours:**

patients' motives and characteristics

EP Moll van Charante, G ter Riet, PJE Bindels

Submitted

Summary

Objective

To determine self-referrals' motives to visit the Accident & Emergency Department (AED) and to compare their characteristics to patients contacting the GP cooperative.

Methods

Postal questionnaires were sent to AED self-referrals and logistic regression analysis was used to contrast self-referrals to patients contacting the GP cooperative.

Results

For a study population of 62,000, during four months, 5547 contacts were registered with the GP cooperative, along with 808 AED contacts, 344 of whom (43%) were self-referrals. Main reasons to visit the AED were the perceived need for diagnostic facilities and the conviction that the hospital specialist was best qualified to handle the problem. Dissatisfaction with the GP cooperative among respondents was high.

Self-referral to the AED was positively associated with injury, age between 15 and 64, musculoskeletal, cardiovascular and respiratory problems, and distance to the GP centre.

Conclusion

Self-referrals emerge as patients with a strong preference for the AED, mainly based on assumptions on quality of care and necessary facilities.

Practice implications

The current plans to redirect self-referrals to the GP by integrating AED and GP services should take into account that self-referrals may, in part, make motivated and appropriate choices to visit the AED.

Introduction

Currently, Dutch health policy makers, insurance companies and other actors in the field are propagating the integration of GP cooperatives and Accident & Emergency Departments (AED) into one facility. They claim that such a close collaboration has become necessary as patients with an urgent out-of-hours problem feel indecisive whom they should contact: the GP cooperative, the AED or the ambulance service. Furthermore, this would offer a chance to prevent patients from bypassing the GP cooperative and self-referring to the AED, as many of them are believed to present with problems that can be treated equally well by the GP service and therefore cause unnecessary crowding in the AED.¹⁻³ Thus, integration would lead to a more efficient use of resources at a lower overall cost.

Since the millennium change, Dutch provision of out-of-hours primary health care has shifted from practice-based services towards large-scale general practitioner (GP) cooperatives.⁴ Many GP centres are known to lie in close proximity of the hospital, yet have a separate mode of operation. Most Dutch AEDs are facing substantial numbers of self-referrals ranging from 25 percent to as high as 70 percent of all their in- and out-of-hours demand.⁵ Recently, it was shown that integration of GP and AED services into one out-of-hours emergency centre can redirect many of these self-referrals to the GP.⁶

In the current debate on the optimal role and position of the main out-of-hours health care providers very little attention is paid to patients' motives to skip the GP cooperative and self-refer to the AED. A better understanding is necessary of patients' incentives to attend to the AED and the extent to which their demand is complementary to the demand for GP care.⁷

Most studies on AED self-referrals took place in the UK and were performed in the period preceding the GP cooperatives. In this out-of-hours study of a Dutch population of 62,000 people we explored self-referrals' motives to visit the AED and compared their characteristics to patients contacting the GP cooperative.

Methods

Setting

The GP cooperative in the coastal city of IJmuiden (municipality of Velsen) participated in the study. It serves a population of around 62,000 people with a total of 25 GPs and 8 nurses. During out-of-hours, all staff members have access to the complete electronic medical records for all GP practices. The GP cooperative operates from 5.00 pm to 8.00 am from Monday to Friday and 24 hours during the weekends. Apart from 11 pm to 8 am when only one GP is on call, two GPs work alongside, one making home visits and one taking care of centre consultations or telephone calls following nurse telephone triage. The service is located in the former AED of a small district hospital that had to close in 1996. The population is served by three AEDs bordering on the region.

Postal questionnaire to AED self-referrals

We developed a short questionnaire to assess self-referrals' motives to visit the AED, since the questionnaires that were found in the literature were either unvalidated or dated back to the time before the introduction of the GP cooperatives. To locate relevant aspects on this subject, in September 2002 a bibliographic search was carried out in the EMBASE and MEDLINE database using combinations of the MeSH-terms 'after hours', 'primary (health) care', 'accident and emergency'/'emergency care', 'satisfaction' and 'health seeking behaviour'. Nine articles of interest were found and reviewed and their references checked, yielding a preliminary questionnaire of nineteen items. This was then piloted among twelve randomly chosen patients who had visited the AED without being referred by the GP or ambulance service. They were asked to comment on the items' relevance and phrasing, and to indicate whether they had any additional items that could further clarify their motives to attend the AED. Items that were ambiguous, confusing or irrelevant were rephrased or removed, resulting in a 20-item questionnaire, leaving room for additional qualitative remarks (Appendix).

Between 1 November 2002 and 1 March 2003, all self-referrals from the population studied who visited one of the three AEDs received a postal questionnaire within one week of their contact and a reminder after 10 days. Of all 344 registered self-referrals, three patients had died and of two others no address was available. The remaining 339 patients were sent a postal questionnaire.

Out-of-hours activity data

In the same period, all incoming calls at the GP cooperative were registered by the nurses. Contact information was entered on a specially prepared data collection sheet. It was completed by the nurses (advice alone) or GPs (all other contacts) and was used to collect demographic data, presented problems, diagnosis and management (by nurse or GP). All contacts were classified into injury or non-injury and coded according to the International Classification of Primary Care (ICPC).⁸ Passers-by from other regions were excluded.

For the same period and population, a similar, retrospective data collection and coding took place using the hospital records for all patients who contacted one of the three AEDs. All AED charts were anonymised and coded. Using a national route & travel program, for all patients, the shortest distance was calculated from their home address to the GP cooperative.⁹ Similarly, we obtained the shortest distance to the AED for all self-referrals. A more detailed description of the data collection and setting can be found elsewhere.¹⁰

Analysis

In the non-response analysis, Pearson's χ^2 test was used to test for differences in two by two tables, using a level of significance of $p < 0.05$.

We used random effects logistic regression analysis with self-referral to the AED (yes/no) as the dependent variable and patients as random intercept, since 22 percent of them had received more than one contact. To facilitate comparison with other studies, six age groups and five main ICPC chapters were modelled as dummy variables using 5-14 years and 'general and unspecified' as the respective reference categories. These nine dummies were kept in the model at all times. The initial set of determinants included sex, age-group, insurance (public or private), time of contact (day, evening, night), social deprivation (yes/no, area defined by the local council), and distance to the GP cooperative (km). We made the model more parsimonious by removing non-significant variables, but only if their removal did not materially (>10%) alter the regression coefficients of significant associations and the likelihood ratio test¹¹ indicated a non-significant change in the model's fit (at a two-sided $p > 0.05$). Odds ratios were converted to relative risks (RR) to facilitate interpretation.¹² All analyses were carried out using Stata statistical software (Release 9.2, Stata Corporation, College Station, TX).

Results

For the population of Velsen, during four months, 5,547 contacts were registered with the GP cooperative. In parallel, 808 contacts were registered with the AED: 344 (43%) self-referrals, 338 (42%) referrals by the GP cooperative, 115 (14%) patients brought in by the ambulance service and 11 (1%) other contacts. Overall, self-referrals constituted 5% (344/6,355) of the total out-of-hours demand.

Patient questionnaire

Overall, 224 out of 339 AED self-referrals who received a postal questionnaire responded (66%). Between the response and non-response groups no differences were found for sex, insurance, time of the day (day versus evening and night), hospital admission (y/n), follow up care (referral back to the GP (y/n)), or distance to GP centre or AED (Table 1). However, respondents were younger and had more often presented with an injury.

Patient opinions

Over half of the respondents (59%) had made the decision to attend the AED themselves, while the partner or other family members also played an important role in this decision (26%)(Table 2). Only 18% of the respondents thought that the AED was better accessible than the GP centre. On average, respondents expected to wait longer in the AED than at the GP centre (1.3 versus 0.9 hrs; sign rank test $z = -7.2$, $p < 0.0001$). Most respondents had presented with a problem of the musculoskeletal system (70%). The large majority of the respondents (90%) perceived the AED to be the most appropriate place for their problem, while many (66%) seemed convinced that the GP would not have been able

Table 1. Characteristics of respondents and non-respondents (%).

	All Self-Referrals		Respondents		Non-respondents		% difference (95% CI)	significance
	N=339		n=224 (66%)		n=115 (33%)			
	n	(%)	n	(%)	n	(%)		
Male	175	(52)	109	(49)	66	(57)	-9 (-20 to 2)	0.128
Public insurance	228	(67)	150	(67)	78	(68)	-1 (-11 to 10)	0.873
Day contact	118	(35)	72	(32)	46	(40)	-8 (-19 to 3)	0.150
Injury	271	(80)	195	(87)	76	(66)	21 (11 to 31)	p<0.001
Hospital admission	34	(10)	22	(10)	12	(10)	-1 (-7 to 6)	0.859
No outpatient appointment	138	(41)	130	(58)	64	(59)	-1 (-13 to 10)	0.832
Age (IQR)	33	(30)	30	(30)	38	(25)	7	0.003 ¹
Distance* to GP centre (IQR)	4	(3)	4	(3)	4	(3)	0	0.505 ¹
Distance* to AED (IQR)	7	(2)	7	(2)	7	(3)	0	0.027 ¹

* in kilometres; IQR = inter quartile range; ¹ Mann-Whitney U

Table 2. Main results from postal questionnaire among self-referrals (n=224).

	n	(%)
Q7. Visiting the AED: whose idea?		
Mine	133	(59)
My partner/family members	59	(26)
Others	24	(11)
Q9. Best accessible service: GP centre or AED?		
AED	40	(18)
GP centre	85	(38)
No difference	83	(37)
Don't know	16	(7)
Q10. Have you visited the AED in the past?		
Yes	103	(46)
No	119	(53)
Q11. Have you visited the GP centre in the past?		
Yes	158	(71)
No	60	(27)

Self-referrals to the A&E Department during out-of-hours

Q12. Expected waiting time (hrs (sd))		
AED	1.3	(0.6)
GP centre	0.9	(0.4)
Q14. What was the best place for the problem: GP or AED?		
AED	202	(90)
GP centre	10	(4)
No difference	7	(3)
Don't know	5	(2)
Q15. Could the GP have solved the problem?		
Yes	24	(11)
No	147	(66)
Don't know	50	(22)
Q17. Are you satisfied with the care from the AED?		
Yes	179	(80)
No	19	(8)
Don't know	17	(8)
Q18. Would you visit the AED again in similar circumstances?		
Yes	154	(69)
No	33	(15)
Don't know	37	(17)
Q19. Are you satisfied with the care from your own GP?		
Yes	191	(85)
No	17	(8)
Don't know	11	(5)
Q20. Are you satisfied with the care from the GP centre?		
Yes	93	(42)
No	62	(28)
Don't know	63	(28)

Due to missing numbers (up to 19 (8.5%)), totals do not always add up to 224 or 100%.

For all question items: see Appendix.

to solve it. In general, patients indicated that they were satisfied with the care they had received from the AED (80%) and most respondents (69%) stated they would visit the hospital again under similar conditions. Interestingly, 28% of the respondents appeared to be dissatisfied with the care from the GP cooperative, compared to 8% dissatisfaction with their own GP (difference = -21%, 95%CI -28 to -13).

Table 3. Main reasons to visit the AED (Q16) (n=224).

	n	(%)
Further research (e.g. X-rays) was necessary	80	(36)
The doctor in the AED is best qualified for this problem	67	(30)
The AED is better accessible than the GP cooperative	36	(16)
It was related to a recent hospital contact or procedure	12	(5)
I didn't want to disturb the GP/ no GP available	9	(4)
Other	12	(5)
Missing	8	(4)
Total	224	(100)

An important reason to visit the AED was the expectation that it would prove necessary to make use of diagnostic facilities (36%)(Table 3).

'I had hit my finger with a hammer really hard and I was afraid that it was broken, so I visited the hospital for an X-ray to know for sure whether this was the case or not.'

Another reason that was mentioned frequently was the assumption that the hospital specialist or A&E doctor would be best qualified for the problem presented (30%).

'When I woke up, I had such excruciating chest pain that I thought I was going to die from a heart attack, so my wife took me to the AED straight away. We anticipated that the GP would have referred us to the hospital too, so we decided not to waste any time by contacting the GP cooperative first.'

Reasons for not being satisfied with the care provided by the GP cooperative (n=62, 28%) were associated with unfriendliness by the nurses (19/62, 31%), long waiting times (18/62, 29%) and insufficient diagnostic facilities (16/62, 26%).

Comparing AED self-referrals with patients contacting the GP cooperative

Around 80% (271/339) of the AED self-referrals had injuries of some sort, compared to 18% (996/5,547) of the GP sample. Table 4 shows which variables were associated with the patients' choice for the AED rather than GP services. Patients with an injury were 3.6 times more likely to visit the AED than those without (95%CI 3.3-3.9). The ICPC-chapters for circulatory (RR 4.3, 95%CI 2.0-8.0), musculoskeletal (RR 2.5, 95%CI 1.8-3.2) and respiratory (RR 2.4, 95%CI 1.2-4.7) complaints were most strongly associated with an AED self-referral. Compared to patients between 5 and 14 years, parents with children aged 0-4 and patients 65 years and older contacted the GP cooperative more often, while patients aged 15-64 were more likely to visit the AED. Compared to the daytime hours during the weekend, patients were more likely to self-refer to the AED during the night (RR 1.5, 95%CI 1.0-2.1). Finally, a higher distance to the GP centre was associated with a

Table 4. Relative risks (RR) for determinants of self-referral to the Accident & Emergency Department (AED)(n=5716; 175 missing cases).

	n	RR (95% CI)	Significance
Age (yrs)			
0-4	938	0.4 (0.2 - 0.9)	p<0.001
5-14	603	1.0 (ref)	
15-24	594	1.9 (1.3 - 2.6)	
25-44	1475	1.6 (1.1 - 2.4)	
45-64	978	1.7 (1.1 - 2.6)	
>65	1265	0.7 (0.4 - 1.2)	
Day	2329	1.0 (ref)	p=0.112
Evening	2666	1.2 (0.9 - 1.6)	
Night	878	1.5 (1.0 - 2.1)	
Non-deprived area	3189	1.0 (ref)	p=0.070
Deprived area	2702	0.7 (0.5 - 1.0)	
Distance (km)	5774	1.2 (1.1 - 1.3)	p<0.001
No injury	4609	1.0 (ref)	p<0.001
Injury	1272	3.6 (3.3 - 3.9)	
ICPC-chapter*			
General & unspecified	1228	1.0 (ref)	p<0.001
Digestive	836	1.2 (0.5 - 2.8)	
Circulatory	198	4.3 (2.0 - 8.0)	
Musculoskeletal	1045	2.5 (1.8 - 3.2)	
Respiratory	707	2.4 (1.2 - 4.7)	
Skin	607	1.6 (0.9 - 2.6)	
Other chapters	1260	0.9 (0.4 - 1.7)	

* Six main chapters for both AED and GP cooperative; a higher RR indicates that patients are more likely to visit

higher RR of visiting the AED (1.2, 95%CI 1.1-1.3). For socio-economic factors (deprived/non-deprived areas) no significant effect was found. There appeared to be no interaction between distance and time of the visit or deprivation.

Discussion and conclusion

Discussion

The large majority of self-referrals considered the AED as the most appropriate place to present their problem. Their motivation to seek help at the AED seems to be emphasized by the anticipation on a longer waiting time and travelling distance compared to the GP cooperative, while over two thirds would visit the AED again under similar circumstances. Main reasons to visit the AED were the perceived need for diagnostic facilities and the conviction that the hospital specialist was best qualified to handle the problem. Dissatisfaction with the GP cooperative was high in comparison with dissatisfaction with the own GP.

Self-referral to the AED was positively associated with injury, age between 15 and 64, musculoskeletal, cardiovascular and respiratory problems, and distance to the GP centre.

In this study, no evaluation took place of the motives of patients contacting the GP cooperative, prohibiting a direct comparison with AED self-referrals. Nevertheless, we did perform a patient evaluation among patients contacting the GP cooperative in 2004 that was part of a larger study of patient satisfaction with out-of-hours primary care.¹³ Satisfaction levels with the GP cooperative in Velsen were very high, with no more than 12 percent of the respondents being dissatisfied with the care received. The 28 percent dissatisfaction with the GP cooperative that was found among self-referrals therefore appears to be high, although the numbers are small and respondents may have 'justified' their choice for the AED by overstating their dissatisfaction with the GP cooperative. Another limitation is that there were more injuries among the respondents compared to the non-respondents. Perhaps patients who felt to have 'legitimately' used the AED without a referral from the GP felt more inclined to describe their incentives for visiting this service. Therefore, some caution should be taken in generalizing the results to all self-referrals.

The percentage of self-referrals within the AEDs studied was 43%. This is low compared to the AEDs in larger cities, that are facing up to 70% of self-referrals.⁵ Indeed, if the self-referrals in this study represent a more 'appropriate' selection of problems for the AED, their motives may have been more focussed on specialist care or diagnostic facilities than would have been the case in the major cities.

Finally, the patient questionnaire was filled out *after* the AED visits, leaving room for recall bias on the expected waiting times or perceived appropriateness of choice.

Many of the study findings seem to be in accordance with the literature. Factors that have also been reported to influence the differential decision making by patients are: direct attention of specialist care,¹⁴⁻¹⁶ need to make use of advanced technology (e.g. x-ray),¹⁵⁻¹⁸ better accessibility^{14;15;19} and not wanting to disturb the GP out-of-hours.¹⁵ We did not find the choice for AED to be associated with lack of knowledge of the range of available services,¹⁸ anticipation on shorter waiting times,²⁰ or dissatisfaction with (daytime) GP care.^{18;19;21}

However, dissatisfaction with the out-of-hours GP cooperative appeared to be higher among AED self-referrals compared to patients contacting the GP cooperative.¹³ Interestingly these dissatisfied patients, while having fewer fractures, received significantly more X-ray investigations than those who were generally satisfied with the care from the GP cooperative (data not shown). These self-referrals may therefore be a more apprehensive and demanding group of patients, requesting a higher level of specialised care with less urgent problems.

Patient characteristics that were found to be associated with the choice to visit the AED were also described previously. Young children (0-4 years) and elderly patients (>65 years) were found to contact the GP cooperative more often, while most self-referrals to the AED came from the remaining age groups.^{20;22;23} Shipman et al. reported that during the nightly hours the percentage of contacts with the AED was higher than with the GP cooperative.¹⁸ Closer proximity to the AED was found to be associated with a higher use of service.^{24;25} In this study we found that an increasing distance to the GP centre was associated with a higher RR of visiting the AED, although the average distance to the AED was still significantly higher. In the logistic regression analysis we did not try to extrapolate the distance to the closest AED for patients contacting the GP centre, as we observed that a substantial minority of AED visitors did not go to the hospital that was closest to their home. This may be the result of the injury taking place elsewhere (e.g. sports injury, or traffic accident), or unknown preferences by patients for one or the other hospital. Overall, perhaps, a greater distance to the GP centre may be related to a lower affinity with the GP services and, hence, lower overall use. A problem of most previous studies is that they describe bivariate associations and were not able to control for confounding effects. For instance, while male sex was found to be associated with self-referring to the AED,^{18;19} it appears to be confounded by injury in our study ($OR_{sex} 1.37$, $OR_{sex\ adjusted\ for\ injury} 1.07$).

Compared to general and unspecified problems (e.g. fever) we found the AED not only to have a higher RR for handling musculoskeletal complaints,^{18;26} but also for circulatory (mainly chest pain) and even respiratory (mainly shortness of breath) complaints. Interestingly, we observed that there were high referral rates for patients with chest pain (41%), shortness of breath (18%) or injury (12%), compared to the 7% overall referrals (results described elsewhere¹⁰). Therefore, for these types of problems it may not be unreasonable that patients decide to self-refer to the AED.

There has been much debate on (in)appropriateness of service use by self-referrals to the AED.²⁷⁻³⁰ An important shortcoming in much of the research on this subject has been that 'inappropriate' attenders (sometimes even called 'primary care patients') have generally been labelled through retrospective comparison with 'legitimate' patients; this is, by using the final diagnosis to identify those whose problems did not need the AED services.^{19;29} It is relatively easy after assessment and investigation to confidently classify a problem as

'minor' and not in need of the services of a hospital department, but from the patients' point of view a rational response in the face of unfamiliar symptoms is to be cautious and consider the worst possible scenario until this has been excluded.

Conclusion

AED self-referrals express the legitimacy of their choice with the need to use diagnostic facilities and most appropriately qualified medical care for the problem presented. They show relatively high levels of dissatisfaction with out-of-hours GP care. Compared to patients contacting the GP cooperative, they emerge as a self-selected group with mainly injuries and problems that have relatively high referral rates when presented to the GP cooperative.

Implications for practice and further research

Involving patients or citizens in the planning and development of health care is receiving increased attention.^{7:31:32} From this study, it seems likely that many self-referrals would be opposed to integration of GP and AED services if the decision to visit the AED were left to a triage nurse. While health policy makers and insurance companies seem convinced that full integration of out-of-hours GP and AED services would lead to a more efficient use of resources and higher quality of care at a lower cost, this has, as yet, not been substantiated. Importantly, a recent study indicated that redirecting these patients to the GP within an integrated out-of-hours service with the AED was not associated with a reduction in costs.³³ Furthermore, although the percentage of self-referrals to the AED dropped with a substantial 53%, this perceived effectiveness gain was diminished by a fifty percent decrease in the number of patient calls to the GP cooperative (limiting the impact of telephone triage) and a forty-five percent increase in the number of AED referrals after an initial GP contact (resulting in unnecessary double contacts).³⁴ Further, prospective studies should focus on the regional differences that may exist in the extent to which patients make appropriate, complementary use of out-of-hours services and their motivation to seek specialist care. Such information could lead to the conclusion that in some regions (e.g. with high percentages of AED self-referrals) full integration of out-of-hours care by GP cooperatives and AEDs can be beneficial in terms of costs and appropriate use of acute care, while in other regions (with fewer self-referrals) this may not be the case.

Acknowledgements

We thank all respondents, GPs, and staff members of the GP cooperative for participating in the study. The authors would also like to express their gratitude to Mildred Beeldman for her sustained help with the data collection and coding of the problems presented.

Funding

The Department of General Practice of the Academic Medical Centre covered the expenses made during data collection and analysis.

References

1. Dale J, Green J, Reid F, Glucksman E, Higgs R. Primary care in the accident and emergency department: II. Comparison of general practitioners and hospital doctors. *BMJ* 1995; 311:427-430.
2. Martin A, Martin C, Martin PB, Martin PA, Green G, Eldridge S. 'Inappropriate' attendance at an accident and emergency department by adults registered in local general practices: how is it related to their use of primary care? *J Health Serv Res Policy* 2002; 7:160-165.
3. Murphy AW, Bury G, Plunkett PK, Gibney D, Smith M, Mullan E et al. Randomised controlled trial of general practitioner versus usual medical care in an urban accident and emergency department: process, outcome, and comparative cost. *BMJ* 1996; 312:1135-1142.
4. Van Uden CJ, Giesen PH, Metsemakers JF, Grol RP. Development of Out-of-Hours Primary Care by General Practitioners (GPs) in The Netherlands: From Small-call Rotations to Large-scale GP Cooperatives. *Fam Med* 2006; 38:565-569.
5. Accident & emergency care: room for improvements [Spoedeisende hulpverlening: Haastige spoed niet overall goed]. Dutch Health Care Inspectorate. The Hague, September 2004.
6. Van Uden CJ, Winkens RA, Wesseling GJ, Crebolder HF, Van Schayck OC. Use of out of hours services: a comparison between two organisations. *Emerg Med J* 2003; 20:184-187.
7. Crawford MJ, Rutter D, Manley C, Weaver T, Bhui K, Fulop N et al. Systematic review of involving patients in the planning and development of health care. *BMJ* 2002; 325:1263.
8. ICPC-2. International Classification of Primary Care. Oxford: Oxford University Press; 1998.
9. <http://route.anwb.nl/>
10. Moll van Charante E, van Steenwijk-Opdam P, Bindels P. Out-of-hours demand for GP care and emergency services: patients' choices and referrals by general practitioners and ambulance services. *BMC Fam Pract* 2007 (submitted).
11. Kleinbaum DG, Klein M: Logistic regression. A Self-learning text. New York: Springer; 2002.
12. Zhang J, Yu KF. What's the relative risk? A method of correcting the odds ratio in cohort studies of common outcomes. *JAMA* 1998; 280:1690-1691.
13. Moll van Charante E, Giesen P, Mookink H, Oort F, Grol R, Klazinga N, Bindels P. Patient satisfaction with large-scale out-of-hours primary health care in the Netherlands: development of a postal questionnaire. *Fam Pract* 2006; 23:437-443.
14. Afilalo J, Marinovich A, Afilalo M, Colacone A, Leger R, Unger B et al. Nonurgent emergency department patient characteristics and barriers to primary care. *Acad Emerg Med* 2004; 11:1302-1310.
15. Singh S. Self referral to accident and emergency department: patients' perceptions. *BMJ* 1988; 297:1179-1180.
16. Rieffe C, Oosterveld P, Wijkkel D, Wiefferink C. Reasons why patients bypass their GP to visit a hospital emergency department. *Accid Emerg Nurs* 1999; 7:217-225.
17. Jaarsma-van Leeuwen I, Hammacher ER, Hirsch R, Janssens M. Self-referrals to the Accident & Emergency Department [Patiënten zonder verwijzing op de afdeling spoedeisende hulp]. *Ned Tijdschr Geneeskd* 2000; 144:428-431.
18. Shipman C, Longhurst S, Hollenbach F, Dale J. Using out-of-hours services: general practice or A&E? *Fam Pract* 1997; 14:503-509.
19. Green J, Dale J. Primary care in accident and emergency and general practice: a comparison. *Soc Sci Med* 1992; 35:987-995.

20. Rajpar SF, Smith MA, Cooke MW. Study of choice between accident and emergency departments and general practice centres for out of hours primary care problems. *J Accid Emerg Med* 2000; 17:18-21.
21. Campbell JL. General practitioner appointment systems, patient satisfaction, and use of accident and emergency services--a study in one geographical area. *Fam Pract* 1994; 11:438-445.
22. Avery AJ, Groom L, Boot D, Earwicker S, Carlisle R. What problems do patients present with outside normal general practice surgery hours? A prospective study of the use of general practice and accident and emergency services. *J Public Health Med* 1999; 21:88-94.
23. Hull S, Jones IR, Moser K, Fisher J. The use and overlap of AED and general practice services by patients registered at two inner London general practices. *Br J Gen Pract* 1998; 48:1575-1579.
24. McKee CM, Gleadhill DN, Watson JD. Accident and emergency attendance rates: variation among patients from different general practices. *Br J Gen Pract* 1990; 40:150-153.
25. Hull SA, Jones IR, Moser K. Factors influencing the attendance rate at accident and emergency departments in East London: the contributions of practice organisation, population characteristics and distance. *J Health Serv Res Policy* 1997; 2:6-13.
26. Yzermans CJ, Mentink S, Klaphake LM, van Grieken JJ, Bindels PJ. [Contacts outside of office hours: complaints presented to the general practitioner and to the emergency department]. *Ned Tijdschr Geneesk* 2002; 146:1413-1417.
27. Liggins K. Inappropriate attendance at accident and emergency departments: a literature review. *J Adv Nurs* 1993; 18:1141-1145.
28. Bezzina AJ, Smith PB, Cromwell D, Eagar K. Primary care patients in the emergency department: who are they? A review of the definition of the 'primary care patient' in the emergency department. *Emerg Med Australas* 2005; 17:472-479.
29. Murphy AW. 'Inappropriate' attenders at accident and emergency departments I: definition, incidence and reasons for attendance. *Fam Pract* 1998; 15:23-32.
30. Sempere-Selva T, Peiro S, Sendra-Pina P, Martinez-Espin C, Lopez-Aguilera I. Inappropriate use of an accident and emergency department: magnitude, associated factors, and reasons--an approach with explicit criteria. *Ann Emerg Med* 2001; 37:568-579.
31. Coulter A. What do patients and the public want from primary care? *BMJ* 2005; 331:1199-1201.
32. Moszynski P. Doctors must work in partnership with patients, says GMC. *BMJ* 2006; 333:513.
33. Van Uden CJ, Ament AJ, Voss GB, Wesseling G, Winkens RA, van Schayck OC et al. Out-of-hours primary care. Implications of organisation on costs. *BMC Fam Pract* 2006; 7:29.
34. Van Uden CJ, Winkens RA, Wesseling G, Fiolet HF, van Schayck OC, Crebolder HF. The impact of a primary care physician cooperative on the caseload of an emergency department: the Maastricht integrated out-of-hours service. *J Gen Intern Med* 2005; 20:612-617.

Appendix.

Postal questionnaire self-referrals to Accident & Emergency Department (AED)

1. Who is filling out the questionnaire?

- I am (the patient)
- Patient's family member (partner, parent, child, sister, etc.)
- Someone else, please specify:

2. Part of the day when you contacted the GP cooperative:

- In the weekend during the day (8 am–5 pm)
- In the evening (5 pm–11 pm)
- During the night (11 pm–8 am)

3. Your age (of the patient): categories 0–4, 5–14, 15–24, 25–44, 45–64, 65–74, 75 or older

4. Your gender (of the patient): male/female

5. Your nationality (of the patient): Dutch/non-Dutch

6. Your highest level of education (of the patient):

- None (yet)
- Primary school
- Lower Vocational Education
- Advanced Primary or Elementary Education, Lower General Secondary Education
- Intermediate Vocational Education
- Higher General Secondary Education, Girls' Secondary School, Pre-university Education
- Higher vocational education
- University / College
- Other, please specify:

7. Whose idea was it to visit the A&E department of the hospital?

- Mine (the patient)
- Patient's family member (partner, parent, child, sister, etc.)
- Someone else's, please specify:

Chapter 5

8. How did you travel to the A&E department?

- With own transportation
- With transportation of family, friends or others
- Other (e.g. by bus), please specify:

9. Which service was best accessible: the GP centre or the A&E department?

- A&E department
- GP centre
- No difference
- Don't know

10. Have you visited this A&E department in the past?*

11. Have you visited the GP cooperative in the past?*

12. How long did you expect to be waiting in the A&E department? And how long would you expect to have been waiting at the GP centre? (please specify for both services)

- A&E department hours/ minutes
- GP centre hours/ minutes

13. What were the most important health complaint(s) and/or reason(s) for contacting the A&E department? (no more than 3)

- (1)
- (2)
- (3)

14. What was the best place to present your problem to: the GP centre or the A&E department?

- A&E department
- GP centre
- No difference
- Don't know

15. Could the GP (centre) have solved your problem?*

16a. What was the main reason to visit the A&E department?

(please tick the most important one)

- Further diagnostic investigation (e.g. X-rays) was necessary
- The doctor in the A&E department is best qualified for this problem
- The A&E department is better accessible than the GP centre
- My problem is taken more seriously in the A&E department than in the GP centre
- It was related to a recent hospital contact or procedure
- I didn't want to disturb the GP/ there was no GP available
- My own GP had advised me to visit the A&E department if things would get worse
- The problem was related to an accident on my work
- Other: (please specify)

16b. Please describe briefly why you visited the A&E:

.....

17a. Are you satisfied with the care you received from the A&E department?*

17b. If 'no', please explain in a few words why you were not satisfied:

18a. Would you visit the A&E department again in similar circumstances?*

18b. If 'no', please explain in a few words why you would not visit the A&E again:

19a. Are you satisfied with the care from your own GP?*

19b. If 'no', please explain in a few words why you were not satisfied:

20a. Are you satisfied with the care from the GP cooperative?*

20b. If 'no', please explain in a few words why you were not satisfied:

* Yes/no/don't know

chapter

6

**Patient satisfaction with large-scale
out-of-hours primary health care
in the Netherlands:
*development of a postal questionnaire***

E Moll van Charante, P Giesen, H Mookink,
F Oort, R Grol, N Klazinga, P Bindels

Family Practice 2006; 23(4):437-443

Summary

Background

Since the turn of the millennium, out-of-hours primary health care in the Netherlands has faced a substantial change from small locum groups towards large GP cooperatives. Improving the quality of care requires evaluation of patient satisfaction.

Objective

To develop a reliable postal questionnaire for wide-scale use by patients contacting their out-of-hours GP cooperative and to present the results of a national survey.

Methods

Literature review and interviews with both patients and health carers were carried out to identify issues of potential relevance, followed by two postal pilot studies and additional interviews to remove or rephrase items. Finally, postal questionnaires were sent to 14,400 people who contacted one of 24 GP cooperatives in the Netherlands.

Results

Overall response was 52.2% for all types of contact. Three scales were identified prior to the field phase and confirmed by principal components analysis: telephone nurse, doctor and organisation. Reliability was high, with Cronbach's alphas and intraclass correlation coefficients exceeding 0.70 for all scales. Only items in the organisation scale showed clear differences among the participating cooperatives. Respondents receiving telephone advice showed lower levels of satisfaction than respondents with other types of contact ($P < 0.001$); centre consultation scored lower than home visit ($P < 0.030$ or less for all differences).

Conclusion

A reliable measure of patient satisfaction has been developed that can also be used for the comparison of GP cooperatives on an organisational level. Overall satisfaction was high, showing highest levels for home visit and lowest levels for telephone advice.

Keywords

Family practice, out-of-hours, patient satisfaction, primary health care

Introduction

Since the turn of the millennium, Dutch GPs have reorganized their out-of-hours primary health care substantially, following examples in the UK and Denmark.^{1,2} Due to feelings of increasing and inappropriate demand, fatigue and job dissatisfaction, as have been described elsewhere,³⁻⁵ the decision was made to set up large-scale GP cooperatives. These organisations replaced most of the small locum groups in which GPs had been used to provide care for the local population. In general, out-of-hours care shifted from care by a familiar GP in the vicinity towards more centralized care provided by a cooperative further away. Currently, around 120 GP cooperatives serve more than 90% of the total Dutch population (16.3 million people). The number of full-time GPs participating in these services generally ranges from 40 to 120 with patient populations between 80,000 and 500,000 people. Supervised by the GPs, nurses perform the telephone triage and decide whether they advise the patients themselves, plan a consultation with the GP in the cooperative or recommend the GP to make a home visit. Satisfaction of patients' legitimate demands is a major objective of all medical care, but is also recognized as one of the possible outcome measures of quality of care.⁶ Several attempts have been made to evaluate patients' views on this new out-of-hours primary health care provision,⁷⁻¹⁷ yet in view of possible cultural and organisational differences, its validity for the Dutch situation had still to be assessed. Furthermore, the increasing demand for benchmarking quality of care calls for the development of a valid and reliable measure of patient satisfaction that can both aid individual GP cooperatives in improving their quality of care and also be of use for a nationwide comparison.

The main objectives of this study were the development of a reliable postal questionnaire for wide-scale use of patients contacting their GP out-of-hours cooperative and to present the first results of a national survey.

Methods

Questionnaire development

Reviewing the literature (phase 1). It was decided to depart from a literature review, since McKinley et al.¹³ concluded earlier, that their extensive work on identifying relevant items for evaluating out-of-hours primary health care through the use of focus groups had only yielded a few new items to the literature. Medline was searched with a combination of the terms 'general practitioner', 'patient satisfaction' and 'out of hours'. In total, 34 mainly British articles were found. Three unpublished questionnaires evaluating out-of-hours primary care from different Dutch Departments of General Practice were also studied. This way, an item bank with potential questions on all three types of contact with the GP cooperative was developed.

Interviewing the parties involved (phase 2). Eight GPs and four telephone nurses were invited to review the questions and focus on items with the potential for improving quality of care. They added a few items on the telephone triage and continuity of care and proposed a few open questions to leave room for additional qualitative remarks. Three experts in the field of questionnaire development were each asked independently to comment on various clinimetric aspects of the first concept questionnaire. Their most important suggestion was to split the questionnaire into three separate ones for telephone advice, centre consultation and home visit, since each questionnaire partly addressed different issues. A panel of six patients from a regional patient federation was asked to study the concept questionnaire, to comment on the items' relevance and phrasing and to indicate whether they had any additional relevant items. They appeared to have a strong preference for a functional, rather than a more random ordering of the items, linked to the telephone nurse, the doctor and the organisation, respectively. They found items that were either worded positively or negatively to be confusing and overabundant when addressing the same issues. Instead of the proposed 7-point Likert scale they suggested to use a 10-point scale, similar to the widely used grading system in Dutch primary and secondary schools. Finally, the patients added two items, one on the accessibility of the service and one on the atmosphere in the waiting room.

Refinement of questionnaire (phase 3). We performed two postal pilot studies. In the first one, 696 consecutive patients or carers were sent questionnaires within 48 hours of their request, stratified for type of contact. No reminders were sent. In total, 285 (41%) questionnaires were returned. After studying the numerous written comments by respondents, we rewrote or replaced questions that were ambiguous, confusing or had a non-response of over 20%. In general, respondents found many of the questions too long or complex. Before further testing took place, the revised questionnaire was presented to 13 patients who had recently contacted a cooperative. Apart from a few rephrasings, one item was added concerning accessibility of the pharmacy. We then decided to perform only a small second pilot without reminders: 180 postal questionnaires were sent, 87 (48%) were returned. This time only four items still had a non-response of over 20%. Since all of these items were considered relevant from previous discussions with patients, they were rephrased rather than removed.

Large-scale evaluation

The final concept questionnaires consisted of five sections: general background, telephone nurse, doctor, organisation and follow-up/miscellaneous. The three mid-sections consisted of multiple items using 10-point response scales (1–10) plus the option 'not applicable'. The total number of items varied per type of contact; telephone advice, centre consultation and home visit had 14, 29 and 23 items, respectively. All GP cooperatives in the Netherlands were invited to participate in the study through widespread advertisements in a national medical paper. Between March 2003 and June 2004 this resulted in the participa-

tion of 26 GP cooperatives, serving around a quarter of the total Dutch population. Two GP cooperatives were excluded due to logistical problems. All GP cooperatives sent postal questionnaires to 200 consecutive patients in all three contact strata within 48 hours of contact and a reminder after 10 days. Patients who had died were excluded from the mailing list. Questionnaires were received by the authors and entered in a database.

In one GP cooperative, a test of test–retest reliability was performed among all respondents. In examining the reproducibility of a measure, the time interval must be sufficiently short to assume that the underlying process is unlikely to have changed.¹⁸ Therefore, it was decided to send the same questionnaire to respondents within a week after their first response. In three of the participating GP cooperatives an analysis to compare respondents with non-respondents was performed using baseline data on sex, age, type of insurance, trauma, part of the day and reason for consultation, as coded in the International Classification of Primary Care.¹⁹ A further analysis was performed in five other, also randomly chosen GP cooperatives to study more personal reasons for non-response. At the bottom of the reminder letter a strip had been attached that could be filled out, teared off and returned through an enclosed return envelope. Patients who would not return a questionnaire were asked to tick one of four pre-structured reasons for non-participation: forgotten/not interested, too ill, dissatisfied, language problem or to add an own comment.

Statistical analysis. Principal components analysis (PCA) with varimax rotation was used to check the structure that was assumed in the developmental phases of the questionnaire. Reliability of the scales was expressed using Cronbach's alpha coefficients. Corrected item-total correlations were calculated within all scales. As a large proportion of the respondents had at least one missing (or 'not applicable') answer, imputation techniques were used prior to the analyses to keep the variance and covariance unaffected (expectation maximization).²⁰

The test–retest reliability was assessed by calculating the intraclass correlation coefficient (ICC). In general, an ICC of >0.70 provides confidence in retest reliability.¹⁸ The paired Student's t-test was used to study differences between the first (T₁) and second responses (T₂). The extent to which items and scales discriminated between GP cooperatives was expressed with the F-statistic, resulting from the one-way analysis of variance. The non-response analysis was performed using the chi-square test. SPSS 11.5 was used for all statistical analyses.

Results

Patient characteristics

Twenty-four GP cooperatives participated in the study, receiving a total of 14,400 postal questionnaires for the three types of contact. In total, 7,520 questionnaires were returned (52.2%): 2,352 for telephone advice (49.0%), 2,512 for centre consultation (52.3%) and 2,656 for home visit (55.3%). Patient characteristics are presented in Table 1.

Non-response

From three GP cooperatives, in total 1,636 of 1,800 patients who had received a postal questionnaire were retrieved from the electronic medical records (9% missing cases), and divided into a response group (n=828, 51%) and a non-response group (n=808, 49%). A higher response was found among men ($P=0.042$), age groups between 5 and 14 and between 45 and 74 ($P<0.001$), and privately insured ($P=0.001$). No differences in response were found

Table 1. Patient characteristics.

	Telephone consultation N=2352 (49.0)	Centre consultation N=2512 (52.3)	Home visit N=2656 (55.3)
Gender			
Male	951 (40.4)	1240 (49.4)	1291 (48.6)
Age group (yrs)			
0-4	520 (22.1)	538 (21.4)	52 (2.0)
5-14	240 (10.2)	304 (12.1)	32 (1.2)
15-24	172 (7.3)	252 (10.0)	49 (1.8)
25-44	601 (25.6)	655 (26.1)	238 (9.0)
45-64	448 (19.1)	509 (20.3)	625 (23.5)
65-74	169 (7.2)	150 (6.0)	568 (21.4)
>75	196 (8.3)	99 (3.9)	1085 (40.9)
Level of education			
Not applicable*	530 (22.5)	543 (21.6)	224 (8.4)
Low	384 (16.3)	407 (16.2)	848 (31.9)
Middle	498 (21.2)	541 (21.5)	578 (21.8)
High	378 (16.1)	445 (17.7)	343 (12.9)
Missing	562 (23.9)	576 (22.9)	663 (25.0)

Numbers of respondents (%).

* mainly children

for type of contact, trauma, reason for consultation and part of the day (data not shown). Neither sex nor type of insurance was found to have an effect on satisfaction scores. The relation between age and satisfaction was less clear, since both higher and lower levels of satisfaction seemed to be overrepresented, but showed little, if any, overall impact.

In five other cooperatives (3,000 questionnaires sent), a total of 463 reminder strips were returned by patients who did not fill out a questionnaire, representing a mean feedback of 15.4% for all types of contact. The main reasons for non-response were 'forgotten/not interested' (n=160, 34.6%) and 'too ill' (n=83, 17.9%). Only 30 patients (6.5%) stated dissatisfaction as reason for non-response.

Finally, we analysed whether the response rate of a participating GP cooperative was related to satisfaction scores. Response rates ranged from 36 to 57% for telephone consultation (mean 49%, SD 5.6), from 39 to 67% for centre consultation (mean 52%, SD 7.6) and from 41 to 74% for home visit (mean 55%, SD 7.7), but we found no relation between the response rate per GP cooperative and any of the scales for any type of contact [n=24; Pearson (2-tailed) not significant].

Reliability

Scales and items. PCA clearly confirmed the three-component structure that was developed prior to the first pilot study, explaining 77, 72 and 83% of the total variance within telephone advice, centre consultation and home visit, respectively. Corrected item-total correlations were all (very) high, apart from the organisation scale in the questionnaire on telephone contact (Tables 2–4). Cronbach's alpha scores exceeded 0.70 for all scales (Table 5). For all types of contact, interscale correlations were fairly high, ranging from 0.59 to 0.69 for telephone nurse and doctor, from 0.52 to 0.71 for telephone nurse and organisation, and from 0.53 to 0.56 for doctor and organisation.

Test–retest reliability. Of all 600 questionnaires that had been sent, 338 were returned (57%). All 338 respondents received a second questionnaire (retest), 155 of which were returned (45%). Analysis of the retest data shows that the differences in satisfaction between T₁ and T₂ are small (Table 5). A decrease in satisfaction appeared to be significant three times (centre consultation: telephone nurse, overall judgement; home visit: doctor) and marginally significant once (centre consultation: doctor). The results for organisation show no significant differences for any of the three contact forms. The ICCs range from 0.787 (telephone advice, nurse) to 0.951 (home visit, doctor), which are all very satisfactory.

Discrimination between GP cooperatives

No items in the doctor scale discriminated between GP cooperatives (Tables 2–5). The only significant item in the telephone nurse scale turned out to be 'taking time to talk' (P=0.043 for telephone advice; not significant for other forms of contact). This contrasted with the organisation scale in which almost all items discriminated between the GP cooperatives in all types of contact.

Table 2: Telephone advice.

Scale/items	Corrected item-total correlation	Item non-response (%)	Mean	sd
Telephone nurse (n=11)				
Q25. Advice helped me	0.835	372 (15.8)	7.239	2.219
Q22. Reassurance	0.909	311 (13.2)	7.386	1.969
Q23. Advice or treatment	0.910	221 (9.4)	7.395	2.052
Q16. Professionalism	0.880	234 (9.9)	7.405	1.651
Q21. Confidence	0.922	205 (8.7)	7.460	1.906
Q24. Feasibility of advice	0.838	388 (16.5)	7.564	1.964
Q19. Understanding my problem	0.915	177 (7.5)	7.620	1.829
Q20. Clear explanation	0.895	255 (10.8)	7.657	1.756
Q17. Taking me seriously	0.891	134 (5.7)	7.691	1.825
Q15. Friendliness	0.771	112 (4.8)	7.696	1.537
Q18. Taking time to talk*	0.840	153 (6.5)	7.792	1.673
Organisation (n=3)				
Q27. General information on cooperative	0.586	477 (20.3)	6.827	1.729
Q30. Accessibility of pharmacy**	0.533	1016 (43.2)	7.347	1.685
Q28. Accessibility by telephone*	0.577	145 (6.2)	7.600	1.686

Items and scales, corrected item-total correlations, item non-response (including 'not applicable'), grand mean and standard deviation (n=2352).

* significant at the $p < 0.05$ level;

** significant at the $p < 0.01$ level; F-test for differences between GP cooperatives

Table 3: Centre consultation.

Scale/items	Corrected item-total correlation	Item non-response (%)	Mean	sd
Telephone nurse (n=7)				
Q16. Professionalism	0.879	387 (15.4)	7.663	1.472
Q20. Clear explanation	0.908	548 (21.8)	7.777	1.570
Q21. Confidence	0.911	374 (14.9)	7.779	1.609
Q15. Friendliness	0.840	225 (9.0)	7.806	1.434
Q19. Understanding my problem	0.918	298 (11.9)	7.865	1.579
Q18. Taking time to talk	0.878	286 (11.4)	7.895	1.494
Q17. Taking me seriously	0.887	235 (9.4)	8.003	1.542
Doctor (n=12)				
Q34. Advice/treatment helped me	0.809	330 (13.1)	7.662	1.950
Q32. Advice or treatment	0.907	178 (7.1)	7.792	1.757
Q31. Reassurance	0.918	195 (7.8)	7.840	1.781
Q33. Feasibility of advice/treatment	0.844	323 (12.9)	7.879	1.672
Q30. Confidence	0.935	106 (4.2)	7.890	1.761
Q29. Clear explanation	0.909	171 (6.8)	7.911	1.679
Q26. Taking time to talk	0.864	124 (4.9)	7.914	1.690
Q28. Careful physical examination	0.892	294 (11.7)	7.919	1.672
Q23. Friendliness	0.818	82 (3.3)	7.994	1.452
Q24. Professionalism	0.882	135 (5.4)	8.012	1.498
Q27. Understanding my problem	0.903	159 (6.3)	8.024	1.625
Q25. Taking me seriously	0.900	94 (3.7)	8.076	1.591
Organisation (n=10)				
Q43. Furnishings of waiting room**	0.622	219 (8.7)	7.028	1.711
Q36. General information on cooperative**	0.667	415 (16.5)	7.092	1.628
Q38. Signposting to the GP cooperative**	0.637	360 (14.3)	7.260	1.730
Q42. Time in waiting room**	0.584	173 (6.9)	7.348	1.913
Q40. Parking facilities**	0.492	130 (5.2)	7.472	1.854
Q45. Accessibility pharmacy**	0.511	860 (34.2)	7.529	1.685
Q37. Accessibility by telephone**	0.644	182 (7.2)	7.776	1.635
Q44. Tidiness and hygiene**	0.689	144 (5.7)	7.816	1.295
Q41. Time between contact and consultation	0.651	285 (11.3)	7.854	1.579
Q39. Accessibility of the building**	0.661	146 (5.8)	7.931	1.406

Items and scales, corrected item-total correlations, item non-response (including 'not applicable'), grand mean and standard deviation (n=2512).

* significant at the p<0.05 level; ** significant at the p<0.01 level; F-test for differences between GP cooperatives

Table 4: Home visit.

Scale/items	Corrected item-total correlation	Item non-response(%)	Mean	sd
Telephone nurse (n=7)				
Q16. Professionalism	0.909	528 (19.9)	7.834	1.522
Q20. Clear explanation	0.929	694 (26.1)	7.893	1.618
Q19. Understanding my problem	0.934	427 (16.1)	7.961	1.722
Q15. Friendliness	0.855	320 (12.0)	7.968	1.439
Q21. Confidence	0.922	456 (17.2)	7.969	1.697
Q18. Taking time to talk	0.891	428 (16.1)	8.061	1.532
Q17. Taking me seriously	0.918	377 (14.2)	8.094	1.619
Doctor (n=12)				
Q34. Advice/treatment helped me	0.793	586 (22.1)	7.862	1.875
Q33. Feasibility of advice/treatment	0.851	620 (23.3)	8.031	1.615
Q31. Reassurance	0.913	299 (11.3)	8.195	1.636
Q32. Advice or treatment	0.920	307 (11.6)	8.200	1.716
Q29. Clear explanation	0.927	330 (12.4)	8.211	1.564
Q27. Understanding my problem	0.928	251 (9.5)	8.295	1.571
Q30. Confidence	0.940	211 (7.9)	8.303	1.600
Q28. Careful physical examination	0.910	320 (12.0)	8.319	1.570
Q26. Taking time to talk	0.892	231 (8.7)	8.320	1.496
Q24. Professionalism	0.914	279 (10.5)	8.322	1.438
Q23. Friendliness	0.839	178 (6.7)	8.347	1.370
Q25. Taking me seriously	0.920	226 (8.5)	8.393	1.513
Organisation (n=4)				
Q39. Accessibility pharmacy**	0.628	1199 (45.1)	7.269	1.825
Q36. General information on cooperative	0.740	609 (22.9)	7.468	1.666
Q38. Time between contact and home visit	0.729	399 (15.0)	7.653	1.841
Q37. Accessibility by telephone**	0.725	270 (10.2)	7.913	1.661

Items and scales, corrected item-total correlations, item non-response (including 'not applicable'), grand mean and standard deviation (n=2656).

* significant at the $p < 0.05$ level; ** significant at the $p < 0.01$ level; F-test for differences between GP cooperatives

Table 5. Scale characteristics: numbers of items per scale, Cronbach's alpha (α), mean score on T1 and T2 and paired t-test, intraclass correlation coefficient (ICC) with numbers of patients in the retest reliability, and comparison between GP cooperatives using the F-value.

Type of contact	Scale	items (n)	α	T1		T2		Δ	Retest*		Between GPCs**		
				Mean	SD	Mean	SD		p	ICC	n	F	p
Telephone consultation	Telephone nurse	11	0.975	7.75	0.75	7.85	0.75	0.10	0.602	0.853	41	1.205	0.228
	Organisation	3	0.738	7.28	0.73	7.36	0.73	0.08	0.531	0.921	39	1.580	0.039
	Overall	2	0.806	7.46	0.76	7.72	0.76	0.26	0.109	0.787	36	0.970	0.503
Centre consultation	Telephone nurse	7	0.969	8.13	0.75	7.86	0.75	-0.27	0.008	0.938	41	1.247	0.192
	Doctor	12	0.979	8.06	0.75	7.85	0.75	-0.21	0.064	0.930	44	0.885	0.620
	Organisation	10	0.881	7.66	0.75	7.73	0.76	0.06	0.536	0.893	42	4.396	0.000
Overall	3	0.763	8.11	0.75	7.79	0.75	-0.32	0.001	0.942	39	1.172	0.259	
Home visit	Telephone nurse	7	0.975	7.84	0.75	7.75	0.75	-0.09	0.385	0.912	54	1.158	0.273
	Doctor	12	0.981	8.06	0.75	7.89	0.75	-0.18	0.030	0.951	57	1.085	0.354
	Organisation	4	0.857	7.79	0.75	7.70	0.79	-0.09	0.484	0.896	48	2.111	0.002
Overall	3	0.849	8.08	0.75	8.03	0.75	-0.04	0.760	0.890	39	1.355	0.120	

*At least 67% item response per scale needed; average scale score between 1 (worst score) to 10 (best score);

** GPC = GP cooperative

Patient evaluation

In general, respondents were very satisfied. Combining all forms of contact, overall satisfaction scores ranged from 7.6 to 8.0 for the telephone nurse, from 7.9 to 8.3 for the doctor and from 7.4 to 7.8 for the organisation (on a scale 1–10). Respondents who only received telephone advice gave lower overall scores on all scales than respondents who received other forms of contact ($P < 0.001$), while respondents receiving a centre consultation scored lower than those who were visited by the doctor ($P < 0.030$ or less for all differences). On the question 'did you receive the care that you hoped for?' (section five, follow-up), respondents answered 'no' in 21.1% of telephone advice, 12.1% of centre consultation and 8.8% of home visit cases ($P < 0.001$ for all differences).

Discussion

These findings indicate that all three questionnaires have a satisfactory reliability and seem suitable for a broad range of patients contacting out-of-hours GP cooperatives.

Content validity of the questionnaires appears to be ensured by the combination of literature research and exchange with both patients and health care professionals. Construct validity of the scales was supported by the PCA as well as the high corrected item-total correlations within the scales. The questionnaires have a satisfactory internal consistency, with Cronbach's alpha coefficients exceeding 0.70 for all scales. Furthermore, the test–retest analysis showed high intraclass correlation coefficients for all scales.

The decrease in satisfaction found in several scales in the retest analysis may indicate that satisfaction is not as stable a quantity as is assumed. Others have also reported a decrease in satisfaction over time.¹³ Satisfaction with centre consultation appeared to decrease more strongly than with the other two types of contact.

In this study, a high overall non-response rate of 47.8% was encountered. This may in part have been caused by the rather long questionnaires, although Salisbury et al.²¹ only found small differences in response between long and short questionnaire evaluations of out-of-hours primary health care. Our non-response analysis was performed in 3 GP cooperatives only (12.5%), yet the variables that differed significantly between the response and the non-response groups (sex, age, type of insurance) did not appear to have any effect on the satisfaction scores. Overall, 6.5% (30 out of 463) of the patients who did not fill out a questionnaire but who did send a reason for non-response (through a reminder strip) reported to be dissatisfied. If we would assume that respondents returning a questionnaire were dissatisfied if they had an average score under 6.0 (for which it seems there is broad consensus in the Netherlands), overall 8.0% of the respondents would have been dissatisfied. Therefore, the dissatisfaction rates within the extra 15% of reactions seemed in broad agreement with the 52% response that had already been described. Finally, no relation was found between the response rate of the participating GP cooperatives and any of the mean scale scores, so

that overall the results seem generalizable towards all users of the out-of-hours services. However, more thorough research is still needed to confirm this hypothesis.

Although PCA is an exploratory technique, the results confirmed the hypothesized structure of scales and items that was chosen before the start of the field phase (using scales for telephone nurse, doctor and organisation). In some scales, the number of items remained higher than necessary. At this stage, we decided not to reduce the number of items to be able to study which questions would discriminate best between GP cooperatives. In the quest of national benchmarking, this could perhaps then serve as an extra criterion in the final reduction of questionnaire items. Unfortunately, only items in the scale for organisation showed significant differences that could allow for such an approach. Since the returned questionnaires could not be linked to the individual health carers, it was not possible to determine whether questionnaire items could discriminate between individual nurses or doctors. In addition, item reduction could perhaps focus on the items with the lowest mean (corresponding to aspects of health care that give most room for improvement), while at the same time keeping the Cronbach's alpha acceptably high (e.g. >0.70). In this perspective, the questionnaire on home visits seems least of use, showing highest item means and interscale correlations, while representing only 10–15% of all patient contacts. Yet another approach would be to reduce the number of items per scale based on new focus group discussions, in an attempt to define the items that are considered most relevant for judging the quality of care.

Despite the relatively recent changes and negative publicity in our country, overall satisfaction with the out-of-hours care by GP cooperatives appears to be high. Respondents who received telephone advice were least satisfied with the telephone nurse. Our findings seem in accordance with other studies, although a difference in satisfaction between centre consultation and home visit was not reported elsewhere.^{7;8;11;14;16;17;22} Items with the lowest means may lead the way toward quality improvements. For example, within the scale telephone nurse, issues like reassurance and advice should perhaps receive more attention in training programmes. Similarly, factors like accessibility by telephone, general information on the out-of-hours service and further integration of services from the cooperatives and pharmacies deserve extra attention.

In conclusion, we have developed a reliable questionnaire for a broad range of patients in out-of-hours primary health care. However, future research should focus on further item reduction and, ultimately, on the question whether it is possible at all to drive up the standards of care by differentiating satisfaction levels between GP cooperatives.

Chapter 6

Acknowledgements

We thank all participating patients, telephone nurses, GPs, staff members of GP cooperatives and colleagues who provided copies of unpublished questionnaires. The authors would also like to express their gratitude to Hanneke Janssens, Marjon Reumkens and Esther van der Plasse for their help with the pilot studies and to Carlien Erlings for assisting on the retest and non-response studies.

Declaration

Funding: All but three participating GP cooperatives donated a prefixed fee to cover all expenses of the study and receive an individual feedback report on the evaluation results of their cooperative.

Conflicts of interest: none.

References

1. Hallam L, Cragg D. Organisation of primary care services outside normal working hours. *BMJ* 1994; 309:1621–1623.
2. Olesen F, Jolles JV. Out of hours service: the Danish solution examined. *BMJ* 1994; 309:1624–1626.
3. Salisbury C. Visiting through the night. *BMJ* 1993; 306:762–764.
4. Pitts J. Hours of work and fatigue in doctors. *J R Coll Gen Pract* 1988; 38:2–3.
5. Handysides S. Morale in general practice: is change the problem or the solution. *BMJ* 1994; 308:32–34.
6. Richards T. Patients' priorities. *BMJ* 1999; 318:277.
7. Hansen BL, Munck A. Out-of-hours service in Denmark: the effect of a structural change. *Br J Gen Pract* 1998; 48:1497–1499.
8. Christensen MB, Olesen F. Out of hours service in Denmark: evaluation five years after reform. *BMJ* 1998; 316:1502–1505.
9. Cragg DK, Campbell SM, Roland MO. Out of hours primary care centres: characteristics of those attending and declining to attend. *BMJ* 1994; 309:1627–1629.
10. Baker R. Characteristics of practices, general practitioners and patients related to levels of patients' satisfaction with consultations. *Br J Gen Pract* 1996; 46:601–605.
11. Salisbury C. Postal survey of patients' satisfaction with a general practice out of hours cooperative. *BMJ* 1997; 314:1594–1598.
12. Cragg DK, McKinley RK, Roland MO et al. Comparison of out of hours care provided by patients' own general practitioners and commercial deputising services: a randomised controlled trial. I: The process of care. *BMJ* 1997; 314:187–189.
13. McKinley RK, Manku-Scott T, Hastings AM, French DP, Baker R. Reliability and validity of a new measure of patient satisfaction with out of hours primary medical care in the United Kingdom: development of a patient questionnaire. *BMJ* 1997; 314:193–198.
14. Shipman C, Payne F, Hooper R, Dale J. Patient satisfaction with out-of-hours services; how do GP co-operatives compare with deputizing and practice-based arrangements? *J Public Health Med* 2000; 22:149–154.
15. McKinley RK, Stevenson K, Adams S, Manku-Scott TK. Meeting patient expectations of care: the major determinant of satisfaction with out-of-hours primary medical care? *Fam Pract* 2002; 19:333–338.
16. Pickin DM, O'Cathain A, Fall M, Morgan AB, Howe A, Nicholl JP. The impact of a general practice co-operative on accident and emergency services, patient satisfaction and GP satisfaction. *Fam Pract* 2004; 21:180–182.
17. Van Uden CJ, Ament AJ, Hobma SO, Zwietering PJ, Crebolder HF. Patient satisfaction with out-of-hours primary care in the Netherlands. *BMC Health Serv Res* 2005; 5:6.
18. Streiner DL, Norman GR. *Health Measurement Scales: A Practical Guide to Their Development and Use* (3rd edn). Oxford: Oxford University Press; 2003.
19. ICPC-2. *International Classification of Primary Care*. Oxford: Oxford University Press; 1998.
20. Dempster AP, Laird NM, Rubin DB. Maximum likelihood from incomplete data via the EM algorithm. *J R Stat Soc* 1997; Series B, 39:1–38.

21. Salisbury C, Burgess A, Lattimer V, Heaney D, Walker J, Turnbull J, Smith H. Developing a standard short questionnaire for the assessment of patient satisfaction with out-of-hours primary care. *Fam Pract* 2005; 22:560–569.
22. Leibowitz R, Day S, Dunt D. A systematic review of the effect of different models of after-hours primary medical care services on clinical outcome, medical workload, and patient and GP satisfaction. *Fam Pract* 2003; 20:311–317.

chapter

7

**Patients evaluate accessibility and
nurse telephone consultations
in out-of-hours GP care:
*determinants of a negative evaluation***

P Giesen, E Moll van Charante, H Janssens, H Mookink,
P Bindels, W van den Bosch, R Grol

Patient Education & Counseling 2007; 65(1):131-136.

Abstract

Objective

The shift towards large-scale organisation of out-of-hours primary healthcare in different western countries has created an important role for the nurse telephone consultation. We explored the association between negative patient evaluation of nurse telephone consultations and characteristics of patients and GP cooperatives.

Methods

A cross-sectional study using postal patient questionnaires sent to patients receiving a nurse telephone consultation from one of 26 GP cooperatives in the Netherlands.

Results

The total response was 49.3% (2,583/5,239). Negative evaluations were most frequently encountered for the general information received on the GP cooperative (35%). When patients expected a centre consultation or home visit, but only received a nurse telephone consultation, they were more negative about the accessibility (OR 1.7, 95%CI 1.4–2.1) and nurse telephone consultation (OR 4.2, 95%CI 3.2–5.6). In the presence of a special supervising telephone doctor at the cooperative's call centre, nurse telephone consultation was evaluated significantly less negative (OR 0.4, 95%CI 0.2–0.8).

Conclusion

Expectation of care mode was most strongly associated with a negative evaluation of nurse telephone consultation. The presence of a supervising telephone doctor may lead to a better evaluation of nurse telephone consultations.

Practice implications

More attention should be paid to the provision of patient information on the GP cooperative and discrepancies between the care expected and the care offered.

Keywords: out-of-hours; GP cooperative; patient evaluation; triage

Introduction

In some western countries a tendency can be observed away from GP practices collaborating in local rotas during out-of-out-hours primary health care, towards large-scaled GP cooperatives with use of telephone triage and consultation.^{1,2} This reorganisation resulted in a sharp decrease of GP workload³ and was also associated with higher levels of job satisfaction by GPs.⁴⁻⁷

Patient opinion

These changes may have had important consequences for patients as well. Formerly, patients were most likely to speak to a GP on the phone and receive GP care from a small and local rota group, whereas currently their call is being answered by a telephone nurse who decides what action should take place. In many GP cooperatives, there has been a sharp decrease in the number of home visits, while up to 50% of all contacts is now handled by telephone alone.³ Although nurse telephone triage appears to be effective and safe,⁸ patients who received a nurse telephone consultation showed lower satisfaction levels than those who contacted a GP.⁹⁻¹³

Triage model

In Denmark GPs decided to take on the telephone triage themselves,² while the UK introduced telephone nurses.³ Also, the UK and Switzerland introduced national telephone help lines which are freely accessible to all residents and provide telephone triage and advice by trained nurses.^{14,15} The Netherlands has a hybrid model: a GP is available in the background for consultation and supervision, but the triage nurse handles the large majority of the telephone calls by herself.¹⁶ Some cooperatives in the Netherlands prefer a more prominent role for the GP in telephone triage and advice. They created a special function of 'telephone doctor' who is present at all times at the cooperatives' call centre, giving advice and feed-back to triage nurses and taking over in complex cases.¹⁷

Based on literature we hypothesized that a mismatch in expectation of care mode (telephone nurse advice only, instead of contact with a doctor),¹⁸ age (younger respondents),^{9,12} and nationality (non-Dutch)⁹ would be associated with a more negative evaluation.

Based on our own impressions, we also expected a more positive patient evaluation in large cooperatives, having more staff to guarantee the quality of telephone triage and financial capacity to arrange for one or more fully equipped satellite locations to increase the proximity to the population served. Likewise, we expected that patients would favour a model with a more prominent role for the GP in telephone triage and advice.¹⁷

To test such hypotheses we performed a multi-centred study in 26 GP cooperatives. We focused on the negative patient evaluation to find incentives for improving the quality of care, using the following questions:

- Which aspects of the GP cooperative's accessibility and nurse telephone consultation were more negatively evaluated?
- To what extent are patient- or GP cooperative-related determinants associated with a negative patient evaluation on accessibility and nurse telephone consultation?

Method

Design and population

A cross-sectional study was performed by means of postal patient questionnaires, sent to patients who only received a telephone consultation from a GP cooperative. This study was conducted from March 2003 to May 2005 within 28 GP cooperatives across the Netherlands serving around 4 million patients, a quarter of the total Dutch population. These GP cooperatives have most of the following features in common listed in Box 1.

All participating GP cooperatives followed a standard research protocol. Each of 200 consecutive patients receiving a telephone consultation was sent a postal questionnaire within 2 days after contact with the cooperative. All records were checked to exclude patients who had died. A reminder was sent 10 days later. Questionnaires were received by the authors and entered in a database. Illegible or omitted answers were coded as missing values. The validity, reliability, principal components analysis, test–retest, and non-response analysis have been described elsewhere.¹³

Measures

The postal questionnaire for telephone consultation contains two scales, one on the telephone nurse (n=11) and one on the organisation (n=3). From the latter scale, for this study, one item on the accessibility of the pharmacy was removed since it did not appear to represent the organisation of GP cooperatives as such, but also because it had yielded a substantial non-response (43%). We decided to refer to the remaining scale as ‘accessibility’ (of the GP cooperative). In their response, patients could rate every item from very bad (1) to excellent (10), which is the usual school mark in the Netherlands.

The questionnaire also contains items on various patient characteristics, which were used as independent, dichotomous variables: gender, age (patients ≥65 years), nationality (Dutch/non-Dutch), expected mode of care (patients who expected a telephone consultation only or a centre consultation/home visit), chronic illness (self-reported, at least one of the follow-

Box 1. Features of GP cooperatives in the Netherlands^{5,19}

- Usually situated near a hospital
- Access via a single regional telephone number
- Access daily from 5 p.m. to 8 a.m. and the entire weekend
- Population of 80,000 to 500,000 patients within distances of 20–30 km
- Nurse telephone triage
- General practitioner shifts of 6–8 h
- Chauffeurs in identifiable GP cars that are fully equipped (e.g. O2, infusion drip, automatic defibrillation equipment).
- ICT support including electronic patient files and on-line connection to the GP car

ing: cardiovascular disease, asthma/COPD, cancer, diabetes, rheumatic disease or chronic psychiatric disease) and distance to the GP cooperative (self-reported, distance 10 km). The following independent dichotomous variables with characteristics of the GP cooperatives were added: size of GP cooperative (expressed as cooperatives with more than one satellite centre or not); rural area (predominant character; region with less than 100,000 inhabitants), and telephone doctor (GP cooperatives engaging a doctor for telephone supervision only or not).

Analysis

Analyses were performed in SPSS 11.5 and SAS 8.1. Mean sum scores were calculated for the two dependent variables: accessibility (n=2; Cronbach's alpha=0.66) and nurse telephone consultation (n=11; Cronbach's alpha=0.97). As a large proportion of the respondents had at least one missing (or 'not applicable') answer in the variables that were used in the regression analysis, imputation techniques were used prior to the analyses to keep the variance and covariance unaffected (expectation maximization).²⁰ We then dichotomized these variables, with all average scores of 6 or lower being labelled as a 'negative evaluation'. In the Netherlands, a score of 6 or lower is generally considered indicative for improvement.

For all items, the overall percentage was calculated that had received a score of 6 or less, along with the highest and lowest scores for the participating GP cooperatives.

To explore which determinants were associated with a negative evaluation, a mixed models multilevel logistic regression analysis was performed controlling for differences between GP cooperatives.

The relation between a negative patient evaluation, and patient- and organisation-related features were expressed in odds ratios (OR's) and confidence intervals (CI's). A value of $p < 0.05$ was considered significant.

Results

Population

In total 28 GP cooperatives participated in this study. Two cooperatives that were not able to follow the research protocol were excluded. Altogether, 5,239 questionnaires were posted to patients who had received a telephone consultation, and 2,583 patients responded (49.3%).

Patient evaluation

Overall, average scores for both scales were satisfactory, ranging from 7.2 for accessibility to 7.6 for nurse telephone consultation, respectively. Nevertheless, a substantial percentage of the respondents gave negative evaluations for various items, like the general

Table 1

Percentage patients who gave a negative evaluation (score ≤ 6) on aspects of the GP cooperative and the GP cooperatives with the most and least negative evaluations^a (n = 2583)

	Number of missings (%) ^b	Negative evaluation (overall % score ≤ 6)	Cooperative with most negative (poorest) evaluation (highest % score ≤ 6)	Cooperative with least negative (best) evaluation (lowest % score ≤ 6)
Accessibility				
General information on cooperative	522 (20)	35	44	24
Accessibility by telephone	158 (6)	19	33	10
Nurse telephone consultation				
Effectiveness of advice	423 (16)	26	39	17
Reassurance	337 (13)	22	32	13
Quality of advice	248 (10)	21	37	14
Professionalism	263 (10)	19	27	13
Confidence	231 (9)	19	30	11
Understanding my problem	198 (8)	18	32	11
Feasibility of advice	436 (17)	17	34	9
Taking me seriously	148 (6)	16	24	8
Clear explanation	285 (11)	15	25	8
Taking time for me	171 (7)	14	22	5
Friendliness	124 (5)	12	20	5

a Interpretation: the lower the percentage, the less negative (or more positive) the evaluation.

b Missing values or marked as 'not applicable'.

information they had received about the GP cooperative (35%) and the effectiveness of the telephone advice (25%). Other items appeared to receive fewer negative assessments, e.g. on friendliness (12%) or taking time (14%). There were considerable differences between the highest and lowest scoring GP cooperatives on all aspects (Table 1).

Determinants of patient evaluation

No relation was found with sex, nationality (non-Dutch) or size of the GP cooperative (>1 satellite centre). Older respondents were less negative about both the accessibility and nurse telephone consultation (ORs 0.5 and 0.6, respectively)(Table 2). Respondents who had reported to have one or more chronic illness more negatively evaluated the accessibility

(OR 1.3). Similarly, lower levels of satisfaction for both the accessibility and nurse telephone consultation were associated with living farther away (OR 1.4). When patients had expected a centre consultation or home visit, but received a telephone consultation only ('expectation mismatch'), lower levels of satisfaction were also found on both scales (ORs 1.7 and 4.2, respectively). Respondents from a rural population appeared less negative about the accessibility (OR 0.7) than respondents from predominantly urban populations. Finally, respondents from the cooperatives that were engaging a telephone doctor (n=2) were less negative about the nurse telephone consultation (OR 0.4) than from those that did not.

Table 2

Multilevel logistic regression analysis: relations between patient or cooperative characteristics and a negative patient evaluation (expressed as odds ratios (95% confidence intervals))

	Percentage of patients/cooperatives	Accessibility of cooperative (2 items)	Nurse telephone consultation (11 items)
Patient characteristics			
Gender (male)	59.8	1.0 (0.8–1.2)	0.9 (0.7–1.1)
Age (≤ 65 years)	16.6	0.5 (0.4–0.7)*	0.6 (0.4–0.9)*
Nationality (non-Dutch)	3.3	1.2 (0.7–2.0)	1.1 (0.6–2.0)
Chronic illness	40.9	1.3 (1.1–1.7)*	0.9 (0.7–1.1)
Distance (>10 km)	31.6	1.4 (1.2–1.8)*	1.4 (1.1–1.8)*
Expected consultation or home visit	49.2	1.7 (1.4–2.1)*	4.2 (3.2–5.6)*
Cooperative characteristics			
Size (>1 satellite centre) (n=10)	38.5	1.0 (0.8–1.2)	1.0 (0.8–1.3)
Rural population (n=15)	57.7	0.7 (0.6–0.9)*	1.0 (0.8–1.3)
Telephone doctor (n=2)	7.7	0.7 (0.4–1.0)	0.4 (0.2–0.8)*

Interpretation: the lower the OR, the less negative (or more positive) the patient evaluation.

* Significance: $p < 0.05$.

Discussion and conclusion

Discussion

Although the overall evaluation of accessibility and nurse telephone consultation appears to be satisfactory, considerable differences were found between the highest and lowest percentages of negative evaluations by respondents from the 26 participating GP cooperatives. Overall, the lowest evaluation was given for the general information received on the GP cooperative, followed by various aspects of nurse telephone consultation, like effectiveness of the advice or reassurance. Patients who expected, but did not receive a centre consultation or home visit, most negatively evaluated both the accessibility and the nurse telephone consultation. Also, evaluation of accessibility was negatively associated with a higher distance and chronic illness, and positively associated with a rural population. Elderly patients showed higher levels of satisfaction on both scales of the questionnaire. Finally, the presence of a telephone doctor seemed to be related to a better evaluation of the nurse telephone consultation.

One of the limitations of this study is the substantial nonresponse (51%) that was encountered. However, an extensive non-response analysis that was presented previously did not reveal any important differences between the satisfaction of both response and non-response groups, so that the results may seem generalizable towards all patients contacting the GP cooperatives.¹³ Another limitation is the relatively large number of missing values in the logistic regression analysis (up to 37%) if a listwise deletion procedure was followed. Nevertheless, the results after maximum likelihood from incomplete data via the EM algorithm did not yield any important differences, although handling missing covariates through multiple imputation techniques would have been a more sophisticated and reliable method.²¹ Finally, in this study, only two GP cooperatives had engaged a telephone doctor, so that the impact of this determinant on the evaluation of the telephone nurse should be interpreted cautiously. Perhaps a higher awareness that these two cooperatives had for the quality of care in general may have confounded this relation.

An important role for expectation of care mode was already described by McKinley et al.¹⁸ Others have also concluded, that there appears to be a need for patients to be better informed about the service they can expect to receive from GP cooperatives.²² In particular, more attention should be paid to the nurse telephone triage for its being an entirely new phenomenon to most of the Dutch patients contacting a GP cooperative.¹² Although telephone nurses seem to face conflicting demands in being both professional carer and gatekeeper,²³ a more open attitude towards the patients' demand to speak to a doctor might improve the quality of both the communication and the care process.

While various authors have emphasized that elderly patients evaluate the received out-of-hours care more favourably than patients of younger age,^{9;12;24} others reported that age was not independently related with satisfaction within a multivariate model.^{18;25} The finding

that respondents who reported a chronic illness were less satisfied with telephone consultations is in accordance with the study by Glynn et al., who found that patients with lower physical and mental health status scores were significantly less likely to be satisfied with their out-of-hours care.²⁵ Indeed, the continuity of care for these patients may have been reduced by the large scale reorganisation of out-of-hours care and extra efforts should be made to guarantee equal access for this vulnerable group. Similarly, some found a negative association between distance and the evaluation of centre consultations,¹² although others did not find a relation with distance.²⁶ To our knowledge, the (negative) effect of distance on the evaluation of nurse telephone consultation has not been previously described. Perhaps the loss of close proximity of care that was previously received in out-of-hours care did have a stronger impact on patients living farther away that was independent of their care expectation and therefore showed an equal impact on both the accessibility and the nurse telephone consultation. Respondents from rural areas were less likely to be negative on the accessibility, although one other study from the Kingdom of Ireland did not find any association between (perceived) rurality and satisfaction levels.²⁶ Finally, the positive association with a telephone doctor appears to be a new finding, although further study is required to confirm this relation. Possibly, the availability of a telephone doctor improves the competency of the telephone nurses or lowers the barriers that patients perceive in their wish to speak to a doctor. As more and more large cooperatives decide to employ GPs solely to act as telephone doctors, perhaps new strategies could be evaluated how to manage patients who expect to speak to (or see) a doctor.

Conclusion

Expectation of care mode was most strongly associated with a negative evaluation of nurse telephone consultation, while a longer distance and the presence of chronic illness also decreased satisfaction levels on the accessibility of the cooperative. The presence of a supervising telephone doctor may lead to a better evaluation of nurse telephone consultations.

Practice implications

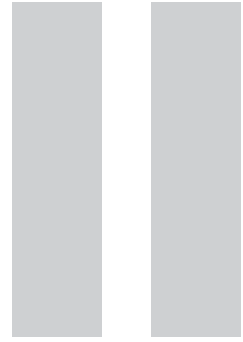
More attention should be paid to general information on the GP cooperative (e.g. through information folders, posters or stickers with telephone numbers), and to possible discrepancies between the care expected and the care offered. Perhaps ongoing training sessions for telephone nurses should also focus on communicative issues like reassurance,²² and there may be substantial room for improvement in the content of the advice too, e.g. by paying much attention to what patients have already tried for themselves before telling them what to do.

References

1. Hallam L. Primary medical care outside normal working hours: review of published work. *Br Med J* 1994;308:249–53.
2. Olesen F, Jolleys JV. Out of hours service: the Danish solution examined. *Br Med J* 1994;309:1624–6.
3. Bunn F, Byrne G, Kendall S. The effects of telephone consultation and triage on healthcare use and patient satisfaction: a systematic review. *Br J Gen Pract* 2005;55:956–61.
4. Salisbury C. Evaluation of a general practice out of hours cooperative: a questionnaire survey of general practitioners. *Br Med J* 1997;314:1598–9.
5. Giesen P, Haandrikman L, Broens S, Schreuder J, Mokkink H. Centrale Huisartsenposten: wordt de huisarts er beter van? [GP cooperatives: does the general practitioner benefit from them?] *Huisarts Wet* 2000;43:508–10.
6. Pickin DM, O’Cathain A, Fall M, Morgan AB, Howe A, Nicholl JP. The impact of a general practice co-operative on accident and emergency services, patient satisfaction and GP satisfaction. *Fam Pract* 2004;21:180–2.
7. Van Uden CJ, Nieman FH, Voss GB, Wesseling G, Winkens RA, Crebolder HF. General practitioners’ satisfaction with and attitudes to out-of-hours services. *BMC Health Serv Res* 2005;5:27.
8. Lattimer V, George S, Thompson F, Thomas E, Mullee M, Turnbull J, Smith H, Moore M, Bond H, Glasper A. Safety and effectiveness of nurse telephone consultation in out of hours primary care: randomised controlled trial. The South Wiltshire Out of Hours Project SWOOP) Group. *Br Med J* 1998;317:1054–9.
9. Salisbury C. Postal survey of patients’ satisfaction with a general practice out of hours cooperative. *Br Med J* 1997;314:1594–8.
10. Hansen BL, Munck A. Out-of-hours service in Denmark: the effect of a structural change. *Br J Gen Pract* 1998;48:1497–9.
11. Leibowitz R, Day S, Dunt D. A systematic review of the effect of different models of after-hours primary medical care services on clinical outcome, medical workload, and patient and GP satisfaction. *Fam Pract* 2003;20:311–7.
12. Van Uden CJ, Ament AJ, Hobma SO, Zwietering PJ, Crebolder HF. Patient satisfaction with out-of-hours primary care in the Netherlands. *BMC Health Serv Res* 2005;5:6.
13. Moll van Charante E, Giesen P, Mokkink H, Oort F, Grol R, Klazinga N, Bindels P. Patient satisfaction with large-scale out-of-hours primary health care in the Netherlands: development of a postal questionnaire. *Fam Pract* 2006;23:437–43.
14. Munro J, Sampson F, Nicholl J. The impact of NHS Direct on the demand for out-of-hours primary and emergency care. *Br J Gen Pract* 2005;55:790–2.
15. Nieman S, Meer A, Simonis C, Abel T. Medical telephone and subsequent patient behaviour. How do they compare? *Swiss Med Weekly* 2004;134:123–4.
16. Giesen P, Wilden-van Lier E, Schers H, Schreuder J, Busser G. Telefonisch advies en triage tijdens de dienst. [Telephone advice and triage during out-of-hours]. *Huisarts Wet* 2002;45:299–302.
17. Busser G, Giesen P. Een spin in het web: de telefoonarts, een nieuwe functie in de grootschalige huisartsenpost. [A spider in the web: the telephone doctor in the large-scale GP cooperative]. *Med Contact* 2002;57:1353–5.
18. McKinley RK, Stevenson K, Adams S, Manku-Scott TK. Meeting patient expectations of care: the major determinant of satisfaction with out-of-hours primary medical care? *Fam Pract* 2002;19:333–8.

19. Van Uden CJ, Winkens RA, Wesseling GJ, Crebolder HF, Van Schayck OC. Use of out of hours services: a comparison between two organisations. *Emerg Med J* 2003;20:184–7.
20. Dempster AP, Laird NM, Rubin DB. Maximum likelihood from incomplete data via the EM algorithm. *J R Stat Soc Series B* 1977;39:1–38.
21. Greenland S, Finkle WD. A critical look at methods for handling missing covariates in epidemiologic regression analyses. *Am J Epidemiol* 1995;142:1255–64.
22. Payne F, Shipman C, Dale J. Patients' experiences of receiving telephone advice from a GP co-operative. *Fam Pract* 2001;18:156–60.
23. Holmstrom I, Dall'Alba G. 'Carer and gatekeeper' - conflicting demands in nurses' experiences of telephone advisory services. *Scand J Caring Sci* 2002;16:142–8.
24. Shipman C, Payne F, Hooper R, Dale J. Patient satisfaction with out-of-hours services; how do GP co-operatives compare with deputizing and practice-based arrangements? *J Public Health Med* 2000;22:149–54.
25. Glynn LG, Byrne M, Newell J, Murphy AW. The effect of health status on patients' satisfaction with out-of-hours care provided by a family doctor co-operative. *Fam Pract* 2004;21:677–83.
26. Glynn LG, Byrne M, Murphy AW. Effect of rurality on patients' satisfaction with out of hours care provided by a family doctor cooperative. *Rural Remote Health* 2004;4:320.

part



Studies on GP hospital care

chapter

8

The first general practitioner hospital in the Netherlands; towards a new form of integrated care?

EP Moll van Charante, EE Hartman, CJ IJzermans,
E Voogt, NS Klazinga, PJE Bindels

Abstracts

Objective

To describe the types of patients admitted to the first Dutch general practitioner (GP) hospital, their health-related quality of life and its substitute function.

Design

A prospective observational study.

Setting

The remaining 20-bed ward of a former district general hospital west of Amsterdam; a region with 62,000 inhabitants and 26 GPs.

Subjects

All patients admitted during the 12 months between 1 June 1999 and 1 June 2000.

Main outcome measures

Patients' health-related quality of life (Medical Outcome Study 36-item Short Form Health Survey, Groningen Activities Restriction Scale), GPs assessments of severity of illness (DUSOI/WONCA Severity of Illness Checklist) and alternative modes of care.

Results

In total, 218 admissions were recorded divided into 3 bed categories: GP beds (n=131), rehabilitation beds (n=62) and nursing home beds (n=25). The mean age of all patients was 76 years. Main reasons for admission were immobilization due to trauma at home (GP beds), rehabilitation from surgery (rehabilitation beds) and stroke (nursing home beds). Overall, patients showed a poor health-related quality of life on admission. If the GP beds had not been available, the GPs estimated that the admissions would have been almost equally divided among home care, nursing home care and hospital care. The severity of the diagnosis on admission of the 'hospital-care group' appeared to be significantly higher than the other care groups.

Conclusion

The GP hospital appears to provide a valuable alternative to home care, nursing home care and hospital care, especially for elderly patients with a poor health-related quality of life who are in need of short medical and nursing care.

Key words: elderly care, GP hospital, health-related quality of life

Introduction

Since the 1980s, there has been a progressive reduction in hospital beds in the Netherlands. Consequently, hospital admission regulations have become stricter, putting the less severely ill at a disadvantage. As the ageing population increases, a growing number of elderly people in need of medical and/or complex nursing care are thus being refused admittance. This is causing GPs to look for alternative care facilities such as nursing homes or (extra) home care.

The United Kingdom, Norway and Finland are the only Western countries that have substantial experience with general practitioner (GP) hospitals, also referred to as community hospitals or cottage hospitals.¹⁻³ With regard to elderly people, it has been suggested that GP hospitals could reduce the demand on the hard-pressed district general hospital services^{4,5} and play an important role in acute care, rehabilitation, observation and assessment, and respite and palliative care.⁶⁻⁸ At this time, however, little is known about the severity of illness and the health-related quality of life (HRQOL) of patients who are admitted to these GP hospitals.⁹

The aim of this study is to describe the types of patients admitted to the first Dutch GP hospital, their HRQOL and its substitute function.

Materials and methods

Setting

In the fall of 1996 the closing of a small hospital in the city of IJmuiden (municipality of Velsen) instigated the start of an experimental GP hospital in the Dutch health care system to ensure the continuity of low clinical care for the local population (Table 1).

Data collection

The study was a prospective, observational study and included all admissions to the GP hospital between 1 June 1999 and 1 June 2000. It was approved by the Medical Ethics Committee of the Academic Medical Centre in Amsterdam. For data collection three main sources were used: hospital records, questionnaires filled out by the GPs and patient questionnaires that were obtained with informed consent. The data were collected by one of the authors (EM) along with a student and handled confidentially.

Hospital records from both nurses and GPs were used to collect demographic data, details of admission and hospital stay (diagnosis, level of dependency according to the Barthel Index¹⁰) and discharge (length of stay and discharge address).

Patients' questionnaires. On admission, patients received a questionnaire that included the Dutch version of the Medical Outcome Study 36-item Short Form Health Survey (SF-36)¹¹ to measure HRQOL and the unidimensional ADL scale (activities of daily living) of

Table 1. The GP hospital IJmuiden.

History	Founded in the fall of 1996 upon the closing of the district general hospital.
Setting	Former district general hospital; two other locations at 11 and 17 km distance.
Population	62,000
Number of beds	20
Intended for	Patients living in the vicinity of the former district general hospital.
Bed categories	GP beds, rehabilitation beds, nursing home beds (bed numbers following the fluctuations of demand).
Type of care	Low care, observation
Admissions	GP beds: by GPs only. For patients in need of hospital care or nursing home care, or home care beyond the maximum care level provided. Rehabilitation beds: by senior consultants only. For post-operative patients in their last phase of clinical rehabilitation (from other hospital locations). Nursing home beds: by senior consultants only. For patients in anticipation of a vacancy in a nursing home (from other hospital locations).
Responsibility of GPs	For GP beds: patients' own GP during working hours. Out-of-hours: via own out-of-hours service in former Accident and Emergency Department in same location. For rehabilitation beds and nursing home beds: small, appointed staff consisting of GPs and a GP trainee.
Functions	Outpatient clinics Laboratory and radiodiagnostic facilities Paramedical aid, such as physiotherapy, ergotherapy and speech therapy Occupational therapy
Participating GPs	All 26 GPs in the city of IJmuiden, working in single or double practices, or one of two health-care centres (with three or more GPs).

the Groningen Activities Restriction Scale (GARS)¹² to assess the level of physical dependence. The SF-36 measures eight components of health, including physical role functioning, physical functioning, vitality, general health, social functioning, emotional role functioning, bodily pain and mental health. The scores of the eight subscales were linearly transformed into scales ranging from 0 (worst health) to 100 (best health). The GARS measures activities of daily living (ADL) and comprises 11 ADL items, each with 4 response categories. Scores may range from 11 (total independence) to 44 (total dependence, bedridden). Because of their physical dependency, the nursing home patients received help from an instructed medical student on completing the questionnaire. Terminally ill patients were excluded.

GP questionnaires. All 26 GPs involved were given verbal and written guidance on how to complete the Dukes Severity of Illness Checklist (DUSOI/WONCA), which has become part of the International Classification of Primary Care (ICPC-2).^{13,14} This checklist, which was used for patients on GP beds only, contained questions about the diagnosis as well as any relevant comorbid disease at the time of admission. The resulting information was quantified in a score on four different disease parameters: symptoms, complications, prognosis and treatability. A score ranging between 0 (low severity) and 100 (high severity) was obtained for the diagnosis and all comorbidities that the GP rendered relevant to admission (overall DUSOI) as well as for the main admission diagnosis alone (diagnosis DUSOI). Since the use of ICPC codes appeared to be too diverse and summarizing on the level of ICPC chapters only too global, diagnoses on admission were categorized according to our own working definitions: musculoskeletal trauma, infection, other acute disorders, chronic disease, stroke, postoperative rehabilitation, terminal/palliative care, respite care and investigation.

In addition, the GPs were asked which alternative mode of care they would have preferred in the absence of the GP hospital, without considering the limitations in the supply of care they might have faced at the time of admission: home care, nursing home care or hospital care.

Statistics

Analysis was performed using the SPSS statistical software package (version 10.07) for continuous variables (two-sided Student's t-test), categorical variables (χ^2 -tests) and comparisons between more than two groups (Oneway ANOVA) where appropriate, using a level of significance of $p < 0.05$. Responding and non-responding patients were compared on patient characteristics (gender, age, volunteer-aid, home care) and clinical characteristics (diagnosis, observed ADL, form of discharge, DUSOI/WONCA, length of stay). To give an overall impression of patients' HRQOL on admission, means of the SF-36 of the examined patient categories were compared to reference values (>65 years) of Dutch chronically ill patients ($n=237$) and healthy subjects ($n=86$), as reported by Aaronson et al.¹⁷

Results

Patient characteristics

During the study period, a total of 218 admissions were recorded, of which 131 (60%) were GP bed admissions (Table 2). While most patients appeared to be of advanced age (mean 76 years), their average length of stay varied substantially, with GP patients having the shortest (15 days) and nursing home patients having the longest length of stay (90 days). According to the Barthel Index, nursing home patients had the lowest level of independence and rehabilitation patients the highest.

GP bed patients were more often transferred to a district general hospital and saw their GPs more frequently (3.3 visits a week) than patients in the other two categories. When the GPs visited their own patients, they stayed around 19 minutes on the ward, averaging between 41 minutes (admission) and 16 minutes (follow-up contacts). This was calculated from an observed sample of 13% of all admissions and follow-up contacts. Patients in the rehabilitation category received more specialist and paramedical treatment than patients in either of the other two categories. Specialists who were most frequently consulted were the general surgeon, internist and neurologist.

The reasons for admission are clustered in Table 3. Musculoskeletal trauma appeared to be the most important reason for admission in the GP bed category and the second most important reason in the rehabilitation bed category. For the GP beds this cluster consisted

Table 2. The GP hospital in IJmuiden: general characteristics of admissions between June 1st 1999 and May 31st 2000.

	GP beds	RH beds	NH beds
Number of admissions	131	62	25
Mean age (years)	75	77	79
Female sex	63%	61%	60%
Living alone	73%	60%	62%
Barthel index on admission*	58.6	79.5	39.8
Average length of stay (days)	15	31	90
Number of GP visits per week	3.3	3.0	1.6
Specialist consultations	55%	69%	28%
Paramedical treatments	46%	76%	68%
Physiotherapeutic treatments per week	2.2	2.3	1.0
Transfer to hospital	19%	8%	12%
Died in GP hospital	11%	8%	28%

GP=general practitioner; RH=rehabilitation; NH=nursing home

* Scores ranging from 0 to 100 with higher scores representing a higher level of functioning

Table 3. Reasons for admission; all three bed categories

Admission category	GP beds		RH beds		NH beds		Total	
	n	(%)	n	(%)	n	(%)	n	(%)
Musculoskeletal trauma	43	(32.8)	25	(40.3)	1	(4.0)	69	(31.7)
Infection	15	(11.5)	3	(4.8)	1	(4.0)	19	(8.7)
Other acute disorders	17	(13.0)	-		-		17	(7.8)
Chronic disease	22	(16.8)	5	(8.1)	7	(28.0)	34	(15.6)
Stroke	13	(9.9)	-		8	(32.0)	21	(9.6)
Post-operative rehabilitation	-		28	(45.2)	6	(24.0)	34	(15.6)
Terminal/palliative care	8	(6.1)	1	(1.6)	2	(8.0)	11	(5.0)
Respite care	8	(6.1)	-		-		8	(3.7)
Investigation	5	(3.8)	-		-		5	(2.3)
Total	131	(100)	62	(100)	25	(100)	218	(100)

GP=general practitioner; RH=rehabilitation; NH=nursing home

of various stable fractures (51%, mainly osteoporotic vertebra) and contusional injuries (40%, heterogeneous, often hip). For the rehabilitation beds this cluster consisted of post-fracture treatment (88%; mainly hip fractures) in all but 3 cases.

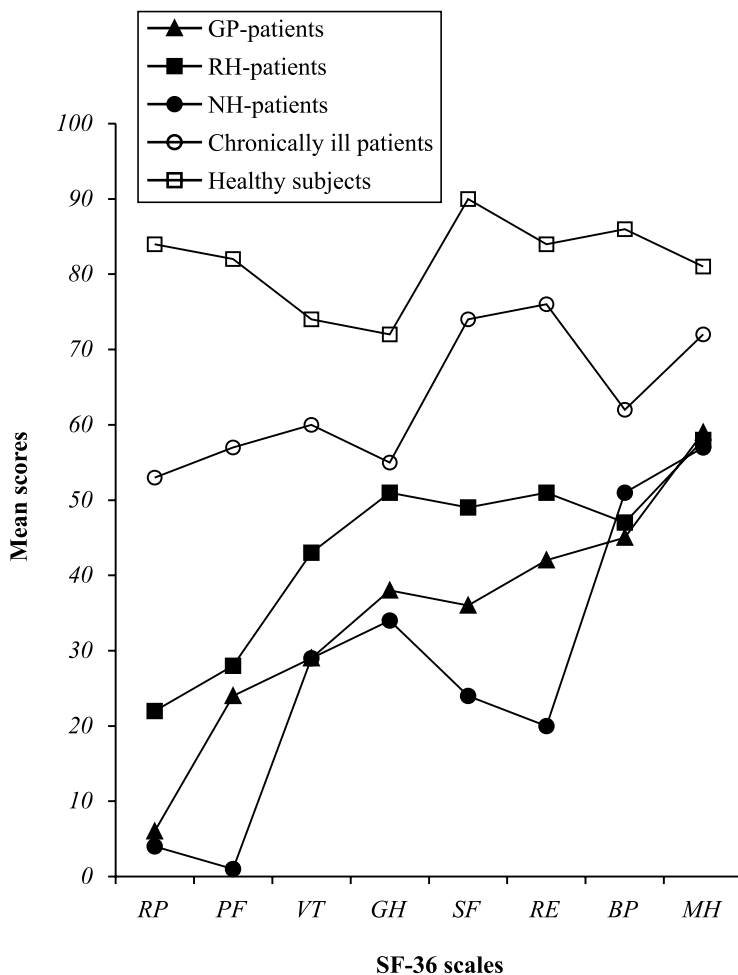
Patients HRQOL

After exclusion of terminal patients, the HRQOL questionnaire was completed by 69/123 (56%) GP patients, 23/61 (38%) rehabilitation patients and 17/23 (74%) nursing home patients. There were no differences between the responding and the non-responding patients, except for 'form of discharge' and 'length of stay'. More non-responding than responding GP patients died (9% vs 1%) or were transferred to a hospital (28% vs 15%), while the responding patients more often went home after discharge (84% vs 63%). The mean length of stay of the non-responding rehabilitation patients was 4 days shorter than that of the responding ones (14 and 18 days, respectively).

Compared to the two reference groups (chronically ill patients and a healthy population), all bed categories show a substantially lower score on the SF-36 (Fig. 1).

On admission, perceived ADL level varied from 'total independence' (GARS score 11) to 'total dependence' (GARS score 44). GARS sum scores were 28 for GP patients, 24 for rehabilitation patients and 40 for nursing home patients. Approximately one third of the GP (39%) and rehabilitation patients (32%) and almost all nursing home patients (94%) were classified as bedridden.

Figure 1. The health related quality of life scores¹ of patients in the three bed categories on admission (GP-, RH-, and NH-patients)^{2,3} and two reference-groups (chronically ill patients and healthy subjects).⁴



¹ For readability standard deviations (SD) are not represented in this figure. SD's vary from 17 to 47 for GP-patients, from 25 to 48 for RH-patients, from 5 to 39 for NH-patients, from 20 to 44 for chronically ill patients, and from 18 to 32 for healthy subjects.

² Abbreviations: GP=general practitioner; RH=rehabilitation; NH=nursing home.

RP=physical role functioning; PF=physical functioning; VT=vitality; SF=social functioning; GH=general health; RE=emotional role functioning; BP=bodily pain; MH=mental health.

³ Sample sizes vary from 50 to 68 for GP-patients, from 19 to 23 for RH-patients, and 16 to 17 for NH-patients due to missing values.

⁴ Reference values (>65 years) of Dutch chronically ill patients (n=237), and of healthy subjects (n=86).¹⁷

N.B. Lines between scales only link the same patient categories.

Alternative mode of care and severity of illness

For all but four patients (n=127) a checklist on the alternative mode of care and severity of illness was returned by the participating GPs. In their judgement, 46 patients (36%) would have stayed home with extra home care, 37 (29%) would have been assigned (temporary) admission in a nursing home, while another 44 (35%) would have been referred to a district general hospital in the absence of the GP hospital. The severity of illness of the 'home care group' appeared to be significantly lower than the 'hospital group' both for the diagnosis on admission (DUSOI diagnosis) and for the total burden of disease (DUSOI overall) (Table 4). There was a significant difference between the 'nursing home group' and the 'hospital group' for the DUSOI diagnosis but not for the DUSOI overall.

Thirteen patients from the 'hospital group' were referred to a hospital during their stay in the GP hospital (30%) compared to 6 in the 'home care group' (13%) and 5 in the 'nursing home group' (14%).

Between the three alternative modes of care no difference was found in the average score on the Barthel Index (Table 4).

Table 4. Mean Barthel Index score and mean Dukes/WONCA Severity of Illness Checklist score (DUSOI) for the alternative modes of care (n=127)

	Alternative mode of care		
	Home n=46	Nursing home n=37	Hospital n=44
Barthel Index	55.7	59.2	61.6
DUSOI-overall	60.8	64.8	72.1*
DUSOI-diagnosis	53.7	53.9†	64.4‡

* Difference with home care p=0.002; † difference with hospital care p=0.009; ‡ difference with home care p=0.017

Barthel Index: scores ranging from 0 to 100 with higher scores representing a higher level of functioning
DUSOI/WONCA: scores ranging from 0 to 100 with higher scores representing an increase of severity of illness

Discussion

For the first time, a GP hospital has been set up in the Netherlands. It appears to be used mainly for elderly patients with a low ADL and health-related quality of life, in need of hospital care, nursing home care or home care. In the Dutch context, it is entirely new that GPs admit their own patients or care for patients that are transferred from elsewhere for further rehabilitation or final transfer to a nursing home. The numbers of rehabilitation and GP patients that were recorded to this end remain relatively small, since almost half

of the beds were in permanent use by the nursing home patients. Furthermore, it was not feasible to construct a pragmatic control group, so that judgement on the appropriateness of use and best alternative mode of care for the GP beds was left to the participating GPs. Moreover, about half of all patients on the GP beds were admitted by eight GPs only, who by their personal preferences may have influenced the observed overall pattern of admission considerably.

Since the GP bed admissions required the most complete commitment by the GP, these patients were studied in more detail. Although the severity of illness (DUSOI) checklist has been tested and validated for use in the domain of general practice, it has not yet been used in the context of GP beds. Its validation for a GP hospital is therefore uncertain. Indeed, the GPs may have overrated the scores to legitimize admissions, e.g. for patients with a focus on respite care. Nevertheless, it is interesting that with no significant differences in the Barthel Index scores among the three alternative modes of care, a significant difference was found in the severity of diagnosis on admission between home care and hospital care and between nursing home care and hospital care. Apparently, severity of illness played a more important role than physical dependency in the GPs choice of best alternative mode of care. The inclusion of comorbidity seemed to have the strongest effect on the overall severity score for patients whose best alternative mode of care was a nursing home. This may indicate that the presence of comorbidity gave these patients an overall severity rate that was too high for the domestic setting, yet not high enough for the hospital setting. Compared to chronically ill patients, patients in the GP hospital report a remarkably low HRQOL on almost all domains. Nevertheless, it appears that the mean values on most domains differ consistently between all three bed categories. The low HRQOL is perhaps partly due to a methodological problem. As many items comprise questions about work or physical activities, the SF-36 may not be the most appropriate questionnaire for measuring the HRQOL of elderly and ill patients and may have a substantial floor effect.¹⁵ In order to determine whether GP hospitals may indeed provide a viable alternative to conventional care from the patients' perspective, further study is needed with larger patient groups and with more suitable questionnaires.

Our data show a number of similarities with some GP hospital surveys from the United Kingdom and Norway.^{2,6,16} With a focus on observation and low care, the GP hospitals are usually nurse-led, have access to their own diagnostic facilities and to paramedical and specialist care from outpatient clinics in the same hospital location. Patients are predominantly of advanced age and have an average length of stay of 1 to 3 weeks. Most admissions concern acute or rehabilitative care; smaller categories are formed by patients with respite, palliative/terminal and other care.

Despite a series of reports on the use of GP hospitals in the UK and Norway, there is still uncertainty about their place and value within the health care system. With an expected decrease of care supplies in all segments of the health care system in the Netherlands, there is an urgent need for discussions on the demarcation of responsibilities for the sick

and needy elderly patients among all primary and secondary care providers. It is not unlikely that the substitution of care as observed in the GP hospital in IJmuiden may provide us with just one possible solution in solving these complex care problems. To determine whether the GP hospital provides adequate care, a future study should focus on comparing GP bed patients with the alternative modes of care they are assumed to substitute.

Conclusion

The GP hospital appears to provide valuable substitution of care in the domain of home care, nursing home care and hospital care, especially for elderly patients with a poor health-related quality of life who are in need of short medical and nursing care.

References

1. Tucker H. The role and function of community hospitals. Kings Fund Project Paper No. 70, London, 1987.
2. Aaraas I. The Finnmark general practitioner hospital study. Patient characteristics, patient flow and alternative care level. *Scand J Prim Health Care* 1995;13:250-6.
3. Jones R. General practitioner beds in Finland: lessons for the UK? *J R Coll Gen Pract* 1987;37:28-30.
4. Hine C, Wood VA, Taylor S, Charny M. Do community hospitals reduce the use of district general hospital inpatient beds? *J R Soc Med* 1996;89:681-7.
5. Cook P, Porter L. Community hospitals and district general hospital medical bed use by elderly people: a study of 342 general practitioner beds in Oxfordshire. *Age Ageing* 1998;27:357-61.
6. Young J, Donaldson K. Community hospitals and older people. *Age Ageing* 2001;30(Suppl 3):7-10.
7. Seamark DA, Moore B, Tucker H, Church J, Seamark C. Community hospitals for the new millennium. *BMJ* 2001;51:125-7.
8. Cavenagh AJ. Contribution of general practitioner hospitals in England and Wales. *BMJ* 1978;2:34-6.
9. Boston NK, Boynton PM, Hood S. An inner city GP unit versus conventional care for elderly patients: Prospective comparison of health functioning, use of services and patient satisfaction. *Fam Pract* 2001;18:141-8.
10. Mahoney FI, Barthel DW. Functional evaluation: the Barthel Index. *Maryland Med J* 1965;14:61-5.
11. McHorney CA, Ware JE Jr, Lu JE, Sherbourne CD. The MOS 36-item Short-Form Health Survey (SF-36): III. Tests of data quality, scaling assumptions, and reliability across diverse patient groups. *Med Care* 1994;32:40-66.
12. Kempen GIJM, Miedema I, Ormel J, Molenaar W. The assessment of disability with the Groningen Activity Restriction Scale. Conceptual framework and psychometric properties. *Soc Sci Med* 1996;43:1601-10.
13. Parkerson GR Jr, Bridges-Webb C, Gervas J, Hofmans-Okkes I, Lamberts H, Froom J, et al. Classification of severity of health problems in family/general practice: an international field trial. *Fam Pract* 1996;13:303-9.
14. ICPC-2. International Classification of Primary Care. Oxford: Oxford University Press, 1998.
15. Fowler RW, Congdon P, Hamilton S. Assessing health status and outcomes in a geriatric day hospital. *Public Health* 2000;114:440-5.
16. North NT, Hall DJ, Kearns WE. First year of an inner city general practitioner community hospital. *BMJ (Clin Res Ed)* 1984;288:1209-11.
17. Aaronson NK, Muller M, Cohen PD, Essink-Bot ML, Fekkes M, Sanderman R, et al. Translation, validation, and norming of the Dutch language version of the SF-36 Health Survey in community and chronic disease populations. *J Clin Epidemiol* 1998;51:1055-68.

chapter

9

**A cost study of
a general practitioner hospital
in the Netherlands**

L Hakkaart-van Roijen, E Moll van Charante,
PJE Bindels, CJ IJzermans, FFH Rutten

European Journal of General Practice 2004; 10(2):45-49

Abstracts

Objective

To perform a cost study of the first general practitioner (GP) hospital in the Netherlands.

Methods

We conducted a cost study in a GP hospital in the Netherlands. Data on healthcare utilisation from 218 patients were collected for a period of one year. The costs of admission to the GP hospital were compared with the expected costs of the alternative mode of care. In the GP hospital three types of bed categories were distinguished: GP beds (admission and discharge by GPs, n=131), rehabilitation beds (recovery from hospital surgery, n=62) and nursing home beds (hospital patients awaiting a vacancy in a nursing home, n=25). GPs were interviewed to indicate the best alternative form of healthcare for the GP bed patients in the absence of the GP hospital (dichotomised for this study into 'hospital' or 'home care'). For the 'rehabilitation' and 'nursing home' patients the alternative care mode was admission to a hospital.

Results

The mean length of stay was 15 days for the GP beds, 31 days for the rehabilitation beds and 90 days for the nursing home beds. For the GP bed patients the costs were € 2,533 per admission compared with € 3,792 for hospital stay. For the group of GP bed patients for whom 'home care' was the best alternative, the costs were € 2,494 for GP hospital days compared with € 2,814, the average cost for home care of patients of 65 years and older. For rehabilitation patients the costs per patient were € 4,744 compared with € 8,041 in a hospital. For patients waiting for admission to a nursing home, these costs were € 13,143 and € 22,670, respectively.

Conclusion

The GP hospital might be a cost-saving alternative for elderly patients in need of intermediate medical and nursing care between hospital and home care. Further research on the cost-effectiveness of the GP hospital compared with home care and nursing home care is needed.

Keywords: general practitioner hospital, cost study

Introduction

General practitioner (GP) hospitals, also referred to as community hospitals or cottage hospitals, are usually low technology units for the clinical observation and treatment of patients who need more intensive medical care than can be provided at home. The United Kingdom, Norway and Finland are the only Western countries that have substantial experience with this type of hospital.¹⁻³ In the GP hospital the care is shared between GPs, nurses and medical specialists. A Norwegian study indicated that GP hospitals might provide healthcare at lower costs than alternative modes of care.⁴ Some studies in the UK have suggested that the GP hospital is likely to reduce the use of scarce health service resources.⁵⁻⁷ Until recently, there was no experience with this type of community-based integrated care within the Dutch general practice.

In the fall of 1996 the closing of a small hospital in the city of IJmuiden (municipality of Velsen) instigated the start of the first GP hospital in the Dutch healthcare system to ensure the continuity of low clinical care for the local population. The former ward became part of a District General Hospital (DGH) with two other locations in the same region at a distance of about 11 and 17 km, respectively. Recently, Moll van Charante et al. described the type of patients being admitted to this GP hospital, their health-related quality of life and its substitute function.⁸

There is a scarcity of home care in the Netherlands. Hence, policymakers are exploring cost-effective innovative forms of healthcare to meet the demand. The intention of the Minister of Health to increase the number of GP hospitals in the Netherlands enhanced the need for an assessment of the GP hospital within the Dutch healthcare system. The study design of the clinical study did not allow a cost-effectiveness study; therefore the assessment was confined to a cost analysis.

We based our analyses on data collected during one year in this GP hospital in IJmuiden. The GP hospital consisted of 20 beds divided into three categories. GP beds were intended for patients who would otherwise have been referred by the GP to a hospital and for patients in need of home care beyond the maximum care level that could be provided. Rehabilitation (RH) beds were indicated for postoperative patients in their last phase of clinical rehabilitation. These beds were allocated through specialist consultations with the GP hospital's head nurse from one of the other DGH locations. Similarly, nursing home (NH) beds were used for patients who were transferred from one of these locations in anticipation of a vacancy in a nursing home. It was agreed that the patient's own GP would remain in charge of the treatment in the GP bed category. For the RH and NH patients a small staff of GPs, including a GP trainee, was appointed to make daily rounds. During working hours laboratory, (radio)diagnostic and paramedical facilities of the GP hospital were available. Additionally, GPs could consult specialists from the outpatient clinics at the same location.

The primary objective of this study was to perform a cost analysis of the first GP hospital in the Netherlands. Due to the lack of a control group, the costs of the GP hospital were compared with the expected costs of care supplied by the best alternative care mode according to the GPs.

Methods

We conducted this cost study from the perspective of the healthcare service. Between 1 June 1999 and 31 May 2000 we collected data on all patients admitted to the GP hospital in IJmuiden. The 26 GPs involved had direct access to GP beds for admission of patients from both their own practice and their combined out-of-hours service. Hospital records were used to collect data on the number of hospital days, medical procedures, laboratory investigations, medication, paramedical treatments, GP visits and specialist consultations. The cost estimates were based on real costs for the main cost components e.g. hospital days, GP visits, specialist and paramedical contacts.⁹ The price of a GP hospital day was based on data from the financial administration of the DGH. The calculation included the following cost components: costs for medical staff, nursing staff, material, nutrition, medication, laundry and cleaning, housing and a rise of 30% for overhead. The unit cost per GP hospital day was calculated by dividing the total costs by the number of hospital days. The unit costs for GP visits in the hospital visits were based on the labour costs and duration of the visits. The unit cost estimates for laboratory and (radio)diagnostic investigations were based on tariffs, because they were a reasonable reflection of the real costs.¹⁰ The costs per patient were calculated by multiplying the number of hospital days, contacts, and laboratory and (radio)diagnostic investigations, respectively, with their corresponding unit costs.

For the GP bed patients the average costs per patient were compared with the expected costs of the best alternative care mode. Due to the lack of a control group the costs of the GP hospital were compared with the expected costs of the best alternative care mode (e.g. hospital care, home care or nursing home care) according to the GP. However, due to long waiting lists for a nursing home admission in the region, we assumed that these patients would have been admitted to a hospital in real clinical practice. Therefore, in this study the cost comparison was limited to the expected costs of a hospital admission or home care. For all three groups of patients we assumed the costs of medical procedures and paramedical treatment would not change due to the setting. The hospital days were valued by the average weighted costs per hospital day in the Netherlands for general and university hospitals for 1999.⁹

For the group of GP bed patients for whom 'home care' would be the best alternative care mode according to the GPs, we compared the costs during the GP hospital stay with the average costs of home care for patients of 65 years and older in 1999¹¹ as most of the patients in the GP hospital were of advanced age. The average costs of home care of patients over

65 years were based on the average number of home care days for 1999 multiplied by the weighted unit price for three home care activities: 'caring', 'household work' and 'nursing'. For the RH patients and NH patients the costs in the GP hospital were compared with the expected costs of a hospital admission. We did not have access to data on the medical procedures in NH patients and consequently could not calculate these costs.

Results

During the study period, a total of 218 admissions was recorded (Table 1), consisting of 131 GP bed patients, 62 RH bed patients and 25 NH bed patients. While most patients appeared to be of advanced age (mean 76 years), their average length of stay varied significantly, with GP patients having the shortest (15 days) and nursing home patients having the longest length of stay (90 days). For all categories combined the occupation rate of the GP hospital averaged around 85%. GP bed patients saw their GPs more frequently (3.3 visits a week) than patients in the other two categories. When the GPs visited their patients, they stayed an average of 19 minutes per patient, corresponding with a unit cost of € 21.50 per contact. The costs for specialist contacts and paramedical contacts were on average € 36.70 and € 18.00, respectively. Patients in the rehabilitation category received more specialist and paramedical treatment than patients in either of the other two categories. Specialists who were most frequently consulted were the general surgeon, internist and neurologist. During admission, 99 GP patients (76%) underwent further examinations, particularly haematological and biochemical tests (26%), X-rays (9%), or both (40%). The reasons for admission by diagnosis category are presented in Table 2. Musculoskeletal trauma appeared to be the most important reason for admission in the GP bed category and the second most important reason in the rehabilitation bed category. For the GP beds this cluster consisted of various stable fractures (51%, mainly osteoporotic vertebra) and contusional

Table 1. General characteristics of admissions of the GP hospital IJmuiden

	GP beds	RH beds	NH beds
Number of admissions	131	62	25
Male (%)	37	39	40
Mean age (years)	75	77	79
Mean length of stay (days)	15	31	90
Number of GP visits per week	3.3	3.0	1.6
Specialist consultations (%)	55	69	28
Paramedical treatment (%)	46	76	68
Physiotherapeutic treatments per week	2.2	2.3	1.0

GP=general practitioner; RH=rehabilitation; NH=nursing home

Table 2. Reasons for admission; all three bed categories

Admission category	GP beds		RH beds		NH beds		Total	
	n	(%)	n	(%)	n	(%)	n	(%)
Musculoskeletal trauma	43	(32.8)	25	(40.3)	1	(4.0)	69	(31.7)
Infection	15	(11.5)	3	(4.8)	1	(4.0)	19	(8.7)
Other acute disorders	17	(13.0)	-	-	-	-	17	(7.8)
Chronic disease	22	(16.8)	5	(8.1)	7	(28.0)	34	(15.6)
Stroke	13	(9.9)	-	-	8	(32.0)	21	(9.6)
Post-operative rehabilitation	-	-	28	(45.2)	6	(24.0)	34	(15.6)
Terminal/palliative care	8	(6.1)	1	(1.6)	2	(8.0)	11	(5.0)
Respite care	8	(6.1)	-	-	-	-	8	(3.7)
Investigation	5	(3.8)	-	-	-	-	5	(2.3)
Total	131	(100)	62	(100)	25	(100)	218	(100)

GP=general practitioner; RH=rehabilitation; NH=nursing home

injuries (40%, heterogeneous, often hip). For the rehabilitation beds this cluster consisted of post-fracture treatment (88%; mainly hip fractures) in all but three cases.

The average costs per hospital day for a GP hospital were calculated to be € 144. The average weighted costs for a hospital day in a general and university hospital were € 250 in 1999⁹ (Table 3). The costs for medical staff and medication appeared to be relatively low for the GP hospital. Additionally, indirect costs, such as nutrition, housing and overheads, were low compared with the weighted average costs per hospital day for the Netherlands. The costs for one hour of home care were estimated to be € 22.69 per hour.⁹

Table 3. The costs per hospital day for a GP hospital and a hospital in the Netherlands (Euros, 1999)

	GP hospital		Hospital	
	€	%	€	%
Medical staff	11	(8)	36	(15)
Nursing staff	80	(56)	96	(38)
Material	3	(2)	8	(3)
Nutrition	6	(4)	15	(6)
Medication	4	(3)	25	(10)
Laundry/cleaning	5	(3)	5	(2)
Housing	13	(9)	23	(9)
Overhead	22	(15)	42	(17)
Total	144	(100)	250	(100)

Table 4. The mean costs per patient admitted to a GP hospital in GP, RH and NH beds (Euros, 1999)

	GP beds		RH beds		NH beds	
	€	(SD)	€	(SD)	€	(SD)
Hospital days*	2485	(1959)	4478	(5233)	12976	(9944)
Medical procedures	105	(108)	154	(257)	-	
Paramedical procedures	60	(90)	112	(96)	167	(140)
Total costs	2650	(2036)	4744	(5450)	13143	(9981)

RH = rehabilitation; NH= nursing home

* Including costs of GP- and specialist contacts

Table 5. The average costs of GP bed patients by alternative form of care based on the opinion of the GP (Euros, 1999)

	Hospital	Home care
	€ N=81	€ N=46
Alternative mode of care		
Hospital days	2091	2494
GP and specialist contacts	266	271
Medical procedures	116	89
Paramedical	59	64
Total costs	2533	2919

Table 4 presents the average costs per patient by bed category in the GP hospital. The costs for NH bed patients were by the far the highest due to the high number of bed days. The average costs for an NH patient in a hospital would have been € 22,670 (e.g. $90.0 \cdot € 250 + € 167$, excluding the costs for medical procedures) compared with € 13,143 in the GP hospital setting. The average costs per RH patient would have been € 8,041 in case of admission to a hospital (e.g. $31.1 \cdot € 250 + € 154 + € 112$) compared with € 4,744 in a GP hospital setting. The response rate of the GPs to the interview was 97% (n=127). For 62% (n=81) of the patients, admission to a GP bed was an alternative for admission to a hospital or nursing home according to the GPs, and 35% (n=46) of the GP bed patients would otherwise have received home care. Table 5 presents the average costs for the GP bed patients by alternative care mode. On average the mean GP hospital stay was lower for the 'hospital group' compared with the 'home care' group, 14.5 and 17.3 days, respectively (not significant). The resulting average cost per patient for the 'hospital' group compared with the 'home care' group was € 2,533 and € 2,919 respectively. In comparison, for the 'hospital group' the costs would have been € 3,792 in a hospital setting (e.g. $14.5 \cdot € 250 + € 116 + € 59$).

For the 'home care' group of patients the costs for GP hospital days were € 2,494. In comparison, the average number of hours of home help for patients of 65 year and older for 1999 was 124 hours at the costs of € 2,814.¹¹

Discussion

This study is a first cost study of a GP hospital in the Netherlands. The costs of a GP hospital day were € 144, which is lower than the average costs for a hospital day, € 250. According to this rough comparison, the costs of a GP hospital day were 58% of the average costs of a hospital day. This was comparable with the estimation of the costs of a GP hospital day in a Norwegian study.⁴ Further research is needed to evaluate the possible differences in cost and outcome between the GP hospital, nursing home and home care.

For all patient groups, the GP hospital days were by far the largest part of the average total costs, which was in accordance to the low care profile of the GP hospital patients. The results of this study may be used for comparison in future cost-effectiveness studies. Moreover, it may contribute to the discussion around integrated care in the Dutch health-care system.

As expected, the costs of medical and nursing staff and medication were lower for the GP hospital than the 'average' Dutch hospital due to the selection of elderly patients with an emphasis on observation and nursing care rather than cure. Due to the lack of a control group, we compared these costs with the average costs of a hospital day in a conventional setting. The average costs for a hospital day were derived from the total costs of all hospital days based on many different patient groups (care and cure) with associated cost differences per hospital day. In comparison, the patients in the GP hospital were patients in need of observation and low care, thus relatively less costly with respect to medical care. However, the costs for nutrition, housing and overhead were also relatively low for the GP hospital compared with these cost components for a weighted average hospital day in general. These cost components are generally not assumed to vary substantially between patient groups. Study indicated that these indirect costs might differ between individual hospitals due to variations in cost accounting methods.⁹ For purposes of standardisation of unit cost pricing we may assume the costs of nutrition, laundry, housing and overhead not to be different between hospitals due to variations in patient population. As a result, the costs per GP hospital day would amount to € 183 compared with € 250 for a hospital day. Hence, the costs per GP hospital day would still be 27% lower than the costs of a conventional hospital day.

We assumed the number of hospital days would be equal to the number of days admitted to a GP hospital. This seemed reasonable, since treatment in GP hospitals focuses on care rather than on cure. However, a cost-effectiveness study including a control group is needed to verify these premises. A study by Henderson et al. on a GP-led hospital con-

cluded that the care of stroke patients in a GP-led community hospital was likely to reduce the use of scarce health service resources.⁵

Unfortunately, for NH bed patients the costs of medical procedures were unknown. Since the costs of medical procedures were only 3% and 4% in case of the GP and RH beds, it is unlikely that this percentage would have been substantially higher for the NH bed patients.

According to the original design of the clinical study, GPs were asked to indicate the alternative care mode they would have preferred in the absence of a GP hospital - home care, nursing home care or hospital care - without considering the limitations in the supply of care they might have faced at the time of the admission. Adding the nursing home group to the hospital group dichotomised these three alternative modes. Therefore, the alternative expected costs of a nursing home were not calculated. The reason for this was that during the study period there were practically no acute nursing home beds available. The average costs per nursing home day have been estimated to be € 135 in 1999.⁹ Hence, the costs of this type of care were slightly lower than the costs of GP hospital day and should be considered as one of the alternative care modes in a future cost-effectiveness study on GP hospitals.

For the group of GP bed patients for whom the best alternative form of care was home care, we calculated that the costs were lower than the average costs of home care for patients over 65 years. Further research is needed to support these rough analyses. However, with the current scarcity of this service in the Netherlands an admission to a GP bed could be a valuable alternative compared with a hospital admission. In our study the cost calculation included the costs until discharge from the GP hospital. However, some GP bed patients (n=25; 19%) were transferred to a hospital due to medical problems and were consequently discharged from the GP hospital. These patients were over-represented in the GP bed group for whom the alternative care mode was a hospital admission according to the GP. This partly explains the shorter average stay of patients in the 'hospital care' group and consequently may have lead to an underestimation of average cost in this patient group (Table 5).

We assumed that the health outcome was equivalent for GP hospital care and conventional care, namely hospital care and home care. The literature on this subject is sparse. Boston et al. showed that patients who received care on the GP unit experienced a similar physical outcome to patient in conventional settings; however, they were consistently more positive about the quality of care in the GP hospital.¹² Shepperd et al. performed a randomised controlled trial to assess the patient health outcomes of hospital and home care and found no differences.¹³

The international literature on the cost-effectiveness of GP hospitals is limited and has methodological shortcomings. Further research on the cost-effectiveness of the GP hospital compared with home care and nursing home care is needed.

The GPs and other interested parties should start a discussion about the role and place of the GP hospital in the future.

Acknowledgements

The Health Insurance Council (CVZ) financed the study. We would like to thank Ms Siok Swan Tan for her practical work on this project. We are grateful to the employees of the clinical and the financial department of the GP hospital in IJmuiden. Finally, we thank the GPs for their contribution to this study.

References

1. Tucker H. The role and function of community hospitals. London: Kings Fund Project Paper; 1987.
2. Aaraas I. The Finnmark general practitioner hospital study. Patient characteristics, patient flow and alternative care level. *Scand J Prim Health Care* 1995;13:250-6.
3. Jones R. General practitioner beds in Finland - lessons for the UK? *J R Coll Gen Pract* 1987;37:28-30.
4. Aaraas I, Sorasdekkkan H, Kristiansen IS. Are general practitioner hospitals cost-saving? Evidence from a rural area of Norway. *Fam Pract* 1997;14(5):397-402.
5. Henderson LR, Scott A. The costs of caring for stroke patients in a GP-led community hospital: an application of programme budgeting and marginal analysis. *Health Soc Care Community* 2001;9(4):244-54.
6. Cook P, Porter L. Community hospitals and district general hospital medical bed use by elderly people: a study of 342 general practitioner beds in Oxfordshire. *Age Ageing* 1998;27:357-61.
7. Hine C, Wood VA, Taylor S, Charny M. Do community hospitals reduce the use of district general hospital inpatient beds? *J R Soc Med* 1996;89:681-7.
8. Moll van Charante E, Hartman E, Yzermans J, Voogt E, Klazinga N, Bindels P. The first general practitioner hospital in the Netherlands: towards a new form of integrated care? *Scandinavian Journal of Primary Health Care* 2004; 22(1):38-43.
9. Oostenbrink JB, Koopmanschap MA, Rutten FFH. [Manual for research on costs.] [In Dutch.] Amstelveen: College for Health Insurance (CVZ); 2000. p. 178.
10. COTG. Tariffs for medical specialist. Utrecht: Dutch Central Agency for Tariffs and Medicine; 1999.
11. Polder J, et al. [Cost of illness in the Netherlands 1999.] [In Dutch] Rotterdam: National Institute for Health and Environment (RIVM) and Department of Public Health (MGZ), Erasmus University Rotterdam, the Netherlands; 1999.
12. Boston NK, Boyton PM, Hood S. An inner city GP unit versus conventional care for elderly patients: prospective comparison of health functioning, use of services and patient satisfaction. *Fam Pract* 2001;18(2):141-8.
13. Shepperd S, et al. Randomised controlled trial comparing hospital at home care with inpatient hospital care. II: cost minimisation analysis. *BMJ* 1998;316(7147):1791-6.

chapter

10

**General discussion of the results
and their implications for
Dutch General Practice**

Introduction

This thesis focuses on the changing role and position of the Dutch GP by studying two new organisations in which the GP acts as a key player: the GP cooperative (out-of-hours care) and the GP hospital (clinical care).

The GP cooperative was studied to explore the GPs' role and position both within the organisation (delegation of telephone triage to practice assistants or nurses, Chapters 2&3), and in relation to secondary care providers (Accident & Emergency Department (AED), Chapters 4&5) and patients (Chapters 6&7). The studies on the GP hospital more specifically looked into the GPs' ability to expand their role and position towards low complex clinical care (Chapters 8&9). The studies took place between 1997 and 2005 and were mainly located in IJmuiden (municipality of Velsen).

Currently, in 2007, GP cooperatives have become a common feature in out-of-hours care, covering more than 90% of the Dutch population. The GP hospital in IJmuiden closed in the course of 2005 due to financial problems, although two similar initiatives that were reproduced elsewhere are still running.

In this final chapter the main findings of this thesis will be discussed along the lines of four central themes:

1. The GP as gatekeeper in out-of-hours care
2. Workload reduction and telephone triage
3. Evaluation of GP cooperatives by patients
4. Substitution of clinical and home care by the GP hospital

Per theme we will address the following issues: (1) main findings of the studies, (2) how they add to the (inter)national literature, and (3) how they affect both the role and position of the GP. Within each theme, specific methodological issues will be addressed and recommendations will be made for future research.

Out-of-hours care

1. The GP as gatekeeper in out-of-hours care

Main findings

In Velsen, GPs were found to have a stable, central position in out-of-hours demand for urgent care: 88% of all contacts were handled by the GP cooperative and the remaining 12% were handled by the AED. These latter contacts consisted of self-referrals to the AED (5%), GP-referrals to the AED (5%), or patients who were brought in by the ambulance service (2%) (Chapter 4). Self-referrals appeared to make complementary use of the AED, mainly for injuries and problems that have relatively high referral rates when presented to the GP cooperative. Compared to AED self-referrals, GPs and ambulance services form an additional filter to the AED, making stronger selections of patients in terms of fractures and admissions. Finally, AED self-referrals turned out to be a group of patients with a strong preference for the AED that was mainly based on assumptions of quality of care and the necessary facilities (Chapter 5).

Current knowledge and debate

The central position of GPs in the out-of-hours care in Velsen is in accordance with studies performed in other Dutch cities like Maastricht,¹ Groningen² and Nijmegen.³ Nevertheless, one study in the city of Amsterdam found a substantially lower contact rate with the GP services (171/1000/yr) and a higher contact rate with the AED (170/1000/yr).⁴ Another study that included highly urbanised areas reported 197 contacts/1000/yr with the GP cooperatives versus 112 contacts/1000/yr with the AED.⁵

Compared to the rural and suburbanised areas, GPs working in large cities seem to have a less prominent position as gatekeepers to secondary care where there are more passers-by, more inhabitants who are not registered with a personal GP, more illegal residents, and relatively high numbers of patients from ethnic groups who find it more self-evident to visit the AED or have more difficulty in finding the GP cooperative.⁶ Further support for variability in the GPs' gatekeeping role is provided by the association between the total annual AED contact rate and the percentage of self-referrals within this demand, which ranges from 25% (less than 10,000 contacts/yr) to as high as 70% (more than 50,000 contacts/yr).⁷ In the literature, factors that were found to contribute to a higher use of the AED are proximity^{8,9} and social deprivation.⁹⁻¹¹ As a result, the severity of problems presented by AED self-referrals may vary regionally, perhaps showing higher levels of urgency in the more suburbanised and rural areas.

The gatekeeping role of the GPs in preselecting patients with more complex problems for secondary care has also been described by Van Geloven et al.¹² She found that AED self-

referrals had less serious diseases and needed less additional work-up and fewer admissions and surgery compared to patients referred by the GP.

Even larger differences in demand for GP care were found in studies from the UK, Ireland, Denmark and Finland (ranging from 130/1000/yr in England to 533/1000/yr in Finland).¹³⁻¹⁶ International comparisons should be interpreted cautiously because of varying definitions of the out-of-hours period, differences in health service organisation, and the lack of studies based on well-defined populations. Salisbury et al. found that the variation in call rates between different British cooperatives could not be accounted for by local demographic features (age structure, deprivation, and rurality).¹³ Finally, although no literature review has been performed yet, self-referral rates to the AED also appeared to vary substantially across some of these countries (ranging from 57/1000/yr in one British study to 190/1000/yr in Denmark).^{10;17-19} Again, this enormous variation may in part be explained by differences in the effectiveness of the gatekeeper. Boerma and others have shown that while as a rule patients need a GP referral to make use of hospital services, all gatekeeping systems make an exception for emergencies that can be presented directly to the AED.²⁰ This important leakage of gatekeeping systems may lead to variation in AED use, especially since the (perceived) availability of, and care provision by, GP services varies from country to country.²¹

Currently, Dutch health policymakers, insurance companies and other actors in the field are propagating the integration of GP cooperatives and AEDs into one facility by using one triage system ('front office') while maintaining some organisational independence at the same location ('back office'). They claim that such a close collaboration has become necessary as patients with an urgent out-of-hours problem feel indecisive about whom they should contact: the GP cooperative, the AED, or the ambulance service. Furthermore, this would offer a chance to enhance the gatekeeping role of GPs by preventing patients from self-referring themselves to the AED without first consulting the GP cooperative. Many of these patients are believed to present with problems that can (and should) be treated by a GP and therefore cause unnecessary crowding in the AED and higher overall costs. Also, in order to optimise the triage process the use of one national or regional emergency number for all presented problems has been suggested (113 instead of the current 112, which is the equivalent of 999 in the UK) as well as the employment of skilled telephone assistants who give advice or redirect the patient to the most appropriate care provider.^{22;23} Integration would thus lead to a more efficient use of resources at lower overall costs.

It is interesting that such a major operation is proposed without solid evidence for any of the following assumed outcome measures.

Firstly, whether or not patients indeed have difficulty in deciding which care provider they should contact is unknown. Although a recent Dutch study among visitors of GP cooperatives and AEDs indicated that patients were aware of an alternative care supplier in around 50% of all cases,²⁴ it was not reported whether these patients had experienced any

difficulty in making their choice for either the GP or AED service. Moreover, patients who had visited either of these services indicated that they had justly done so in more than 80-85% of all cases. Within the suburbanised municipality of Velsen, AED self-referrals only comprised a small part (5%) of the out-of-hours demand. We found that the overwhelming majority (90%) of these AED self-referrals considered the AED as the best place to present their problem and most of them indicated that they would visit the AED again under similar circumstances. Similar motives among AED self-referrals were reported in other studies.²⁵⁻²⁸ Also, there appears to be some consistency in the problems that are presented by AED self-referrals^{32;29;30} and the pattern of demand that GP cooperatives are facing.^{23;33;31} In general, AED self-referrals are aged between 15 and 64 years and mainly present with injuries, while parents of young children and elderly patients more often contact the GP cooperative, presenting with infections mainly.

Therefore, except perhaps for the larger cities, we have the impression that patients make well-considered choices when they decide to contact either the GP cooperative or the AED. Whether or not this also applies to the use of the national emergency number we were not able to judge from the current literature.

Secondly, there has been much debate on the (in)appropriateness of service use by self-referrals to the AED.³²⁻³⁴ However, without a clear definition of what constitutes an 'inappropriate attender', it does not seem surprising that a wide variation (6-80%) was found in the literature³⁵ and that others have cast doubts on the usefulness of the term itself.³⁶ As a result, no clear view exists on the potential gain that can be achieved by redirecting AED self-referrals to the GP. In the only study that was performed on the effect of out-of-hours service integration in our country, it was shown that locating a GP cooperative *in front of* the AED led to a 53% decrease in AED self-referrals.²⁹ However, this perceived effectiveness gain was diminished by a shift from telephone consultations to centre consultations at the GP service. While the overall demand remained more or less stable, the number of centre consultations almost tripled and the number of telephone consultations showed a 50% decrease. Being a vital instrument of GP cooperatives, the loss of telephone triage therefore negatively affected the overall effectiveness of out-of-hours care provision. Also, in the same study a 45% increase was observed in the number of AED referrals after an initial GP contact, resulting in unnecessary double contacts and indicating that former AED self-referrals represented an already pre-selected group of patients. Finally, while much of the overcrowding in the AED is attributed to attendance by GP-type patients, this might be a simplistic approach to this problem, as it does not address how patients are processed within the AED or how they are transferred to wards later if required (the so-called 'access block').^{37;38}

Thirdly, the effects of the integration of overall costs are still unknown. A cost study of the Maastricht GP cooperative that integrated with the local AED did not show any substantial change in costs of the AED within the integrated system, mainly because it was not possible to cut the staffing of the AED to below the critical minimum that had already been

reached.³⁹ By having more flexibility in workforce⁴⁰ perhaps only the very large AED services will allow for such a reduction, although it is unknown whether a large shift of AED self-referrals towards the GP may also be accompanied by the need to increase the staff of the GP cooperative. Alternatively, reduction in personnel may be possible if GP assistants, AED nurses and ambulance personnel are able to take over part of each others' tasks, although this would require staff and personnel to no longer be separated in an integrated model.⁴¹ The limited experience that has been gained in this collaborative model (Purmerend) leads us to believe that this will not be easy to achieve.⁴² Whether or not integration of services will in the long run lead to a higher use of hospital resources by GPs as a result of a lower threshold to refer patients to secondary care (e.g. X-rays or consultant care) is not yet known.

Finally, health policymakers should consider that the overall gain of an integrated model diminishes with decreasing percentages of AED self-referrals. This effect may be reinforced if a lower proportion of self-referrals within the AED is associated with a more 'appropriate' pre-selection of these patients.

Therefore, however interesting it may seem to further integrate all out-of-hours services, the overall gain is based on many assumptions that have yet to be assessed. Further prospective studies should focus on the determinants that explain the wide variation in the pattern of out-of-hours demand for GP and hospital services within our own country. More in-depth knowledge is required on patient characteristics (social background, severity of problem(s), chronic diseases) and patient evaluations (quality of care, choice of service), opinions of the professional groups involved (redirecting of self-referrals, collaboration between GP and AED services), care-delivery process (waiting times, further investigations, hospital admissions, return consultations) and overall costs. Also, more insight is needed into the triage activities of the regional ambulance services, both on the telephone and during field assessments, as they appear to overlap with both GP and AED services. The high percentage of fractures and hospital admissions among patients who were brought in by the ambulance services (Chapter 4) clearly indicates the strength of this triage system. Finally, contacts with other (acute) out-of-hours care providers should be registered, like psychiatric services, home nursing and terminal care.⁴³ Interestingly, many GPs have indicated to be actively involved in the provision of out-of-hours care without being on call, as has been described for the Kingdom of Ireland.⁴⁴

Such information could lead to the conclusion that full integration of out-of-hours care by GP cooperatives and AEDs would in some regions (e.g. with low percentages of AED self-referrals) not be beneficial in terms of cost and appropriate use of acute care, whereas it might be in other regions (e.g. with high percentages of AED self-referrals, of whom many are passers-by from elsewhere).

Role and position of the GP

After the organisational reform from small-scale rotas to large-scale GP cooperatives, the GP became a visible, central player in out-of-hours care. Up to now, the main actors in the

field, i.e. insurance companies, government, hospitals and patient organisations, acknowledge the importance of their services. Nevertheless, as indicated before, it is important for GPs to be aware of the different incentives that these actors may have in the current plans to reform out-of-hours care. While the government wants to guarantee easy and equal access of primary health care for all Dutch citizens, the insurance companies aim to find the most cost-effective provision of care in their regulated competition. Perhaps they will insist on an integration of GP and AED services, but GPs should not embark on such a major operation unless they are convinced that the overall efficiency gain is favourable and their gatekeeping role and professional identity within such a new organisation will not be undermined. Likewise, GPs should try to anticipate on outsourcing of their care by insurance companies, e.g. through hospitals contracting GPs or specialised AED doctors for the care of the AED self-referrals. Studies from the UK have shown that GPs working as an integral part of the AED can work equally safe,^{45;46} with fewer resources⁴⁷ and at lower cost.⁴⁸

Gatekeeping primary care systems appear to spend less on health care as a percentage of their gross national product than those allowing direct access to specialists.⁴⁹ Moreover, Delnoij et al. suggested that the introduction of gatekeeping in a healthcare system is likely to reduce healthcare costs.⁵⁰ In the UK, the Pay-for-Performance Programs in family practices⁵¹ have given GPs the opportunity to opt out of their out-of-hours care since they have become the responsibility of primary care trusts (PCT).⁵² These trusts can employ GPs or other professionals to perform the out-of-hours services. Apparently, many GPs in the UK have already made use of this opportunity to focus fully on daytime care, thereby giving up their central role in the provision of out-of-hours care. Could this be a future scenario for the Netherlands? In the short run, this seems unlikely. Despite some dispute within the professional group, it appears that the majority of Dutch GPs consider personal continuity, 24-hour responsibility and acute care to be inextricable features of general practice, as was reflected in the renewed mission statement on the content and tasks of general practice by the Dutch College of General Practitioners (NHG) and the Dutch Association of General Practitioners (LHV)⁵³ and a more recent statement by the NHG.⁵⁴

2. Workload reduction and telephone triage

Main findings

After the introduction of the GP cooperative in Almere (Chapter 2) there was a decrease in GP workload (from 39 to 13 hours per month). Furthermore, an important part of the workload shifted towards the practice assistants, who handled a quarter of all calls through telephone advice alone. Their telephone consultation rate was similar to the 28% that was found in IJmuiden (Chapter 3). Within the overall demand for GP care, 93% of all contacts took place during daytime hours versus 7% during out-of-hours. This proportion remained stable in the years after the introduction of the GP cooperative (Chapter 2).

In the two-week follow-up cohort study of all contacts with the GP cooperative in IJmuiden that has been described in Chapter 3, various determinants of nurse telephone advice alone (NTAA) and return consultations were found. Telephone assistants appeared most confident in providing advice to parents of young children and were more likely to provide NTAA during the night than during the day or evening. The probability of return consultations mainly appeared to be associated with the type of presented problem and after midnight calls.

Current knowledge and debate

The decrease in GP workload after the introduction of a large-scale out-of-hours GP cooperative was less marked than in one other Dutch study (from 19 to 4 hours per week).⁵⁵ Presumably this resulted from the fact that out-of-hours GP care in Almere had already been organised on a larger scale before the central cooperative was introduced (serving the total population with three healthcare centres only). Elsewhere it has been described how GPs' job satisfaction increased and how other factors that had formerly been identified as problematic, such as the lack of separation between work and private life and the frequency of shifts, were also perceived to have improved.^{1:56}

Despite a critical report on the quality of care by the telephone assistants from the Dutch Health Care Inspectorate,⁵⁷ there has been little, if any, research on its safety and effectiveness since the start of the new out-of-hours GP care. A few well-performed studies from the UK showed that the introduction of the telephone nurse was associated with a substantial decrease in GP workload without an increase in adverse events, like hospital admissions or deaths.^{58:59} However, the results of these studies may, in part, have been dependent on the training, professional level and skill of the telephone nurse and the setting. Such studies should therefore have been reproduced in the Netherlands, particularly because most of the Dutch GP cooperatives did not use computerised triage advice systems (TAS) but merely written protocols.⁶⁰ Studies from the UK have indicated that through the use of TAS, telephone nurses can safely handle up to 50% (or more) of the incoming calls,⁶¹ whereas only half this percentage was found in our studies. Interestingly, within the Netherlands alone, substantial differences in NTAA rates were observed between GP cooperatives, ranging from around 25 (our studies) to 36%.²

A new finding seems to be that nurses handled a larger proportion of calls alone at night than during the day and evening. While after midnight calls are thought to be of a more serious nature,⁶² as is supported by a higher overall hospital referral rate during the night than during the day and evening, we would have expected the NTAA rate to go down rather than up during the night. After all, telephone assistants are only expected to independently handle the low-complex cases themselves and to refer the more complex cases to the GP. At least two mechanisms may, in combination, be responsible for this finding: explicit instructions to triage more strictly, or the implicit perception of a higher threshold to consult the GP while he/she is asleep or out on a visit. More research will be needed to answer the question whether nurses take on more complex cases during nightly calls and

to study to what extent this affects the quality and safety of care.

In Chapter 3 we also described that 33.8% of the patients returned for a consultation with the GP after NTAA, with a median return time of one day. Interestingly, only 26.9% of the patients returned following a GP contact (difference 6.9%; 95%CI 1.4-12.4) after a median period of two days. This difference may reflect that nurses distinguish between problems that need immediate attention and problems that can wait until the surgery hours, thereby referring some of the patients back to their own GP as has been suggested before. On the other hand, high and early return consultation rates following NTAA may also have been the result of a lower confidence in, or reassurance by, the telephone assistants^{63;64} (Chapter 6) or some degree of discontent due to a mismatch between the care expected (e.g. a home visit) and the care received (telephone advice)⁶⁵ (Chapter 7).

Nurse telephone triage has been introduced in the Netherlands without certainty about its safety or effectiveness. Although written guidelines have in the meantime been developed, it is still unknown to what extent they are being used, how much they contribute to the actual decision-making, or whether their presence leads to higher standards of care at all. More research is also needed to study whether computerised TAS increase the rate of calls that result in nurse telephone advice alone, as was demonstrated in the UK. At the same time, its impact on inter-nurse variation, return consultation rates and overall costs should also be taken into account to determine whether these computerised decision support systems may have a role to play in the complex process of telephone triage.

Role and position of the GP

With the introduction of the telephone assistant (practice assistant or nurse) for the triage in out-of-hours primary care, under the aegis of the GPs, a new health professional has come on stage. Given the large variability in NTAA rates between GP cooperatives and assistants, the professional role of telephone assistants needs to be further defined. GPs should guide this process on three levels. Firstly, it is essential to further develop criteria that can be used as an evidence-based foundation of the professional domain of the telephone assistant. Secondly, GPs should validate these criteria within the decision support systems that are to be used. Is it enough to have a set of written guidelines or should computerised TAS be implemented? How are the pros and cons of a TAS to be balanced? Thirdly, in order to acknowledge the complexity and specific skills that are required for telephone triage, ongoing educational programmes should be developed or revised to adequately train the telephone assistants.

More attention should perhaps also be paid to issues like reassurance⁶³ (Chapter 6), care expectancy⁶⁵ (Chapter 7), or the possibility to talk to a doctor (like telephone doctors). Finally, GPs need to be more clear about whether telephone assistants should provide optimal care only for callers with an acute problem that cannot wait until the next surgery hours, or also to those who have less urgent problems, so that pressure on the daytime GP care might be reduced.

3. Patient evaluation

Main findings

In Chapter 6 we described the development of a reliable measure of patient satisfaction that can also be used for the comparison of GP cooperatives on an organisational level. Despite the relatively recent changes and negative publicity on accessibility and telephone triage of GP cooperatives in our country, overall satisfaction was high, with the highest levels for home visits and the lowest levels for telephone advice.

In Chapter 7 we analysed to what extent patient- or GP-cooperative-related determinants were associated with a negative patient evaluation on accessibility and nurse telephone consultation (by practice assistants or nurses). Patients who expected but did not receive a centre consultation or home visit most negatively evaluated both the accessibility and the nurse telephone consultation. Evaluation of accessibility was also negatively associated with a larger distance and chronic illness and positively associated with a rural population. Elderly patients showed higher levels of satisfaction on all items of the questionnaire. Finally, the presence of a telephone doctor seemed to be related to a better evaluation of the nurse telephone consultation.

Current knowledge and debate

High levels of patient satisfaction with out-of-hours care were described in many previous studies, although a difference in satisfaction between centre consultation and home visit has not been reported elsewhere.

Several attempts have been made to evaluate patients' views on this new out-of-hours primary healthcare provision,⁶⁹⁻⁷¹ yet in view of possible cultural and organisational differences, its validity for the Dutch situation still had to be assessed. It was decided to depart from a literature review rather than from focus group meetings, since McKinley et al. had concluded earlier that their extensive work on identifying relevant items for evaluating out-of-hours primary health care through the use of such groups only yielded a few new items to the literature.⁶⁹ Nevertheless, in order to revalidate the items that were found from a literature search and to find out whether there would be still new ones that could be relevant for the Dutch situation, they were twice presented to a small yet representative group of users. After the field study, principal components analysis (PCA) was used to confirm the component structure that was chosen before the start of the field phase (using scales for telephone assistant, doctor and organisation). The PCA could have yielded a different component structure, but none of the scales appeared to split into new components. Undoubtedly, a substantial item redundancy still remained in these scales. However, it was decided not to reduce the number of items prior to the field phase in order to study which items would discriminate best between GP cooperatives. Unfortunately, the study design did not allow for a (multilevel) analysis on the differences between nurses and doctors, as this would have required a minimum sample of questionnaires per health carer. This

would have taken a great effort to achieve in daily practice (taking a long period of time before all health carers had had enough shifts and patients on one or more types of contact). For the time being, the differences found on the organisational level could serve as a starting point for benchmarking out-of-hours GP services. Future research should focus on further item reduction of the patient satisfaction questionnaire.

An important role for the expectation of care mode in patient satisfaction had already been described by McKinley et al.⁶⁵ Others have also concluded that patients seem to feel the need to be better informed about the service they can expect to receive from GP cooperatives.⁶³ In particular, more attention should be paid to the nurse telephone triage, as this is a new phenomenon for Dutch patients who contact a GP cooperative.⁶⁶ Although telephone assistants seem to face conflicting demands in being both professional carer and gatekeeper,⁶⁷ a more open attitude towards the patients' demand to speak to a doctor⁶⁸ might improve the quality of both the communication and the care process. This may explain why there were higher levels of patient satisfaction within the GP cooperatives that had employed a telephone doctor. Perhaps the availability of a telephone doctor improves the competence of the telephone assistants or lowers the barriers that patients perceive in their wish to speak to a doctor.

The multivariate regression analysis that was performed to find determinants of a negative evaluation (Chapter 7) suffered from the limited amount of cooperative-related variables. Furthermore, the one variable that was perhaps amenable to modification (the presence of a telephone doctor) was only represented by two GP cooperatives. Indeed a higher, general awareness for the quality of care by these two cooperatives could have confounded this relation. Therefore, the impact of this determinant on the evaluation of the telephone assistant should be interpreted cautiously.

The ultimate challenge, however, will be to study whether it is at all possible to drive up the standards of care by measuring patient satisfaction and providing feedback to individual GP cooperatives.

Role and position of the GP

Satisfaction of patients' legitimate demands is a major objective of all medical care, but is also recognised as one of the possible outcome measures of quality of care.⁷² Furthermore, involving patients or citizens in the planning and development of health care is receiving increasing attention.⁷³⁻⁷⁵ It is therefore intriguing why the evaluation of patients' opinions on out-of-hours GP care was not an issue to most of the cooperatives in the first years of their existence.⁷⁶ Perhaps the speed with which the changes took place and the self-interest of GPs that formed the basis of this major organisational change in times of high pressure did not leave any room for such evaluation. However, now that GP cooperatives have their own national association (*Vereniging Huisartsenposten Nederland, VHN*) that operates independently from the Dutch Association of General Practitioners (LHV), there appears to be a higher awareness of the value of patient evaluations on improving the quality of care.

Currently, over 50 GP cooperatives have participated in the ongoing national patient questionnaire survey that was initiated in 2003 (Chapters 6&7). We are under the impression that many of them have tried to learn from the individual feedback report that was sent to each and every cooperative and that attempts have been made to improve the quality of the care or the organisation accordingly. For instance, in many places one out-of-hours pharmacy was introduced close or next to the GP cooperative following critical comments from patients who had had great difficulty in reaching the deputising pharmacy elsewhere in the town or city after their contact with the GP cooperative.

While the public at large considers the GP to be the kingpin in out-of-hours primary health care⁷⁷ and the users of this care appear to be very satisfied, the GPs are sitting 'in the driver's seat'⁷⁸ and are holding the keys to the future (re)organisation of Dutch primary health care. Therefore, building a strong partnership with regional or national patient organisations can create a platform for improving and monitoring GP care that cannot be ignored by health policymakers nor by insurance companies and will further contribute to a strong position of the GP within the Dutch primary healthcare system.

GP hospital care

4. Substitution of clinical and home care by the GP hospital

Main findings

Chapter 8 reports on the first GP hospital that was set up in the Netherlands. Main reasons for admission were immobilisation due to trauma at home (GP beds), rehabilitation from surgery (rehabilitation beds) and stroke (nursing home beds). If the GP beds had not been available, the GPs estimated that the admissions would have been almost equally divided among home care, nursing home care and hospital care. The severity of illness on admission of the 'hospital-care group' appeared to be significantly higher than that of the other care groups. Overall, patients showed a poor health-related quality of life on admission. In Chapter 9 the costs of care in a GP hospital day were analysed. In global comparison, the costs of a GP hospital day were 58% (€ 144) of the average costs of a hospital day (€ 250).

Current knowledge and debate

Our data show a number of similarities with some GP hospital studies from the United Kingdom, Norway and Finland.⁷⁹⁻⁸¹ With a focus on observation and low care, the GP hospitals are usually nurse-led and have access to their own diagnostic facilities and to paramedical and specialist care from outpatient clinics in the same hospital location. Patients are predominantly of advanced age and have an average length of stay of one to three weeks. Most admissions concern acute or rehabilitative care; smaller categories are formed by patients in need of respite, palliative/terminal or other care. Main differences between the GP hospitals in Europe appear to lie in the context of the organisation. While in the UK GP hospitals are independent institutions that arose within the local communities, in Norway they are mostly embedded within nursing homes and in Finland they are part of large primary care centres. In general, GP hospitals in these countries are located much closer to the local population than to the District General Hospital(s). Owing to the provision of small operations or deliveries in many places ('medium care'), the complexity of problems or severity of illness seems to be higher than those observed in IJmuiden ('low care').

Cost studies on GP hospitals are scarce. Similar to our findings, a Norwegian study indicated that GP hospitals might be able to provide health care at lower costs than alternative modes of care.⁸² Moreover, some studies in the UK have suggested that the GP hospital is likely to reduce the use of scarce hospital resources.^{83;84} Nevertheless, the interpretation of these studies is difficult, since none of them made use of control groups.

In the cost study that has been described in Chapter 9, it was assumed that the number of hospital days would be equal to the number of days during a GP hospital stay. This seemed reasonable, since the treatment in GP hospitals emphasises on care rather than

on cure. Nevertheless, to determine whether the GP hospital provides adequate care, future studies, preferably with a randomised-controlled design, should try to focus on comparing GP bed patients with the alternative modes of care they are assumed to substitute.

Role and position of the GP

Despite a series of reports on the use of GP hospitals in some European countries, there is still uncertainty about their place and value within the healthcare system. Nevertheless, it has been suggested that they have a potential role to play in the care for the elderly^{85;86} whose growing care demands are expected to increase the pressure on scarce hospital resources in the decades to come.⁸⁷

In the course of 2005, the District General Hospital Board decided to close the GP hospital in IJmuiden. Main reason was the hospital's rather low return on investments, in part caused by the segregated financial flow between primary and secondary care. Moreover, the motivation of the GPs had crumbled away over the years. Although many of them had considered it a challenge to provide continuity of care for their own patients and spare them unnecessary hospital admissions, it appeared difficult to communicate with nurses and senior consultants, being separated in both time and place. Furthermore, as a result of serious shortages in the provision of home care, GPs felt that they were often unable to discharge people to their homes in the last phase of their recovery, which led to an undesired prolongation of the GP hospital stay.

The GP hospital in Velsen has demonstrated that GPs are capable of performing low-complex clinical care for the sick and needy elderly patients. Only a few adverse events were observed. Patients were very satisfied with the care received and highly valued the opportunity of being cared for by their own GP in the proximity of their homes and families.⁸⁸ Overall, the GP hospital has the potential of providing a qualitative, cost-saving alternative, especially for patients in need of hospital care. However, working in the GP hospital is both challenging and demanding, requiring extra time and efforts of GPs to admit and visit their patients, often outside their surgery hours. Also, continuity of care needs to be ensured, both during in- and out-of-hours (e.g. through the presence of a GP trainee on the ward) and in collaboration with other care providers, like nursing home or home care institutions.

Whether or not GPs will play an important role in the provision of low clinical care has yet to be discussed. It is entirely possible that other health carers, like clinical or general geriatrists or even nurse practitioners, are equally capable of delivering this care within the context of the hospital, nursing home or home care. Undoubtedly, the development of integrated care for the sick and needy elderly outside of hospital care will appear on the political agenda in the near future. Working in a GP hospital could mean a valuable and satisfactory extension of the role of the GP in the Netherlands. Nevertheless, it will be up to the professional group to decide whether or not they want to play a key role in this type of care, as is the case in many areas of the UK, Norway and Finland.

Final conclusions

This thesis focuses on the changing role and position of the Dutch general practitioner (GP) by studying two new organisations of GP care: the GP cooperative (out-of-hours care) and the GP hospital (clinical care).

It appears that the shift from small-scale rotas to large-scale GP cooperatives has reinforced the GPs role and position within out-of-hours care, as has been acknowledged by insurance companies, the government, hospitals and patient organisations. At the same time, GP cooperatives are already facing new challenges to maintain their central position. Firstly, GPs should determine their position in the current debate on integration of all acute out-of-hours services. They should be cautious in embarking on such a major operation unless they are convinced that the overall efficiency gain is favourable and their gatekeeping role and professional identity within such a new organisation will not be undermined. Secondly, GPs need to further define the role and tasks of the telephone assistants, develop their training programmes and monitor the quality of their care. Finally, much effort will be needed to improve the continuity of care for vulnerable patient groups and to strengthen the partnerships with patient organisations and other healthcare providers to enhance the quality of care and the GPs' central place within out-of-hours health care.

The main yield of the GP hospital study appears to be that GPs appear capable of substituting the care for patients in need of low-complex hospital or nursing home care or care that exceeds the capacity of home care. Working in a GP hospital could mean a valuable and satisfactory extension of the role of the GP in the Netherlands. Nevertheless, it will be up to the professional group to decide whether or not it wants to play a key role in this type of service or leave this to other health care providers.

Being the generalist in a domain of ever-expanding knowledge and skills, GPs face the daunting challenge of providing qualitative, patient-centred care on a small scale, while at the same time delegating tasks to other healthcare professionals, organising themselves in larger cooperatives and building strong partnerships with other actors in the field. Strengthening the organisational function of GP care seems paramount for maintaining a central role and position within the healthcare system. In a time of both change and challenge, this feature should receive continuous attention by GPs, policymakers and researchers alike.

References

1. Van Uden CJ. Studies on general practice out-of-hours care [Thesis]. Maastricht; Maastricht University, 2005.
2. Post J. Large scale out-of-hours GP care [Grootschalige huisartsenzorg buiten kantooruren] [Thesis]. Groningen; Groningen University, 2004.
3. Giesen P, Franssen E, Mokkink H, van den Bosch W, van Vught A, Grol R. Patients either contacting a general practice cooperative or accident and emergency department out of hours: a comparison. *Emerg Med J* 2006; 23(9):731-734.
4. Joling K, van Exter P, Vissers JMH. Demand for and supply of acute care in the region of Amsterdam [Acute zorg in beeld. Onderzoek naar vraag en aanbod in acute zorg binnen regio Amsterdam en omstreken]. Occasional paper for the Regional Ambulance Services of Amsterdam, 2006.
5. Schrijvers AJP. Acute zorg: achtergrondstudies. Zoetermeer: Raad voor de Volksgezondheid en Zorg, 2003.
6. Van Geloven AAW. Emergency care for abdominal complaints [Thesis]. Amsterdam, 2000.
7. Accident & emergency care: room for improvements [Spoedeisende hulpverlening: Haastige spoed niet overal goed]. Dutch Health Care Inspectorate. The Hague, September 2004.
8. McKee CM, Gleadhill DN, Watson JD. Accident and emergency attendance rates: variation among patients from different general practices. *Br J Gen Pract* 1990; 40(333):150-153.
9. Hull SA, Jones IR, Moser K. Factors influencing the attendance rate at accident and emergency departments in East London: the contributions of practice organisation, population characteristics and distance. *J Health Serv Res Policy* 1997; 2(1):6-13.
10. Carlisle R, Groom LM, Avery AJ, Boot D, Earwicker S. Relation of out of hours activity by general practice and accident and emergency services with deprivation in Nottingham: longitudinal survey. *BMJ* 1998; 316(7130):520-523.
11. Beattie TF, Gorman DR, Walker JJ. The association between deprivation levels, attendance rate and triage category of children attending a children's accident and emergency department. *Emerg Med J* 2001; 18(2):110-111.
12. Van Geloven AAW, Luitse JSK, Simons MP, Obertop H. Accident and Emergency Department: self-referrals and patients referred by the GP [in Dutch]. *Huisarts Wet* 2000; 43(12):516-517.
13. Salisbury C, Trivella M, Bruster S. Demand for and supply of out of hours care from general practitioners in England and Scotland: observational study based on routinely collected data. *BMJ* 2000; 320(7235):618-621.
14. Hansen BL, Munck A. Out-of-hours service in Denmark: the effect of a structural change. *Br J Gen Pract* 1998; 48(433):1497-1499.
15. Salisbury C. The demand for out-of-hours care from GPs: a review. *Fam Pract* 2000; 17(4):340-347.
16. Vehvilainen AT, Takala JK. Where have all the back pains gone? Changes in the reasons for requiring out-of-hours medical care from a centralized primary care centre after changing to a list system. *Fam Pract* 1996; 13(4):373-376.
17. Hull S, Jones IR, Moser K, Fisher J. The use and overlap of AED and general practice services by patients registered at two inner London general practices. *Br J Gen Pract* 1998; 48(434):1575-1579.
18. Brogan C, Pickard D, Gray A, Fairman S, Hill A. The use of out of hours health services: a cross sectional survey. *BMJ* 1998; 316(7130):524-527.

19. Vedsted P, Christensen MB. The effect of an out-of-hours reform on attendance at casualty wards. The Danish example. *Scand J Prim Health Care* 2001; 19(2):95-98.
20. Boerma WG. Profiles of General Practice in Europe. An international study on variation in the task of general practitioners [Thesis]. Maastricht; Maastricht University; 2003.
21. Boerma WG, Van der Zee J, Fleming DM. Service profiles of general practitioners in Europe. European GP Task Profile Study. *Br J Gen Pract* 1997; 47(421):481-486.
22. Drijver R. Continuïteit in de acute zorg. *Huisarts Wet* 2006; 49(11):584.
23. Pepels R, Sonneveld R, Lierens G, Tijn K. Het regionaal loket voor acute zorg. Een programma van eisen voor telefonische toegang en regie (in opdracht van CVZ). Utrecht: Stichting Prismant; juni 2006.
24. Foekema H, Hendrix C. Spoed moet goed. Een onderzoek naar de spoedeisende zorg. Amsterdam: TNS NIPO, 2006.
25. Singh S. Self referral to accident and emergency department: patients' perceptions. *BMJ* 1988; 297(6657):1179-1180.
26. Green J, Dale J. Primary care in accident and emergency and general practice: a comparison. *Soc Sci Med* 1992; 35(8):987-995.
27. Rieffe C, Oosterveld P, Wijkel D, Wiefferink C. Reasons why patients bypass their GP to visit a hospital emergency department. *Accid Emerg Nurs* 1999; 7(4):217-225.
28. Jaarsma-van L, I, Hammacher ER, Hirsch R, Janssens M. [Patients without referral treated in the emergency room: patient characteristics and motives]. *Ned Tijdschr Geneeskd* 2000; 144(9):428-431.
29. Van Uden CJ, Winkens RA, Wesseling G, Fiolet HF, Van Schayck OC, Crebolder HF. The impact of a primary care physician cooperative on the caseload of an emergency department: the Maastricht integrated out-of-hours service. *J Gen Intern Med* 2005; 20(7):612-617.
30. Yzermans CJ, Mentink S, Klaphake LM, van Grieken JJ, Bindels PJ. [Contacts outside of office hours: complaints presented to the general practitioner and to the emergency department]. *Ned Tijdschr Geneeskd* 2002; 146(30):1413-1417.
31. Van Uden CJ, Winkens RA, Wesseling GJ, Crebolder HF, Van Schayck OC. Use of out of hours services: a comparison between two organisations. *Emerg Med J* 2003; 20(2):184-187.
32. Bezzina AJ, Smith PB, Cromwell D, Eagar K. Primary care patients in the emergency department: who are they? A review of the definition of the 'primary care patient' in the emergency department. *Emerg Med Australas* 2005; 17(5-6):472-479.
33. Liggins K. Inappropriate attendance at accident and emergency departments: a literature review. *J Adv Nurs* 1993; 18(7):1141-1145.
34. Sempere-Selva T, Peiro S, Sendra-Pina P, Martinez-Espin C, Lopez-Aguilera I. Inappropriate use of an accident and emergency department: magnitude, associated factors, and reasons--an approach with explicit criteria. *Ann Emerg Med* 2001; 37(6):568-579.
35. Murphy AW. 'Inappropriate' attenders at accident and emergency departments I: definition, incidence and reasons for attendance. *Fam Pract* 1998; 15(1):23-32.
36. Richardson S, Ardagh M, Hider P. New Zealand health professionals do not agree about what defines appropriate attendance at an emergency department. *N Z Med J* 2006; 119(1232):U1933.
37. Wilson H. Co-locating primary care facilities within emergency departments: brilliant innovation or unwelcome intervention into clinical care? *N Z Med J* 2005; 118(1221):U1633.
38. Ardagh M, Richardson S. Emergency department overcrowding--can we fix it? *N Z Med J* 2004; 117(1189):U774.

39. Van Uden CJ, Ament AJ, Voss GB, Wesseling G, Winkens RA, van Schayck OC et al. Out-of-hours primary care. Implications of organisation on costs. *BMC Fam Pract* 2006; 7:29.
40. Balestra W, Wiechers J, Rozeboom A, van Dalen J. Cooperation, coherence, and integration with the Emergency Department. Report (part 3). [Samenwerking, samenhang en integratie met de spoedeisende hulp. Rapport (deel 3)]. Amsterdam: Plexus Medical Group, 2004.
41. Van Es R. De Metamorfose van Hoogeveen. Naast elkaar 'wonen' en werken op (Spoed)Zorgplein Bethesda. *Med Contact* 2006; 61(33/34):1300-1303.
42. Drijver R, Teunis M. Functies en competenties op de Spoedpost. Utrecht: College voor de Bevoegden en Opleidingen in de Gezondheidszorg (CBOG), 2006.
43. Meier M, Smit MCA, van Overbeek L, van Baar ME, Schrijvers AJP. Demand for and supply of acute care in the province of Utrecht [Vraag en Aanbod van Acute Zorg in de Regio Utrecht]. Utrecht: Julius Centrum voor Gezondheidswetenschappen en Eerstelijns Geneeskunde; oktober, 2006.
44. O'Dowd TC, McNamara K, Kelly A, O'Kelly F. Out-of-hours co-operatives: general practitioner satisfaction with governance and working arrangements. *Eur J Gen Pract* 2006; 12(1):15-18.
45. Murphy AW, Bury G, Plunkett PK, Gibney D, Smith M, Mullan E et al. Randomised controlled trial of general practitioner versus usual medical care in an urban accident and emergency department: process, outcome, and comparative cost. *BMJ* 1996; 312(7039):1135-1142.
46. Murphy AW, Plunkett PK, Bury G, Leonard C, Walsh J, Lynam F et al. Effect of patients seeing a general practitioner in accident and emergency on their subsequent reattendance: cohort study. *BMJ* 2000; 320(7239):903-904.
47. Dale J, Green J, Reid F, Glucksman E, Higgs R. Primary care in the accident and emergency department: II. Comparison of general practitioners and hospital doctors. *BMJ* 1995; 311(7002):427-430.
48. Dale J, Lang H, Roberts JA, Green J, Glucksman E. Cost effectiveness of treating primary care patients in accident and emergency: a comparison between general practitioners, senior house officers, and registrars. *BMJ* 1996; 312(7042):1340-1344.
49. Anderson GF, Hurst J, Hussey PS, Jee-Hughes M. Health spending and outcomes: trends in OECD countries, 1960-1998. *Health Aff (Millwood)* 2000; 19(3):150-157.
50. Delnoij D, Van Merode G, Paulus A, Groenewegen P. Does general practitioner gatekeeping curb health care expenditure? *J Health Serv Res Policy* 2000; 5(1):22-26.
51. Doran T, Fullwood C, Gravelle H, Reeves D, Kontopantelis E, Hiroeh U et al. Pay-for-performance programs in family practices in the United Kingdom. *N Engl J Med* 2006; 355(4):375-384.
52. Petri H. Nieuw model Britse eerste lijn. Doelstellingen sneller bereikt dan verwacht. *Med Contact* 2006; 61(2):72-74.
53. Future view on General Practice. [Project Toekomstvisie Huisartsenzorg. Huisartsenzorg in 2012: 'Medische zorg in de buurt']. Utrecht: LHV/NHG, 2002.
54. NHG-Standpunt: De huisartsgeneeskundige inbreng in de acute ketenzorg. Utrecht: NHG, 2005.
55. Giesen PHJ, Haandrikman LGR, Broens S, Schreuder JLM, Mokink HGA. GP cooperatives: does the general practitioner benefit from them? [Centrale huisartsenposten: wordt de huisarts er beter van?]. *Huisarts Wet* 2000; 43(12):508-510.
56. Salisbury C. Evaluation of a general practice out of hours cooperative: a questionnaire survey of general practitioners. *BMJ* 1997; 314(7094):1598-1599.
57. GP cooperatives in the Netherlands: new structures with many teething troubles [Huisartsenposten in Nederland: nieuwe structuren met veel kinderziekten]. Dutch Health Care Inspectorate; The Hague, April 2004.

58. Lattimer V, George S, Thompson F, Thomas E, Mullee M, Turnbull J, Smith H, Moore M, Bond H, Glasper A. Safety and effectiveness of nurse telephone consultation in out of hours primary care: randomised controlled trial. *The South Wiltshire Out of Hours Project (SWOOP) Group. BMJ* 1998; 317(7165):1054-1059.
59. Thompson F, George S, Lattimer V, Smith H, Moore M, Turnbull J, Mullee M, Thomas E, Bond H, Glasper A: Overnight calls in primary care: randomised controlled trial of management using nurse telephone consultation. *BMJ* 1999, 319:1408.
60. NHG-Telefoonwijzer voor triage en advies. [National guidelines for triage and advice]. NHG, 2002. available at www.nhg.artsenet.nl
61. Bunn F, Byrne G, Kendall S. The effects of telephone consultation and triage on healthcare use and patient satisfaction: a systematic review. *Br J Gen Pract* 2005; 55(521):956-961.
62. McKinstry B. Out-of-hours care. What do registrars and their trainers see? A study in South-East Scotland. *Education for General Practice* 2000; 2000;11(3).
63. Payne F, Shipman C, Dale J. Patients' experiences of receiving telephone advice from a GP cooperative. *Fam Pract* 2001; 18(2):156-160.
64. Van Uden CJ, Zwietering PJ, Hobma SO, Ament AJ, Wesseling G, van Schayck OC et al. Follow-up care by patient's own general practitioner after contact with out-of-hours care. A descriptive study. *BMC Fam Pract* 2005; 6(1):23.
65. McKinley RK, Stevenson K, Adams S, Manku-Scott TK. Meeting patient expectations of care: the major determinant of satisfaction with out-of-hours primary medical care? *Fam Pract* 2002; 19(4):333-338.
66. Van Uden CJ, Ament AJ, Hobma SO, Zwietering PJ, Crebolder HF. Patient satisfaction with out-of-hours primary care in the Netherlands. *BMC Health Serv Res* 2005; 5(1):6.
67. Holmstrom I, Dall'Alba G. 'Carer and gatekeeper' - conflicting demands in nurses' experiences of telephone advisory services. *Scand J Caring Sci* 2002; 16(2):142-148.
68. Gerard K, Lattimer V, Turnbull J, Smith H, George S, Brailsford S, Maslin-Prothero S. Reviewing emergency care systems 2: measuring patient preferences using a discrete choice experiment. *Emerg Med J* 2004; 21(6):692-697.
69. McKinley RK, Manku-Scott T, Hastings AM, French DP, Baker R. Reliability and validity of a new measure of patient satisfaction with out of hours primary medical care in the United Kingdom: development of a patient questionnaire. *BMJ* 1997; 314(7075):193-198.
70. Salisbury C. Postal survey of patients' satisfaction with a general practice out of hours cooperative. *BMJ* 1997; 314(7094):1594-1598.
71. Shipman C, Payne F, Hooper R, Dale J. Patient satisfaction with out-of-hours services; how do GP co-operatives compare with deputizing and practice-based arrangements? *J Public Health Med* 2000; 22(2):149-154.
72. Richards T. Patients' priorities. *BMJ* 1999; 318(7179):277.
73. Coulter A. What do patients and the public want from primary care? *BMJ* 2005; 331(7526):1199-1201.
74. Crawford MJ, Rutter D, Manley C, Weaver T, Bhui K, Fulop N et al. Systematic review of involving patients in the planning and development of health care. *BMJ* 2002; 325(7375):1263.
75. Moszynski P. Doctors must work in partnership with patients, says GMC. *BMJ* 2006; 333(7567):513.
76. Moll van Charante EP, Den Broeder JM, Klazinga NS, Bindels PJE. Complaints about GP cooperatives: Patients should play a more prominent role in the organisation [Klachten over huisartsenposten: Patiënten moeten een rol spelen bij de organisatie]. *Med Contact* 2003; 58(52):2030-2032.

77. Lems S. De huisarts-patiënt relatie anno 2006. Amsterdam: TNS NIPO, 2006.
78. Saltman RB, Rico A, Boerma W. Primary care in the driver's seat? Organisational reform in European primary care. European Observatory on Health Systems and Policies Series. Glasgow: Bell & Bain Ltd, 2006.
79. Aaraas I. The Finnmark general practitioner hospital study. Patient characteristics, patient flow and alternative care level. *Scand J of Prim Health Care* 1995; 13(4):250-256.
80. Jones R. General practitioner beds in Finland--lessons for the UK? *J R Coll Gen Pract* 1987; 37(294):28-30.
81. Seamark DA, Moore B, Tucker H, Church J, Seamark C. Community hospitals for the new millennium. *BMJ* 2001; 51:125-127.
82. Aaraas I, Sorasdekkkan H, Kristiansen IS. Are general practitioner hospitals cost-saving? Evidence from a rural area of Norway. *Fam Pract* 1997; 14(5):397-402.
83. Cook P, Porter L. Community hospitals and district general hospital medical bed use by elderly people: a study of 342 general practitioner beds in Oxfordshire. *Age and Ageing* 1998; 27(3):357-361.
84. Hine C, Wood VA, Taylor S, Charny M. Do community hospitals reduce the use of district general hospital inpatient beds? *J R Soc Med* 1996; 89(12):681-687.
85. Boston NK, Boynton PM, Hood S. An inner city GP unit versus conventional care for elderly patients: prospective comparison of health functioning, use of services and patient satisfaction. *Fam Pract* 2001; 18(2):141-148.
86. Young J, Donaldson K. Community hospitals and older people. *Age Ageing* 2001; 30 Suppl 3:7-10.
87. Lawson C. Planning to improve the hospital experience for older inpatients. *Nurs Times* 2006; 102(39):30-31.
88. Moll van Charante EP, IJzermans CJ, Hartman EE, Voogt E, Hanekamp LA, van den Berg B, Bindels PJE. The GP hospital in IJmuiden; a descriptive study [De Huisartsenkliniek in IJmuiden; een inventariserend onderzoek]. Funded by the Health Care Insurance Board. Ridderkerk: Ridderkerk, 2001.

Summary

Chapter 1: General Introduction

This thesis focuses on the changing role and position of the Dutch general practitioner (GP) by studying two innovative organisations of GP care: the GP cooperative (out-of-hours care) and the GP hospital (clinical care).

The aim of the out-of-hours studies is to gain insight into the overall role and position of the GP by exploring the out-of-hours patterns of demand, changes in care utilisation, telephone triage and return consultations, patients' motives for self-referring to the AED and their opinions on different aspects of the care provided by the GP cooperatives. Better knowledge of all these aspects could be of use in the current effort to come to a more coherent organisation of all out-of-hours urgent primary care.

The aim of the studies on the first GP hospital in the Netherlands is to describe the type of patients being admitted, its substitute function, and the overall costs.

Chapter 2

The second chapter describes the effects of the introduction of one, central GP cooperative in Almere on GP workload, division of tasks between GPs, practice assistants and nurses, and the overall demand for in- and out-of-hours GP care. During three-month periods in six consecutive years, the total healthcare demand was registered. This started two years prior to the introduction of the GP cooperative. For each period contact rates per type of contact (telephone call, centre consultation, home visit) and type of care provider (GP, practice assistant, nurse) was calculated.

After the introduction of the GP cooperative, GP workload dropped from 39 to 13 hours per month. With the introduction of telephone triage approximately 25% of all calls were handled by the telephone assistant alone. There was a substantial decrease in the percentage of telephone consultations (from 31 to 13; difference 18, 95%CI 17-20) and home visits (from 16 to 7; difference 9, 95%CI 8-10) by GPs over the first two years. The percentage of nurse contacts significantly increased from 13% to 17% in the first year and then remained stable. Overall, there was no change in demand both in- and out-of-hours after the introduction of the GP cooperative.

The reorganisation of out-of-hours GP care has thus led to a reduction in GP workload through a simultaneous decrease in numbers of monthly shifts and task delegation, without affecting the overall in- and out-of-hours demand.

Chapter 3

Nowadays, nurses play a central role in telephone triage in Dutch out-of-hours primary care. In this chapter determinants are explored that are associated with nurse telephone advice alone (NTAA) and with subsequent return consultations to the GP.

Between 1 November 2002 and 1 March 2003, a two-week follow-up cohort study took place in one GP cooperative run by 25 GPs and 8 nurses, serving a population of 62,291 people. Random effects logistic regression analysis was used to study the determinants of

Summary

NTAA and return consultation rates. The effect of NTAA on hospital referral rates was also studied as a proxy for severity of illness.

For the ten most frequently presented problems, the mean NTAA rate was 27.5%, ranging from 15.5% to 39.4% for the eight nurses. It was higher during the night (RR 1.63, 95%CI 1.48-1.76) and lower with increasing age of the patient (RR 0.96, 95%CI 0.93-0.99, per ten years) or when the patient presented >2 problems (RR 0.65; 95%CI 0.51-0.83). Using cough as reference category, NTAA was highest for earache (RR 1.49; 95%CI 1.18-1.78) and lowest for chest pain (RR 0.18; 95%CI 0.06-0.47). After correction for differences in case mix, significant variation in NTAA between nurses remained ($p < 0.001$). Return consultations after NTAA were higher after nightly calls (RR 1.23; 95%CI 1.04-1.40). During first return consultations, the hospital referral rate after NTAA was 1.5% versus 3.8% for non-NTAA (difference -2.2%; 95%CI -4.0 to -0.5).

In conclusion, important inter-nurse variability may indicate differences in perception on tasks and/or differences in skill to handle telephone calls alone.

Chapter 4

This chapter describes the out-of-hours demand for and supply by GP and hospital services in the municipality of Velsen. During two four-month periods (1997-8 and 2002-3), a prospective cross-sectional study was performed in a Dutch population of 62,000 people. Data were collected on all patient contacts with one GP cooperative and three AEDs bordering the region.

Overall, GPs handled 88% of all out-of-hours contacts (275/1000 inhabitants/year), while the AEDs dealt with the remaining 12% of contacts (38/1000 inhabitants/year). Within the AED, the self-referrals represented a substantial percentage of all contacts (43%), although within the total out-of-hours demand they only represented 5% of all contacts. Self-referrals were predominantly young adult males presenting with an injury, 19% of whom appeared to have a fracture. Compared to self-referrals, patients who were referred by the GP or brought in by the ambulance services were generally older and were more frequently admitted for both injury and non-injury ($p < 0.001$ for all differences).

Thus, the GP cooperative deals with the large majority of out-of-hours problems presented. Within the total demand, self-referrals constitute a stable yet small group of patients, many of whom seem to have made a reasonable choice to attend the AED. The GPs and the ambulance services appear to effectively select the problems that are presented to the AED.

Chapter 5

In the current debate on the optimal collaborative role and position of the main out-of-hours healthcare providers little attention is paid to patients' motives to skip the GP cooperative and self-refer to the AED, and to compare their characteristics to patients contacting the GP cooperative.

In this chapter, postal questionnaires were sent to AED self-referrals and logistic regression analysis was used to contrast self-referrals to patients contacting the GP cooperative.

For a study population of 62,000, 5547 contacts were registered with the GP cooperative during four months, along with 808 AED contacts, 344 of whom (43%) were self-referrals. Main reasons to visit the AED were the perceived need for diagnostic facilities and the conviction that the hospital specialist was best qualified to handle the problem. Dissatisfaction with the GP cooperative among respondents was high.

Self-referral to the AED was positively associated with injury, age between 15 and 64, musculoskeletal, cardiovascular and respiratory problems, and distance to the GP centre.

Overall, self-referrals turned out to be patients with a strong preference for the AED, mainly based on assumptions on quality of care and necessary facilities. The current plans to redirect self-referrals to the GP by integrating AED and GP services should take into account that self-referrals may, in part, make motivated and appropriate choices to visit the AED.

Chapter 6

Improving the quality of care requires evaluation of patient satisfaction. This chapter describes the development of a postal questionnaire for wide-scale use by patients contacting their out-of-hours GP cooperative. Also, the overall results of a national survey using this questionnaire are presented.

First, a literature review was carried out, followed by interviews with both patients and health carers to identify issues of potential relevance. Secondly, two postal pilot studies and additional interviews took place to remove or rephrase items. Finally, postal questionnaires were sent to 14,400 people who contacted one of 24 GP cooperatives in the Netherlands.

The overall response was 52.2% for all types of contact. Three scales were identified prior to the field phase and confirmed by principal components analysis: (1) telephone nurse, (2) doctor and (3) organisation. Reliability was high, with Cronbach's alphas and intraclass correlation coefficients exceeding 0.70 for all scales. Only items in the organisation scale showed clear differences among the participating cooperatives. Respondents receiving telephone advice showed lower levels of satisfaction than respondents with other types of contact ($p < 0.001$); centre consultation scored lower than home visit ($p < 0.030$ or less for all differences).

For Dutch out-of-hours GP care, a reliable measure of patient satisfaction has been developed that can also be used for the comparison of GP cooperatives on an organisational level. Overall satisfaction was high, showing highest levels for home visit and lowest levels for telephone advice.

Chapter 7

The shift towards a large-scale organisation of out-of-hours primary health care in different Western countries has created an important role for the nurse telephone consultation. This chapter explores the association between negative patient evaluation of nurse

Summary

telephone consultations and characteristics of patients and GP cooperatives.

Similar to the previous chapter, postal patient questionnaires were sent to patients receiving a nurse telephone consultation from one of 26 GP cooperatives in the Netherlands.

The total response was 49.3% (2583/5239). Negative evaluations were most frequently encountered for the general information received on the GP cooperative (35%). When patients expected a centre consultation or home visit but only received a nurse telephone consultation, they were more negative about the accessibility (OR 1.7, 95%CI 1.4-2.1) and nurse telephone consultation (OR 4.2, 95%CI 3.2-5.6). In the presence of a special supervising telephone doctor at the cooperative's call centre, nurse telephone consultation was evaluated significantly less negatively (OR 0.4, 95%CI 0.2-0.8).

In conclusion, expectation of care mode was most strongly associated with a negative evaluation of nurse telephone consultation. More attention should be paid to the provision of patient information on the GP cooperative and to discrepancies between care expected and care offered.

Chapter 8

This chapter describes the type of patients admitted into the first Dutch GP hospital and its substitute function.

Between June 1st 1999 and June 1st 2000, all patients admitted to the remaining 20-bed ward of a former district general hospital in IJmuiden were studied prospectively. Main outcome measures were patients' health-related quality of life and the GPs' assessments of severity of illness and alternative modes of care. In total, 218 admissions were recorded. These were divided into three bed categories: GP beds (n=131), rehabilitation beds (n=62) and nursing home beds (n=25). The mean length of stay was 15 days for the GP beds, 31 days for the rehabilitation beds, and 90 days for the nursing home beds. The mean age of all patients was 76 years. Main reasons for admission were immobilisation due to trauma at home (GP beds), rehabilitation from surgery (rehabilitation beds) and stroke (nursing home beds). If the GP beds had not been available, the GPs estimated that the admissions would have been almost equally divided among home care, nursing home care and hospital care. The severity of the diagnosis on admission of the 'hospital-care group' appeared to be significantly higher than that of the other care groups. Overall, patients showed a poor health-related quality of life on admission.

Overall, the GP hospital appears to provide a valuable substitution for home care, nursing home care and hospital care, especially for elderly patients in need of short medical and nursing care.

Chapter 9

A cost analysis of the GP hospital is presented for the same setting and period that was described in chapter 8. GPs were interviewed to indicate the best alternative form of health care for the GP bed patients in the absence of the GP hospital (dichotomised for this study into 'hospital' or 'home care').

For the GP bed patients the costs were € 2,533 per admission compared to € 3,792 for a hospital admission. The average costs of GP bed patients for whom 'home care' was the best alternative were € 2,494, which was lower than the average costs of home care for patients 65 years and older (€ 2,814). For rehabilitation patients the costs per patient were € 4,744 (GP hospital) compared to € 8,041 (district hospital). For patients waiting for admission into a nursing home these costs were € 13,143 (GP hospital) and € 22,670 (district hospital).

Therefore, the GP hospital might be a cost-saving alternative for elderly patient groups in need of intermediate medical and nursing care between hospital and home care.

Chapter 10: General discussion of the results and their implications for Dutch General Practice

In the final chapter, the implications of the results for Dutch general practice will be discussed along the lines of four central themes: (1) The GP as gatekeeper in out-of-hours care; (2) Workload reduction and telephone triage; (3) Evaluation of GP cooperatives by patients; and (4) Substitution of clinical and home care by the GP hospital. For each theme the main study findings will be presented, followed by a discussion on the current knowledge and debate and the implications for the GP's role and position.

Samenvatting

Hoofdstuk 1: Inleiding

Dit proefschrift richt zich op de veranderende rol en positie van de Nederlandse huisarts aan de hand van twee nieuwe organisatievormen: de Huisartsenpost (zorg in de avond- en weekenddienst (ANW)) en de Huisartsenkliniek (klinische zorg).

Doel van het onderzoek van de Huisartsenpost is om meer inzicht te verkrijgen in de rol en positie van de huisarts in de acute zorg buiten kantooruren. Hierdoor kan mogelijk een bijdrage worden geleverd aan de verdere ontwikkeling van een samenhangende organisatie van de acute ANW-zorg.

Doel van het onderzoek van de eerste Huisartsenkliniek (HAK) in Nederland is het beschrijven van het type patiënten dat er werd opgenomen, de substitutiefunctie ten opzichte van andere zorgaanbieders en de globale kosten van zorg in deze setting.

Hoofdstuk 2

Dit hoofdstuk beschrijft het effect van de introductie van een centraal gelegen Huisartsenpost in Almere op de werkdruk van huisartsen, taakverdeling tussen huisartsen, doktersassistenten en verpleegkundigen en de vraag naar huisartsgeneeskundige zorg binnen en buiten kantooruren. In zes opeenvolgende jaren werden daartoe in steeds dezelfde periode van drie maanden alle hulpvragen geregistreerd. De meting startte twee jaar voor de introductie van de centrale Huisartsenpost. De contacten werden uitgesplitst per periode (binnen en buiten kantooruren), per contactsoort (telefoon, consult, visite) en per type hulpverlener die het contact afhandelde (huisarts, assistente, verpleegkundige).

Na de introductie van de Huisartsenpost daalde de werklust van huisartsen van 39 naar 13 diensturen per maand. Doktersassistentes voerden de telefonische triage uit en handelden daarbij ongeveer 25% van alle contacten zelfstandig af over de telefoon. Het percentage telefonische consulten door huisartsen daalde in de eerste twee jaar van de Huisartsenpost (van 31 naar 13, verschil 18, 95%BI 17-20), evenals het percentage visites dat gereden werd (van 16 naar 7; verschil 9, 95%BI 8-10). Het percentage verpleegkundige contacten steeg significant van 13 naar 17% in het eerste jaar en bleef daarna stabiel.

Al met al werd er na de komst van de Huisartsenpost in Almere geen verandering waargenomen in de vraag naar huisartsenzorg binnen of buiten kantooruren. De schaalvergroting in de huisartsgeneeskundige zorg heeft daarmee geleid tot een daling van de werklust van huisartsen door een gelijktijdige daling van het aantal maandelijkse diensturen en delegatie van taken, zonder dat de omvang van de zorgvraag binnen of buiten kantooruren veranderde.

Hoofdstuk 3

Telefonische triage op Nederlandse Huisartsenposten wordt meestal uitgevoerd door doktersassistentes of verpleegkundigen (in ons land ook wel 'triagisten' genoemd). In dit hoofdstuk worden determinanten geïnventariseerd die geassocieerd zijn met het geven van een zelfstandig telefonisch advies door de triagist ('zelfstandig advies') en met daaropvolgende contacten bij de (eigen) huisarts.

Samenvatting

Tussen 1 november 2002 en 1 maart 2003 werd een cohortstudie uitgevoerd (twee weken follow-up duur) in een Huisartsenpost met een populatiebereik van 62.291 inwoners en bediend door 25 huisartsen en 8 verpleegkundigen. Logistische regressie analyse werd gebruikt om de determinanten van een zelfstandig advies en vervolgcontacten te bestuderen. Het effect van een zelfstandig advies op de ziekenhuisverwijzingen werd daarbij ook geïnventariseerd.

Het gemiddelde percentage zelfstandig advies voor de tien meest frequent gepresenteerde problemen was 27,5%, variërend van 15,5% tot 39,4% voor de acht verpleegkundigen.

Het was hoger gedurende de nacht (RR 1,63; 95%BI 1,48-1,76) en lager naarmate de leeftijd van de patiënt toenam (RR 0,96; 95%BI 0,93-0,99, per tien jaar), of wanneer de patiënt >2 problemen presenteerde (RR 0,65; 95%BI 0,51-0,83). Met de klacht hoest als referentie bleek de mate van zelfstandigheid het hoogst voor oorpijn (RR 1,49; 95%BI 1,18-1,78) en het laagst voor pijn op de borst (RR 0,18; 95%BI 0,06-0,47).

Na correctie voor verschillen in case-mix bleef er significante variatie over tussen de verpleegkundigen in het geven van zelfstandig advies ($p < 0,001$). Vervolgcontacten na zelfstandig advies waren frequenter na nachtelijke telefonische contacten (RR 1,23; 95%BI 1,04-1,40).

Gedurende eerste vervolgcontacten werden na zelfstandig advies 1,5% van de patiënten naar het ziekenhuis verwezen, tegenover 3,8% na een contact met de huisarts (verschil -2,2%; 95%BI -4,0% to -0,5%).

De gevonden variabiliteit tussen verpleegkundigen zou kunnen wijzen op verschillen in taakopvatting en/of verschillen in vaardigheden bij het zelfstandig beantwoorden van een telefonische hulpvraag.

Hoofdstuk 4

In dit hoofdstuk vindt een beschrijving plaats van de vraag naar, en aanbod van, zorg door huisarts en Spoed Eisende Hulp (SEH) in de regio Velsen. Gedurende twee viermaandelijke perioden (in 1997-8 en 2002-3) werd een prospectieve, crossectionele studie uitgevoerd in een populatie van rond de 62.000 mensen. Gegevens werden verzameld met betrekking tot alle patiëntcontacten met de Huisartsenpost en drie SEH's die grenzen aan de regio. In totaal handelde de Huisartsenpost 88% van alle ANW-contacten af (275/1000 inwoners/jaar), terwijl de SEH's de resterende 12% van de contacten voor hun rekening namen (38/1000 inwoners/jaar). Binnen de SEH's vertegenwoordigden de zelfverwijzers een groot deel van alle contacten (43%), maar zij vormden slechts 5% van alle hulpvraag buiten kantooruren. Zelfverwijzers waren hoofdzakelijk jong volwassen mannen die zich presenteerden met een trauma, waarbij in 19% van de gevallen röntgenologisch een fractuur werd vastgesteld. Patiënten die naar de SEH werden verwezen door de huisarts of hier rechtstreeks via de ambulance werden binnengebracht bleken gemiddeld ouder te zijn en vaker te worden opgenomen in het ziekenhuis dan zelfverwijzers ($p < 0,001$ voor alle verschillen).

De Huisartsenpost blijkt derhalve de grote meerderheid van hulpvragen buiten kantooruren af te handelen. Binnen deze hulpvraag vertegenwoordigen zelfverwijzers een stabiele maar kleine groep, die in veel gevallen een adequate keuze lijken te hebben gemaakt om de SEH te bezoeken. De huisartsen en ambulancediensten vormen een effectief filter in de selectie van patiënten die naar de SEH worden verwezen.

Hoofdstuk 5

In de huidige discussie over de optimale onderlinge rol en positie van de voornaamste aanbieders van acute zorg is er nog maar weinig aandacht voor de motieven patiënten om zich zonder verwijzing van de huisarts op de SEH te presenteren en voor een vergelijking van hun kenmerken met patiënten die contact zoeken met de Huisartsenpost.

In dit hoofdstuk wordt een studie beschreven waarin SEH-zelfverwijzers een schriftelijke vragenlijst thuisgestuurd kregen. Logistische regressie-analyse werd gebruikt om de kenmerken van deze patiënten te contrasteren met die van bezoekers van de Huisartsenpost. Voor de studie-populatie van 62.000 inwoners werden in totaal 5547 contacten geregistreerd met de Huisartsenpost (4 maanden), gelijktijdig met 808 SEH-bezoeken, waarvan 344 (43%) werden afgelegd door zelfverwijzers.

Belangrijkste motieven om de SEH te bezoeken waren de ervaren noodzaak om van diagnostische voorzieningen gebruik te moeten maken en de overtuiging dat de specialist of Eerste Hulp arts het meest deskundig was voor de behandeling van het gepresenteerde probleem. De ontevredenheid over de Huisartsenpost onder de respondenten was hoog. Zelfverwijzing naar de SEH was positief geassocieerd met een trauma, leeftijd tussen 15 en 64, klachten van het bewegingsapparaat, het cardiovasculair en respiratoir systeem, en de afstand tot de Huisartsenpost.

In het algemeen blijken zelfverwijzers een sterke voorkeur voor de SEH te hebben, die met name berust op veronderstellingen over kwaliteit van zorg en noodzakelijke voorzieningen. In de huidige plannen om de stroom zelfverwijzers om te buigen in de richting van de Huisartsenpost zal nadrukkelijk moeten worden meegewogen dat veel zelfverwijzers gemotiveerde en adequate keuzes lijken te maken bij hun bezoek aan de SEH.

Hoofdstuk 6

Verbetering van de kwaliteit van zorg vraagt om evaluatie van het oordeel van de patiënt. In dit hoofdstuk wordt de ontwikkeling van een schriftelijke vragenlijst beschreven die bedoeld is voor grootschalige gebruik door patiënten die buiten kantooruren contact zoeken met de Huisartsenpost. Daarnaast worden de resultaten gepresenteerd van een nationale survey die met deze vragenlijst werd uitgevoerd.

Als eerste werd een literatuurstudie verricht, gevolgd door interviews met zowel patiënten als zorgverleners om potentieel relevante items te verzamelen. Daarna werden twee schriftelijke pilot-studies uitgevoerd en vonden opnieuw interviews plaats met als doel items te verwijderen of te herformuleren. Tot slot werden vragenlijsten gestuurd naar

Samenvatting

14.400 patiënten die contact hadden gezocht met een van 24 deelnemende Huisartsenposten in ons land.

De totale respons was 52,2% voor alle contactsoorten samen. Voorafgaand aan de veldfase werden drie schalen geïdentificeerd en bevestigd door middel van principale componenten analyse: (1) assistente/verpleegkundige aan de telefoon ('triagist'), (2) dokter en (3) organisatie. De betrouwbaarheid was groot, met Cronbach's alfa's en intraclass correlatie coëfficiënten boven de 0,70 voor alle schalen.

Alleen items in de schaal voor organisatie vertoonden duidelijke verschillen tussen de deelnemende Huisartsenposten. Respondenten die een telefonisch advies hadden gekregen bleken minder tevreden dan respondenten met andere contactsoorten ($p < 0,001$); bovendien bleken patiënten na een consult op de Huisartsenpost minder tevreden dan na een visite thuis ($p < 0,030$ of minder voor alle verschillen).

De vragenlijsten blijken een betrouwbaar instrument voor de evaluatie van het oordeel van patiënten die buiten kantooruren Huisartsgeneeskundige zorg ontvingen. Daarnaast kan zij worden gebruikt voor het onderling vergelijken van Huisartsenposten op organisatorische aspecten.

Al met al was de tevredenheid over de Huisartsenposten groot, waarbij de hoogste gemiddelde score werd gegeven aan de visite thuis en de laagste voor het telefonisch advies.

Hoofdstuk 7

De schaalvergroting in de eerstelijns gezondheidszorg in diverse Westerse landen heeft geleid tot taakdelegatie van telefonische triage in de richting van doktersassistenten of verpleegkundigen ('triagist'). In dit hoofdstuk wordt de associatie onderzocht tussen een negatief patiëntenoordeel en kenmerken van patiënten en Huisartsenposten.

Overeenkomstig de in het vorige hoofdstuk beschreven procedure werden vragenlijsten toegestuurd aan patiënten die contact hadden gezocht met een van 26 deelnemende Huisartsenposten in Nederland.

De totale respons was 49,3% (2583/5239). Een negatief oordeel werd het vaakst gerapporteerd voor de algemene informatie die patiënten hadden ontvangen over de Huisartsenpost (35%). Wanneer patiënten hadden verwacht om de Huisartsenpost te kunnen bezoeken of thuis bezocht te worden door de huisarts, maar alleen een telefonisch advies van de triagist ontvingen, bleken zij een negatiever oordeel te hebben over de bereikbaarheid (OR 1,7; 95%BI 1,4-2,1) en het telefonisch advies (OR 4,2; 95%BI 3,2-5,6). In de aanwezigheid van een specifieke, superviserende telefoonarts in het call-centre van de Huisartsenpost werd het advies van de triagist juist minder negatief beoordeeld (OR 0,4; 95%BI 0,2-0,8).

Concluderend was de verwachting van het soort contact met de Huisartsenpost het sterkst geassocieerd met een negatief oordeel van het telefonische advies door de triagist. Meer aandacht is nodig voor het geven van informatie over de Huisartsenpost en voor mogelijke discrepanties tussen de zorg die wordt verwacht en geboden.

Hoofdstuk 8

In dit hoofdstuk worden de patiënten beschreven die werden opgenomen in de eerste Huisartsenkliniek (HAK) in Nederland en wordt haar potentiële substitutiefunctie verkend. Tussen 1 juni 1999 en 1 juni 2000 werden alle patiënten die werden opgenomen op deze voormalige ziekenhuisafdeling van een klein perifeer ziekenhuis prospectief bestudeerd. Belangrijkste uitkomstmaten waren de gezondheidsgelerateerde kwaliteit van leven en de door de huisartsen vastgestelde ernst van ziekte en het beste zorgalternatief indien de HAK niet beschikbaar was geweest.

In totaal werden 218 opnames geregistreerd. Deze werden verdeeld in drie bedcategorieën: huisartsenbedden (n=131), herstelbedden (n=62) en bedden voor patiënten met een verpleeghuisindicatie (n=25). De gemiddelde opnameduur was 15 dagen voor huisartsenbedden, 31 dagen voor herstelbedden en 90 dagen voor verpleeghuisbedden. De gemiddelde leeftijd van alle patiënten was 76 jaar. Belangrijkste redenen van opname waren immobilisatie als gevolg van een trauma in de thuissituatie (huisartsenbedden), revalidatie na een operatie (herstelbedden) en beroerte (verpleeghuisbedden).

Indien de huisartsenbedden niet beschikbaar waren geweest hadden de huisartsen, naar hun eigen inschatting, de patiënten min of meer gelijkelijk verdeeld aangeboden voor zorg door de thuiszorg, het verpleeghuis en het ziekenhuis. De ernst van ziekte bij opname bleek significant hoger te zijn voor de 'ziekenhuisgroep' dan die van de andere twee groepen. Over het algemeen hadden de patiënten een zeer slechte kwaliteit van leven score bij opname.

De Huisartsenkliniek lijkt een waardevolle substitutie te bieden voor thuis-, verpleeghuis- en ziekenhuiszorg, met name voor oudere patiënten met een kortdurende zowel medische als verpleegkundige zorgbehoefte.

Hoofdstuk 9

In dit hoofdstuk wordt een kostenminimeringsstudie gepresenteerd voor dezelfde setting en periode als in hoofdstuk 8. Huisartsen werd gevraagd om het beste zorgalternatief aan te geven indien zij geen beschikking hadden gehad over de HAK (in deze studie gedichotomiseerd in 'ziekenhuis' of 'thuiszorg'). Voor de huisartsenbedden bedroegen de kosten € 2.533 per opname, vergeleken met € 3.792 voor een opname in het ziekenhuis. De gemiddelde kosten voor patiënten die anders 'thuiszorg' hadden ontvangen waren € 2.494, hetgeen lager was dan de gemiddelde kosten van thuiszorg voor patiënten van 65 jaar en ouder (€ 2.814). Voor herstelbedden bedroegen de kosten € 4.744 (HAK), vergeleken met € 8.041 in het ziekenhuis. De kosten van opname voor patiënten in afwachting van een verpleeghuis bedroegen € 13.143 (HAK) tegenover € 22.670 in het ziekenhuis.

De Huisartsenkliniek zou derhalve een kostenbesparend alternatief kunnen zijn voor oudere patiënten met een intermediaire zorgbehoefte tussen ziekenhuis en thuiszorg.

Samenvatting

Hoofdstuk 10: Discussie van de resultaten en implicaties voor de Huisartsgeneeskunde in Nederland

In het laatste hoofdstuk worden de implicaties van de resultaten besproken vanuit vier centrale thema's: (1) De huisarts als poortwachter van de medische zorg buiten kantooruren; (2) Werklastvermindering en telefonische triage; (3) Evaluatie van Huisartsenposten door patiënten; en (4) Substitutie van klinische zorg en thuiszorg door de Huisartsenkliniek. Voor elk thema zullen de belangrijkste studiebevindingen worden gepresenteerd, gevolgd door een inbedding in de huidige kennis en discussie en de implicaties voor de rol en positie van de huisarts.

Dankwoord

Dankwoord

Dit proefschrift had niet gerealiseerd kunnen worden zonder de hulp en steun van velen, die ik daarvoor op deze plaats wil bedanken.

Mijn promotoren Patrick Bindels en Niek Klazinga. Patrick, ik ben je enorm erkentelijk voor de lange reeks waardevolle commentaren waarmee je mijn conceptartikelen van een wetenschappelijke impuls bleef voorzien. Dankzij jouw hulp ben ik in de veelheid aan observationele data en analyses het bos door de bomen blijven zien.

Niek, ontzettend bedankt voor je steun en het vertrouwen, dat de transmurale zorgvernieuwingen in IJmuiden een promotietraject waardig waren. Door je heldere analyse van de veranderende rol en positie van de huisarts in het Nederlandse zorglandschap heb je me over mijn eigen grenzen leren heenkijken.

Bert Schadé. Bert, je onvoorwaardelijke steun over de jaren is het fundament geweest onder mijn werkzaamheden. Op cruciale momenten heb je me aangemoedigd om door te gaan en me geholpen om de schouders er onder te houden. Ik ben enorm dankbaar voor de ruimte die je me daarbij hebt geboden.

Gerben ter Riet. Gerben, jouw hulp bij diverse analyses is zowel uitermate significant als relevant gebleken. Ik was niet alleen onder de indruk van jouw methodologische en statistische inbreng, maar ook van je grote betrokkenheid bij het verhelderen van de precieze onderzoeksvraag. Niet zelden had ik na overleg met jou het gevoel dat we aan een geheel nieuw hoofdstuk waren begonnen, waarvan de afloop weliswaar hoogst onzeker, maar in elk geval zeker spannend zou gaan worden.

Frans Oort. Frans, met jouw gedegen methodologische hulp is de vragenlijst tot een bruikbaar instrument geworden dat al door meer dan de helft van de Nederlandse Huisartsenposten is gebruikt. Ik neem graag een voorbeeld aan de wijze waarop je altijd beschikbaar was, meedacht en mij tegelijkertijd het gevoel kon geven dat ik zelf in staat was om het verder uit te werken.

Joris IJzermans. Joris, ook al werk je nu al een aantal jaren bij het NIVEL, de eerste steen van dit proefschrift is in feite door jou gelegd. Met een lach en een huivering denk ik terug aan de presentatie van mijn eerste, vrijwel onuitvoerbaar onderzoeksopzet voor de toenmalige Ziekenfondsraad. Bijzonder, hoe je ons met een effectieve mix van humor en stoïcisme door die periode hebt geleid, met als bekroning een solide eindrapport voor het ministerie van VWS. Heel veel dank voor de vele uren tijd die je destijds in 'ons boekje' hebt gestoken en het grote vertrouwen dat je daarbij in mij hebt gesteld.

Dankwoord

Bij de studie van de Huisartsenkliniek heb ik steun gehad van vele mensen, van wie ik hier in het bijzonder Esther Hartman en Elsbeth de Vogel–Voogt wil noemen, voor hun onmisbare aandeel in het kwaliteit van leven onderzoek, en Leona Hakkaart-van Roijen en Frans Rutten voor hun langdurige betrokkenheid bij de kostenminimeringsstudie.

Graag dank ik alle collega's van de Afdeling Huisartsgeneeskunde voor hun hulp bij de totstandkoming van het manuscript. Dat geldt in het bijzonder voor Jacob Mohrs, die verschillende databases toegankelijk maakte voor invoer en bewerking van gegevens.

Ook leverden diverse studenten een substantiële bijdrage aan het onderzoek. Met name Carlien Erlings, Loes van der Linden en Sara Drost wil ik hier expliciet bedanken voor hun grote inzet bij het verzamelen en verwerken van gegevens. Dat geldt ook voor Marjon van Wingerden, Patrick Jansen en Daan van Schooneveld, die in 1997-8 als huisartsen-in-opleiding hielpen bij het verzamelen en coderen van contactgegevens op de huisartsenpost. Tot slot ben ik Marianne Henselmans zeer erkentelijk voor haar uitgebreide hulp bij de logistiek rondom de organisatie van mijn promotie.

Grote dank ben ik ook verschuldigd aan de huisartsen van de voormalige Regionale Huisartsen Vereniging IJmond. Zonder hun massale betrokkenheid bij het invullen van onze registratieformulieren zowel in de Huisartsenpost (HAP) als in de Huisartsenkliniek (HAK) was er niets van deze studies terecht gekomen. In het bijzonder noem ik hier Robert Cuvelier, die gedurende vele jaren het onderzoek onder alle betrokkenen is blijven bepleiten en faciliteren.

Ook dank ik de collega's Johan Corver, Willem van Faassen, Peter Paul Molkenboer, Ron Peters, Ad Vester en Francis Vollebergh voor hun spontane inzet om het onderzoek tot een succes te maken. Vanzelfsprekend wil ik ook graag alle verpleegkundigen bedanken. Onder hen Piet Duin, die als hoofdverpleegkundige van de HAK altijd beschikbaar was om mee te denken en te helpen bij de uitvoering van het onderzoek. Daarnaast ook een hulde aan de verpleegkundigen van de HAP, die eveneens veel energie staken in het bijhouden van de 'dubbele boekhouding' ten tijde van alle contactregistraties. Tot slot wil ik natuurlijk ook alle patiënten bedanken die zich de moeite hebben getroost om de soms lange vragenlijsten in te vullen; zij hebben een belangrijke bijdrage geleverd aan dit onderzoek.

Behalve de directie van het Kennemer Gasthuis, die ons hielp de noodzakelijke randvoorwaarden voor het verrichten van onderzoek van HAP en HAK te creëren, zijn Paul van Kempen (hoofd Medisch Archief) en Henri-Jan van Lint (Dienst Automatisering) van eminent belang geweest voor de dataverzameling. Daarnaast was de steun die Jan Petit, chirurg, en enkele andere specialisten aan het onderzoek van de HAK gaven van grote betekenis voor de stabiliteit van het project en de uitvoering van het onderzoek, waarvoor ik mijn oprechte dank wil uitspreken.

Prof. dr. K. van der Meer, prof. dr. R. Huijsman, prof. dr. W.A. van Gool, dr. A. Wiegman, en drs. J.S.K. Luitse dank ik voor het zitting willen nemen in de promotiecommissie. Ik zie uit naar een interessante gedachtewisseling met u tijdens de openbare verdediging.

Paul Giesen dank ik voor de jarenlange samenwerking bij de ontwikkeling van 'onze' vragenlijst. Het viel misschien niet altijd mee om de grote afstand tussen Nijmegen en Amsterdam te overbruggen, maar de sterke gezamenlijke affiniteit met het onderwerp heeft ons bijeengehouden. Bijzonder, dat we nu op slechts een week afstand van elkaar op het onderwerp zullen promoveren.

Mijn paranimfen Rik en Roger. Beste Rik, ontzettend fijn dat je er bent. We hebben veel ondernomen samen, met als fascinerend hoogtepunt een gezamenlijk spreekuur in een kleine kliniek in de Himalaya. Beste Roger, ik bewaar fantastische herinneringen aan ons gemeenschappelijke bestuursjaar van het Nederlands Studenten Orkest. Geweldig, dat je mij in mei ook terzijde wilt staan.

Mijn lieve kamergenoten. Ongelofelijk, hoeveel life-events er onder ons zijn gepasseerd in de afgelopen jaren. Hèlen, fantastisch zoals je me dikwijls hebt geholpen als ik weer eens in gevecht was met Power Point of Reference Manager. Zelfs als je het druk had wist je toch altijd even tijd te maken en mee te denken. Corlien, dank voor je luisterend oor. Het wandelingetje op weg naar de koffie-verkeerd van Albert Heijn is een onmisbaar reflectiemoment geworden op onze onderzoeksactiviteiten. Remco, jouw grote gedrevenheid en bijzondere wetenschappelijke prestaties zijn steeds een extra prikkel en inspiratiebron geweest om ook een stap verder te komen. Hopelijk vindt je in een latere fase weer ruimte om je wetenschappelijke activiteiten op de afdeling voort te zetten.

Mildred Beeldman. Mildred, zonder jou had ik de dataverzameling nooit rond gekregen. Ondanks alle drukte heb je een wonderbaarlijke hoeveelheid contactgegevens voor me gecodeerd en uitstekende suggesties gedaan voor het verbeteren van dit omvangrijke en soms moeilijke proces. Dank voor je oprechte belangstelling voor het onderzoek en jouw geweldige bijdrage daaraan.

Ido Bergsma. Ido, jij hebt mij laten zien hoe mooi het huisartsenvak is. Immer gedreven om je kennis en vaardigheden te vergroten en tegelijkertijd uitblinkend in 'watchful waiting', was je de geëngageerde huisarts die ik als voorbeeld nam. Tussen de mensen uit de stad en het boerenbedrijf leverde jij in je eentje dag en nacht de integrale en continue zorg die we nu met een veelvoud aan professionals (op zijn minst) moeten zien te evenaren. Ik kijk met ontzettend veel voldoening terug op het jaar waarin ik in jouw praktijk mocht werken. En heel soms schrijf ik nog wel eens een zalfje voor uit een van jouw gouden lijstjes.

Dankwoord

Max, bedankt dat je mijn coach en begeleider wilde zijn in het afgelopen jaar; dankzij jou ben ik aan een nieuw hoofdstuk in mijn leven begonnen.

Lieve Joost en Zuzan, jullie zijn de liefste schoonouders die ik ken. Altijd betrokken op wat we doen, bereidwillig om op de kinderen te passen, ons op concertjes te trakteren en heerlijk mee uit eten te nemen. Die zonnige herfstweek in Přílepy (Tjechië) van vorig jaar zal ik niet snel vergeten, toen ik in jullie prachtige huisje een hele week aan mijn proefschrift kon werken, terwijl de kinderen buiten op de trampoline rondbuitelden.

Lieve paps en mams, ik wil jullie enorm bedanken voor het vele dat jullie voor mij hebben gedaan. Jullie lieten me kennismaken met veel bijzondere omgevingen, zoals de wereld van de klassieke muziek, de Vrije School en een onvergetelijk jaar in Engeland. Tegelijkertijd hebben jullie mij altijd vrij gelaten in de keuzes die ik wilde maken. En als er één waardevolle eigenschap is die ik van jullie heb meegekregen, dan is het wel om volhardend te zijn. Mijn lieve 'zusjes' Titia, Guusje en Karen: geweldig dat jullie er altijd zo voor mij zijn; jullie vormen een onmisbare 'life-line' voor me.

Lieve Simonka, zonder jou was het allemaal niet mogelijk geweest. Ondanks de soms trage progressie, tegenslagen of zelfs onmiskenbare stappen achteruit bleef je me onvoorwaardelijk steunen in de voltooiing van dit proefschrift. Je gaf me de ruimte om weekenden door te werken en maakte intussen uitstapjes met de kinderen, zelfs tot in Spanje toe. Heel lief dat je dat voor mij gedaan hebt. Ik hoop straks wat voor je terug te kunnen doen, wanneer al je documentaires op internationale festivals gaan draaien. En ik verheug me enorm op onze lange reis naar de VS deze zomer, samen met onze mannetjes Timo en Noah.

In memoriam

Pim Wippoo

Edith ten Broeke

Dr. Loe de Jong ('opa Loe')

List of affiliations of co-writers

PJE Bindels

Professor of General Practice - Division of Clinical Methods and Public Health, Department of General Practice, Academic Medical Centre, University of Amsterdam, Amsterdam, the Netherlands

NS Klazinga

Professor of Social Medicine – Department of Social Medicine, Academic Medical Centre, University of Amsterdam, Amsterdam, the Netherlands

G ter Riet

PhD, MD, Epidemiologist – Division of Clinical Methods and Public Health, Department of General Practice, Academic Medical Centre, University of Amsterdam, Amsterdam, the Netherlands, and Horten Zentrum, University of Zurich, Zurich, Switzerland

CJ IJzermans

PhD, Sociologist/Senior Lecturer - Division of Clinical Methods and Public Health, Department of General Practice, Academic Medical Centre, University of Amsterdam, Amsterdam, the Netherlands

Current affiliation: Programme coordinator for long-term health consequences of disasters and acute care, the Netherlands Institute for Health Services Research (NIVEL), Utrecht

F Oort

PhD, Statistician - Division of Medical Psychology, Academic Medical Centre, University of Amsterdam, Amsterdam, the Netherlands

EE Hartman

PhD, Psychologist - Division of Medical Psychology, Academic Medical Centre, University of Amsterdam, Amsterdam, the Netherlands

Current affiliation: Lecturer – Faculty of Social and Behavioural Sciences, Psychology and Health, Pediatric Psychology, Tilburg University, the Netherlands

S Drost

Medical student - Academic Medical Centre, University of Amsterdam, Amsterdam, the Netherlands

L van der Linden

Medical student - Academic Medical Centre, University of Amsterdam, Amsterdam, the Netherlands

List of affiliations of co-writers

PCE van Steenwijk – Opdam

Medical information specialist – Zorggroep Almere, Almere, the Netherlands

E de Vogel – Voogt

PhD, Researcher/psychologist - Division of Clinical Methods and Public Health, Department of General Practice, Academic Medical Centre, University of Amsterdam, Amsterdam, the Netherlands

Current affiliation: Department of Medical Decision Making, Leiden University Medical Centre, Leiden, the Netherlands

PH Giesen

General Practitioner - Centre for Quality of Care Research (WOK), Radboud University Nijmegen Medical Centre, Nijmegen, the Netherlands

H Mookink

PhD, Epidemiologist - Department of postgraduate training of general practitioners, Radboud University Nijmegen Medical Centre, Nijmegen, the Netherlands

W van den Bosch

Professor of General Practice - Department of family medicine and general practice, Radboud University Nijmegen Medical Centre, Nijmegen, the Netherlands

RPTM Grol

Professor of General Practice - Centre for Quality of Care Research (WOK), Radboud University Nijmegen Medical Centre, Nijmegen, the Netherlands

L Hakkaart - van Roijen

PhD, Economist - Institute for Medical Technology Assessment, Erasmus Medical Centre, Rotterdam, the Netherlands

FFH Rutten

Professor of Health Economics - Institute of Health Policy and Management, Erasmus Medical Centre, Rotterdam, the Netherlands

List of publications

Peer reviewed**International**

Patients evaluate accessibility and nurse telephone consultations in out-of-hours GP care: Determinants of a negative evaluation.

Giesen P, Moll van Charante E, Mookink H, Bindels P, van den Bosch W, Grol R.
Patient Education & Counseling 2007; 65(1):131-136.

Nurse telephone triage in out-of-hours GP practice: determinants of independent advice and return consultation.

Moll van Charante EP, ter Riet G, Drost S, van der Linden L, Klazinga NS, Bindels PJ.
BioMed Central Family Practice 2006; 7:74.

Patient satisfaction with large-scale out-of-hours primary health care in the Netherlands: development of a postal questionnaire.

Moll van Charante E, Giesen P, Mookink H, Oort F, Grol R, Klazinga N, Bindels P.
Family Practice 2006; 23(4):437-443.

A cost study of a general practitioner hospital in the Netherlands.

Hakkaart-van Roijen L, Moll van Charante EP, Bindels PJ, Yzermans CJ, Rutten FF.
European Journal of General Practice 2004; 10(2):45-49.

The first general practitioner hospital in the Netherlands: towards a new form of integrated care?

Moll van Charante E, Hartman E, Yzermans J, Voogt E, Klazinga N, Bindels P.
Scandinavian Journal of Primary Health Care 2004; 22(1):38-43.

Human-computer interaction in context: physician interaction with automated intravenous controllers in the operating room.

Moll van Charante E, Cook RI, Woods DD, Yue L, Howie MB. In: Stassen HG, editor. Analysis, design and evaluation of man-machine systems. New York: Pergamon Press; 1993.

National

De huisartsenkliniek in IJmuiden. Een bijzonder transmuraal experiment.

EP Moll van Charante, EE Hartman, CJ IJzermans, E Voogt, NS Klazinga, PJE Bindels.
Huisarts & Wetenschap 2005; 48(3):102-108

Van spelverdeler tot speelbal? De veranderende rol en positie van de Nederlandse huisarts.

Moll van Charante E, Delnoij D, IJzermans CJ, Klazinga N.
Huisarts & Wetenschap 2002; 45(2): 70-75.

List of publications

Non-peer reviewed

Klachten over huisartsenposten: Patiënten moeten een rol spelen bij de organisatie.

Moll van Charante EP, Den Broeder JM, Klazinga NS, Bindels PJE.

Medisch Contact 2003; 58(52):2030-2032.

De Huisartsenkliniek in IJmuiden; een inventariserend onderzoek.

Moll van Charante EP, Yzermans CJ, Hartman EE, Voogt E, Hanekamp LA, van den Berg B, Bindels PJE.

Funded by the Health Care Insurance Board. Ridderkerk: Ridderprint, 2001.

Huisartsenbedden in een ziekenhuis; een transmuraal experiment in IJmuiden.

Moll van Charante EP, Yzermans CJ, Bindels PJE.

Medisch Contact 2000; 55(14):502-504.

Curriculum Vitae

Eric Moll van Charante werd op 15 oktober 1966 geboren te Naarden als eerste van vier kinderen. Hij doorliep de onder- en bovenbouw van de Zeister Vrije School en behaalde in 1985 het Staatsexamen. Tussen 1984 en 1986 studeerde hij enkele jaren cello bij Fred Pot aan het Koninklijk Conservatorium te Den Haag, in combinatie met een jaar Biologie aan de Rijksuniversiteit Leiden en de start van de studie Geneeskunde in Utrecht (1986). In deze eerste jaren was hij actief als snijzaalassistent en als praeses van de Almanakcommissie der MFSU-SAMS te Utrecht (1990). Het muzikale leven bestond uit deelname in het Nationaal Jeugd Orkest (1984-6), diverse optredens met een eigen strijkkwartet en acquisitie voor het Nederlands Studenten Orkest (1989). Tijdens de Geneeskunde-opleiding reisde hij naar de V.S. voor een wetenschappelijke stage over vermijdbare fouten en ongelukken in de operatiekamer op de Afdeling Anaesthesiologie van de Ohio State University onder leiding van prof. dr. J.S. McDonald en dr. R. Cook en naar Israel, voor een co-schap Gynaecologie en Verloskunde. In 1994 behaalde hij zijn artsexamen en werkte in het daaropvolgende jaar als wisselassistent in het voormalige Pieter Pauw Ziekenhuis in Wageningen op de afdelingen Interne, Chirurgie en Gynaecologie en Verloskunde. In 1995 verhuisde hij naar Amsterdam voor de opleiding Huisartsgeneeskunde in het AMC (huisartsopleiders: Ido Bergsma, Han Jacobs en Raynold Bruessing). In aansluiting op deze opleiding begon hij eind 1998 vanuit de Afdeling Huisartsgeneeskunde van het AMC aan de studie van de Huisartsenkliniek in IJmuiden, die door het Ministerie van VWS werd gefinancierd en in 2001 uitmondde in een eindrapportage. In ditzelfde jaar werd hij aangesteld als docent in het basiscurriculum van de Geneeskundestudie. In combinatie met deze werkzaamheden was hij HIDHA in diverse praktijken, o.a. in Ouderkerk a/d Amstel en in Maarn. In 2005 werd hij gevraagd mede leiding te gaan geven aan de pre-DIVA studie (prevention of Dementia through Intensive Vascular care), waarin over een periode van zes jaar het effect van intensieve vaatzorg bij 70-plussers op het voorkomen van dementie en andere hartvaatziekten zal worden bestudeerd.

Eric is getrouwd met Simonka de Jong en vader van Timo en Noah.

Appendix 1
postal questionnaires for

telephone consultation
centre consultation
home visit
(Chapters 6 & 7)

Questionnaire 'Out-of-hours primary health care'

The patient preferably fills out the questionnaire him- or herself. If this is not possible, we would like to ask the **direct companion** to fill out the questionnaire **on behalf of or together with the patient**.

The direct companion is the person who made the telephone call and/or was present during the contact with the general practitioner.

General

1. Who will fill out the questionnaire?
 - Myself (the patient)
 - Patient's family member (partner, parent, child, sister, etc.)
 - Someone else, please specify:

2. Part of the day when you contacted the GP cooperative:
 - in the weekend during the day (8 a.m. – 5 p.m.)
 - in the evening (5 p.m. – 11 p.m.)
 - during the night (11 p.m. – 8 a.m.)

3. Your age (of the patient):

<input type="checkbox"/> 0 – 4 years of age	<input type="checkbox"/> 45 – 64 years of age
<input type="checkbox"/> 5 – 14 years of age	<input type="checkbox"/> 65 – 74 years of age
<input type="checkbox"/> 15 – 24 years of age	<input type="checkbox"/> 75 years of age or older
<input type="checkbox"/> 25 – 44 years of age	

4. Your gender (of the patient):
 - male
 - female

5. Your nationality (of the patient):

6. Your highest level of education (of the patient):

<input type="checkbox"/> None (yet)	<input type="checkbox"/> Intermediate Vocational Education
<input type="checkbox"/> Primary school	<input type="checkbox"/> Higher General Secondary Education, Girls' Secondary School, Pre-university Education
<input type="checkbox"/> Lower Vocational Education	<input type="checkbox"/> Higher vocational education
<input type="checkbox"/> Advanced Primary or Elementary Education, Lower General Secondary Education	<input type="checkbox"/> University / College
<input type="checkbox"/> Other, please specify:	

Telephone advice

7. What were your **expectations** when you called the GP cooperative?

(please answer **all** parts of this question by checking the appropriate box)

- | | | |
|--|------------------------------|-----------------------------|
| a. I only wanted telephone contact | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| b. I wanted to visit the GP (consultation) | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| c. I wanted the GP to visit me (visit) | Yes <input type="checkbox"/> | No <input type="checkbox"/> |

8. What **did you expect** from the healthcareer when you contacted the GP cooperative?

(please answer **all** parts of this question by checking the appropriate box)

- | | | |
|--|------------------------------|-----------------------------|
| a. I needed advice | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| b. I needed reassurance | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| c. I needed a prescription or medication | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| d. I needed a physical examination | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| e. I needed treatment (e.g. bandage, suture) | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| f. I needed a referral to the hospital | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| g. Other, please specify: | | |

9. What were the most important health complaint(s) and/or reason(s) for calling the GP cooperative? (no more than 3)

- 1)
- 2)
- 3)

10. Do you have one of the following (chronic) illnesses for which you use medication?

(please answer **all** parts of this question by checking the appropriate box)

- | | | |
|---|------------------------------|-----------------------------|
| a. Asthma, chronic bronchitis or CARA | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| b. Heart condition or myocardial infarction | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| c. High blood pressure | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| d. (Consequences of a) stroke | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| e. Diabetes | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| f. Arthropathy (rheumatoid arthritis) | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| g. Cancer | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| h. Psychiatric illness (depression, phobia, schizofrenia) | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| i. Other, please specify: | | |

11. Did you contact your own general practitioner concerning **the same complaint** in the week before you contacted the GP cooperative?
- Yes
 No
12. What was the distance between your place of residence and the GP cooperative?
- 0 – 4 km
 5 – 9 km
 10 – 14 km
 15 – 19 km
 20 km or more
13. If it had been necessary for you to come to the GP cooperative, would it have been a problem for you?
- Yes → please continue with question 14
 No → please continue with question 15
14. Can you indicate why this would have been difficult for you?
(please answer **all** parts of this question by checking the appropriate box)
- | | | |
|--|------------------------------|-----------------------------|
| a. It would have been difficult to find the GP cooperative | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| b. I would have had transportation problems
(e.g. no car, public transportation) | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| c. The GP cooperative was too far away | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| d. I would have been unable to leave my house
(e.g. had to attend to my children) | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| e. The transportation costs would have been a problem for me | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| f. Transportation would have been difficult due to my impediment
or handicap | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| g. My age would have made it difficult for me | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| h. I was too ill | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| i. Other, please specify: | | |

Final judgement

31. I have received the care I hoped for Yes No

If your answer is 'No', please specify below:

.....

32. What type of care did you **receive** by the GP cooperative?

(please answer **all** parts of this question by checking the appropriate box)

a. Advice Yes No

b. Reassurance Yes No

c. A prescription or medication Yes No

d. A physical examination Yes No

e. Treatment (e.g. bandage, suture) Yes No

f. Referral to the hospital Yes No

g. Other, please specify:

33. Did you have contact **about the same problem** with the GP cooperative or another healthcare provider or healthcare institution after you contacted the GP cooperative?

(please answer **all** parts of this question by checking the appropriate box)

a. The GP cooperative Yes No

b. Your own general practitioner Yes No

c. The hospital Yes No

d. Emergency number 911 Yes No

e. Other, please specify:

34. If your answer to question 34 was 'Yes', what was the reason for this contact?

.....

35. If your answer to question 34 was 'Yes', has the treatment you previously received been changed?

No

Yes, please specify:

.....

Questionnaire 'Out-of-hours primary health care'

The patient preferably fills out the questionnaire him- or herself. If this is not possible, we would like to ask the **direct companion** to fill out the questionnaire **on behalf of or together with the patient**.

The direct companion is the person who made the telephone call and/or was present during the contact with the general practitioner.

General

1. Who will fill out the questionnaire?
 - Myself (the patient)
 - Patient's family member (partner, parent, child, sister, etc.)
 - Someone else, please specify:

2. Part of the day when you contacted the GP cooperative:
 - in the weekend during the day (8 a.m. – 5 p.m.)
 - in the evening (5 p.m. – 11 p.m.)
 - during the night (11 p.m. – 8 a.m.)

3. Your age (of the patient):

<input type="checkbox"/> 0 – 4 years of age	<input type="checkbox"/> 45 – 64 years of age
<input type="checkbox"/> 5 – 14 years of age	<input type="checkbox"/> 65 – 74 years of age
<input type="checkbox"/> 15 – 24 years of age	<input type="checkbox"/> 75 years of age or older
<input type="checkbox"/> 25 – 44 years of age	

4. Your gender (of the patient):
 - male
 - female

5. Your nationality (of the patient):

6. Your highest level of education (of the patient):

<input type="checkbox"/> None (yet)	<input type="checkbox"/> Intermediate Vocational Education
<input type="checkbox"/> Primary school	<input type="checkbox"/> Higher General Secondary Education, Girls' Secondary School, Pre-university Education
<input type="checkbox"/> Lower Vocational Education	<input type="checkbox"/> Higher vocational education
<input type="checkbox"/> Advanced Primary or Elementary Education, Lower General Secondary Education	<input type="checkbox"/> University / College
<input type="checkbox"/> Other, please specify:	

Centre consultation

7. What were your **expectations** when you called the GP cooperative?

(please answer **all** parts of this question by checking the appropriate box)

- | | | |
|--|------------------------------|-----------------------------|
| a. I only wanted telephone contact | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| b. I wanted to visit the GP (consultation) | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| c. I wanted the GP to visit me (visit) | Yes <input type="checkbox"/> | No <input type="checkbox"/> |

8. What **did you expect** from the healthcareer when you contacted the GP cooperative?

(please answer **all** parts of this question by checking the appropriate box)

- | | | |
|--|------------------------------|-----------------------------|
| a. I needed advice | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| b. I needed reassurance | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| c. I needed a prescription or medication | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| d. I needed a physical examination | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| e. I needed treatment (e.g. bandage, suture) | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| f. I needed a referral to the hospital | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| g. Other, please specify: | | |

9. What were the most important health complaint(s) and/or reason(s) for calling the GP cooperative? (no more than 3)

- 1)
- 2)
- 3)

10. Do you have one of the following (chronic) illnesses for which you use medication?
(please answer **all** parts of this question by checking the appropriate box)

- | | | |
|---|------------------------------|-----------------------------|
| a. Asthma, chronic bronchitis or CARA | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| b. Heart condition or myocardial infarction | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| c. High blood pressure | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| d. (Consequences of a) stroke | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| e. Diabetes | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| f. Arthropathy (rheumatoid arthritis) | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| g. Cancer | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| h. Psychiatric illness (depression, phobia, schizofrenia) | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| i. Other, please specify: | | |

11. Did you contact your own general practitioner concerning **the same complaint** in the week before you contacted the GP cooperative?
- Yes
 No
12. What was the distance between your place of residence and the GP cooperative?
- 0 – 4 km
 5 – 9 km
 10 – 14 km
 15 – 19 km
 20 km or more
13. Was it difficult for you to come to the GP cooperative?
- Yes → please continue with question 14
 No → please continue with question 15
14. Can you indicate why this was difficult for you?
(please answer **all** parts of this question by checking the appropriate box)
- | | | |
|--|------------------------------|-----------------------------|
| a. It was difficult to find the GP cooperative | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| b. I had transportation problems
(e.g. no car, public transportation) | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| c. The GP cooperative was too far away | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| d. I was unable to leave my house
(e.g. had to attend to my children) | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| e. The transportation costs were a problem for me | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| f. Transportation was difficult due to my impediment or handicap | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| g. My age made it difficult for me | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| h. I was too ill | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| i. Other, please specify: | | |

Would you please answer the following questions by attributing a **report mark** in order to express your appreciation for the GP cooperative (please circle your answer):

X Example 1 2 3 4 5 6 **7** 8 9 10 n.a.
 1=very bad; 10=excellent; n.a.=not applicable or no opinion

Appreciation for the telephone nurse

15. Friendliness	1	2	3	4	5	6	7	8	9	10	n.a.
16. Professionalism	1	2	3	4	5	6	7	8	9	10	n.a.
17. Taking me seriously	1	2	3	4	5	6	7	8	9	10	n.a.
18. Taking time to talk	1	2	3	4	5	6	7	8	9	10	n.a.
19. Understanding my problem	1	2	3	4	5	6	7	8	9	10	n.a.
20. Clear explanation	1	2	3	4	5	6	7	8	9	10	n.a.
21. Confidence	1	2	3	4	5	6	7	8	9	10	n.a.
22. Final judgement on the telephone nurse	1	2	3	4	5	6	7	8	9	10	n.a.

Comments:

Appreciation for the doctor

23. Friendliness	1	2	3	4	5	6	7	8	9	10	n.a.
24. Professionalism	1	2	3	4	5	6	7	8	9	10	n.a.
25. Taking me seriously	1	2	3	4	5	6	7	8	9	10	n.a.
26. Taking time to talk	1	2	3	4	5	6	7	8	9	10	n.a.
27. Understanding my problem	1	2	3	4	5	6	7	8	9	10	n.a.
28. Careful physical examination	1	2	3	4	5	6	7	8	9	10	n.a.
29. Clear explanation	1	2	3	4	5	6	7	8	9	10	n.a.
30. Confidence	1	2	3	4	5	6	7	8	9	10	n.a.
31. Reassurance	1	2	3	4	5	6	7	8	9	10	n.a.
32. Advice or treatment	1	2	3	4	5	6	7	8	9	10	n.a.
33. Feasibility of advice or treatment	1	2	3	4	5	6	7	8	9	10	n.a.
34. Extent to which advice or treatment helped me	1	2	3	4	5	6	7	8	9	10	n.a.
35. Final judgement on the doctor	1	2	3	4	5	6	7	8	9	10	n.a.

Comments:

Appreciation for the organisation of the GP cooperative

36. General information on the GP cooperative	1	2	3	4	5	6	7	8	9	10	n.a.
37. Accessibility by telephone	1	2	3	4	5	6	7	8	9	10	n.a.
38. Signposting to the GP cooperative	1	2	3	4	5	6	7	8	9	10	n.a.
39. Accessibility of the building (stairs, door steps, etc.)	1	2	3	4	5	6	7	8	9	10	n.a.
40. Parking facilities	1	2	3	4	5	6	7	8	9	10	n.a.
41. Time between telephone contact and consultation	1	2	3	4	5	6	7	8	9	10	n.a.
42. Time in waiting room	1	2	3	4	5	6	7	8	9	10	n.a.
43. Furnishings of the GP cooperative (e.g. atmosphere in waiting room)	1	2	3	4	5	6	7	8	9	10	n.a.
44. Tidiness and hygiene	1	2	3	4	5	6	7	8	9	10	n.a.
45. Accessibility of pharmacy	1	2	3	4	5	6	7	8	9	10	n.a.
46. Final judgement on the organisation	1	2	3	4	5	6	7	8	9	10	n.a.

Comments:

.....

Final judgement

47. I have received the care I hoped for Yes No

If your answer is 'No', please specify below:

.....

.....

.....

48. What type of care did you **receive** at the GP cooperative?

(please answer **all** parts of this question by checking the appropriate box)

- | | | |
|-------------------------------------|------------------------------|-----------------------------|
| a. Advice | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| b. Reassurance | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| c. A prescription or medication | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| d. A physical examination | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| e. Treatment (e.g. bandage, suture) | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| f. Referral to the hospital | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| g. Other, please specify: | | |

Questionnaire 'Out-of-hours primary health care'

The patient preferably fills out the questionnaire him- or herself. If this is not possible, we would like to ask the **direct companion** to fill out the questionnaire **on behalf of or together with the patient**.

The direct companion is the person who made the telephone call and/or was present during the contact with the general practitioner.

General

1. Who will fill out the questionnaire?
 - Myself (the patient)
 - Patient's family member (partner, parent, child, sister, etc.)
 - Someone else, please specify:

2. Part of the day when you contacted the GP cooperative:
 - in the weekend during the day (8 a.m. – 5 p.m.)
 - in the evening (5 p.m. – 11 p.m.)
 - during the night (11 p.m. – 8 a.m.)

3. Your age (of the patient):

<input type="checkbox"/> 0 – 4 years of age	<input type="checkbox"/> 45 – 64 years of age
<input type="checkbox"/> 5 – 14 years of age	<input type="checkbox"/> 65 – 74 years of age
<input type="checkbox"/> 15 – 24 years of age	<input type="checkbox"/> 75 years of age or older
<input type="checkbox"/> 25 – 44 years of age	

4. Your gender (of the patient):
 - male
 - female

5. Your nationality (of the patient):

6. Your highest level of education (of the patient):

<input type="checkbox"/> None (yet)	<input type="checkbox"/> Intermediate Vocational Education
<input type="checkbox"/> Primary school	<input type="checkbox"/> Higher General Secondary Education, Girls' Secondary School, Pre-university Education
<input type="checkbox"/> Lower Vocational Education	<input type="checkbox"/> Higher vocational education
<input type="checkbox"/> Advanced Primary or Elementary Education, Lower General Secondary Education	<input type="checkbox"/> University / College
<input type="checkbox"/> Other, please specify:	

Home visit

7. What were your **expectations** when you called the GP cooperative?

(please answer **all** parts of this question by checking the appropriate box)

- | | | |
|--|------------------------------|-----------------------------|
| a. I only wanted telephone contact | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| b. I wanted to visit the GP (consultation) | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| c. I wanted the GP to visit me (visit) | Yes <input type="checkbox"/> | No <input type="checkbox"/> |

8. What **did you expect** from the healthcareer when you contacted the GP cooperative?

(please answer **all** parts of this question by checking the appropriate box)

- | | | |
|--|------------------------------|-----------------------------|
| a. I needed advice | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| b. I needed reassurance | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| c. I needed a prescription or medication | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| d. I needed a physical examination | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| e. I needed treatment (e.g. bandage, suture) | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| f. I needed a referral to the hospital | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| g. Other, please specify: | | |

9. What were the most important health complaint(s) and/or reason(s) for calling the GP cooperative? (no more than 3)

- 1)
- 2)
- 3)

10. Do you have one of the following (chronic) illnesses for which you use medication?

(please answer **all** parts of this question by checking the appropriate box)

- | | | |
|---|------------------------------|-----------------------------|
| a. Asthma, chronic bronchitis or CARA | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| b. Heart condition or myocardial infarction | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| c. High blood pressure | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| d. (Consequences of a) stroke | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| e. Diabetes | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| f. Arthropathy (rheumatoid arthritis) | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| g. Cancer | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| h. Psychiatric illness (depression, phobia, schizofrenia) | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| i. Other, please specify: | | |

11. Did you contact your own general practitioner concerning **the same complaint** in the week before you contacted the GP cooperative?
- Yes
 No
12. What was the distance between your place of residence and the GP cooperative?
- 0 – 4 km
 5 – 9 km
 10 – 14 km
 15 – 19 km
 20 km or more
13. If it had been necessary for you to come to the GP cooperative, would it have been a problem for you?
- Yes → please continue with question 14
 No → please continue with question 15
14. Can you indicate why this would have been difficult for you?
(please answer **all** parts of this question by checking the appropriate box)
- | | | |
|--|------------------------------|-----------------------------|
| a. It would have been difficult to find the GP cooperative | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| b. I would have had transportation problems
(e.g. no car, public transportation) | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| c. The GP cooperative was too far away | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| d. I would have been unable to leave my house
(e.g. had to attend to my children) | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| e. The transportation costs would have been a problem for me | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| f. Transportation would have been difficult due to my
impediment or handicap | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| g. My age would have made it difficult for me | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| h. I was too ill | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| i. Other, please specify: | | |

Appreciation for the organisation of the GP cooperative

36. General information on the GP cooperative	1	2	3	4	5	6	7	8	9	10	n.a.
37. Accessibility by telephone	1	2	3	4	5	6	7	8	9	10	n.a.
38. Time between telephone contact and home visit	1	2	3	4	5	6	7	8	9	10	n.a.
39. Accessibility of pharmacy	1	2	3	4	5	6	7	8	9	10	n.a.
40. Final judgement on the organisation	1	2	3	4	5	6	7	8	9	10	n.a.

Comments:

.....

Final judgement

41. have received the care I hoped for Yes No

If your answer is 'No', please specify below:

.....

.....

.....

42. What type of care did you **receive** by the GP cooperative?

(please answer **all** parts of this question by checking the appropriate box)

- | | | |
|-------------------------------------|------------------------------|-----------------------------|
| a. Advice | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| b. Reassurance | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| c. A prescription or medication | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| d. A physical examination | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| e. Treatment (e.g. bandage, suture) | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| f. Referral to the hospital | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| g. Other, please specify: | | |

43. Did you have contact **about the same problem** with the GP cooperative or another healthcarer or healthcare institution after you contacted the GP cooperative?

(please answer **all** parts of this question by checking the appropriate box)

- | | | |
|----------------------------------|------------------------------|-----------------------------|
| a. The GP cooperative | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| b. Your own general practitioner | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| c. The hospital | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| d. Emergency number 911 | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| e. Other, please specify: | | |

Home visit

44. If your answer to question 34 was 'Yes', what was the reason for this contact?

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

45. If your answer to question 34 was 'Yes', has the treatment you previously received been changed?

- No
- Yes, please specify:

.....
.....

In conclusion

46. Do you have any additional general remarks with regard to your contact with the GP cooperative?

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

Appendix 2
Photographs

Photographs



The GP cooperative
in IJmuiden (1997)





The GP hospital
in IJmuiden (2000)



