

Quality of out-of-hours primary care in the Netherlands

*Opgedragen aan
mijn overleden ouders*

The studies presented in this thesis have been performed at the Centre for Quality of Care Research (WOK). This centre is part of the Nijmegen Centre for Evidence Based Practice (NCEBP), one of the approved research institutes of the Radboud University Nijmegen and the Netherlands School of Primary Care Research (CaRe), acknowledged by the Royal Dutch Academy of Science (KNAW).

The studies described in this thesis have been financed by Stichting Centraal Fonds RVVZ, CZ Zorgverzekeraar Tilburg, Traumacentrum UMC St Radboud Nijmegen and more as 25 GP Cooperatives.

Financial support by the Centre for Quality of Care Research (WOK) for the publication of this thesis is gratefully acknowledged.

Nijmegen, 2007

Copyright:	Bohn Stafleu Van Loghum	Chapters 2, 3, 4
	BMJ Publishing Group Ltd.	Chapters 4, 5
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	Elsevier Ltd.	Chapter 9
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Coverdesign: Erwin Scholte (er.grafischontwerp@chello.nl)

Photography: Flip Franssen (www.flipfranssen.nl)

Layout: Jolanda van Haren

Print: Ponsen & Looijen BV, Wageningen

NUR: 870

ISBN: 978-90-76316-550

Quality of out-of-hours primary care in the Netherlands

een wetenschappelijke proeve
op het gebied van de Medische Wetenschappen

Proefschrift

ter verkrijging van de graad van doctor
aan de Radboud Universiteit Nijmegen
op gezag van de rector magnificus prof. mr. S.C.J.J. Kortmann,
volgens besluit van het College van Decanen
in het openbaar te verdedigen op woensdag 6 juni 2007
om 14.00 uur precies
door

Paulus Henrikus Josephus Giesen

geboren op 18 januari 1952
te Steenderen

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Introduction

This introduction is based on the following articles:

- *Giesen P, Haandrikman L, Broens S, Schreuder J, Mookink H. Centrale Huisartsenposten: Wordt de huisarts er beter van? [GP cooperatives: does the general practitioner benefit from them?]. Huisarts Wet 2000;43:508-10.*
- *Giesen P, Wilden-van Lier E, Schers H, Schreuder J, Busser G. Telefonisch advies en triage tijdens de dienst. [Telephone advice and triage in out-of-hours] Huisarts Wet 2002; 45 (6): 299-302.*
- *van Uden C, Giesen P, Metsemakers J, Grol R. 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):565-9.*
- *Grol R, Giesen P, van Uden C. Assuring high quality after hours primary care: models and impact in different countries. Health Affairs 2006; 25: 1733–173.*

Around the year 2000, the Dutch general practitioners (GPs) reorganized their out-of-hours primary care and shifted it from small rota groups to large-scale GP cooperatives in which 40 to 250 GPs take care of populations ranging from 100,000 to 500,000 inhabitants.¹⁻⁷ The out-of-hours GP care is intended for urgent help requests that cannot wait until the next day, and it is available daily from 5 p.m. to 8 a.m. and the entire weekend.

The GPs themselves initiated the cooperatives, primarily to reduce their workloads.¹⁻⁷ The new GP cooperatives were criticized by the GPs themselves, patients, political bodies, and the Dutch Inspectorate of Health Care (IGZ), with regard to various aspects of care delivery (Box 1).⁸⁻¹⁵

Box 1. Possible weaknesses of the GP cooperatives

Patient and care characteristics

- Inefficient care caused by non urgent demands that need only self-care or daytime GP care
- Inefficient care due to patient self-referral to ambulance and hospital accident and emergency (A&E) care

Quality of care delivered by professionals

- Nurse telephone triage, which may lead to 'keeping from care' behaviour and possibly unsafe care
- Poor quality of care because of medical mistakes and lack of continuity of care
- Long distances, long waiting times, and therefore possibly unsafe care in urgent cases

Patient experience and behaviour

- Patient-unfriendly care because of the impersonal character of the care and problems with accessibility. These factors perhaps provoke rude and aggressive patient behaviour

The reality is that we know little about this supposed weaknesses and strengths of the quality of care delivered by GP cooperatives. Meanwhile, policy-makers continue to develop plans for optimal out-of-hours and emergency care, but evidence about these plans is lacking.¹⁶⁻¹⁷ Research into the actual problems of the quality of care in GP cooperatives and research groundwork for future developments is urgently needed.¹⁷

This thesis describes our research into the quality of the Dutch out-of-hours primary care, which takes into account patient and care characteristics, care delivered by both the professionals, and the patient's opinion experiences. We also describe the development of instruments for future quality measurement of the GP cooperatives. With our research we try to support an optimal balance of efficient, safe, patient-centred, evidence-based, out-of-hours primary care.

This introduction gives a brief description of international and historical aspects of out-of-hours GP care and the current organization of the GP cooperative in the Netherlands, from which we derive the research questions for this thesis.

Out-of-hours primary care in the international perspective

There are different models for out-of-hours care varying from individual, personal GP care, to large-scale GP cooperatives. Most models are a mixture of approaches, and some countries use several different organizational models^{1-3, 18-30}:

Practice-based services: GPs within one practice or GPs organized in small-scale rota groups.

Deputizing services (outsourcing): commercial companies employing doctors and nurses who take over GP shifts sold to them.

After-hours primary-care centres: walk-in centres for face-to-face contact with a doctor or nurse.

GP cooperatives: GPs from several groups supported by additional personnel in nonprofit, large-scale organizations (Box 3).

Hospital emergency departments provide primary care with walk-in and face-to-face contact with a doctor or nurse.

Telephone triage and advice centres: Call centres, staffed by nurses, delivering telephone consultations only.

Western countries are shifting more and more towards large-scale primary-care organizations such as those in the United Kingdom (UK)^{19,23,29}, Denmark^{20, 31-33}, and the Netherlands.¹⁻⁷ The main causes of this tendency towards large-scale, out-of-hours care are the increasing workload with non-urgent demands, the low personal commitment of GPs to be on call, and the shortage of GPs.^{1,5,8,18,19,21,24,34-38} The reorganization is also an answer to policy-makers and patients who worry about access and quality and safety of the out-of-hours GP care, particularly in urgent situations.^{8,37} These worries led to patients referring themselves to the A&E departments of hospitals or ringing ambulance emergency numbers more often instead of contacting the GP, which has implications for costs, efficiency, and continuity of care.^{8,26-27,37-40}

Dutch out-of-hours primary care in historical perspective

Until the 1960s, many Dutch GPs took care of their own patients out-of-hours. As a consequence, GPs were on call most of the time. Subsequently, more and more GPs formed small rota groups of five to ten GPs, in which they were on call for each other's patients. At first, this only involved weekend daytime, but later evenings and nights as well.²¹ This change of out-of-hours care provision was the first step to a less personal approach.

Research into the rota groups of GP care is scarce and only focuses on the GP perspective. The literature reports the problems summarized in Box 2.^{1-8,15,21,34,39} Out-of-hours care was the main reason given for GP burn-out.³⁴ The GP's low personal commitment to be on call led to increased selling of shifts.¹

Box 2. Problems reported in out-of-hours GP care

- Heavy workload
- Long on call time of about 19 hours/week, plus about 50 hours of regular work
- Lack of separation between work and private life
- Lack of private life
- Poor salary (full-time GPs received €4538 a year for on-call time of 19 hours a week)
- Shortage of GPs, especially in rural areas
- Inappropriate patient contacts
- Demanding and aggressive patient behaviour
- Patient self-referral to ambulance and hospital care
- Lack of material and personal support

General practice cooperatives in the Netherlands

The second step to a less personal out-of-hours care provision appeared around 2000. Dutch GPs reorganized their out-of-hours primary care within a few years and shifted from small on-call rotas to large-scale GP cooperatives.¹⁻⁷

This reorganisation was an answer to the problems listed in Box 2 and were encouraged by positive experiences in the UK and Denmark.

Nowadays, more than 120 GP cooperatives have been set up, and they serve more than 90% of the Dutch population. These cooperatives are situated near or within a hospital, but there is no formally regulated patient flow between them.¹⁻⁷

Patients can access the cooperative with a single regional telephone number. Medically trained chauffeurs provide transport for GPs making home visits. Their vehicles are equipped with oxygen, infusion drips, and automatic heart defibrillation equipment. Telephone triage nurses, supported by national triage guidelines⁴¹, assess the urgency of the

patient's complaint, and give telephone advice or arrange a consultation or home visit. Triage nurses are supervised by GPs who can be consulted in case of doubt and who check and authorize all calls handled by the triage nurses.⁴¹⁻⁴²

Box 3. Features of GP cooperatives in the Netherlands

- Out-of-hours defined as daily from 5 p.m. to 8 a.m. and the entire weekend
- Population of 100,000 to 500,000 patients
- Distances up to 30 km
- GP cooperative usually situated near a hospital
- Access via a single regional telephone number
- Telephone triage nurses
- Chauffeurs in identifiable GP cars that are fully equipped (e.g. O₂, infusion drip, automatic heart defibrillation equipment)
- Information and communication technology (ICT) support including electronic patient files and on-line connection to the GP car
- 50–250 GPs with a mean of 4 hours on call per week
- GP shifts of 6 to 8 hours

The GPs report that their out-of-hours workloads have diminished from approximately 19 hours to 4 hours per week since the introduction of the GP cooperative.¹⁻⁷ Moreover, job satisfaction has improved, and the GPs tend to do more shifts themselves instead of selling them.^{1,7} Other factors, such as lack of separation of work and private life, have also improved.^{1,7}

Quality of out-of-hours care from different perspectives

Patient and care characteristics. Out-of-hours GP care has been set up for urgent help requests that cannot wait until the next day.⁸ Nonetheless, it is still unclear to what extent the problems presented are indeed urgent. Specific patient education and training of GPs and triage nurses may be necessary to determine and maintain appropriate out-of-hours primary care.^{1,8-9} In chapter 2 we describe the development of four urgency classes (U1-U4) and a study of the urgency and morbidity presented in out-of-hours primary care.

Much GPs have the feeling that the GP cooperative is the 'evening shop' of daytime GP care. In chapter 3 we compared the morbidity presented during normal day care with that presented out-of-hours.

In the case of an emergency, Dutch patients can either contact GP care, contact hospital A&E department or ring the ambulance emergency number.⁸ This free choice may have led to a shift from GP care to hospital A&E care for complaints that may be less severe or not urgent.^{3,8,15,16,38-40,43-46} Many self-referrals, combined with lack of collaboration, may lead to an inefficient organization of out-of-hours care, with different approaches at different sites (GP cooperatives and A&E departments) for the same medical problems⁸. It is also inefficient and very expensive to have numerous health care teams on duty for relatively few patients, especially at night.⁸ However, a good understanding of the size and nature of these problems is lacking. In chapter 4 we present a study of patient and care characteristics of GP cooperatives and A&E departments.

Quality of care delivered by professionals. An important part of the trend towards large-scale, out-of-hours, primary care is the increase of nurse telephone triage that replaces face-to-face contacts with the GP.^{1,12,18-24} The nurse telephone triage may have an effect on care efficiency: the proportion of telephone consultations increased (+22%) and the proportion of centre consultations (-14%) and home visits decreased (-8%) with respect to the former situation (Table 1). These results from the Netherlands are in line with results of studies in the UK and Denmark.^{20,45,47}

Table 1. Types of care provided in former Dutch rota groups compared with those of GP-cooperatives

	Rota group (percentage)	GP-cooperative (percentage)
Telephone consultations	29	51
Centre consultations	48	34
Home visits	23	15

Although the efficiency of the care seems to have improved, the available data are inconclusive about the quality of care provided in the new setting. However, studies report no increase of adverse events⁵⁴⁻⁵⁶, they were underpowered to detect mortality rates.⁵¹

In a case study we report a considerable safety risk associated with telephone triage⁹, which is caused by the facts that triage nurses do not know the patients and they cannot view the GP's patient files. Moreover, triage nurses were not trained adequately to identify complex, rare, or urgent cases.^{9,11,42,48} We conclude that telephone triage has to be considered the most complex and vulnerable part of out-of-hours GP care, and we recommend a special function of 'telephone doctor' to support the nurse telephone triage.^{9,42} In chapter 5 we investigated the safety of nurse telephone triage and conducted a

study, with mystery patients to get insight into the strengths and weaknesses of nurse telephone triage.

The quality of the GP medical care out-of-hours is unclear since relevant data are not available. Better insight is needed to improve the quality and the continuity of care⁵⁸, as well as to identify and minimize medical errors.⁵⁹ Performance measurement of regular GP medical care in the Netherlands is now based on well-developed, evidence-based, clinical guidelines of the Dutch College of General Practitioners (NHG).⁶⁰ There are no specific guidelines or instrument for measuring the performance of GP out-of-hours medical care, and it is unclear whether the NHG guidelines are applicable. Chapter 6 describes the development of a set of quality indicators based on the NHG guidelines and the test on a patient population of a GP cooperative.

In rural areas the introduction of the Dutch GP cooperatives increased the physical distance between the patient and GP care. The followed social unrest resulted in an investigation of the Dutch Inspectorate of Health Care (IGZ). They criticized the distribution of out-of-hours GP cooperatives throughout the Netherlands and the large distances between GP cooperatives and patients.¹⁰ The IGZ advocated the setting up of satellite cooperatives on the basis of the assumption that there is a more or less linear relationship between distance and waiting times. It is not known whether this assumption is correct, and we hypothesize that other factors, such as traffic intensity, home visit business, time of day, and urgency of the problem, may also add to waiting times for home visits. A better understanding of the relationship between distance and waiting time is relevant because it can help us set up guidelines with respect to the size of the optimal area and the location of the GP cooperative, the number of available GP cars, and coordination with the ambulance service.⁸ In chapter 7 we analysed patient waiting times and the influence of the other mentioned factors.

Patient experiences and behaviour. The onset of large-scale GP cooperatives with nurse telephone triage have important consequences for the patients. Meeting patients expectations are a major objective of all medical care, and patients experiences are also recognized as one of the possible outcome measures of quality of care.⁵⁵ Several attempts have been made to evaluate patients' views on this new out-of-hours primary health care provision^{2,3,18,20,22,23,62-70}, yet in view of possible cultural and organizational differences, its validity for the Dutch situation has not yet been assessed. Furthermore, the increasing demand for benchmarking quality of care calls for the development of a valid, reliable, and useful instrument to measure patient satisfaction. In chapter 8 we describe the development

of a postal questionnaire and a multicentre study of 26 GP cooperatives to invent patient experiences.

In our opinion, analysing negative patient experiences can help to find incentives for improving the quality of care. On the basis of the literature, we hypothesized a mismatch of expected and received care (telephone nurse advice only, instead of contact with a doctor)^{18,69-70}, accessibility problems due to large distances, and nurse telephone consultation meeting more negative evaluations. Likewise, we expected that patients would favour a model with a more prominent role for the GP in telephone triage and advice.⁴² In chapter 9 we present our test of these hypotheses in the same multicentre study of patient experiences in 26 GP cooperatives.

Surveys of Dutch practices also indicate that GPs on out-of-hours duty felt that they are at risk of rude or aggressive patient behaviour, and this has adverse effects on their perception of the workload and job satisfaction¹. We did not find anything in the literature that gave us insight into factors underlying rudeness or aggressive behaviour, while it would be valuable in helping us to understand why patients become rude or aggressive. Such insight would be helpful in preventing aggressive behaviour and improving the quality of the communication with patients.⁷¹⁻⁷² In chapter 10 we describe a study of patient records from which we tried to get information about the incidence, types of rude or aggressive behaviour, and the characteristics of patients exhibiting such behaviour.

Table 2. Outline of the thesis

Chapter	Research questions	Design
Patient and care characteristics		
2	What are the complaints of the presented morbidity and what is the urgency of it?	Development of an urgency classification and carry out a cross-sectional exploratory study using patient records.
3	What are characteristics of the morbidity in office GP care and the morbidity in out-of-hours GP care?	Cross-sectional exploratory study using patient records.
4	What are differences in patient- and care characteristics between the GP cooperative and the hospital A&E department?	Cross-sectional exploratory study using patient records.
Quality of care delivered by professionals		
5	Do telephone triage nurses correctly estimate the urgency?	Cross-sectional multicentre observational study employing mystery patients.
6	How valid, feasible, reliable and applicable are developed indicators for quality improvement of GP care?	Development of quality indicators by means of expert panels and testing indicators on patient records.
7	What is the patients waiting time for a home visit and what is the relationship between waiting time and distance to the GP cooperative?	Cross-sectional multicentre study assessing waiting times and influencing factors.
Patient experiences and behaviour		
8	What are the experiences of patients contacting their GP cooperative?	Development of a postal questionnaire and a carry out a multicentre cross-sectional study.
9	Which aspects of accessibility and nurse telephone triage did patients evaluate negatively?	Cross-sectional multicentre study using patient questionnaires.
10	What is the incidence and type of aggressive patient behaviour and which patient and care characteristics are associated with such behaviour?	Cross-sectional exploratory study by analysis of medical records.

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How urgent is the presented morbidity on the GP cooperative?

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Abstract

Introduction. Out-of-hours general practice care is intended for help requests that cannot wait until regular office GP care. These requests are therefore urgent to a certain degree. The nature and urgency of the morbidity presented at out-of-hours largely unknown. We developed an urgency classification and explored the degree of urgency and the nature of morbidity presented by patients in out-of-hours primary care.

Methods. Cross-sectional exploratory study using computer-registered patient contacts from a GP cooperative. Patient contacts were classified by the degree of urgency (U1-U4) and the presented morbidity was classified by International Classification of Primary Care (ICPC).

Results. Of the 20,471 studied patient contacts, 23.1% had some urgent character (U1-3). Life-threatening emergencies (U1) make up 0.7% of the cases and 76.9% of the cases were considered as not-urgent (U4). If the complaints presented during telephone triage were classified as urgent (U1-3), this urgency on basis of the diagnosis was 29% lower. Presented problems in the high urgent categories (U1-2) were mainly those of heart, airway, and consciousness disorders; routine complaints concerned mainly infections and complaints of the locomotor apparatus.

Conclusion. The number of patient contacts that were considered urgent at this out-of-hours medical post is small. Most of the complaints were evaluated as not urgent.

Introduction

Out-of-hours primary care is intended for help requests that cannot wait until regular office GP care next day. These requests are therefore urgent to a certain degree.¹

The question is whether this is the reality. Rota groups of general practitioners (GPs) reported an increasing number of non-urgent and inappropriate help requests. They also observe that for really urgent problems, patients do not go to the GP, but to the hospital accident and emergency (A&E) department by themselves or via the alarm number 112.^{2,3}

Dutch GPs are reorganised their out-of-office care and set up large scales GP cooperatives. We know little about the urgency and the nature of the morbidity presented at GP cooperatives. Furthermore, it is not known what is the degree of urgency after telephone triage (S line) and the urgency calculated on the basis of the diagnosis (E line). Insight into this could be useful in searching for an optimal balance between the safety and efficiency of triage in out-of-hours, as well as for schooling, defining the range of duty times, and coordinating with other parties in urgent care.³⁻⁹

We studied the following questions:

- What is the urgency of the help requests at the out-of-hours primary care and how great are the differences in degree of urgency on the basis of the symptoms (S line) and the diagnosis (E line)?
- What are the most common complaints and disorders in each urgency class?
- What is the relationship between the degree of urgency to sex, age, and contact moment with the GP cooperative?

Method

Design

We undertook an cross-sectional exploratory study using computer-registered patient contacts from a GP cooperative.

Population

The study material consisted of patient contact registries in the period January - July 2002 of one GP cooperative in the eastern part of the Netherlands. The study included a total population of 132,000 patients registered with 80 GPs. The contact registries contained data regarding telephone consultations, centre consultations, and home visits. We excluded all contact registrations of an administrative nature, such as messages given by third parties. The registration procedure on the GP cooperative is to be found in Box 1.

Box 1. Procedure on the GP cooperative

- Nurses perform the telephone triage and gives telephone advice of consults the supervising telephone doctor.⁴
- The assistant immediately registers the information during the initial telephone conversation on the S line (complaint). This concerns data about the actual complaint, anamnesis, duration, and course of the complaint, as well as feelings such as anxiety and pain.
- If appropriate, this information is augmented with information from the telephone, centre consultation or home visit doctor.
- All fields of the SOEP system in the electronic patient dossier must be filled in before a contact can be closed.
- The supervising telephone doctor checks all contacts for completeness and correctness, validates the file and sends the information electronically to the patient's own GP.

Development of the urgency classification and procedures

We developed an urgency classification with four urgency classes (U1-4). In this not published pilot study we did a literature study studies known classification systems and asked experts and combined carried out a practice test. Our urgency classification was taken over in the Dutch National (NHG) Telephone Guidelines¹⁰ (Box 2).

Box 2. Urgency classification

Life-threatening (U1). This concerns complaints in which the vital functions are in danger. The assistant informs the GP at once. The GP interrupts his work immediately and goes to the patient as quickly as possible. If necessary, the ambulance service is notified at the same time.

Acute (U2). This concerns complaints for which there is a real chance that the condition of the patient will worsen in a short time, with a risk of loss of vital functions. The assistant informs the GP immediately. The GP sees the patient as soon as possible, certainly within an hour.

Urgent (U3). Time plays a potentially negative role for medical or emotional reasons. The patient's condition has to be evaluated within a few hours.

Routine (U4). Not-urgent problems with no pressure of time for this help request. The assistant makes an appointment with the GP or gives information and advice.

Five co-assistants were trained how to classify each patient contact in one of the four urgency classes (U1-4). Also they were trained to classify each patient complaint, using the International Classification of Primary Care (ICPC). The co-assistants and a supervising GP checked each other classification once a week and discussed doubtful cases. The text on the E line was withheld during scoring for urgency on the basis of the S line.

To measure the reliability of the urgency score, the GP and the co-assistants scored 1200 registered patient contacts independently of one another. This interobserver test resulted in

a kappa of 0.54 at the complaint level (S line) and 0.6 at the diagnosis level (E line). Analysis of the scores showed small differences between the co-assistants (0.70 for the S line and 0.82 for the E line). We found a greater difference between the co-assistants and the GP, because the GP generally evaluated patient contacts as less urgent.

Variables

The following variables were defined:

- The ICPC coding was done on the basis of the diagnosis (E line).
- Urgency was determined on the basis of the complaint (S line) and on the basis of the diagnosis (E line). This urgency was divided into four classes (see box 2).¹⁰

For each contact registration, the following data were defined:

- Sex of the patient,
- Age of the patient in groups (0-4, 5-14, 15-24, 25-44, 45-64, 65-74, and >75 years)
- Time of the week: 7 evenings from 5 p.m. to midnight, 7 nights from midnight to 8 a.m., and twice during the day during the weekend from 8 a.m. to 5 p.m.

Analysis

We calculated the frequency of U1 to U4 inclusive on the basis of the complaint (S) and the diagnosis (E) for the whole study population. For each urgency category, we compiled the top five most common clusters of the ICPC codes that belonged together.

For each urgency category, we calculated the number contacts/1000 patients per year by age and sex, as well as a breakdown by urgency category. For this purpose, we applied the age and sex distribution of the whole population (n = 156,308) to the population registered on the GP cooperative (n=132,000).

Finally, we calculated the contacts/hour by urgency category and by time of contact. We expressed this as the number of contacts/hour because of the differences of lengths of the evening, night, and weekend services.

Results

Degree of urgency

Of the 20,471 studied patient contacts, 23.1% had some urgent character (U1-3) and there was no urgency (U4) in 76.9% of the contacts. Life-threatening urgency (U1) was classified in 0.7% of the cases. If the complaints presented during telephone triage (S line) were classified as urgent (U1-3), this urgency on basis of the diagnosis (E line) was 29% lower (3352 of 4726 patients were urgent after diagnosis) (Table 1).

Table 1. Frequency distribution of urgency classes by complaint (S) and diagnosis (E)

Urgency	Complaints (S)		Diagnoses (E)	
	n	%	n	%
U1 - life-threatening	145	0.7	116	0.6
U2 – acute	982	4.8	665	3.2
U3 – urgent	3,599	17.6	2,571	12.5
U4 – routine	15,745	76.9	17,119	83.7
Total	20,471	100	20,471	100

Most common complaints per urgency class

Classification of the complaints on the basis of the diagnosis (E line) showed that the categories of greatest urgency (U1 and U2) concerned many problems related to the heart, airways, and consciousness. For the category U1, more than half of the problems involved the heart.

Not urgent categories (U4) involved infections, problems with the locomotor apparatus, and the skin (Table 2).

Table 2. The top five complaints and disorders by urgency category on the basis of the E line

Clusters and disorders with the most common International Classification of Primary Care codes in descending order	Top five by urgency category (%)
U1	
1 Possible heart problems (life-threatening): K75, K01, K74, K90, K02, K78, K99, K03	55
2 Loss of consciousness: A07, A06, T87, N07	17
3 Acute death: A96	6
4 Airway obstruction: R75, R24, R02, R98	5
5 Cerebrovascular accident: K90	5
U2	
1 Possible heart problems (not life-threatening): K01, K74, K77, L04, K75, K02, K78, K04-K06, K79	40
2 Severely short of breath: R95, R02, R96, R81, R98, R78, R06, R84	26
3 Fainting/lowered consciousness: A07, A06, N88, N07	6
4 Stomach/intestine problems, possible acute abdomen: D06, D01, D02, D99, D73, D98	4
5 Hypoglycaemia	3
U3	
1 Infections of the lower airways, shortness of breath: R81, R02, R74, R04, R95, R96, R78, R76, R01, R06	20
2 Abdominal pain/infections: D06, D01, D73, D10, D02, D88, D98	11
3 Trauma (fractures, distortion, dislocation): L81, L77, L74, L76, L80, L79	7
4 Wounds (bites, cuts, and burns): S18, S14, S13	7
5 Severe pain of the locomotor apparatus: L09, L14, L12, L17, L02, L13, L18	4
U4	
1 Infections (airways, skin, urinary tract, stomach/intestine): A03, U71, R74, D73, A77, R05, H71, R21, F70, R98, S11, R75, A72, R80, S76, S09, R78, S70, S84	30
2 Complaints of the locomotor apparatus: L03, L14, L81, L04, L01, L02, L15, L17, L08, L18, L09, L77, L12, L13, L92, L79, L05, L1j6, L11, L07	10
3 Trauma of the skin: S18, S13, S14, S12, S17	4
4 Possible complications of side effects: A87, A85, A84, A86	3
5 Headache and dizziness: N01, N89, N17	3

Annual number of contacts per 1000 patients by age and sex

Women made relatively more contacts than men, except in the category U1 where the proportions were reversed.

Patients younger than 45 years presented hardly any life-threatening complaints (U1) but there was a sharp increase of U1 from the age of 45 years onward.

The number of U4 contacts for the 0 to 4-year-old children was about four times as high as it was for other ages (Table 3).

Table 3. Annual number of contacts per 1000 patients by age and sex

Urgency class	<i>n</i>	U1	U2	U3	U4	Total
Sex						
Women	68,522	1.8	16.3	55.7	250.2	323.9
Men	63,478	2.7	13.4	53.3	191.7	261.1
Age in years						
0-4	7,303	0.8	9.9	116.9	817.2	944.8
5-14	13,350	0.1	3.6	50.6	232.2	286.6
15-24	19,776	0.9	2.8	24.2	152.2	180.1
25-44	43,453	0.5	5.2	37.8	190.0	233.5
45-64	30,915	3.3	16.0	45.4	166.7	231.3
65-74	9,375	6.6	33.1	73.2	164.7	277.6
>75	7,828	10.2	96.3	186.8	292.0	585.4
Total	132,000	2.2	14.9	54.5	222.1	293.7

Number of contacts per hour by time of contact

There were six telephone calls per hour on average. During the day on the weekend, there could be as many as 13.7 calls per hour.

During the daytime on the weekend patients very often called the out-of-hours medical post with not urgent problems (U4). Very urgent problems (U1) occurred very few and independently of the daytime. All problems with some urgent character (U1-3) occurred most in the evening and weekend daytime (Table 4).

Table 4. Number of contacts per hour, by time of day and urgency class on the basis of patients complaint

Urgency class	U1	U2	U3	U4	average number/hour
Time of day					
Night (midnight – 8 a.m.)	0.04	0.18	0.40	1.23	1.8
Daytime on the weekend (8 a.m. – 5 p.m.)	0.05	0.45	2.29	11.00	13.7
Evening (5 p.m. – midnight)	0.06	0.42	1.63	6.50	8.6
Average number of patients/hour	0.05	0.30	1.12	4.54	6.0

Discussion

Less than 1% of the requests for help were evaluated as life-threatening (U1). Three-quarters of all the complaints were considered to be not-urgent problems (U4).

The urgency of 30% of the complaints considered “urgent” as assessed on the basis of the diagnosis was lower than the degree of urgency as assessed on the basis of the complaint. In other words: the degree of urgency turned out to be better than expected.

As expected, the problems of greatest urgency were attributable to the heart and, to a lesser degree, to the airways. The routine problems (U4) mainly concerned complaints that resolve themselves. They consisted of infections of the airways and complaints of the stomach, intestines, urinary tract, and the locomotor apparatus. There were relatively few traumas. This picture corresponds with data in the literature.¹¹

The distribution of urgency by age shows that life-threatening complaints (U1) hardly occur among patients younger than 45 years, but above this age, this urgent complaints increase sharply with age. By far the greatest number of routine urgent contacts (U4) occur among the 0 to 4-year-olds.

We find not only the most contacts, but also the most routine problems, during the day on the weekend.

The total number of complaints that were evaluated as more or less urgent (U1-U3) corresponds reasonably well with the data from the *Nationale Studie* (Dutch National Study) in 1987 in which GPs describe approximately 15% of the out-of-hours house calls as acute.¹² This low emergency frequency can perhaps be explained by the fact that patients with ‘a real emergency’ refer themselves to the A&E department.

The idea that out-of-hours GP care is in principle only intended for cases of emergency is at odds with the reality that these data highlight. From a medical point of view, in contrast to the patient’s assessment, a substantial part of the population could wait for their own GP’s office hours or could get sufficient advice to take care of the problems themselves.

Even though a request for help is not urgent from a medical perspective, it may still be justified. There appears to be a large group of patients who, for completely understandable reasons or concerns, feel the weight of or a lack of knowledge about the complaint and do not want to wait. It is then the caregiver’s duty to reassure the patient and provide information about the nature of the problem and, together with the patient, to determine what should happen.

Limitations of this study

Our study has some limitations. Although it considers many patient contacts, they all originate from one GP cooperative and are therefore not automatically representative of the rest of the Netherlands. The urgency was determined on the basis of the contact registries. Emotional aspects such as anxiety or panic were not registered and thus could not be considered in the determination of urgency. The interassessment test shows a moderate agreement between the co-assistants and the GP, in which the co-assistants generally assess the cases as more urgent than the experienced GP. This may have led to a slight overestimation of the urgency of the complaints.

We feel that further study should be directed toward the safety of the triage; the current trend toward efficient care could push aside the issue of safety.⁵ The question is whether assistants are capable of identifying the seldom occurring urgent requests for help among the whole of the requests, most of which are not urgent.

Because GP cooperatives and A&E departments are working together more and more, it is interesting to compare the respective patient populations in the study with each other.³

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Out-of-hours GP care compared with office GP care: common complaints with an urgent character

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Introduction

Most of the patient contact on GP cooperatives have an not-urgent character. Some GP's have the feeling that the GP cooperative is the evening 'shop' of daytime GP care. To get an impression, we studied differences between GP care in office and out-of-hours.

We presents a cross-sectional retrospective study of 36,164 patient records of a GP cooperative compared with patient data for GP care during office hours, derived from the Dutch National Information Network of General Practitioners (LINH).

Frequency and type of contact

The annual number of contacts at the GP cooperative was 277 for each 1000 patients registered, while at the LINH there were 6600 contacts for each 1000 patients registered. Twenty-four times as many patients contact the services within office hours as they do after hours. A GP at the cooperative makes four times as many home visits and receives five times as many telephone calls (apart from repeat prescriptions) than a GP in a LINH practice.

Nature of the request for help

The nature of help requests varies greatly. Table 1 shows the top ten symptoms and diagnoses registered by the CHN and LINH practices. The symptoms presented at the GP cooperative are more often acute and more often painful or infectious diseases. The LINH practices treat more chronic not urgent diseases. The symptoms presented at the GP cooperative are almost all (92.5%) physical in nature (data not showed). The top ten symptoms and diagnoses are a limited part of the total morbidity.

Table 1. Top ten symptoms and diagnoses

No.	ICPC	Symptom or diagnosis	GP coop. (%)	No.	ICPC	Symptom or diagnosis	LINH (%)
1	A03	Fever	4.6	1	K86	Hypertension	3.7
2	U71	Urinary tract infection	3.1	2	T90	Diabetes mellitus	2.2
3	R74	Acute upper airway infection	2.8	3	W11	Oral contraception	1.8
4	D01	Abdominal pain or cramps	2.3	4	P06	Insomnia	1.5
5	D73	Probable gastrointestinal infection	2.3	5	A99	Other unspecified disease	1.5
6	H01	Earache	1.9	6	P76	Depression	1.4
7	D06	Other localized abdominal pain	1.7	7	R05	Coughing	1.2
8	A77	Other viral disease	1.7	8	R96	Asthma	1.2
9	D10	Vomiting	1.6	9	U71	Urinary tract infection	1.2
10	N01	Headache	1.5	10	S88	Contact eczema	1.0
		Total	23.5			Total	16.7

Nature of the assistance

About 25% of patients at the GP cooperative receives a prescription and in a general practice 57% of the patients. Only 6% of the patients at a GP cooperative is prescribed more than one medication. In LINH practices, it is quite usual to prescribe more than one medication for one patient. The type of medication in the medication top ten is closely associated with the types of symptom presented (Table 2).

Table 2. Top ten medications prescribed

No.	Medication prescribed for	GP coop No. (%)	No.	ATC	Medication prescribed for	LINH (%)
1	Infectious disease	26.5	1	N	Central nervous system/mental	17.4
2	Pain	25.6	2	C	Cardiovascular disease	17.2
3	Airways	11.8	3	R	Airways	10.7
4	Alimentary canal and metabolism	11.3	4	A	Alimentary canal and metabolism	10.4
5	Cardiovascular disease	5.3	5	D	Skin disease	7.5
6	Mental disorder	4.7	6	J	Infectious disease	7.3
7	Allergy	3.3	7	G	Urogenital tract and sex hormones	6.8
8	Skin disease	3.2	8	M	Skeletomusculature	6.3
9	Pregnancy/anticonception	2.6	9	X,Y	Other	6.2
10	Ear, nose, and throat disorders	1.9	10	B	Blood and blood-producing organs	4.5
	Total	96.2			Total	89.8

ATC anatomical therapeutic chemical classification

In 5.8% of the contacts with the GP cooperative, the patient is referred for further treatment. For general practice, this figure is 8.5%. The three most common referrals at the GP cooperative are for cardiology, internal medicine and the emergency room. The three most common referrals in general practice are for surgery; ear, nose, and throat; and dermatology.

Conclusion

Most problems on GP cooperatives were new and concerned acute infections or acute painful complaints. General practitioners in office hours see more patients with chronic problems. About 25% of the patients at the GP cooperative and 57% of the patients in office time received a prescription. The feeling that the GP cooperative is the 'evening shop' of daytime GP care was not confirmed in this study. The question whether these acute problems can wait until office hours is not a topic of this paper. We simply wanted to provide insight into the types of treatment, and to distinguish among waiting, prescribing, and referring. However, even though one GP cooperative is not enough for making comparisons, the symptoms presented at this GP cooperative do not seem to differ from those at other GP cooperatives.

3 *Quality of out-of-hours primary care*

The data were taken from LINH files (2002). The LINH is collaborative project of the Dutch Centre for Quality of Care Research (WOK), the Dutch Institute for Research in Healthcare (NIVEL), the Dutch National Association of General Practitioners (LHV), and the Dutch College of General Practitioners (NHG). In 2002, 96 general practices participated in the LINH. For more information, see www.linh.nl. E-mail: info@linh.nl.

4

Patients either contacting a general practice cooperative or accident and emergency department in out-of-hours: a comparison

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Emergency Medicine Journal 2006; 23: 731-734 and
Huisarts en Wetenschap 2007; (double publication).

Abstract

Introduction. Lack of collaboration between the general practice (GP) cooperatives and accident and emergency (A&E) departments and the many self-referrals may lead to inefficient out-of-hours care. Organization models with more collaboration and integration should be examined, but good insight into current patient characteristics and the care received is needed for the right choices in the future.

Method. We retrospectively analysed records of all patients contacting the GP cooperative and all self-referring to the A&E department in out-of-hours in a eastern region in the Netherlands.

Results. 258 patients contacted the GP cooperative and 43 self-referrals to the A&E department per 1000 patients per year. At wide range of problems were seen at the GP cooperative, mainly related to infections (26.2%). The A&E department had a smaller range of problems, mainly related to trauma (66.1%). Relatively few urgent problems were seen in the GP cooperative (4.6%) and for self-referrals in the A&E department (6.1%). Women, children, elderly people, and patients from rural areas chose the GP cooperative significantly more often, as did patients with less urgent complaints (U4), patients with infections, heart and airway problems.

Discussion. *The* contact frequency of self-referrals to the A&E department is much lower than that at the GP cooperative. Care is complementary: the A&E department particularly focuses on trauma while the GP cooperative deals with a wide diversity of problems. The self-referrals concern mostly minor, non-urgent problems and can generally be treated by a general practitioner, by a nurse or by advice over the telephone, particularly in case of optimal collaboration in an integrated care facility of GP cooperatives and A&E departments with one access point to medical care for all patients.

Introduction

The organization of out-of-hours primary medical care is changing in many countries. We see more and more large-scale general practice (GP) cooperatives with central triage and sometimes a combination of primary care and accident and emergency (A&E) departments in hospitals.¹⁻⁶ These changes are due in part to increased medical workloads and the changing attitudes of general practitioners.^{1,5} Inefficiency and a lack of coordination among the various organizations providing out-of-hours emergency care also influences this changes.⁶⁻¹³ The number of non-urgent self referral patients to the A&E department affects the organization of out-of-hours medical care⁷⁻¹² but there is an enormous variability (6–80%) of taxied of non-urgent self referred patients to A&E department, who could be treated by GP care providers.^{6-9,13-16} The reasons cited most frequently by patients for skipping the GP care providers, is the belief that radiography is necessary and, less frequent, convenience, lack of timely access to GP care providers and the belief that the medical complaint is very urgent.¹²⁻¹⁵

Around 2000, primary medical care in the Netherlands started to change from small groups of practitioners taking turns to be on call out-of-hours to large-scale GP cooperatives (Box 1).

Box 1. Features of general practice cooperatives in the Netherlands⁵

- Usually situated near a hospital
- Access via a single regional telephone number
- Access daily from 5 p.m. to 8 a.m. and the whole week-end
- Large-scale handling of 100,000 to 500,000 patients within a radius of 20–30 km
- Chauffeurs in recognizable fully equipped GP cars (with O₂, infusion drip, automatic defibrillation equipment).
- ICT support including electronic patient files, electronic feedback to the GPs and on-line connection to the GP car
- Triage nurses in contact by telephone (that is, GP or hospital nurses)
- General practitioner shifts of 6 - 8 hours

Although the GP cooperatives are usually situated near hospitals, as yet there is very little collaboration.¹¹ In case of emergency, patients in the Netherlands can contact either GP care or secondary care by going to the hospital A&E department or by ringing the emergency number 112. Apparently in the Netherlands this free choice has also led to a patient shift from GP care to secondary care for non-urgent complaints.^{5,9,11,12}

Lack of collaboration and the large number of self-referrals may lead to inefficient organization of out-of-hours care with different approaches in different places for the same

medical problems. An example concerns the approach of a patient with an uncomplicated ankle distortion: At the GP cooperative such patient receives, after triage, self-care advice or a bandage, but when this patient visits an A&E department they often receive an X ray or plaster cast.

However, it is perhaps not efficient and very expensive to have three health care teams (GP cooperative, ambulance care and hospital A&E care) on duty for relatively few patients, especially in the night. Organization models with greater collaboration and integration of GP cooperatives and A&E departments should be examined. To prepare and develop effective models for collaboration out-of-hours, insight into current patient characteristics and the care received at both the GP cooperative and A&E department is required. We have therefore studied all patient contacts with a GP cooperative and with the linked A&E department as regards:

- Differences in contact frequency and characteristics of patients contacting a GP cooperative and an A&E department.
- Differences in care provided between a GP cooperative and an A&E department.
- Factors explaining differences in the patients' decisions.

Method

Design and population

We retrospectively analysed the records of all patients who contacted either a GP cooperative or an A&E department out-of-hours in a defined and overlapping region in the east of the Netherlands (223,410 inhabitants). We limited the research to 4 weeks in February 2003.

Procedures and variables

We examined every patient record available at the GP cooperative and the A&E department; two observers and a GP supervisor coded each record. These trained observers used defined code protocols, and dubious coding was discussed. Interobserver analysis gave a Kappa of 0.82. We did not exclude any of the patients, and missed value was used in the case of missing information or none at all.

We recorded the following:

- Sex
- Age (0–15, 16–65, >65 years)
- Complaint or diagnosis coded according to the ‘International classification of primary care’ (ICPC).¹⁷ Then we clustered ICPC codes that appeared to be similar.
- Origin (city or rural area)
- Contact moment (evening, night, or weekend daytime)
- Urgency (U1-U4); we used a validated urgency classification developed by the Dutch College of General Practitioners¹⁸ (Box 2).
- Care of choice (GP cooperative versus secondary care by going to the A&E department or phoning the national emergency number 112).
- Referral from A&E (yes/no)
- Follow-up: self-care, referral to regular GP, referral to out-patient clinic, or hospital admission.

Box 2. Urgency criteria¹⁸

Life threatening (U1). Vital functions are in danger. The triage nurse informs the GP at once. The GP interrupts work and immediately goes to the patient. When necessary, ambulance is simultaneously called.

Acute (U2). Real danger of patient’s condition quickly deteriorating with risk of vital functions failing. The triage nurse informs the GP at once. The GP goes to the patient as soon as possible - within an hour at most.

Urgent (U3). Complaint(s) should be evaluated within a couple of hours for medical or emotional reasons.

Routine (U4). Complaint(s) with no urgency. The triage nurse arranges an appointment with the GP or gives advice herself.

Analysis

We compared the patients contacting the GP cooperative and those contacting the A&E department by absolute numbers and number of contacts per 1000 patients per year. The patient and follow-up characteristics were calculated in numbers and percentages.

We used logistic regression analysis to explain the determinants for choosing GP care or secondary care. The dependent variable was the choice of either the GP cooperative or the A&E department. The independent variables were sex, age, origin, contact moment, urgency, and type of complaint. We calculated the outcomes in odds ratios, while variance was calculated in confidence intervals and significance ($P < 0.05$ was considered significant).

Results

Contact frequency and characteristics of patients

The population of 223,410 inhabitants in the studied region requested out-of-hours help 5178 times in a period of 4 weeks. To make these requests, 4423 patients (85.4%) contacted the GP cooperative, and 755 patients (14.6%) self-referred to secondary care by going to the A&E department (n=644; 12.4%) or by ringing the national emergency number 112 (n=111; 2.1%). This results in a contact frequency of 258 with the GP cooperative and of 43 self-referrals to the A&E department per 1000 patients per year.

Of those who contacted the GP cooperative, men were in the minority (43.4%), while they were the largest group in the A&E department (60.1%).

Only a very small minority of contacts with the GP cooperative (4.6%) and the A&E department (6.1%), concerned very urgent problems (U1 and U2). In absolute numbers, more patients with very urgent problems (U1 and U2) went to the GP cooperative (4423x 4.6%= 203) than to the A&E department (755x 6.1%= 46).

The GP cooperative dealt with a wide range of problems, mainly concerning infections (26.2%), while the A&E department had a smaller ranges of problems, mainly concerning trauma (66.1%) (Table 1).

Table 1. Contact frequency and patient characteristics at the general practice cooperative and self referral to the accident and emergency department (in absolute numbers and percentages)

	Total region	GP cooperative	Self-referral to A&E department
Contact frequency	n=5178 100%	n=4423 85.5%	n=755 14.5%
Contact frequency/1000 patients per year	301	258	43
Men (%)	45.8	43.4	60.1
Age (%)			
0–15	26.4	27.9	17.5
16—65	55.7	53.0	71.7
> 65	17.9	19.1	10.9
Urgency (%)			
U1 + U2	4.9	4.6	6.1
U3	17.4	13.0	43.6
U4	77.7	82.4	50.3
Complaints (%)			
Trauma	15.4	6.8	66.1
Infection	22.9	26.2	3.7
Musculo-skeletal problems	11.4	12.8	3.4
Digestive tract	9.0	10.1	2.4
Respiratory problems	4.2	4.8	0.9
Heart	4.2	3.9	6.1
Other problems	32.8	35.4	17.4

GP general practice; A&E accident and emergency

Differences in care provided

A minority of the patients (7.1%) at the GP cooperative were referred to the A&E department, and half of these patients (52.5%) were admitted to hospital. Some of these patients were been referred because GP cooperatives have no facilities for EKG, X-Ray or extensive blood testing.

The self-referring patients at the A&E department got an X ray in 50.4% of the cases. At the GP cooperative, most patients were given advice for self-care (78.1%) or were advised to go to the general practice for follow-up care.

Among the self-referrals to the A&E department, most patients were given advice for self-care or were referred to the general practice (60.6%). Of the self-referrals 13.5% were admitted to hospital.

Table 2. Diagnostics and care advised by the GP cooperative and the A&E department

	GP cooperative (n=4423)	Self-referral to A&E department (n=755)
Diagnostics* (%)		
Blood tests	-	17.7
EKG	-	12.3
X-ray	-	50.4
Advised care %		
Self-care	78.1	34.9
GP care	14.8	25.7
A&E	7.1**	-
Hospital care	-	39.4***

* GP cooperatives have no facilities for EKG, X-Ray and extensive blood test

** Of these patients, 28.1% were referred to the out-patient clinic and 52.5% were admitted to hospital

*** Of these patients, 25.9% were referred to the out-patient clinic and 13.5% were admitted to hospital

Factors explaining differences in the patient's decisions

Women, children, elderly people, and patients from rural areas chose the GP cooperative significantly more often, as did patients with less urgent complaints (U4), patients with infections, heart and airway problems (Table 3).

The total explained variance for contacting the GP cooperative or the A&E department was 48.5% (Nagelkerke test: $R^2 = 0.485$).

Table 3. Factors related to attending the general practice cooperative instead of the A&E

		N	% patients contacting GP cooperative	Odds ratio	95% CI	Significance
Total		5178	85.4			
Age	0-15 years	1368	90	1.89	1.45-2.48	<0.001
	16-65	2883	81	Ref*		
	>65	927	91	2.39	1.76-3.26	<0.001
Sex	Men	2373	81	Ref		
	Women	2805	89	1.48	1.21-1.82	<0.001
Origin	City	4014	84	Ref*		
	Rural area	1164	90	2.17	1.65-2.85	<0.001
Contact moment	Weekend daytime	2120	89	1.92	1.42-2.59	<0.001
	Evening	2290	84	1.31	0.99-1.74	0.06
	Night	761	82	Ref		
Urgency	U1 + U2	251	82	1.24	0.76-1.98	0.37
	U3	899	64	Ref		
	U4	4012	91	4.07	3.23-5.13	<0.001
Complaint	Trauma	800	38	Ref*		
	Infection	1188	98	48.80	32.33-73.66	<0.001
	Heart problems	217	79	9.86	6.11- 15.91	<0.001
	Respiratory problems	220	97	56.54	25.7-124.3	<0.001
	Other problems	2753	94	21.83	17.3- 27.4	<0.001

* Patients who attended the A&E department constitutes the reference group (Ref.)
A&E accident and emergency; CI confidence interval; GP general practice

Discussion

The contact frequency for the GP cooperative was found to be more than five times greater than the contact frequency for patients self-referring patients to the A&E department. Interestingly, more than three-quarters of all contacts with the GP cooperative and half of all contacts self-referred to the A&E department did not concern urgent problems.

The GP cooperative dealt with a wide range of problems, most of which involved infections. In contrast, the self-referrals at the A&E department were concerned with a small range of problems, mainly trauma. Half of these received a radiograph.

Most patients at the GP cooperative and patient self-referred to the A&E department received advice for self care or general practitioner care. The referral rate of the GP cooperative was very low, and a half these patients were admitted to hospital, while the admission rate of the self referrals to the A&E department was very low.

As reported in the literature, self-referrals particularly concerned young men with non-life-threatening trauma who lived in urban areas. They mostly expected a radiograph expect and got it.¹²⁻¹⁵ The admission rate for this group was generally low.

The results of this study show that the problem of the self-referrals is relative. Contact frequency at the A&E department is much lower than that at the GP cooperative.

Moreover, care is complementary: the A&E department particularly focuses on trauma while the GP cooperative deals with other problems. This may agree with patient expectations and experience in that: ‘When you have a trauma, you go to the A&E department’. In contrast, the self-referrals concern mostly minor, non-urgent problems.

Two studies examining general practitioners’ work in A&E departments found that the general practitioners managed ‘non-emergency’ patients as safely as the hospital A&E doctors, and the patients were equally satisfied. However, the general practitioners requested fewer imaging tests, referred more patients to primary care, admitted fewer patients to hospital and were more cost effective than the hospital A&E doctors.¹³⁻¹⁴

As supported by the literature we estimate that most self-referrals can be treated by the general practitioner, by a nurse or by advice over the telephone in case of integrated care facility with one single site for patients.^{6-9,13-16} When GPs have also access to radiography, EKG and blood tests (as they do during the day) we expect this percentage to be even higher.

There are some limitations to our study. It is a retrospective analysis of records and the A&E contacts were sometimes incompletely recorded and sometimes difficult to read. To classify the urgency of the complaint we used a classification validated for telephone triage. This classification was not originally developed for retrospective documentary analysis and the research population may have had more urgent problems than are reflected by the registration.

Our study took place in only one region and lasted only 4 weeks. This may limit the generalizability of the findings to other settings and periods. However, the results are comparable with those found in the literature.^{7,8,13}

The organization of out-of-hours primary medical care is changing in many countries. Alternative services, separate from A&E departments offering first contact care for non-urgent health problems, were likely to have little impact on the demand for emergency services¹⁵. Therefore it may be essential to create an integrated care facility of GP cooperatives and A&E departments with one access point to medical care for patients. In such a system patients no longer need to choose between different entrances to care and they are always on the right place. We recommend further research into this model or combinations of models on out-of-hours care, such as shared emergency patient telephone numbers or general practitioners working in the A&E department. Such research should result in the most effective, evidence-based, and patient tailored care.

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**Safety of telephone triage in GP cooperatives:
Do triage nurses correctly estimate urgency?**

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Abstract

Objectives. In recent years there has been a growth in the use of triage nurses to decrease GP workloads and increase the efficiency of telephone triage. The actual safety of decisions made by triage nurses has not yet been assessed. We therefore investigated if triage nurses accurately estimate the urgency level of health complaints when using the national telephone guidelines. We also examined the relations between the performance of triage nurses and their education and training.

Method. Cross-sectional, multicentre, observational study employing five mystery (simulated) patients who telephoned triage nurses in four GP cooperatives. The mystery patients played standardized roles. Each role had one of four urgency levels as determined by experts. The triage nurses called were asked to estimate the level of urgency after the contact. This level of urgency was compared with a 'gold' standard.

Results. Triage nurses estimated the level of urgency of 69% of the 352 contacts correctly and underestimated the level of urgency of 19% of the contacts. The sensitivity and specificity of the urgency estimates provided by the triage nurses were found to be 0.76 and 0.95, respectively. The positive and negative predictive values of the urgency estimates were 0.83 and 0.93, respectively.

A significant correlation was found between correct estimation of urgency and specific training on the use of the guidelines. The educational background (primary or secondary care) of the nurses had no significant relation between the rate of underestimation.

Conclusion. Telephone triage by nurses is efficient but possibly not safe, with potentially severe consequences for the patient. An educational programme for triage nurses is recommended. Also, a direct second safety check of all cases by a specially trained GP telephone doctor is advisable.

Introduction

Out-of-hours general practitioner (GP) care in Europe is increasingly being handled by large-scale organizations (i.e., GP cooperatives), with nurses generally handling the telephone triage. This trend is in response to the increased demand for GP care and attempts to reduce their workloads.¹⁻⁶ Research shows that the handling of telephone triage by nurses does indeed cause a substantial decrease in the immediate workload and increased efficiency of GPs.³⁻⁷ On the other hand some studies have shown that subsequent GP consultations increase after nurse-led telephone triage.⁷⁻⁹

Telephone triage is nevertheless considered the most complex and vulnerable part of the out-of-hours GP care process.¹⁰⁻¹² It has not yet been proven safe, perhaps due to underestimation of the complaints.^{4,7,10-12} There is no research on the effects of specific education and training on the efficiency and safety of telephone triage. Perhaps that it differs in different countries: Denmark opts for GPs,² England and the Netherlands opt for nurses who could have a primary or secondary care background.^{1,3,11}

To improve the balance between safety and efficacy for the care provided by triage nurses, explicit national telephone guidelines were implemented in the Netherlands. The telephone guidelines include a classification system with four levels of urgency.¹⁰

In this study we examined the ability of triage nurses to adequately estimate the urgency of health problems presented via the telephone, using the telephone guidelines. We also examined the correlations between underestimation of the urgency estimates, educational backgrounds of the triage nurses and their training on the telephone guidelines.

Methods

Design

Cross-sectional, multicentre, observational study employed five mystery (simulated) patients who telephoned triage nurses in four GP cooperatives. Each of the five mystery patients played four different standardized roles. We chose mystery patients for investigation, because they mimic the reality in care quite reliably and naturally.¹³⁻¹⁶

Population

The study was conducted in the last quarter of 2003 and included 118 triage nurses from four GP cooperatives in the Netherlands (Box 1). We attempted to obtain a representative picture of the quality of triage in the Netherlands by selecting cooperatives with different periods of existence from different regions with different levels of urbanization.

Box 1. Features of the 120 GP cooperatives in the Netherlands^{3,11}

- Mostly situated near or within a hospital.
- Access via a single regional telephone number.
- Large-scale handling of 100,000 to 500,000 patients within distances up to 20-30 km.
- Chauffeurs in recognizable GP cars which are fully equipped (e.g., O2, infusion drip, Automatic Defibrillation).
- Information and communications technology support, including electronic patient files, electronic feedback to the GPs and on-line connection to the GP car.
- Triage nurses on the telephone (primary or secondary care background).
- GP shifts of 6 - 8 hours.

Instruments and procedures

A total of 20 Dutch vignettes were written on the basis of practice cases matched to the protocols from the national telephone guidelines. The vignettes represented different complaints, different levels of urgency and different age and sex groups in the most natural manner possible. Life-threatening cases were included slightly more often than in actual daily life. A panel of seven GP experts evaluated the medical accuracy, completeness, representativeness and level of urgency of the vignettes. After modifying the vignettes, the panel of experts again judged the level of urgency for the different vignettes. It was decided a priori that at least six of the seven experts had to assign the same level of urgency to a vignette and that such agreement had to be achieved for more than 95% of the vignettes. Using this gold standard, only 6 (or 4%) of the 140 judgements (7 experts x 20 vignettes) were found to disagree with regard to the level of urgency for a vignette. Box 2 gives an overview on the the vignettes.

The mystery patients were very experienced in their job as as simulation patient at the Radboud University Nijmegen Medical Centre and able to mimic reality quite naturally.¹⁴⁻¹⁷ The five mystery patients were trained to play four vignettes matched with respect to content and emotion. We checked whether the mystery patients played the vignettes natural and reliably in a pilot study and also by listening to all the audiotaped contacts on a weekly basis.

We made agreements with the four GP cooperatives with respect to logistics and safety.

Box 2. Vignettes, including fingated name and birth date

	Name	complaint	birth date	Urgency class
1	mrs. Aalbers	painfull leg and fever	22-10-1951	U3
2	mr. Burgers	dyspnoea	15-12-1938	U2
3	mr. Cornelissen	diarrhoea	06-03-2002	U4
4	mr. Van Doorn	chest pain	04-06-1943	U1
5	mrs. Everts	back pain	02-04-1974	U4
6	mr. Fontijn	constipation	02-09-1950	U4
7	mrs. Gerritsen	paralyses	02-10-1939	U2
8	mrs. Hoogakker	intoxication/suicide treat	03-09-1980	U1
9	mrs. Van Ingen	diabetes/hypoglycaemia	03-04-1953	U2
10	mrs. Jansen	ankel trauma	03-07-1978	U3
11	mr. Klaassen	abdominal pain	05-02-1948	U3
12	mrs. de Lange	abdominal pain and pregnant	06-10-1975	U3
13	mr. Maassen	collapse	10-02-1989	U4
14	mrs. de Nooy	throat pain	12-01-1960	U4
15	mrs. Otten	pregnant and bleeding	12-12-1970	U4
16	mrs. Peters	painfull eye	06-06-2003	U4
17	mrs. Roelofsen	dizziness	04-04-1957	U4
18	mr. Schipper	anal bleeding	10-12-1945	U3
19	mrs. Timmer	headache	12-11-1978	U4
20	mrs. de Vries	contraception forgotten	02-03-1982	U4

The triage nurses were informed of the purpose of the present research and all consented to participate. The triage nurses completed a questionnaire with information on their education in primary care (2-3 years) or secondary care (4 years). Also they provided information about specific training received on the use of national telephone guidelines.

The mystery patients phoned the GP cooperative at random times in out-of-hours. The triage nurses did not know whether the individual on the telephone was a mystery patient and they presumably dealt with the contact in accordance with their own normal routines. At the end of the call or right before the triage nurse went to take action, the standardized patients revealed themselves. They asked the triage nurse her decision regarding the level of urgency on the triage criteria outlined in box 3.

Box 3: Urgency criteria from national telephone guidelines¹³

Life threatening (U1): Vital functions are in danger. Triage nurse informs GP at once. GP interrupts work and immediately goes to patient. When necessary, ambulance is simultaneously called.

Acute (U2): Real danger of patient's condition quickly deteriorating with risk of vital functions falling out. The triage nurse informs GP at once. GP goes to patient as soon as possible — within an hour at most.

Urgent (U3): Complaint(s) should be evaluated within three hours for medical or emotional reasons.

Routine (U4): Complaint(s) with no urgency. Triage nurse arranges an appointment with the GP or gives advice him/herself.

Each of the 20 vignettes was presented 18-20 times, equally spread out across the four GP cooperatives, so that each cooperative received the same set.

Consultations that were prematurely terminated and those lacking an urgency estimation were excluded from the analyses.

Analysis

We compared the urgency score, assigned by the triage nurse, to the gold standard.

We calculated the sensitivity, specificity and predictive values of the estimated urgency. For this purpose, a dichotomy was created between the U1-U2 life-threatening or potentially life-threatening categories of urgency and the remaining U3-U4 categories.

Next, we analysed the underestimation of urgency in the subset U1-2 cases. Underestimation was defined as score U1-U2 by the golden standard, with the triage nurses score of U3-U4. We performed a multilevel logistic regression analysis, with underestimation of the urgency as the dependent variable and the educational background and hours of training on the national telephone guidelines as independent variables, with the GP cooperative as a random factor. A significance level of $p < 0.05$ was adopted.

Results

The mystery patients made a total of 370 telephone contacts with 352 of the contacts proving usable in the end. A total of 18 contacts were dropped mostly due to no urgency estimate (5) or premature termination due to recognition by the mystery patient (13).

For 242 (69%) of the 352 telephone contacts, the urgency estimation was in perfect concordance with the gold standard. For the 110 non-concordance contacts, the urgency estimate of 106 (30%) contacts differed not more than 1 point and for 4 (1%) of the contacts, the urgency estimates differed ≥ 2 points from the gold standard.

For 44 (12.5%) of the telephone contacts, the triage nurses scored higher urgency and for 66 (19%) of the contacts, the triage nurses scored lower urgency than the gold standard (Table 1).

Table 1. Judgements of urgency by triage nurses; Relative to gold standard

<i>Criteria assessed by triage nurses</i>	<i>Gold standard U1-U4*</i>				Total
	U1	U2	U3	U4	
U1	<u>22</u>	2	1	0	25
U2	11	<u>28</u>	11	1	51
U3	1	18	<u>38</u>	29	86
U4	1	0	35	<u>154</u>	190
Total	35	48	85	184	352

*underlined numbers denote correct estimation

The capacity of the triage nurses to discriminate (potentially) life-threatening cases from less urgent cases was examined through comparison of the U1 and U2 figures with the U3 and U4 figures. The sensitivity was 0.76 (63/83) and the specificity was 0.95 (256/269). The positive predictive value of the estimates of the triage nurses was 0.83 (63/76). This is therefore much higher than the 0.24 (35+48)/352 a priori probability of a life-threatening problem. The negative predictive value of the estimates of triage nurses was 0.93 (256/267) while the a priori probability of a non-life-threatening problem was 0.76 (269/352).

The triage nurses who were trained on the use of national telephone guidelines had a lower rate of underestimation of the urgency (OR=0.10, CI 95% 0.01-0.81). The educational background (primary or secondary care) of the nurses had no significant relationship with the rate of underestimation.

Discussion

The urgency judgements made by the triage nurses after telephone contact with a mystery patient were found to be in two-thirds agreement with the gold standard. The sensitivity and positive predictive values were not high which meant that triage nurses tended to underestimate high urgent complaints. Conversely, the specificity and negative predictive values were high, which meant that the triage nurses delivered efficient care.

We found a significant correlation between the accurate estimation of the urgency and specific training on telephone guidelines. This finding suggests that training can help improve the safety of care, but we do not know what is the required intensity or frequency of this training.

The use of mystery patients in practice mimics the reality on an outstanding way. However, despite our efforts, one cannot prevent subtle differences in the presentations of the different complaints by the standardized mystery patients.

Additional research is needed to unravel the different determinants of the quality and safety of telephone consultations with triage nurses. A follow up study in general practice reviewing on safety patient contacts with the GP cooperative is also recommended.¹⁸

In The Netherlands, there is a trend to employ a special telephone doctor to supervise about 4-6 triage nurses¹⁰⁻¹¹. Investigation of this role is needed: Does it improve the quality and safety of telephone triage?

In the delivery of high-quality care, safety should always take priority over efficiency because of the potential severe consequences for the patient¹⁰⁻¹². This research proves that telephone triage by nurses is efficient, but is possibly not safe.

Should we be worried about the outcome of this study? Should we remove the nurses from their triage tasks and should doctors perform telephone triage as done in Denmark?² Other studies have showed that telephone triage by nurses is safe.^{4-7,19} Moreover, there is no research comparing doctors and nurses performing triage. In addition we cannot conclude that nurse triage is less safe than GP triage, because that requires another study design. Perhaps it does not matter who performs the triage because the telephone as a is unsafe.

Indeed we should worry about the safety of the telephone triage and take major steps to improve this. GP cooperatives should take safety rules such as: “When patients ring for the second time you should arrange a face-to-face meaning with the doctor”. They should also encourage the attitude of not being too restrictive in arranging a face-to-face contact, because the telephone is perhaps an unsafe medium.¹⁰⁻¹³

We recommend an educational certified programme for triage nurses and a direct second safety check of all cases by a specially trained GP, who supervises telephone triage nurses.¹⁰⁻¹¹ Further, the use of computerized decision support may also be helpful to enhance the safety of telephone triage.^{4,7,20-22} Finally, we recommend analysis of medical (near) calamities in peer group meetings.

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6

Quality of out-of-hours primary care: development and testing of indicators for prescribing and referring

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Abstract

Objective. Development of a set of quality indicators for internal quality improvement in out-of-hours primary care.

Methods. A systematic approach combining the opinion of three different GP expert panels, and an empirical test in daily practice. The indicators were based on clinical, evidence based, national guidelines. We tested the validity, feasibility, reliability, and opportunity for quality improvement.

Results. Of the 80 available national clinical guidelines, 29 were approved and selected by the first GP expert panel. Out of these 29 guidelines, 73 indicators concerning prescribing and referring were selected by the second panel. In a empirical test on 36,254 patient contacts 7344 patient contacts (22.7%) were relevant for the assessment of these 73 indicators.

Six indicators were excluded because they scored more than 15% missing values. The inter-rater reliability was high (kappa 0.82 and 0.86). In total, 38 indicators were excluded because the opportunity for quality improvement was limited (performance score $\geq 90\%$). In the final meeting, the third GP expert panel excluded five indicators, leading to a final set of 24 indicators.

Conclusions. This study shows the importance of subjecting indicators to an empirical test in practice. The national clinical guidelines are only partially applicable in the assessment of out-of-hours primary care. They need to be expanded with topics that are related to GP care in an out-of-hours setting and acute medical problems.

Introduction

Since the turn of the millennium, Dutch general practitioners (GPs) have reorganized their out-of-hours primary health care completely. They have replaced most of the small locum groups, in which GPs used to provide care for the local population, with large-scale GP cooperatives.^{1,2} This reorganization of out-of-hours care in the Netherlands was preceded by reorganizations in out-of-hours primary care in the early 1990s in the United Kingdom (UK)³⁻⁹ and Denmark.¹⁰⁻¹²

The creation of GP cooperatives led to a sharp decrease of GP workload and a higher level of job satisfaction.^{1,3} The number of telephone consultations has risen from about 35% to 50% since the GP cooperatives started.^{13,14} Patients in the UK, Denmark, and the Netherlands are generally positive about the care received from GP cooperatives.^{2,3,6-12,15-17}

However, the quality of medical care delivered by these GP cooperatives is as yet unclear. Good insight into this quality of medical care is important to make the accountability of health practitioners and managers transparent to society and to identify and minimize medical errors.¹⁸

Performance measurement of GP-cooperative clinical care is for instance based on well-developed, evidence-based, clinical guidelines. To make a valid and reliable assessment of current practice, key recommendations from clinical guidelines can be translated into measurable elements – the so-called indicators.¹⁹ These indicators need to be rigorously developed and need to be valid, reliable, and usable in quality measurement.¹⁸

In the Netherlands, the Dutch College of GPs have been developing evidence-based, national guidelines for primary care for over 15 years.²⁰ It is unclear whether these national guidelines are applicable to out-of-hours care. The problems presented in out of hours are different from daytime care due to the more urgent and more ad hoc character of the patients' complaints.^{21,22} Furthermore, the context differs from that of daytime care: triage nurses and GPs usually do not know the patients' medical history and GPs treat patients only for urgent complaints that cannot wait until daytime.^{21,22} In this article, we describe the development of a set of quality indicators for internal quality improvement in out-of-hours primary care based on clinical guidelines and test the validity, feasibility, reliability, and opportunity for quality improvement.^{18,23}

Methods

We systematically developed a set of quality indicators and tested it in three steps on the basis of the criteria described in Box 1.¹⁸

Box 1. Definitions used in the three steps for developing quality indicators¹⁸**I Deriving indicators from guidelines**

- Validity: the guidelines are underpinned by evidence and/or consensus.

II Empirical testing

- Feasibility: data are available and collectable.
- Reliability: findings are reproducible when different raters do the testing (inter-rater reliability, kappa).
- Potential opportunity for quality improvement: the indicator has the capacity to detect room for improvement in the quality of care.
- Validity: the indicator set covers the spectrum of problems presented and is relevant in relation to their urgency.

III Final evaluation

- Validity: the indicator is acceptable to both GPs and the research team as a measure of quality.

Deriving indicators from guidelines

We based our indicators on the available evidence-based, national, clinical guidelines for general practice.²⁰ These guidelines were developed in a rigorous procedure that took AGREE criteria into account and combined a systematic review of the literature with consensus meetings of GPs.²⁴ For this reason, we assumed validity of the clinical guidelines to be sufficient.

To be able to develop indicators from guidelines, we first investigated whether the available guidelines were applicable to the out-of-hours setting. A panel of six GPs were asked to judge the suitability of all 80 of the available national clinical guidelines for evaluation of clinical care at the GP cooperative on the basis of “clinical relevance”. We used “contact frequency” and “urgency” as the criteria for this judgement. Urgency was used as a criterion because urgent complaints generally have substantial medical consequences for the patient, while their incidence may be limited.²² A guideline was selected when at least five of six panel members judged a specific guideline to be relevant for out-of-hours care.

Next, three members of the research team derived all recommendations concerning prescribing and referring from the selected national guidelines. We focused on recommendations for prescribing and referring to hospital specialists because they are best registered in patient records.²⁵

The selected recommendations were next presented to a second panel of seven GP experts who were asked to judge these recommendations on their relevance and utility for evaluation of clinical care at a GP cooperative. In case of a positive score, defined as at least six out of seven panel members, the recommendation was directly accepted; if only

four or fewer panel members were in favour, the recommendation was immediately eliminated. A positive score of five members allowed further consideration of acceptance or elimination on the basis of consensus discussions by two GP guideline experts.

The accepted recommendations were finally operationalized into indicators by defining them as numerators and denominators.

Empirical testing

We used routinely collected data from a cross-sectional study, in which computer-registered data about patient contacts from one large out-of-hours GP cooperative were classified with diagnosis codes²⁶ and a code for urgency of complaints.²² The study material consisted of records of all 36,254 patients who contacted a GP cooperative in an urban-rural area in the east of the Netherlands, between July 2001 and June 2002. Records without medical content (e.g. messages from the hospital) were excluded. This particular GP cooperative has features in common with other GP cooperatives in the Netherlands (Box 2).

Box 2. Features of a general practitioner cooperative^{1,2}

- Usually situated near a hospital
- Access through a single telephone number
- Access daily from 5 p.m., the entire weekend and holidays
- Handling of 100,000 to 500,000 patients within distances of 20-30 km
- Telephone triage nurses working under supervision of GPs
- GP shifts of 6 to 8 hours
- Chauffeurs in recognizable GP cars that are fully equipped (e.g. O₂, infusion drip, automatic defibrillation equipment)
- ICT support including electronic patient files, electronic communication to the GP practices and on-line connection to the GP car

We analysed the extent to which GPs followed the recommendations in the selected national guidelines by investigating computerized medical records of patients. Diagnose codes were assigned to each indicator, and each patient contact was scored as to what extent the related clinical guideline was followed.

Feasibility was defined as the percentage of “missing values”.²⁷ A contact was considered a “missing value” when a patient contact was incompletely registered or unclear for judgement. Doubtful cases were scored by consensus of two observers, and if no consensus was reached, we added them to the category of “missing values”. An indicator that scored a “missing” percentage of 15 or more was excluded.

For inter-rater reliability, we performed a blinded random check of 330 decisions spread out on 37 indicators by three raters.

Opportunity for quality improvement was defined as a performance score of less than 90% because these indicators still have enough room for improvement.²⁷ We excluded every indicator with a performance score of 90% or more.

To get a more objective view on the representativity of our set of indicators, we classed the complaints presented at this GP cooperative as urgent or not urgent, and compared the results to data for the test population.

Final evaluation

For testing the validity of this set of indicators, we arranged a final meeting with four GP experts on guideline development and the research team. We asked this panel to determine, on the basis of all the results and the experience gained from our tests, whether this set of indicators represents a good measure of the quality of care provided by GPs out- of- hours. Box 3 gives an overview of the three steps just described.

Box 3. Development of guideline-driven indicators

	Aim	Definitions and criteria used	Undertaken by
I Derivation of indicators	Selection of all guidelines in the out-of-hours setting Pre-selection of key recommendations Selecting key recommendations	Urgency Contact frequency Prescribing and referring Urgency Contact frequency Utility	Research team (3) and GPs (6) Research team (3) Expert panel (7)
II Empirical testing	Feasibility Reliability Opportunity for quality improvement Validity	Missing values < 15% Inter-rater reliability Performance score < 90% Comparing urgency complaints	Pilot study
III Final evaluation	Validity	Consensus in expert meeting	Expert panel(4) + research team

Results

Deriving indicators from guidelines

SELECTION OF GUIDELINES

Of the 80 available national clinical guidelines, 29 were approved and selected by the entire panel of six GPs on the basis of clinical relevance (Table 1). The kappa of the judgements averaged 0.64.

Table 1. Selected 29 Dutch National Guidelines

Acute Coronary Syndrome (ACS)	Bacterial skin infections	Otitis media acuta
Acute coughing	Cerebrovascular accident	Pneumonia
Acute diarrhea	Children with fever	Sinusitis
Acute sore throat	COPD treatment	Stomach complaints
Ankle distortion	Imminent miscarriage	The red eye
Anticonception (post coital)	Heart failure	Transient Ischemic Attack (TIA)
Aspecific lower back pain	Headache	Urinary stones
Asthma in children	Gout	Urinary tract infections
Asthma in adults	Lumbar radicular syndrome	Vertigo
Atrial fibrillation	Otitis externa	

SELECTION OF KEY RECOMMENDATIONS

The research team derived 138 recommendations concerning prescribing and referring from the 29 selected guidelines. The second GP expert panel immediately accepted 54 recommendations, added 23 of 29 doubtful cases after consensus discussions, and immediately excluded 55 recommendations. Of the 77 remaining recommendations, 8 were combined, resulting in a set of 73 indicators.

Empirical testing

A total of 7344 of 36,254 patient contacts (22.7%) were relevant for the assessment of these 73 indicators. The 7344 contacts included 12,071 decisions that could be related to the clinical guideline recommendations.

The feasibility was high. Six indicators were excluded because they scored more than 15% missing values. The inter-rater reliability was calculated for two dimensions. The first one tested the agreement in scoring an item on whether a recommendation was followed (kappa: 0.82). The second one tested the extent of agreement on assessing an item as “not possible to judge” (kappa: 0.86).

In total, 38 indicators were excluded because the opportunity for quality improvement was limited (performance score $\geq 90\%$).

The remaining 29 indicators were classed as not urgent or urgent. As described elsewhere, the entire GP cooperative has a distribution of 16.3% urgent and 83.7% non-

urgent complaints²². As related to the indicator set, the distribution of complaints was 35.1% urgent and 64.9% non-urgent complaints (Table 2).

Table 2. Distribution of patient contact numbers (from the remaining indicators) in urgency classes

Urgency	Contact frequency at a GP cooperative ²²		Contact frequency in selected indicators	
	n	%	n	%
Urgent	3352	16.3	1212	35.1
Not urgent	17,119	83.7	2235	64.9
Total	20,471	100	3447	100

Final evaluation

In the final meeting, the third GP expert panel and the research team discussed the results and experience gained. The panel determined whether this set of indicators represents a good measure of the quality of care provided by GPs in out of hours. On the basis of consensus, this GP expert panel decided to exclude four indicators because they had a limited contact frequency at the indicator level and one indicator because of its limited evidence. This led to a final set of 24 indicators (Table 3).

Table 3. Final set of 24 indicators for prescribing and referring in out-of-hours primary care

Guideline and Indicator	Patient contact (n)	Performance score (%)	Missing values (%)	Guideline and Indicator	Patient contact (n)	Performance score (%)	Missing values (%)
Acute coronary syndrome				Bacterial skin infections			
Acetylsalicylic acid	122	39.3	7.6	Antibiotics local**	53	88.7	0
Atrial fibrillation				Antibiotics systemic**		83.0	0
Beta blocker	47	45.5	6.4	Otitis externa			
Referral		88.4	8.5	Antibiotics**	80	89.9	1.3
Heart failure				Acute otitis media			
Nitrate	133	27.6	4.5	Antibiotics**	370	81.6	3
Loop diuretics		46.8	6.8	Sinusitis			
Referral		88.2	4.5	Antibiotics**	100	80.9	0
Transient ischaemic attack				Red eye**			
Acetyl salicylic acid	51	54.2	5.9	Antibiotics cornea erosion	95	87.6	6.3
Asthma in adults				Antibiotics conjunctivitis	175	60.6	0
β_2 -sympathomimetics	152	80.7	1.3	Urinary tract infections			
Ipratropium bromide		88.0	1.3	Antibiotics	289	66.0	2.4
COPD Treatment*				Antibiotics		77.8	3.5
β_2 -sympathomimetics	218	44.7	1.4	Migraine			
Prednisone		70.3	11.9	Pain treatment	62	85.0	3.2
Pneumonia				Vertigo			
Amoxicillin (children)	75	80.6	10.7	No medication	344	74.1	0
Doxycyclin (adults)	225	53.6	14.7				

* COPD Chronic obstructive pulmonary disease;

** only prescribe antibiotics on indication as described in the guidelines

Discussion

As far as we know, this is the first attempt to develop indicators for testing the quality of primary care in out-of-hours. With a systematic approach that combined expert opinion and testing in daily practice we developed a set of 24 valid indicators. This study shows us the importance of subjecting indicators to an empirical test in practice because testing our indicators in daily practice proved to reduce our set because of lack of measurability or variability.^{18,27}

As we suspected, the national clinical guidelines are only partially applicable in the assessment of out-of-hours primary care due to the other context and the more urgent and ad hoc character of patients' complaints.^{21,22} Around 80% of all the complaints presented were not covered by the selected guidelines and indicators.

The practice test performance was very good on average. We had to exclude about half the indicators because of their limited "opportunity for quality improvement". This selection criterion is particularly important for internal quality improvement. However, if the indicator set is to be used for external accreditation purposes, this selection criterion might not be desirable: we then need indicators that highlight both excellent and minimal performance.²³

Strengths and limitations of this study

We used a rigorous procedure with several different GP panels, a combination of practice and guideline expertise, and testing of indicators on large numbers of patients and decisions.

The advantage of using indicators from clinical guidelines and studying every medical record is that it provides an opportunity to detect exactly what the specific problems are in daily practice and what the specific limitations of the national guidelines are.^{23,30} A disadvantage of studying every medical record is that it is very time-consuming and expensive.²⁸

The reliability was excellent, but it was tested only on the entire set and not on each indicator. The feasibility was excellent as well, but the data we used were already coded. To overcome feasibility problems in the future, a system for extracting the relevant patient contacts from the database of a GP cooperative has to be developed.^{28,29}

By testing whether the indicator set covers the spectrum of problems presented, we found a small shift to more urgent problems. We appreciated this shift because of the possibly severe consequences of very urgent problems.

A limitation of our study is that the indicators used for prescribing and referring give no indication about the quality of the diagnostic process or the advice given because this information proved to be insufficiently available in medical records.²⁵ The diagnostic process and patient education are crucial elements of the out-of-hours care and need to be assessed as well.

Recommendations for research and guideline development

This study describes the development of a monitoring instrument for out-of-hours primary care. The findings highlight the difficulty of constructing rigorous and useful indicators in such a complex situation as an out-of-hours consultation.

In our opinion, the existing national clinical guidelines need to be expanded with topics that are related to GP care in an out-of-hours setting and acute medical problems. We also recommend research into urgent complaints because the evidence regarding them is limited.³²⁻³⁶

In summary, we have described how we systematically developed a valid set of quality indicators that can be used to assess the quality of medical care out-of-hours. Our first impression is that this GP cooperative has, in general, a high performance score. More research is needed to evaluate the performance of GPs in the out-of-hours setting.

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General Practice Cooperatives: long waiting times for home visits due to long distances?

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Abstract

Introduction. The introduction of large-scale out-of-hours GP cooperatives has led to questions about increased distances between the GP cooperatives and the homes of patients and the increasing waiting times for home visits in urgent cases. We studied the relationship between the patient's waiting time for a home visit and the distance to the GP cooperative. Further, we investigated if other factors (traffic intensity, home visit intensity, time of day, and degree of urgency) influenced waiting times.

Method. Cross-sectional study at four GP cooperatives. We used variance analysis to calculate waiting times for various categories of traffic intensity, home visit intensity, time of day, and degree of urgency. We used multiple logistic regression analysis to calculate to what degree these factors affected the ability to meet targets in urgent cases.

Results. The average waiting time for 5827 home visits was 30.5 min. Traffic intensity, home visit intensity, time of day and urgency of the complaint all seemed to affect waiting times significantly. A total of 88.7% of all patients were seen within 1 hour. In the case of life-threatening complaints (U1), 68.8% of the patients were seen within 15 min, and 95.6 % of those with acute complaints (U2) were seen within 1 hour. For patients with life-threatening complaints (U1) the percentage of visits that met the time target of 15 minutes decreased from 86.5% (< 2.5 km) to 16.7% (≥ 20 km).

Conclusion. Although home visits waiting times increase with increasing distance from the GP cooperative, it appears that traffic intensity, home visit intensity and urgency also influence waiting times. For patients with life-threatening complaints waiting times increase sharply with the distance.

Introduction

The organisation of out-of-hours primary medical care is changing in many countries. We see more and more large-scale general practice (GP) cooperatives with central triage and sometimes a combination of primary care and accident and emergency (A&E) departments in hospitals.¹⁻⁶ These changes are due in part to increased workload and the changing needs and attitudes of general practitioners related to their work.^{1,5}

Around 2000, primary medical care in the Netherlands was also changing from small groups of practitioners taking turns to be on call out of hours to large-scale GP cooperatives (Box 1).

Box 1. Features of general practice cooperatives in the Netherlands⁵⁻⁷

- Usually situated near a hospital
- Access via a single regional telephone number
- Access daily from 5 p.m. to 8 a.m. and the whole week-end
- Large-scale handling of 100,000 to 500,000 patients within distances of 20–30 km
- Chauffeurs in recognizable GP cars that are fully equipped (e.g., O₂, infusion drip, automatic defibrillation equipment).
- ICT support including electronic patient files, electronic feedback to the GPs and on-line connection to the GP car
- Triage nurses in contact by telephone (i.e., GP or hospital nurses)
- GP shifts of 6 to 8 hours

With the introduction of out-of-hours GP cooperatives in the Netherlands, the physical distance between the patient and the general practitioner (GP) increased, especially in rural areas. The question of whether the GP can reach patients in time for very urgent problems has led to social unrest, especially on places at big distances from the GP cooperatives⁷. In 2004, this unrest resulted in an investigation by the Dutch Inspectorate of Health Care (IGZ), which criticized the distribution of out-of-hours GP cooperatives throughout the Netherlands and the large distances between GP cooperatives and patients. The IGZ advocated the setting up of satellite cooperatives.⁷

Underlying the social unrest and the IGZ recommendations is the general assumption of a more or less linear relationship between the patients' distance to the GP cooperatives and the patient's waiting times for a home visit in urgent cases.⁷ It is not known whether this assumption is correct or if there are other factors that influence waiting times as well. Our review of the Dutch literature and a Medline search did not provide a single article in which the relationship between the distance to the services and the patient's waiting times was studied. A better understanding of this relationship is relevant because it can help us

set up guidelines with respect to the organisation of the services, the size of the area for a cooperative, the location of the PG cooperative, the number of available GP cars, and coordination with the ambulance service.⁸

Although we also assume that there is a relationship between distance and waiting times, we also hypothesize that other factors, such as traffic intensity, home visit intensity, and time of day, are important in explaining waiting times for home visits. We also expect that the urgency estimated at the telephone may influence waiting times. Further analysis of waiting times of patients with very urgent problems is important because too long waiting times for these patients can lead to permanent damage or even to death.

Therefore we conducted a study aimed at answering the following questions:

- To what extent is waiting time related to patients' distance to the GP cooperative, traffic intensity, home visit intensity, time of day, and the urgency estimated by telephone triage?
- What is the proportion of very urgent consultations (U1 and U2) for which the national time limits are satisfied and to what extent is this related to distance, traffic intensity and home visit intensity?

Method

We conducted a cross-sectional study of patient's waiting times for all home visits at four out-of-hours GP cooperatives in the Netherlands in the period 2002–2005. At the four GP cooperatives, there were complaints from the population about the long distances at the time of this study. We did not exclude any of the home visits, and in the case of missing information or none at all, a missing-value code was used. Box 1 shows the characteristics of the participating GP cooperatives.

Procedures

With or without consulting the supervising telephone doctor⁹, the triage assistants routinely determined the urgency on the telephone on the basis of the complaint. At post A, the urgency was determined later, after the reading of the complaint, according to a procedure described elsewhere.¹⁰ The time at which the telephone conversation ended and the time of day was registered electronically or by hand (post D). The arrival time was taken from the time registration that was routinely updated by the chauffeurs of the GP cars. For each home visit, the shortest distance between the GP cooperative and patients' address was calculated with the aid of the route planner of the Dutch Automobile Association, the ANWB. We obtained an overview of the intensity of traffic from the traffic police; the

overview indicates whether there was off-peak, intermediate or rush hour traffic for every half hour on all days of the week. All consultations were classified into these three categories on the basis of the time when the telephone conversation ended.

Box 2. Characteristics of the participating GP cooperatives

GP cooperative	A	B	C	D
City population	140,000	23,800	46,000	77,825
Rural population	35,000	79,500	39,350	100,652
Location of the GP cooperative in the area	Central	Peripheral	Peripheral	Peripheral
Greatest distance (km) to the GP cooperative	19	29**	25	28
<i>Number of GP cars</i>				
Evening	2	1	1	1*
Night	1	1	1	1*
Daytime in the weekend	2	2**	1	2
<i>Traffic measures</i>				
	-use of bus lane	Flashing lights Siren Swing-down posts Short cuts Notice of new traffic obstacles	Flashing lights Siren Swing-down posts Short cuts Notice of new traffic obstacles	Flashing lights Siren Swing-down posts for access within city
Emergency number	Yes	Yes	Yes	Yes
Telephone doctor present	Yes	No	No	Yes
Urgency determined by	Triagist + Telephone doctor	Triagist	Triagist	Triagist + Telephone doctor

* During evenings and nights, one GP car is on immediate call from a private address

** During the day on the weekend, the GP car is parked on the perimeter, so that the greatest distance is reduced to 19.6 km

Variables

The *waiting time* for the arrival of the consultation doctor was the dependent variable. This was defined as the time from the end of the telephone conversation to the arrival of the GP car. Box 2 shows the national target values by urgency category.

The independent variables were:

- *Distance*: the number of kilometres between the GP cooperative and the consultation address. These data were classified in distance categories (0.0–2.4, 2.5–4.9, 5.0–7.4, 7.5–9.9, 10.0–14.9, 15.0–19.9, and ≥ 20.0 km).
- *Traffic intensity*: classified as off-peak, intermediate, or rush hour traffic.
- *Home visit business*: the sum of the number of home visits requests in 1 hour before and after each consultation. This was classified as: no visit, one or two visits, or three or more visits.

- *Urgency*: degree of urgency of the complaint as estimated by telephone triage. The urgency was divided into four classes according to the urgency system of the Dutch College of General Practitioners (NHG) Telephone Guide (Box 2).
- *Time of day*: the moment at which the patient approached the GP cooperative, which was, according to a dossier check, in the evening (5 p.m.–11 p.m.), at night (11 p.m.–8 a.m.), or during the day on the weekend (8 a.m.–5 p.m.).

Box 3. Urgency classes of the Dutch College of General Practitioners Telephone Guide¹¹

Life-threatening (U1). Complaints in which the vital functions are in danger. The assistant informs the GP immediately. The GP interrupts his/her work at once and goes to the patient as quickly as possible; this must be within **15 min**. If necessary, the ambulance service is notified at the same time (e.g. for a complaint with a serious chance of heart attack or loss of consciousness).

Acute (U2). Complaints for which there is a real chance that the condition of the patient will worsen in a short time, with a risk of loss of vital functions. The assistant informs the GP immediately. The GP sees the patient as soon as possible, certainly within **1 hour** (e.g. for the rapidly increasing shortness of breath of a patient known to have chronic obstructive pulmonary disease).

Urgent (U3). Time plays a potentially negative role for medical or emotional reasons. The patient's condition is evaluated within **3 hours** (e.g. a patient with a cut or a lot of pain).

Routine (U4). There is no pressure of time for this request for help. The assistant makes an appointment with the GP or gives information and advice.

Analysis

In order to answer the first question, we calculated waiting times by means of a variance analysis (F test) in the various categories of distance, intensity of traffic, consultation business and urgency.

To answer the second question, we calculated waiting times in the various urgency categories by means of a variance analysis. The percentages that met the national time limits were also calculated. For the consultations with the greatest urgency (U1 and U2), we determined, by means of a multiple logistic regression-analysis, which factors were associated with meeting, or not meeting, the time limits (U1 within 15 min and U2 within 60 min). For these calculations, $P < 0.05$ was considered significant.

Results

Relationship of waiting times to distance. For the 5827 home visits included in the study, the average waiting time was 30.5 min. The waiting time increased linearly with respect to the distance. Patients living 20 km or more from the GP cooperative had to wait an average

of 13.4 min longer for a home visit than patients living in the immediate neighbourhood of the GP cooperative (Table 1).

Factors that influence waiting times. The average the home visit time increased from 28.2 min in the off-peak hours to 32.8 min in rush hours. If there were no other home visits, then the average waiting time was 22.8 min, but the average waiting time could be as much as 37.9 min at very busy times. The waiting time was 25.0 min at night, and could be as much as 36.4 min during the day on the weekend. The waiting time was on average 13.9 min for requests for help that were estimated to be very urgent (U1), and if the urgency was estimated as low (U4), then the waiting time was 36.2 min (Table 1).

Waiting times and time targets. Altogether, 88.7% of all patients were seen within 60 min. For life-threatening complaints (U1), 68.8% of the patients were seen within 15 min, and 95.6% of the patients with acute complaints (U2) were seen within 1 hour.

Table 1. Relationships of average waiting time to distance, traffic intensity, home visit intensity, time of day and urgency

	Number of consultations	Average waiting time in minutes	Standard deviation	Significance
Total	5827	30.5	27.4	
<i>Distance in km</i>				0.00
0.0-2.4	1326	26.6	28.5	
2.5-4.9	1673	28.6	28.2	
5.0-7.4	842	31.7	28.4	
7.5-9.9	610	30.3	25.9	
10.0-14.9	616	33.7	25.4	
15.0-19.9	505	36.6	23.1	
≥ 20.0	255	40.0	23.1	
<i>Traffic intensity</i>				0.00
Off-peak hours	2083	28.2	25.6	
Intermediate hours	2487	31.2	27.8	
Rush hours	1270	32.8	28.9	
<i>Home visit intensity</i>				0.01
No visit	1336	22.8	17.4	
1 or 2 visits	2836	29.9	26.4	
≥ 3 visits	1600	37.9	33.2	
<i>Time of day</i>				0.00
Evening	2685	29.9	25.6	
Night	1495	25.0	21.7	
Daytime in the weekend	1658	36.4	32.9	
<i>Urgency</i>				0.00
U1, life-threatening	205	13.9	11.3	
U2, acute	1613	23.1	18.5	
U3, urgent	1915	33.1	28.7	
U4, routine	1845	36.2	30.9	

Of the patients with urgent complaints (U3), 98.4 % were seen within 2 hours, and 100% were seen within the 3-hour time limit (Table 2).

For the patients with life-threatening complaints (U1), the time limit of 15 min appeared to be met significantly less often as the distance increased. The percentage of visits that met the time target decreased from 86.5% near the GP cooperative to 16.7% at a distance 20 km or more [odds ratio (OR) decreasing from 29.9 to 1.6]. All other factors (traffic intensity, home visit intensity, and time of day) did not lead to a significant odds ratio for the U1 category.

Table 2. Home visits with waiting times and time targets for the arrival of the home visit doctor

Urgency	Number of home visits	% visit ≤ 15 min	% Consultation ≤ 30 min (%)	Consultation ≤ 60 min (%)	Consultation ≤ 120 min (%)**
U1	205	68.8*	95.6	98.5	100
U2	1613	41.2	76.6	95.6*	99.6
U3	1915	29.8	61.4	89.8	98.4*
U4	1845	23.6	56.3	84.3	97.3
Total	5578	32.5	65.4	88.7	98.6

U1 life-threatening; U2 acute; U3 urgent; U4 routine

* Time targets: 15 min for U1, 60 min for U2, 180 min for U3, and no time limit for U4

** Although the time limit for U3 is 180 min, almost 100% of the U3 patients received a consultation within 120 min. For this reason we chose to maintain the time limit of 120 min

In the U2 category, the distance appeared to have no significant influence on waiting times, and approximately 95% of the patients were seen within an hour. Furthermore, the time target was met more often in the U2 category as the number of home visits decreased [no home visits: OR 8.9, confidence interval (CI) 3.0–26.2; and 1–2 home visits: OR 2.8, CI 1.7–4.7; see Table 3].

Table 3. Multiple logistic regression-analysis: relationships of meeting the time targets of the urgency categories U1 and U2 to distance, traffic intensity, home visit intensity and time of day

	Urgency category: life-threatening (U1)			Urgency category: acute (U2)		
	Number of consultations	Percentage of consultations in ≤ 15 min	Odds ratio and 95% confidence interval**	Number of consultations	Percentage of consultations in ≤ 1 hour	Odds ratio and 95% confidence interval**
Total	204	68.8		1613	95.5	
<i>Distance in kilometres</i>						
0.0–2.4	52	86.5	29.9 (2.8–314.2)*	427	96.2	1.5 (0.4–5.4)
2.5–4.9	61	80.3	17.7 (1.8–178.8)*	440	95.9	1.6 (0.5–5.9)
5.0–7.4	34	70.6	12.0 (1.1–126.4)*	235	93.6	1.1 (0.3–3.9)
7.5–9.9	20	55.0	5.3 (0.5–57.7)	190	94.7	1.0 (0.3–3.8)
10.0–14.9	12	33.3	2.1 (0.2–26.5)	121	95.9	2.3 (0.4–11.9)
15.0–19.9	19	31.6	1.6 (0.1–19.0)	137	96.4	1.4 (0.3–6.0)
≥ 20.0	6	16.7	Reference	63	95.2	Reference
<i>Traffic intensity</i>						
Off-peak hours	83	74.7	2.1 (0.6–5.2)	622	96.3	1.2 (0.6–2.4)
Intermediate hours	77	64.9	1.1 (0.7–2.8)	669	95.5	1.4 (0.8–2.6)
Rush hours	45	64.4	Reference	322	94.1	Reference
<i>Home visit intensity</i>						
No consultations	55	72.7	1.8 (0.6–5.2)	386	99.0	8.9 (3.0–26.2)*
1 or 2 consultations	107	71.0	1.7 (0.7–4.0)	830	96.6	2.8 (1.7–4.7)*
≥ 3 consultations	42	57.1	Reference	380	90.3	Reference
<i>Time of day</i>						
Evening	86	69.0	1.6 (0.7–3.9)	764	95.5	0.6 (0.2–1.4)
Night	69	74.3	1.4 (0.4–4.9)	495	97.4	1.7 (0.7–4.0)
Daytime in the weekend	47	59.6	Reference	353	92.9	Reference

* $P < 0.05$

**Interpretation: the greater the odds ratio is, the greater the chance that the patient will be seen within the time limit

Discussion

Main findings

The average waiting time for all home visits was half an hour, and almost 90% of all home visits took place within an hour. Traffic intensity, home visit business, and urgency of the complaint all had a significant influence on this waiting time. Seventy percent of all patients with an urgency of U1 were seen within 15 min, and 95% of all patients with an urgency of U2 were seen within an hour. For patients with life-threatening complaints (U1) the time target was met increasingly less often as the distance increased. This appeared not to apply for U2, for which waiting times and distance were not related, but for which the home visit business significantly influenced whether the time target was met.

What this study adds

Patients with a U2 or U3 classification were seen so well within the time target that, as this study indicates, the time target for U2 cases could be reduced to ½ hour and the time target

for U3 cases could be reduced to 2 hours. The short patient waiting times for home visits can possibly be explained by the fact that the house call GP has no other duties and can therefore carry out the consultations without interruption. The driver possibly makes a contribution to shorter waiting times by being aware of the traffic situation and by taking measures to get there faster, by using the bus lane, for example.

The patient's waiting time is largely determined by the urgency category. Training in correctly classifying the urgency is therefore very important to ensure that the right patient receives the right care at the right moment.

The time target of 15 min for patients with life-threatening complaints (U1) appears to be met significantly less often as the distance increases. Furthermore, it appears that other factors, such as traffic intensity and home visit business, are of hardly any influence. This is probably due to the fact that the doctor interrupts his work immediately for a U1 patient and uses the bus lane, sirens, and flashing lights to get to the patient immediately. For a somewhat lower priority, such as that for U2, we see that distance does not play a role, but home visit business and traffic intensity do.

How, then, can we gain time for patients with life-threatening complaints (U1)?

Although literature about this subject is lacking, we can, on the basis of this study, cautiously suggest that the distance to the patient be shortened by spreading the starting points of the GP cars and ambulances over the work area in as well balanced a way as possible. Further, it is very important that the GP cooperatives and ambulance services complement each other as seamlessly as possible by means of agreements about mutual fine tuning of times and efforts.⁷⁻⁹

Limitations

We do not know of any published study about waiting times for consultations, so we cannot compare our data with those of others. The results for individual GP cooperatives correlated very well as proves in a supplementary multiple logistic regression-analysis. This strengthens the idea that the results can be generalized to some degree. However, each district has its own unique characteristics that influence waiting times.

For example, there is a large suburb 5 km from GP cooperative A that is difficult to access because of traffic bumps and roundabout routes. This caused a sharp increase in waiting times for the patients, which made it comparable to the waiting times at a distance of 20 km (data not shown).

A limitation of this study is that there were relatively few patients with life-threatening complaints, so that results pertaining to them should be interpreted with caution.

Implications for research

Further research is indicated regarding models of more cooperation between GP cooperatives and ambulance services with a view to how waiting times for patients with life-threatening complaints can be reduced. Also the question of what the consequences are for the patient if the U1 time limit of 15 min is not met should also be studied.

In this cross-sectional study, we have studied the patient's waiting times to see the home visit GP. Attention for waiting times is important in order to assure that the patient receives the right care at the right moment.

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8

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

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Abstract

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 organization. Reliability was high, with Cronbach's alphas and intraclass correlation coefficients exceeding 0.70 for all scales. Only items in the organization 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 organizational level. Overall satisfaction was high, showing highest levels for home visit and lowest levels for telephone advice.

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 elsewhere³⁻⁵ the decision was made to set up large-scale GP cooperatives. These organizations 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 provision⁷⁻¹⁷, yet in view of possible cultural and organizational 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 organization, 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, organization 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 participation 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, torn 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, 7520 questionnaires were returned (52.2%): 2352 for telephone advice (49.0%), 2512 for centre consultation (52.3%) and 2656 for home visit (55.3%). Patient characteristics are presented in Table 1.

Table 1. Patient characteristics

	Telephone consultation (n=2352)	Centre consultation (n=2512)	Home visit (n=2656)
<i>Gender</i>			
Male	951 (40,4)	1240 (49,4)	1291 (48,6)
<i>Age group (yrs)</i>			
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)
<i>Level of education</i>			
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)

* mainly children

Non-response

From three GP cooperatives, in total 1636 of 1800 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 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 (3000 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 analyzed 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 threecomponent 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 organization 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 *organization*, and from 0.53 to 0.56 for *doctor* and *organization*.

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%).

Table 2. Telephone advice

Scale/items	Corrected item-total correlation	Item non-response (%)	Mean	SD
<i>Telephone nurse (n=11)</i>				
25. Advice helped me	0.835	372 (15.8)	7.239	2.219
22. Reassurance	0.909	311 (13.2)	7.386	1.969
23. Advice or treatment	0.910	221 (9.4)	7.395	2.052
16. Professionalism	0.880	234 (9.9)	7.405	1.651
21. Confidence	0.922	205 (8.7)	7.460	1.906
24. Feasible advice	0.838	388 (16.5)	7.564	1.964
19. Understanding my problem	0.915	177 (7.5)	7.620	1.829
20. Clear explanation	0.895	255 (10.8)	7.657	1.756
17. Taking me seriously	0.891	134 (5.7)	7.691	1.825
15. Friendliness	0.771	112 (4.8)	7.696	1.537
18. Taking time to talk*	0.840	153 (6.5)	7.792	1.673
<i>Organization (n=3)</i>				
27. General information	0.586	477 (20.3)	6.827	1.729
30. Accessibility pharmacy**	0.533	1016 (43.2)	7.347	1.685
28. Accessibility by telephone*	0.577	145 (6.2)	7.600	1.686

Items and scales, item-total correlations, item non-response (including 'not applicable'), grand mean and SD (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
<i>Telephone nurse (n=7)</i>				
16. Professionalism	0.879	387 (15.4)	7.663	1.472
20. Clear explanation	0.908	548 (21.8)	7.777	1.570
21. Confidence	0.911	374 (14.9)	7.779	1.609
15. Friendliness	0.840	225 (9.0)	7.806	1.434
19. Understanding my problem	0.911	374 (14.9)	7.779	1.609
18. Taking time to talk	0.878	286 (11.4)	7.895	1.494
17. Taking me seriously	0.887	235 (9.4)	8.003	1.542
<i>Doctor (n=12)</i>				
34. Advice/treatment helped me	0.809	330 (13.1)	7.662	1.950
32. Advice or treatment	0.907	178 (7.1)	7.792	1.757
31. Reassurance	0.918	195 (7.8)	7.840	1.781
33. Feasibility of advice/treatment	0.844	323 (12.9)	7.879	1.672
30. Confidence	0.935	106 (4.2)	7.890	1.761
29. Clear explanation	0.909	171 (6.8)	7.911	1.679
26. Taking time to talk	0.864	124 (4.9)	7.914	1.690
28. Careful physical examination	0.892	294 (11.7)	7.919	1.672
23. Friendliness	0.818	82 (3.3)	7.994	1.452
24. Professionalism	0.882	135 (5.4)	8.012	1.498
27. Understanding my problem	0.903	159 (6.3)	8.024	1.625
25. Taking me seriously	0.900	94 (3.7)	8.076	1.591
<i>Organization (n=10)</i>				
43. Furnishing of waiting room**	0.622	219 (8.7)	7.028	1.711
36. General information on cooperative**	0.667	415 (16.5)	7.092	1.628
38. Signposting to the GP cooperative**	0.637	360 (14.3)	7.260	1.730
42. Time in waiting room**	0.584	173 (6.9)	7.348	1.913
40. Parking facilities**	0.492	130 (5.2)	7.472	1.854
30. Accessibility pharmacy**	0.511	860 (34.2)	7.529	1.685
28. Accessibility by telephone**	0.644	182 (7.2)	7.776	1.635
44. Tidiness and hygiene**	0.689	144 (5.7)	7.816	1.295
41. Time between contact and consultation	0.651	285 (11.3)	7.854	1.579
39. 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 SD (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 visits

Scale/items	Corrected item-total correlation	Item non-response (%)	Mean	SD
<i>Telephone nurse (n=7)</i>				
16. Professionalism	0.909	528 (19.9)	7.834	1.522
20. Clear explanation	0.929	694 (26.1)	7.893	1.618
19. Understanding my problem	0.934	427 (16.1)	7.961	1.722
15. Friendliness	0.855	320 (12.0)	7.968	1.439
21. Confidence	0.922	456 (17.2)	7.969	1.697
18. Taking time to talk	0.891	428 (16.1)	8.061	1.532
17. Taking me seriously	0.918	377 (14.2)	8.094	1.619
<i>Doctor (n=12)</i>				
34. Advice/treatment helped me	0.793	586 (22.1)	7.862	1.875
33. Feasibility of advice/treatment	0.851	620 (23.3)	8.031	1.615
31. Reassurance	0.913	299 (11.3)	8.195	1.636
32. Advice or treatment	0.920	307 (11.6)	8.200	1.716
29. Clear explanation	0.927	330 (12.4)	8.211	1.564
27. Understanding my problem	0.928	251 (9.5)	8.295	1.571
30. Confidence	0.940	211 (7.9)	8.303	1.600
28. Careful physical examination	0.910	320 (12.0)	8.319	1.570
26. Taking time to talk	0.892	231 (8.7)	8.320	1.496
24. Professionalism	0.914	279 (10.5)	8.322	1.438
23. Friendliness	0.839	178 (6.7)	8.347	1.370
25. Taking me seriously	0.920	226 (8.5)	8.393	1.513
<i>Organization (n=4)</i>				
39. Accessibility pharmacy**	0.628	1199 (45.1)	7.269	1.825
36. General information on cooperative**	0.740	609 (22.9)	7.468	1.666
38. Time between contact and home visit	0.729	399 (15.0)	7.653	1.841
37. 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 SD (n=2656)

* Significant at the p< 0.05 level.

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

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 *organization* 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.

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

* At least 67% item response per scale needed;

** GPC = GP cooperative

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 *organization* scale in which almost all items discriminated between the GP cooperatives in all types of contact.

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 organization (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 or?’ (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 questionnaires evaluates out-of-hours primary health care. Our nonresponse 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 nonresponse (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 organization). 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 organization 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.

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

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Abstract

Objective. The shift towards large-scale organization 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% (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, CI 1.4–2.1) and nurse telephone consultation (OR 4.2, 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, 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.

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 reorganization resulted in a sharp decrease of GP workload and was also associated with higher levels of job satisfaction by GPs.³⁻⁷

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 safe⁸, 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 themselves², 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

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 to 8 hours
- 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

Measures

The postal questionnaire for telephone consultation contains two scales, one on the telephone nurse (n=11) and one on the organization (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 organization 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 following: cardiovascular disease, asthma/COPD, cancer,

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 organization-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, 5239 questionnaires were posted to patients who had received a telephone consultation, and 2583 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 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).

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* (n=2583).

	Number of missings (%)**	Negative Evaluation (overall % score ≤ 6)	Cooperative with most negative (poorest) evaluation (highest % score ≤ 6)	Cooperative with least negative (best) evaluation (lowest % score ≤ 6)
<i>Accessibility</i>				
General information on cooperative	522 (20)	35	44	24
Accessibility by telephone	158 (6)	19	33	10
<i>Nurse telephone consultation</i>				
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

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

** Missing values or marked as 'not applicable'.

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 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))

	% of patients/ cooperatives	Accessibility of cooperative (2 items)	Nurse telephone consultation (11 items)
<i>Patient characteristics</i>			
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)*
<i>Cooperative characteristics</i>			
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)*

*Significance: $p < 0.05$

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

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 cooperatives²². 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 gatekeeper²³, 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 largescale reorganization 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 consultations¹², 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 howto 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 reassurance²², and there may be substantial room for improvement in the content of the

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advice too, e.g. by paying much attention to what patients have already tried for themselves before telling them what to do.

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Rude or aggressive patient behaviour during out-of-hours GP care: Challenges for communications with patients

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Abstract

Background. Surveys of British and Dutch practices in out-of-hours indicated that GPs feel at risk of rude or aggressive patient behaviour and that this may adversely affect their job satisfaction. We tried to get information about the incidence, types and patient characteristics of rude or aggressive behaviour. This information may help us better understand why patients become rude or aggressive and to improve communications with patients.

Methods. Retrospective, observational study involving the analysis of medical records of all patients who contacted a GP cooperative in the eastern part of the Netherlands, between June 2001 and June 2002.

Results. Of the 36,259 patient records available, 545 (1.5%) reported rude behaviour. Verbal aggression was reported in 67 patient records (0.2%), and no physical aggression was reported. Anxiety, sorrow, or pain was reported by patients in 49.7% of the cases with rude or aggressive behaviour. When rude or aggressive behaviour occurred the conflict topic between patient and professional were mostly the request of a home visit (21.8%), or a centre consultation (17.3%), or a request for medication (8.2%). Patients with mental health problems (OR 2.3 CI 1.8–3.1) were more likely than others to engage in rude or aggressive behaviour. We found that the greater the urgency of the complaint, the less often rude or aggressive behaviour occurred (OR 0.2, CI 0.0–0.7).

Conclusion. Anxiety, sorrow, or pain was associated with rude or aggressive behaviour. Requests for home visits or centre consultations were the most frequent conflict topic between patient and triage nurse. These findings suggest that improved communication at the telephone, particularly exploring the expectation, needs and worries of patients, may reduce aggressive behaviour.

Introduction

Healthcare workers in the UK, particularly during out of hours care, said to be at risk of patients' aggressive behaviour.¹⁻³ As a consequence, the British National Health Service (NHS) published *Zero Tolerance* and recently offered doctors a course in self-defence.⁴ Surveys of Dutch practices also indicated that GPs on out-of-hours duty felt that they are at risk of rude or aggressive patient behaviour, and this has adverse effects on their perception of the workload and job satisfaction.⁵

We did not find any literature to get insight on factors underlying rudeness or aggressive behaviour, but we need such insight to understand the patient's perspective on optimal care and to improve the quality of care^{7,8}. With such insight, we can also develop new methods to prevent and channel such rude or aggressive behaviour.⁵

In the period 2000-2003 the organisation of out-of-hours care in the Netherlands has completely moved from small groups to large-scale GP cooperatives^{5,6} (Box 1). The patients have access to the GP cooperative by one regional telephone number only, in contrast to the open access of hospital A&E departments. This is the reason for our expectation that most of the conflicts with rude or aggressive behaviour will occur during telephone triage and are due to communication problems. We expect such behaviour especially in case of patients with mental health problems, including alcohol and drugs abuse.

Since the GP cooperatives started, the number of telephone consultations has increased enormously. This may be efficient from the perspective of the care providers, however many patients do not expect to receive a telephone consultation.⁹⁻¹¹ We expect that this new situation may trigger rude or aggressive behaviour in patients. Particularly worried parents of sick children, anxious and worried patients without urgent medical problems may experience problems with the new situation and may react in an emotional way to it.

It is important to learn about the specific groups of patients who exhibit such behaviour in order to improve the communication with these patients. We therefore performed an observational study during out-of-hours care at a GP cooperative, to explore the incidence of rude or aggressive patient behaviour in GP out-of-hours care and to explore factors associated to such behaviour.

Methods

Design

This retrospective, observational study was carried out by analysis of medical records.

Population

The records of all patients who contacted a GP cooperative between June 2001 and June 2002 were included in the study. The patients lived in a city of some 165,000 inhabitants in the eastern part of the Netherlands. As most cooperatives in the Netherlands, this GP cooperative has the following common features: it is large-scaled, access is via one telephone number, and nurses do telephone triage and give advice under the supervision of a GP. The triage assistants and GPs register all patient contacts in electronic files (Box 1).^{5,6} This particular cooperative records details of each incident of rudeness and aggression. With the help of these records, the patient's own doctor can discuss the incident with the patient.

Box 1. Features of general practice cooperatives in the Netherlands

- 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
- Large-scale handling of 100,000 to 500,000 patients within distances of 20–30 km
- Chauffeurs in recognisable GP cars that are fully equipped (e.g. O₂, infusion drip, automatic defibrillation equipment).
- ICT support including electronic patient files, electronic feedback to the GPs and on-line connection to the GP car
- Triage nurses in contact by telephone (i.e. GP or hospital nurses)
- General practitioner shifts of 6 to 8 hours

Procedures and variables

A trained medical research assistant (MH) assessed, under the supervision of a GP, the content of all recorded patient contacts. In case of doubt, contacts were discussed.

Rudeness and aggression can involve a spectrum of behaviour. Having considered classifications in the literature¹², we distinguished between the following types:

- No rudeness or aggression
- Rudeness: disrespectful behaviour, such as slamming the phone down.
- Verbal aggression: use of abusive language, threats, intimidation ('I'll come to kill you.')
- Physical aggression: use of physical violence.

As independent variables in the study we used:

- Age of patient
- Sex of patient
- Time of day (night vs. daytime or evening) of contact,

- Presence of mental health problems including alcohol and drugs abuse
- (ICPC codes P and Z) ¹²,
- Urgency of the problem presented (urgent and non-urgent as defined in the Dutch National Guidelines) ¹³

In case of rudeness or aggression, we also further explored the presence of potential connected factors as pain, anxiety or worries. Also we explored conflicts topics between patients and health workers, for example patient's expectation to get a consult, a home visit, specific treatment or medication.

Analyses

We calculated the incidence and percentages of the various categories of rude or aggressive behaviour. We used logistic regression analysis to determine the correlations between the various determinants and rude or aggressive patient behaviour. The correlations were rendered in odds ratios (ORs) and confidence intervals (CIs). A value of $p < 0.05$ was considered significant.

Results

Incidence

Among the 36,259 patient records, 545 (1.5%) cases involved rudeness. Verbal aggression towards healthcare workers was reported in 67 (0.2 %) and physical aggression was not reported at all. Most of the records (98.3%) reported no rudeness or aggression (Table 1).

Table 1. Rudeness or aggressive behaviour (absolute numbers and percentages)

Degree of aggression	Number of contacts	Percentage
No aggression	35,030	98.2
Rudeness	545	1.5
Verbal aggression	67	0.2
Physical aggression	0	0
Total	35,642	100

Anxiety, sorrow, or pain was reported in 49.7 % of the cases with rude or aggressive behaviour. In case of rude or aggressive behaviour, the conflicts or debate between patients and professionals concerned the wish of patients to have a home visit (21.8%), centre consultation (17.3%), or medication (8.2%) (Table 2).

Table 2. Factors connected to all contacts with rudeness or aggressive behaviour: Patient problems and topic of debate or conflict between patients and health workers (in numbers and percentages)

Patient problems	Number of contacts	Percentage of contacts
Anxiety/sorrow/pain expressed	304	49.7
Transport problems	32	5.2
Angry at GP cooperative	24	3.9
Angry at his/her own GP	13	2.1
Other factors	14	2.3
Unknown	225	36.8
Total	612	100.0
Topic of debate or conflict		
Home visit	129	21.8
Centre consult	106	17.3
Prescription	51	8.2
Other	33	5.4
Hospital admission	20	3.2
Ambulance	19	3.2
Treatment by GP	9	1.5
GP on the telephone	8	1.4
Unknown	237	37.4
Total	612	100%

Determinants of rudeness or aggressive patient behaviour

Men (OR 1.3, CI 1.1–1.6), young people (OR 1.7, CI 1.4–2.0), patients requesting help at night (OR 1.5, CI 1.2–1.9) and patients with mental health problems (OR 2.3 CI 1.8–3.1) were more often exhibiting rude or aggressive behaviour. We also found that the greater the urgency of the problem presented, the less often rude or aggressive behaviour occurs (OR 0.2, CI 0.0–0.7) (Table 3).

Table 3. Logistic regression analysis: Determinants of patient and care characteristics related to rudeness or aggressive behaviour (in numbers and Odds ratio's)

	N	Odds ratio**	95.0% confidence interval	Significance ***
Total	36,164			
Age				
0–15 years	9,559	1.3	1.1–1.6	0.01
16–40	11,249	1.7	1.4–2.0	0.00
>40	15,305	Constant		
Sex				
Men	15,312	1.3	1.1–1.6	0.00
Women	20,861	Constant		
Time of day				
Night	4,097	1.5	1.2–1.9	0.00
Day and evening	32,166	Constant		
Urgency				
Urgent	781	0.2	0.0–0.7	0.01
Not urgent*	19,686	Constant		
Health problem				
Mental	1,805	2.3	1.8–3.1	0.00
Other	34,458	Constant		

* Scored for just 6 months; ** Interpretation: odds ratio greater than 1.0: more prone to aggression

*** Significance: p < 0.05

Discussion

Main findings

Physical aggression was reported in none of the 36,259 patient records, and rude or aggressive behaviour towards healthcare workers was reported in 2 contacts per 1000 patients per year. On a population of 165,000 inhabitants we calculated that this is less than about one incident per day of eight hours. Anxiety, sorrow, and pain were the most potential connected factors. Home visits, centre consultations and medication were important issues of debate or conflict. Patients with mental health problems were more often showing rude or aggressive behaviour. We found an opposite association between rude or aggressive behaviour and urgency of the medical complaint.

What this study adds

A possible explanation of the absence of physical aggression is that the cooperative is only accessible by telephone. We think that the focus of rudeness or aggressive behaviour has been shifted gradually from the GP to triage assistants. This hypothesis is supported by the finding in another survey that, after the start of the GP cooperatives, the feelings of GPs that they were at risk of rude or aggressive behaviour dropped significantly.¹⁴ If triagists become a kind of safety net for rude or aggressive behaviour, this will be a new challenge for telephone triage and communications with patients at the telephone.

Since we found that patients with rude or aggressive behaviour often had feelings of anxiety, sorrow, or pain improved communication during telephone triage, particularly exploring the expectations, needs and worries of patients, may reduce aggressive behaviour.

The finding that the greater the urgency of the complaint, the less often rude or aggressive behaviour occurs is new. This may mean that the patient and healthcare worker agree quickly on the care needed for very urgent complaints. If the complaint is less urgent, a mismatch between patient expectations and the care offered may occur more quickly particularly in patients who have feelings of anxiety, sorrow, or pain.

Limitations

The studies undertaken so far have used a self-reporting method, which inevitably includes a degree of subjectivity. This is the first study that has tried to get a more objective picture of the incidence and of factors associated to rude or aggressive behaviour and our findings appear us to be plausible. A limitation of this study is, however, that healthcare workers may not have recorded all cases of rude or aggressive behaviour, despite the instructions.

Another limitation of this study is that it was not recorded if the aggression occurred during telephone triage, centre consultations or home visits. We may expect, however, that the large majority of the cases took place during telephone contacts.

Implications for research

Further research into other GP cooperatives is needed to confirm our findings and to get more insight into the determinants of rudeness and aggression during out-of-hours. Research need to focus on the communication during telephone triage. Our assumption that rudeness and aggression occurs mostly during telephone triage should be studied. Also the effects of training on communication with emotional, worried or anxious patients should be evaluated: does it lead to a lower incidence of rudeness and aggression?

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General discussion

In our research about the quality of the Dutch out-of-hours primary care and developing instruments for future quality measurement, we investigated:

- Patient and care characteristics
- Quality of care delivered by professionals
- Patient experiences and behaviour.

In this final chapter, we present and discuss our main findings, provide methodological considerations, and make recommendations for daily practice and future research.

Patient and care characteristics

The principle that out-of-hours GP care is only intended for urgent cases contradicts the reality of the data in our study: three-quarters of the morbidity presented at GP cooperatives is not urgent, and most of the problems are self-limiting.

The feeling that the GP cooperative is the ‘evening shop’ of daytime GP care was not confirmed in this study: there are 24 times as many daytime contacts as there are at the GP cooperative. Most problems are new and concern acute infections or acute painful complaints.

From medical point of view, many of the out-of-hours problems can wait until office hours or can be treated via nurse telephone advice for self-care.

From the patient’s point of view, however, seeking help is appropriate and justified. Moreover, a recent unpublished pilot study suggests that, due to accessibility problems (e.g. telephone blocks or absence of the GP) in regular GP hours, patients with acute problems ‘escape’ probably to out-of-hours care.

Perhaps the sharp artificial distinction between care in- and out of office hours should be abandoned. The access to care should be the same at all times, and the patient should get the same help at any time. To bring out-of-hours primary care up to the level of regular care, it must be available at the same medical facilities. This would create unambiguous care and may shift the ‘escaping’ patient back to regular office hours again.

The results of our study of patient flow at the GP cooperative and at the A&E department show that the problem of self-referral to the A&E department is relatively limited because about 85% of the patients choose to contact the GP cooperative. However, self-referrals seem to be increasing, and most of them concern minor, non-urgent traumas that can be treated by a GP, a nurse, or telephone self-care advice.¹⁻¹³ Care at the two sites is more or less complementary: the A&E department focuses on traumas, while the GP cooperative

deals mainly with a wide diversity of non-traumas. This may fit into patient expectations and experiences: ‘When you have a trauma, you go to the A&E department’. Supported by the literature we estimate that the majority of self-referrals can also be treated by the general practitioner, by a nurse or by advice over the telephone in case of integrated care facility with one single site for patients.¹⁻¹³ If GP cooperatives were to have access to radiography, EKGs, and blood tests, as GPs do during regular office hours, we expect that more than 90% of the self-referrals can be handled by GP care.

In the Netherlands, there is a tendency to better integrate the GP cooperative and the A&E department.^{1,2,14,15} The advantages and disadvantages of this new approach need to be evaluated rigorously. Other options, such as having hospital-employed GPs work in the A&E department^{16,17}, need to be evaluated. There is also a need to investigate models that provide seamless collaboration between the GP making home visits and ambulance care.

Quality of care delivered by professionals

Our research with mystery patients telephoning GP cooperatives shows that the urgency judgements made by the triage nurses met the ‘gold standard’ in about 70% of the time. About 19% of the urgent cases were underestimated, which may possibly lead to unsafe care. An analysis of these underestimated cases shows that the triage nurses were too imperceptive of the patients request for help, asked too few questions to determine the degree of urgency, and did not recognize urgent problems well enough.

Although the literature shows that nurse telephone triage is efficient¹⁸⁻²³, there is still little research into the safety of the triage.^{20,24-26} Research into this issue is complex because unsafe care is relatively rare in normal practice, which makes expanded numbers of patient contacts necessary to produce reliable figures.

In our opinion, safety should always take priority over efficiency because of the potential severe consequences for the patient.²⁴ Our research proves the telephone triage by nurses is efficient but is possibly not safe.

Should we remove the nurses from their triage tasks and should doctors perform telephone triage as the Danish did? There is no research comparing doctors and nurses performing triage. Also we cannot conclude nurse triage is less safe than GP triage, because that asks another study design. Perhaps it does not matter who performs the triage because the telephone as medium proves to be unsafe.

In general GP cooperatives should take big effort to improve the safety of telephone triage. GP cooperatives should take safety rules like: “When patients ring for the second

time you should arrange a face-to-face with the doctor". They should also stimulate the attitude to be not to restrictive in arranging a face-to-face contact because the telephone is perhaps an unsafe medium.²⁴⁻²⁷ We advise an educational certified programme for triage nurses and a direct second safety check of all cases by a specially trained GP, who supervises telephone triage nurses.^{24,27} Further, the use of computerised decision support may also be helpful to enhance the safety of telephone triage.¹⁸⁻²² At last, we recommend analysis of medical (near) calamities in peer group meetings.

We have described how we systematically developed a valid set of 25 quality indicators for out-of-hours GP care based on national clinical guidelines (NHG standards).²⁸ We used the expertise of three expert panels, and we empirically tested indicators on patient records of a GP cooperative. This study also shows the importance of subjecting indicators to a practice test. This test reduced our set of indicators considerably; many did not meet the criteria of lack of measurability and variability.²⁹ The practice test also showed that the national clinical guidelines for general practice are only partially applicable to the assessment of out-of-hours primary care.

Our practice test resulted in a high score for GP performance, but more research is needed to confirm such performance in other GP cooperatives. We recommend that national clinical guidelines be expanded with topics related to the out-of-hours setting and acute medical problems. Our set of quality indicators is now undergoing a final practice test before it can be used for future assessment of the Dutch quality of out-of-hours medical care.

In rural areas the introduction of the Dutch GP cooperatives increased the physical distance between the patient and GP care and led to social unrest³⁰. In our study of patient waiting times, the finding that almost all home visits took place within an hour is reassuring. Furthermore, we found that the factor of distance in the patient waiting time has only a limited effect. Other factors, such as traffic intensity, home visit business, time of day, and urgency of the problem also affected waiting times for home visits as well. Influencing these factors can improve the rate of the right patient receiving the right care at the right moment. For example, the waiting time has largely been determined by the urgency category to which the patient was assigned. We recommend training of telephone triage nurses and GPs to ensure optimal urgency classification.³¹

For patients with life-threatening complaints (U1), the 15-minute criterion for home visits was reached in only 70% of the cases. This finding needs attention. We suggest that the distance to the patient could be shortened by spreading the starting points of GP cars and ambulances throughout the region. Furthermore, it is important that GP cooperatives

and ambulance services complement each other as seamlessly as possible by means of agreements about guidelines, education, and logistic schedules and patient services.²

A better understanding of the relationship between distance and waiting time is relevant because it can help us to set up guidelines with respect to the optimal size of the area serviced by and the location of the GP cooperative, the number of available GP cars, and coordination with the ambulance service⁸.

Patient experiences and behaviour

Meeting patients legitimate expectations are a major objective of all medical care, and patients experiences are also recognized as one of the possible outcome measures of quality of care.³²⁻⁴¹ We therefore developed an instrument for measuring patient experiences and validated it in a wide variety of settings. This instrument aims to help individual GP cooperatives improve their quality of care and set up a nationwide benchmark for the quality of care from the patient perspective.

Despite the relatively recent changes in out-of-hours care and some negative publicity about the changes in the lay press, overall patient satisfaction was good, with the highest level for GP care and the lowest level for organizational aspects.

Patients were most satisfied about face-to-face contacts with the GP. They expected more face-to-face contacts and less telephone consultation. A mismatch between the expected care and the care received was most closely associated with a negative evaluation, as proven in other studies.^{18,32-41}

The important discrepancy between patients' expectations for more face-to-face with centre consultations or home visits on the one hand and the wish of professionals and policy makers to create more efficient care by means of telephone consultations on the other, needs more attention. Exploration of the patients' expectations and trying to bring about a shared decision are, in our opinion, crucial aspects of the triage.^{37,40,41}

The finding that patients were also relatively negative about the advice of telephone nurses is also important: they often reported that this advice did not help. Patients also often reported they wanted to be reassured but got unexpected advice. We hypothesize that more emphasis on exploring the help request will help fine-tune the telephone advice. Training in these areas for telephone nurses is needed.

The finding that the presence of a special telephone doctor²⁷ is related to a better evaluation of the nurse telephone consultation is interesting and perhaps helpful. Further study is needed to investigate the consequences: perhaps the availability of a telephone

doctor improves the competency of the telephone triage nurses, or perhaps speaking to a doctor lowers the threshold for patients.

The relatively large differences in patient evaluations among the 26 participating GP cooperatives show that there is ample room for improvement in some of the GP cooperatives. The reported lack of information about the organization and about the care patients can expect, needs more attention (e.g. through information brochures, posters, and/or stickers with telephone numbers).

The expectation that the impersonal character and problems with accessibility of the GP cooperatives might provoke aggressive patient behaviour was not borne out: incidents of aggressive behaviour were rarely reported. This finding is confirmed by the finding in another survey that, after the start of the GP cooperatives, the feelings of GPs that they were at risk of rude or aggressive behaviour dropped significantly.⁴² The absence of physical aggression could be explained by the fact that the cooperative is only accessible by telephone, where patients can let off steam. Therefore, the focus of rude or aggressive behaviour has perhaps been shifted from the GP to the triage assistants. If triage nurses become a kind of safety net for rude or aggressive behaviour, this will be a new challenge for the telephone triage and the communication with patients via the telephone.

The finding that anxiety, sorrow, or pain was associated with aggressive patient behaviour is noteworthy. Also the discrepancy between expecting a home visit and getting telephone consultation as the most frequent conflict topic is noteworthy. These findings suggest that improved telephone communication, particularly exploring the expectation, needs and worries of patients, may reduce aggressive behaviour.

Methodological considerations

Our studies of the characteristics and behaviour of patients at the GP cooperative and the A&E department were conducted in only a few settings and may therefore not be representative for the whole country. Nonetheless, the studies have included an extensive number of patient contacts, and most of the results of these studies are confirmed by results of other studies.

Using mystery patients in research into the safety of triage is one of the most ideal ways to imitate the daily reality in which the performance of triage nurses can be compared with the 'golden standard'.⁴³ However, the number of scripts is limited. Moreover we cannot avoid subtle differences in the simulation patients' standardized presentations of the various complaints. Additional research into the safety of triage by studying audiocassettes

or by reviewing general practice patient data is therefore recommended, as reported elsewhere.⁴⁴

We developed quality indicators for quality measurement of out-of-hours GP care. We used a rigorous procedure with different GP panels and a practice test on patient records. This resulted in good reliability and feasibility of the indicators. A limitation may be that the indicators used for prescribing and referring give no indication about the quality of the diagnostic process or the advice given⁴⁵.

Using patient experiences can be helpful to detect specific problems in daily practice.^{46,47} A limitation of studying patient records is that it is very time consuming, and there may be discrepancies between the clinical reality and what is written in the records.²⁹

We studied the relationship between the patient waiting time for a home visit and the distance to the GP cooperative in a multicentre cross-sectional study. This study is unique, as far as we know, so we cannot compare our data with those of others. The results for individual participating GP cooperatives correlated very well, which strengthens the idea that they can be generalized to some degree. A limitation of this study is that there were relatively few patients with life-threatening complaints, so that results pertaining to them should be interpreted with caution.

We developed an instrument to measure patient experiences and satisfaction. This instrument underwent an intensive panel procedure and diverse pilot studies, and it proved to be valid and reliable. This very extensive study was carried out in 24 GP cooperatives with 14,400 postal questionnaires. This instrument is now used nationwide. The results are in line with other studies in the Netherlands. Nonetheless, a high overall non-response rate of 47.8% was encountered. The results of the non-response analysis showed almost no effect on the satisfaction scores, although we could not exclude bias completely.

Finally, our study of aggressive patient behaviour is the first attempt to get more objective information on the incidence and nature of this behaviour. However, the use of patient records with their routinely collected data may lead to under-registration of such incidents.

Implications for future research

The organization and the quality of urgent out-of-hours care is a hot issue in the Netherlands. In 2005, we took the initiative to bring Dutch universities and relevant organizations in emergency care (GP cooperatives, ambulance care and hospital A&E departments) together in an expert group and developed a research programme for this issue.⁴⁸ The expert group advised the Dutch government to conduct research into a range of

themes. This research program and recommendations in this thesis shows that research priority is needed for three themes related to GP cooperatives and the increasing collaboration with the hospital A&E departments:

1. *Quality of medical care at GP cooperatives.* GP cooperatives need a unambiguous quality measurement system in which they can compare themselves with others. Therefore, we need to test and implement a performance measurement system based on indicators and instruments as described in this thesis. In future, we need more attention for possible patient subgroups at risk in out-of-hours care, e.g. terminal patients and patients with chronic diseases. What are the bottlenecks and how can we improve their care?

Large-scale organizations such as GP cooperatives and continuity of care seem to contradict each other. There is almost no personal continuity of care and patients have contact with one or more unfamiliar professionals who do not know the patient history. What are the consequences of personal discontinuity of care and how can we deal with this fact?

2. *Quality of accessibility and triage.* In a pilot study we found indications that there are accessibility problems to GP care during office hours with the consequence that patients ‘escape’ to out-of-hours care. Perhaps this causes accessibility problems though increased pressure on our-of-hours care with increased waiting times. The increased distances to care may cause accessibility problems because some people, especially in rural areas, find the threshold too high for contacting health care. How can we bridge the distance?

The efficiency and safety of nurse telephone triage needs attention too. Much literature claims triage by nurses is efficient, but there are indications that the patient ‘escapes’ after telephone self-care advice to GP care in office hours or the A&E department. We should also detect causes of unsafe triage and investigate how to improve it. Would a specially trained telephone doctor or a computerized triage support system improve the quality of telephone triage?

3. *Integration GP cooperative and hospital A&E.* The general expectation is that integrating the GP cooperative and the A&E department would solve most of the actual cooperation problems and lead to quality improvement. However, we do not know whether this is true. Perhaps new problems would surface; for example, increased contact frequency because of increased patient expectations or decreased personal commitment of professionals. The availability of laboratory and roentgen facilities might led to over use it. Thus, we need to study patient and professional experiences in an integrated GP

cooperative and A&E department. We also need research into the costs, efficiency, effectiveness, and safety of such integrated care.

Implications for practice

GPs and patient organizations had to discuss the finding that three-quarters of the morbidity presented at GP cooperatives is not urgent, and most of the problems are self-limiting.

The distinction between care in daytime and out-of-hours may have become less sharp in the last decennia, perhaps resulting in higher contact frequency in out-of-hours. But since GP cooperatives have been set up, telephone triage nurses can handle most of the non-urgent help requests. Despite this the GP workload in out-of-hours care will grow through increased contact frequency (non published data). This and the care needed for the self-referrals in case of integration of GP cooperative and the A&E department, GPs need the support of more trained nurses. At the same time, alternative ways to help patients need to be investigated to reduce the number of help requests that are not urgent. What are the effects of specific Internet information, video consultation, and training of neighbourhood health care volunteers on medical consumption?

To reverse the patient shift to and from out-of-hours care, both office and out-of-hours primary care need to be accessible without barriers for acute, new onset, medical problems. Furthermore, the patient receiving out-of-hours care should receive the same care as received given during office hours. To get to the same level, out-of-hours and office hours primary care should have the same medical facilities (radiography, EKG, and blood tests) and the same electronic patient file.

The reorganization of GP out-of-hours care had positive effects on the GPs workload and on GP commitment to out-of-hours care. These positive effects are important conditions for the delivery of high-quality care in out-of-hours. Many telephone consultations are now delegated to telephone triage nurses, but a special supervising telephone doctor with a prominent role is needed to improve the triage safety. Because triage nurses take the workload of low complex problems, the GP can focus on complex and urgent care.

Perhaps the quality of GP care can be improved by task differentiation with specific tasks for a telephone doctor and a doctor for home visits. In our opinion the telephone doctor needs special training, for example, in telephone consultation, urgency classification, and supervising triage nurses. The home visit doctor should be trained in

diagnostics and therapy of emergency cases, and in getting optimal agreement with ambulance care.

Regular inventory of patients' experiences and opinions are needed to help individual GP cooperatives improve their quality of care. For example, the results of our study teach us that exploring patient help requests and training for giving adequate advice by means of telephone triage are important goals. Another example is the reported lack of information about the GP cooperative organization: supplying information is another important goal. Benchmarking shows great differences among GP cooperatives and patients gave the GP cooperatives many tips and tricks how to improve their quality of care.

The organizations of Dutch GPs (LHV and NHG), formulated a renewed mission statement on the position of GPs for 24-hour responsibility and in emergency care.^{15,49} A recent study on GP's opinion about the future of out-of-hours care shows high commitment to this mission statement.⁵⁰

This discussion about the future of out-of-hours care turns to an organizational model in which ambulance, A&E departments, and GP cooperatives collaborate and even integrate some of their services. In this model, there would only be one entrance to care via a regional telephone number or by going to the integrated service facility. Patients do not need to choose: they are always at the right place for all out-of-hours care, and patients get the most appropriate care after triage.

Many GP cooperatives and A&E departments currently aim at more collaboration, but there is little information about optimal models. For this reason, these services should be integrated gradually. Each step needs to be carefully evaluated to prevent future problems.

Our research produced relevant instruments to assist GP cooperatives. First, we created an urgency classification system on which the national telephone guidelines are based. This system has now been developed into the Dutch Triage System (NTS) that GP cooperatives, ambulance services, and A&E departments will use.⁵¹ Second, we developed a set of indicators that will be part of the future performance measurement system for GP cooperatives. Third, we developed an instrument for measuring patients' and professionals' experiences and satisfaction, which is used now nationwide and which, hopefully, will also be part of the future performance measurement system. We hope our efforts will contribute to future research and quality development in out-of-hours GP care.

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Summary

Chapter 1 describes the organization of the general practitioner (GP) cooperative as the setting of this thesis and gives the historical and international background. Many GPs in rota groups complained of their workload with a duty time of about 19 hours/week, plus about 50 hours of regular work. Also they complained about non-urgent, inappropriate, demanding, and sometimes aggressive patient help requests that need only self-care or regular GP care. At last GPs complained about patient self-referral to ambulance and hospital care because it undermined their gatekeeper position with regard to hospital care.

As a response to these problems, the Dutch GPs reorganized their out-of-hours care and set up large-scale GP cooperatives. A important element in this reorganization is the introduction of nurse telephone triage. Triage nurses improve the efficiency by taking care of non-urgent help requests and giving telephone advice. Another effect of the GP cooperatives is the increasing collaboration with hospital accident and emergency (A&E) departments and ambulance services. This collaboration intends to enhance efficient, safe, and evidence-based emergency care.

Although the GP cooperative proved to be a solution for the reported problems of professionals, patients reported many difficulties when the GP cooperative was implemented. They reported adverse events in the medical care, increased distances, and problems with the restrictive behaviour of telephone triage nurses. The social unrest that followed and the negative publicity inspired GP cooperatives to focus on the quality of care and patient experiences.

However, at the start of this study we knew little about these supposed problems in the out-of-hours care. Moreover, we had no instruments for measuring the quality of GP cooperatives, and we did not know how to create an optimal interface with A&E departments and ambulance care. This highlights the necessity of evaluation and research as presented in this thesis. Our research is meant as a support for improving the quality of care, and it describes the strong and weak points of the out-of-hours GP care. We tried to develop instruments to assist GP cooperatives in their quality improvement.

Chapter 2 presents the results of a cross-sectional exploratory study of 20,471 patient records detailing the urgency and morbidity of the problems presented at the GP cooperatives. Of the patient contacts, 0.7% were considered life-threatening (U1) and 76.9% were considered as non-urgent (U4). Of the complaints presented during telephone triage that were classified as urgent (U1–U3), the urgency, on the basis of the diagnoses, was 29% lower than estimated. Problems in the categories of greatest urgency (U1–U2) were mainly those of heart, airway, and consciousness disorders.

The reality highlighted by these data contradicts the idea that out-of-hours GP care is only for urgent cases: more than three-quarters of the problems are not urgent from medical viewpoint, and most of them can wait until office hours or can be dealt with by self-care. However, a large group of patients, for understandable reasons or concerns, do not want to wait. It is the task of the triage nurse or GP to reassure and advise these patients, and to guide them through their problems.

Chapter 3 presents a cross-sectional retrospective study in which the 36,164 patient records of a GP cooperative were compared with patient data for GP care during office hours. This data were derived from the Dutch National Information Network of General Practitioners (LINH). We studied the two data sets to determine the differences between GP care in office and out-of-hours. The annual number of contacts at the GP cooperative was 277 for each 1000 patients registered and only a fraction (4%) of the 6600 contacts for each 1000 patients registered in GP care during office hours. Most problems presented at GP cooperatives were new and concerned acute infections or acute painful complaints. General practitioners see more patients with chronic problems during office hours. On GP cooperatives 5.8% of all contacts and 8.5% of the patients in office time were referred to a hospital. About 25% of the patients at the GP cooperative and 57% of the patients in office time received a prescription. The feeling that the GP cooperative is the ‘evening shop’ of regular GP care was not confirmed in this study.

Chapter 4 presents a cross-sectional retrospective study of patient records of the GP cooperatives and self-referrals at the hospital A&E department in the same area. We tried to get insight into current patient and care characteristics of both organizations. The contact frequency was 258/1000 patients at the GP cooperative and 43 self-referrals/1000 patients to the A&E department annually. At the GP cooperative, there was a wide diversity of problems, mainly concerning infections (26.2%). The A&E department had less diversity of problems, which consisted mainly of trauma (66.1%). There are relatively few urgent problems in the GP cooperative (4.6%) and in the patient group of self-referrals to the A&E department (6.1%). Women, children, elderly people, and patients from rural areas chose the GP cooperative significantly more often.

The problem of the self-referrals to the A&E department proved to be moderate because there were far fewer contacts there than at the GP cooperative and the traumas were mainly minor and not urgent. We estimate GPs, nurses, or self-care advice can help most self-

referrals. If GPs are given access to radiography, EKGs, and blood tests, we expect that about 85-90% of the self-referrals can be handled by GP care.

Chapter 5 presents a prospective multicentre study using who made 352 telephone calls to telephone triage nurses at four GP cooperatives. Urgency judgements made by the triage nurses met the ‘gold standard’ about 70% of the time. Triage nurses delivered efficient care – just 11% of the cases were overestimated. Triage nurses underestimated 19% of the urgent cases so that there were potential consequences for the safety of care. Analysis of these underestimated cases shows that the triage nurses were too imperceptive of the patient’s request for help, asked too few questions to determine the degree of urgency, and did not recognize urgent problems well enough. To improve the safety of the care, we advised an education programme for triage nurses and a direct second check of all cases by a trained supervising telephone GP.

Chapter 6 describes how we systematically developed and validated a set of 25 quality indicators by consulting expert panels and testing indicators on patient data from records. We used the records of all 36,254 patients who contacted a GP cooperative to empirically test the validity and feasibility of the indicators. This study shows the importance of subjecting indicators to an empirical practice test: it reduced our set of indicators because of a lack of measurability and variability. The test also showed that the national clinical guidelines [Dutch College of General Practitioners (NHG) standards] are only partially applicable in the assessment of out-of-hours primary care: Many do not focus on the out-of-hours setting and on acute medical problems. The GPs generally scored very well on the practice test, but more research is needed to evaluate their performance.

Chapter 7 reports a multicentre cross-sectional study, measuring patient waiting times for house visits. The average waiting time for all was 30 minutes, and almost 90% of all home visits took place within an hour. Distance, traffic intensity, home visit intensity, and urgency of the health problems all had significant influences on the waiting times. For patients with life-threatening complaints (U1), the 15-minute criterion was reached in about 70% of the cases and the time increased with increasing distance. To gain time for patients with life-threatening complaints (U1), we suggested that the distance to the patient should be shortened by spreading the starting points of the GP cars and ambulances throughout the area covered by the GP cooperative. Furthermore, it is important that GP

cooperatives and ambulance services complement each other by using the same guidelines, complementary training and complementary logistic schedules.

Chapter 8 reports the development of a postal questionnaire and a multicentre study of 26 GP cooperatives to inventorize patient experiences. We tried to ensure the content validity of the questionnaires appears by the combination of literature searches and input by both patients and healthcare professionals. The construct validity of the scales was verified by principal component analysis as well as by item-rest correlations within the scales. The questionnaires proved to 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 (ICCs range from 0.787 to 0.951).

We have presented the results of a national survey using our postal questionnaire that were sent to 14,400 patients who contacted one of 24 Dutch GP cooperatives. In total, 52.2% of the questionnaires were returned. Non response analysis showed that this did not seem to affect the results. When all forms of contact were combined, overall satisfaction scores ranged from 7.9 to 8.3 for the doctor, from 7.6 to 8.0 for the practice nurse, and from 7.4 to 7.8 for the organization (on a scale of 1 to 10). Respondents receiving telephone consultations were significantly less satisfied than responders with other types of contact. Our questionnaire is currently the Dutch standard quality instrument for measuring patient experiences with GP cooperatives.

Chapter 9 describes a cross-sectional study using postal questionnaires sent to patients who had nurse telephone consultations with one of 26 GP cooperatives. We explored the association between negative patient evaluations of nurse telephone consultations on the one hand and characteristics of patients and GP cooperatives on the other hand by means of multilevel logistic regression analysis.

The total response was 49.3% (2583/5239). We found considerable differences among the 26 participating GP cooperatives, which may mean that there is room for improvement in the GP cooperatives with low scores. The most negative evaluation (35% of the responders) was given for the general information received from the GP cooperative. Patient information needs more attention, e.g. information folders, posters, and stickers with telephone numbers.

When patients expected a centre consultation or a home visit, but received a nurse telephone consultation, they were more negative about the accessibility (OR 1.7, CI 1.4–2.1) and nurse telephone consultation (OR 4.2, CI 3.2–5.6). To detect discrepancies

between the care expected and the care offered, triage nurses should be trained in exploring patients' expectations. The presence of a telephone doctor seemed to be related to a better evaluation of the nurse telephone consultation (OR 0.4, CI 0.2–0.8), but further research is needed to confirm this.

Chapter 10 describes our retrospective, observational study involving the analysis of 36,259 medical records with respect to rude or aggressive behaviour. Physical aggression was not reported, while verbal aggression was reported in 0.2% of the cases and rude behaviour in 1.5%.

In a logistic regression analysis we found correlations between rude or aggressive behaviour and feelings of anxiety, sorrow, or pain. Expecting a home visit or a consultation at the GP cooperative but receiving a telephone consultation instead was the most frequent conflict topic between patients and triage nurses. These findings suggest that improved telephone communication, in which triage nurses and GPs explore the expectations, needs, and worries of patients, may reduce aggressive behaviour.

S

Samenvatting

Hoofdstuk 1 beschrijft de organisatie van de huisartsenposten in Nederland in een historisch en internationaal perspectief. Veel huisartsen in waarneemgroepen klaagden over grote werkbelasting met gemiddeld 19 uur dienst per week naast een werkweek van 48 uur. Daarnaast ervoeren huisartsen een hoge werkbelasting door het grote aantal patiënten met niet-urgente, en als eisend ervaren hulpvragen. Ook rapporteerden huisartsen een toenemend aantal zelfverwijzers via 1-1-2 en bij de SEH (ziekenhuis Spoedeisende Hulp), wat door de artsen werd ervaren als een ondermijning van hun poortwachterfunctie.

Als antwoord op al deze problemen hebben de Nederlandse huisartsen hun zorg buiten kantoor tijd gereorganiseerd en grootschalige huisartsenposten opgezet. Een belangrijk element in deze reorganisatie is de introductie van telefonische triage door verpleegkundigen of doktersassistentes. Deze triagisten inventariseren de hulpvraag, bepalen de urgentie en de in te zetten hulpverlening. Verder dragen zij bij aan de efficiëntie van de zorg door veel niet-urgente hulpvragen met een telefonisch (zelfzorg) advies af te handelen.

De komst van huisartsenposten is waarschijnlijk een eerste stap en vliegwiel voor een reorganisatie van de gehele spoed zorgketen (huisartsenpost, ambulancehulpverlening en SEH). Er is momenteel een trend te bespeuren naar een nauwere samenwerking met de SEH en de ambulancezorg. Deze samenwerking heeft tot doel om de efficiëntie, veiligheid en doelmatigheid van de zorg in de hele keten te verbeteren.

De huisartsenposten bleken een goede oplossing voor de meeste door huisartsen gerapporteerde problemen. De patiënten daarentegen hadden veel problemen met huisartsenposten en klaagden over tekort schietende medische zorg, een te restrictieve houding van triagisten aan de telefoon en een te grote fysieke afstand tot de hulpverlening. De hieruit volgende maatschappelijke onrust en de negatieve publiciteit inspireerde huisartsenposten zich meer te richten op zorgkwaliteit en de patiëntvriendelijkheid.

Bij de aanvang van deze studie was er nog nauwelijks wetenschappelijk onderzoek verricht naar bovengenoemde problemen in de huisartsenzorg buiten kantoor tijd. Bovendien beschikte men niet over onderzoeksinstrumenten om kwaliteit van zorg in de huisartsenposten te meten. Ten slotte was onduidelijk hoe de ketensamenwerking met de ambulancezorg en SEH vorm te geven. Met dit proefschrift beogen we de veronderstelde zwakke kwaliteitsaspecten van huisartsenposten in kaart te brengen. Daarnaast hebben we meetinstrumenten ontwikkeld om huisartsenposten in hun toekomstig kwaliteitsbeleid te ondersteunen.

Hoofdstuk 2 laat de resultaten zien van een cross-sectionele exploratieve analyse van 20.471 patiëntencontacten, die werden ingedeeld naar aard en urgentie van de gepresenteerde morbiditeit. Van alle patiëntencontacten werd 0,7% als levensbedreigend (U1) beoordeeld en 76,9% als niet urgent (U4). De ernst van de klacht bleek achteraf vaak mee te vallen: van alle klachten die bij de telefonische triage werden geclassificeerd als urgent (U1-U3), werd bij 29% op basis van de diagnose de urgentie lager geschat. Patiënten met hoog urgente klachten (U1-U2) presenteerden zich vooral met hart-, luchtweg- en bewustzijnsklachten.

De realiteit die uit dit onderzoek naar voren komt weerspreekt het idee dat huisartsenzorg buiten kantoor tijd alleen voor urgente situaties bestemd is. Meer dan driekwart van de gemelde problemen bleek niet urgent vanuit medisch perspectief. De meeste klachten zouden kunnen volstaan met een zelfzorgadvies of kunnen wachten tot de reguliere huisartsenzorg overdag. Aan de andere kant is er waarschijnlijk een grote groep patiënten die om begrijpelijke redenen zoals angst en bezorgdheid niet kan wachten. Het is dan de taak van de triagist of de huisarts om begrip op te brengen voor de ervaren problemen en deze patiënten op een professionele manier te helpen.

Hoofdstuk 3 laat de resultaten zien van een cross-sectionele exploratieve analyse waarin 36.164 patiëntendossiers van een huisartsenpost zijn vergeleken met patiëntendata van de huisartsenzorg tijdens kantooruren die afkomstig waren van het Landelijk Informatie Netwerk van Huisartsen(LINH). We onderzochten de twee datareeksen om een beeld te krijgen van de verschillen in de huisartsenzorg tijdens- en buiten kantooruren. In 2003 hadden 277 per 1000 patiënten contact met de huisartsenpost. Dit aantal betrof slechts een fractie (4%) van het aantal patiënten van de huisartsen dagzorg (6600 contacten per 1000 patiënten). De meest gepresenteerde problemen op huisartsenpost waren nieuw en betroffen acute infecties of acute pijn. Huisartsen tijdens kantooruren zien echter meer patiënten met chronische problemen. Op de huisartsenposten werd 5,8 % en in de huisartsen dagzorg werd 8.5% van de patiënten verwezen naar het ziekenhuis. Het gevoel dat de huisartsenpost dient als ‘avondwinkel’ voor de huisartsen dagzorg, werd in dit onderzoek niet bevestigd.

Hoofdstuk 4 laat de resultaten zien van een cross-sectionele exploratieve analyse van 4423 patiëntencontacten van een huisartsenpost en 755 patiëntencontacten van zelfverwijzers op de SEH in dezelfde postcoderegio. We probeerden inzicht te krijgen in patiënt- en zorgkenmerken van beide groepen. De contactfrequentie op de huisartsenpost bedroeg 258

per 1000 patiënten per jaar. Dit is 6 keer zoveel is als het aantal zelfverwijzingen op de SEH (43 per 1000 patiënten per jaar). Op de huisartsenpost werd een ruime diversiteit aan problemen gezien, waarbij infecties (26.2 %) het meest voorkwamen. De klachten van zelfverwijzers op de SEH waren minder divers van aard, hun problemen bestonden vooral (66,1 %) uit trauma's.

Hoogurgente problemen (U1-2) kwamen zowel onder patiënten op de huisartsen-post als onder zelfverwijzers op de SEH weinig voor (4.6 respectievelijk 6.1%).

Uit logistische regressieanalyse bleek dat vrouwen, kinderen, bejaarden en patiënten die op het platteland wonen significant vaker kiezen voor de huisartsenpost dan voor de SEH.

We schatten dat rond 80% van de zelfverwijzers op de SEH behandeld kunnen worden door huisartsen, verpleegkundigen of met een zelfzorgadvies. Dit percentage kan verder oplopen als de huisartsenpost, net als in de dagzorg, toegang heeft tot röntgendiagnostiek, ECG-diagnostiek en laboratoriumonderzoek.

Hoofdstuk 5 doet verslag van een prospectieve multicenter studie waarin simulatiepatiënten 352 telefoongesprekken voerden met triagisten van vier huisartsenposten. Deze simulatie patiënten speelden tevoren geoefende en gestandaardiseerde rollen met tevoren vastgestelde urgentie ("gouden standaard"). Op basis van de telefonische triage bepaalden triagisten de urgentie van de klacht. Deze bleek in 70 % van de gevallen overeen te komen met de "gouden standaard". Van de 30 % niet goed ingeschatte cases werd 11% overschat en 19% onderschat. De onderschatting van de urgentie levert potentiële consequenties op voor de veiligheid van de zorg. Analyse van deze onderschatte cases laat zien dat de triagisten in deze gevallen onvoldoende zicht hadden op de hulpvraag, te weinig vragen stelden om de urgentiegraad te bepalen en de gespeelde urgente ziektebeelden onvoldoende herkenden. Om de veiligheid van zorg te waarborgen, adviseren we een landelijk trainingsprogramma voor triagisten. Bovendien pleiten we voor een "2^e veiligheidszeef" door de inzet van een getrainde continue beschikbare telefoonarts.

Hoofdstuk 6 beschrijft de ontwikkeling van een set indicatoren uit NHG-standaarden die als meetinstrument moet dienen om de kwaliteit van het voorschrijf- en verwijsgedrag van huisartsen in kaart te brengen. De onderzoekers en drie verschillende huisartsen-expertpanels beoordeelden 29 van de 80 NHG-standaarden als geschikt voor de huisartsenzorg buiten kantoor tijd. Uit deze 29 NHG-standaarden werden vervolgens 73 richtlijnen betreffende voorschrijven en verwijzen gedestilleerd. Deze 73 richtlijnen werden omgezet in indicatoren. Om proefondervindelijk de validiteit, bruikbaarheid en haalbaarheid van de

indicatoren te testen werden deze onderworpen aan een praktijktest. In de praktijktest werd gebruik gemaakt van 36.254 patiëntencontacten van een huisartsenpost. Hiervan bleken er 7344 (22.7%) contacten bruikbaar voor het testen van de 73 indicatoren. Na de praktijktest en een finale panelronde bleven 24 indicatoren over. De reden voor deze forse reductie was dat 38 indicatoren in de praktijktest erg hoog scoorden en dus te geringe mogelijkheden boden voor kwaliteitsverbetering (performance score $\geq 90\%$).

Dit onderzoek toont aan dat de NHG-standaarden maar gedeeltelijk van toepassing zijn op de huisartsenzorg buiten kantooruren. Dit onderzoek toont ook de noodzaak, om indicatoren te onderwerpen aan een praktijktest. De huisartsen in de praktijktest bleken over het algemeen goed te scoren, maar verder onderzoek naar generaliseerbaarheid en opsporen van knelpunten is noodzakelijk. We adviseren de NHG standaarden beter aan te passen of aparte richtlijnen te ontwikkelen voor de huisartsenzorg buiten kantoortijd.

Hoofdstuk 7 doet verslag van een cross-sectioneel multicenteronderzoek naar de wachttijd voor patiënten bij thuisvisites. De gemiddelde wachttijd bedroeg 30 minuten en bijna 90 % van alle thuisbezoeken vond plaats binnen een uur. Afstand, verkeersdruk, visitedruk en de urgentie van de klacht hadden allemaal significante invloed op de wachttijd. Voor patiënten met levensbedreigende klachten (U1) werd het 15 minuten criterium in ongeveer 70% van de gevallen gehaald. Bij deze patiënten bleek de wachttijd flink toe te nemen naarmate de afstand groter werd. Bij patiënten met spoedklachten (categorie U2) bleek afstand echter nauwelijks van invloed op de wachttijd. Om tijd te winnen voor patiënten met levensbedreigende klachten (U1), stellen we voor om de afstand tot de patiënten te verkorten door de vertrekpunten van de huisartsendienstauto's en ambulances meer te spreiden over de adherente regio's. Verder is het belangrijk dat huisartsenposten en ambulancehulpverlening elkaar aanvullen door gebruik te maken van dezelfde richtlijnen, training en logistieke afstemming.

Hoofdstuk 8 beschrijft de ontwikkeling van een vragenlijst als meetinstrument voor de ervaringen van patiënten met de huisartsenpost. Met literatuuronderzoek en meerdere expertpanels van, professionals, onderzoekers en patiënten werd de content- en constructvaliditeit van de vragenlijst verzekerd. Daarnaast werd een procedure ontwikkeld om de vragenlijst uit te zetten en vonden twee pilotstudies plaats. De vragenlijst bleek betrouwbaar, met in alle schalen een Cronbach's alpha hoger dan 0,70 (op een schaal van 0 tot 1 met 1 als hoogste score). Verder liet de test- en retestanalyse een hoge interclass correlation coefficient zien (ICC range van 0.787 tot 0.951).

Met deze vragenlijst werd een multicenter onderzoek uitgevoerd bij 24 huisartsenposten, waarbij vragenlijsten werden opgestuurd aan 14,400 patiënten. De respons bedroeg 52.2%. Uit een analyse van de non-repons bleek dat deze niet van invloed op was op de uitkomsten van het onderzoek. De huisarts werd op 11 aspecten beoordeeld met rapportcijfers tussen de 7.9 en 8.3. De triagist werd op 11 aspecten beoordeeld met rapportcijfers tussen 7.6 en 8.0 en de organisatie van de zorg kreeg op 10 aspecten gemiddelde rapportcijfers tussen 7.4 en 7.8. De patiënten die een telefonisch consult kregen, waren significant minder tevreden dan patiënten die een consult of visite ontvingen. De ontwikkelde vragenlijst wordt momenteel als standaardinstrument gebruikt voor het meten van patiëntervaringen op Nederlandse huisartsenposten.

Hoofdstuk 9 doet verslag van een cross-sectioneel vragenlijstonderzoek naar negatieve ervaringen van patiënten die een telefonisch consult ontvingen op een van de 26 deelnemende huisartsenposten. De respons bedroeg 49,3% (2583/5239). De patiënt ervaringen verschilden aanzienlijk, wat ruimte biedt voor kwaliteitsverbetering bij de huisartsenposten met de laagste rapportcijfers. Van de patiënten gaf 35% een negatief oordeel over de voorlichting over de huisartsenpost. Deze voorlichting aan patiënten dient meer aandacht te krijgen, door bijvoorbeeld informatiefolders, posters, telefoonstickers en voorlichting via regionale TV zenders.

We gebruikten logistische regressieanalyse om het verband te onderzoeken tussen negatieve patiëntervaringen, patiënt- en huisartsenpostkenmerken. Als de patiënten een consult of visite verwachtten maar een telefonisch consult kregen, oordeelden ze negatiever over aspecten van toegankelijkheid (OR 1.7, CI 1.4-2.1) en over het ontvangen telefonisch consult (OR 4.2, CI 3.2-5.6). Om discrepanties tussen verwachte en geboden zorg op te sporen, dienen triagisten zich te richten op het achterhalen van de verwachtingen van de patiënt.

De aanwezigheid van een superviserende telefoonarts was positief gerelateerd aan het patiënten oordeel over het ontvangen telefonisch consult (OR 0.4, CI 0.2-0.8). Verder onderzoek is nodig naar de invloed op de kwaliteit van de superviserende telefoonarts op de telefonische triage.

Hoofdstuk 10 doet verslag van een retrospectief onderzoek waarbij 36.259 patiëntcontacten werden onderzocht op onbeschoft of agressief patiënten gedrag. Fysiek geweld werd niet gerapporteerd, verbale agressie in 0.2% en onbeschoft gedrag in 1.5% van de patiëntcontacten.

Uit logistische regressieanalyse bleek een verband te bestaan tussen onbeschoft of agressief patiëntengedrag en gevoelens van angst, bezorgdheid, verdriet of pijn. Het verwachten, maar niet krijgen van een consult of visite was de meest voorkomende oorzaak van een conflict tussen de patiënt en de triagist. Deze bevindingen suggereren dat beter achterhalen van verwachtingen en het bespreekbaar maken van angst en zorgen van patiënten, agressief gedrag kan helpen verminderen.

Dankwoord

Niets bereikt een mens zonder hulp van anderen, zeker als het gaat om het voltooien van het proefschrift. Vooral veel waardering voor de liefdevolle steun van mijn levenspartner Angeline Vermeulen.

Heel veel anderen zeg ik dank:

Mijn promotie begeleidingscommissie:

Richard Grol: Je was sinds mijn studententijd mijn leermeester. Je hield me goed in de hand, was streng, bood structuur en was zeer betrokken. Je wist me goed te begrenzen in mijn creatieve uitspattingen.

Henk Mokkink: Je hebt me spelenderwijs veel bijgebracht en mijn interesse gekweekt voor wetenschappelijk onderzoek. Je geduld met mijn ongeduld dwingt respect af.

Wil van den Bosch: Je creatieve opmerkingen stimuleerden me tot verder nadenken. Bovendien hielp je me onderscheid te maken tussen onderzoeksconclusies, eigen beleidsopvattingen en eigen praktijkervaringen.

Voortgezette opleiding huisartsen (VOHA): Alle docenten die me scherp hebben gehouden. Ben Bottema, voor de ruimte die ik van hem kreeg om te promoveren.

Collega huisartsen en assistentes van Gezondheidscentrum 't Weeshuis: Jullie gaven me de ruimte deze route te volgen: Eric van den Bergh, Bertie van der Bom, Elianne Snoeren, Colette van der Bom, Roelien Elgersma, Marije van Haren en Angeline Vermeulen.

Regio Nijmegen: de twee mede oprichters van de Coöperatieve Huisartsendienst Nijmegen, Guus Busser en Jaap Schreuder. Daarnaast het inspirerende toenmalige RHV bestuur met onder andere Gerben Hellinga† en Paul van der Weerd. Tenslotte Harry Smits, destijds hoofd RAV Nijmegen, en Bart Berden, destijds directielid Radboudziekenhuis: dank voor jullie visionaire ondersteuning.

Collega onderzoekers: Michel Wensing, Maartje Willekens, Linda Huibers. Onderzoeksassistenten: Marc Padros Goossens en Irma Maassen. Projectondersteuners: Resi Rutten, Anita Oude Bos.

Collega onderzoekers, beleidsmakers en begeleiders van andere universiteiten: Eric Moll van Charante (Amsterdam), Caro van Uden, Yvonne Guldemond (Maastricht), Prof. dr. Jan de Haan, Johan Post (Groningen), Prof. dr. Guus Schrijvers, Margriet van Baar (Utrecht).

Projectfinanciers: RIVZ, CZ zorgverzekeraar met Dennis van der Rijt en Rob Raaymakers.

Nederlands Huisartsengenootschap: Kees in 't Veldt, Roeland Drijver, Margriet Bouma en Ron Helsloot.

Vereniging Huisartsenposten Nederland: Christel van Vugt, Hans van Amstel en Hans Maarten Bolle voor het aangaan van de verbinding.

Vele andere medewerkers, besturen en directies van huisartsenposten die me inspireerden met vragen uit de praktijk. Speciaal wil ik noemen: Marion Borghuis, Marianne Kalb, Olga Haverman, Bert Prins, Henk Supheert, Karin Kwekkeboom, Ine van Son, Anne de Jongh en Margreet Zeelen, Stijn van der Broek, Eef van Dijk.

Alle medisch studenten en huisartsen-in-opleiding die tot nu toe stage liepen op onze projecten. Hun leergierigheid en inspirerende jeugdige frisheid hebben mij en dit onderzoek verder geholpen: Laura van Hylckama Vlieg, Susan Pathemos, Gerard Ophey, Mijke Hensing, Elles Beekhuizen, Hasan Poyraz, Ester van der Plasse, Ninke Hiemstra, Hanneke Janssens, Marjon Reumkes, Ronald Haanrikman, Nieke van Lin, Yvette Suyker, Marijke van den Eijnden, Vera Silderhuis, Ilse Rijkers, Rosa Ferwerda, Ilse Rijkers, Roelie Tijssen, Onno de Graaf, Wendy van Gerwen, Erik Franssen, Alexander Schulz, Peter Koenjer, Hanneke Kersten, Suzanne Marcelis, Richard de Hoogh, Nasrin Sadri, Elke Wester, Floor Pieper, Saskia Benthem, Joris Stoppels, Saskia van Vucht, Fatima van de Poel, Paula Verstraeten, Annebet Meesters, Drieske Halink, Janske Poos, Elmie Terpstra, Bregje van der Coer, Dorien Rottier, Eric Onnouw, Anniek Snoek, Nadine Vermue.

En vele anderen....

Curriculum Vitae

Paul Giesen werd geboren in 1952 te Steenderen (Gld).

Tijdens zijn HBS-b tijd op het Ludgercollege te Doetinchem zette hij zich in voor leerlingenparticipatie. Afkomstig uit een groot boerengezin, was hij voorbestemd om dierenarts te worden. Op het laatste moment koos hij toch voor de studie medicijnen aan de universiteit van Nijmegen. Gedurende deze studie had hij vele activiteiten, zoals studentbegeleider bij snijzaal practica, mentor van studenten, begeleider van gehandicaptenreizen, kampbegeleider, onderzoeker op het dierenlaboratorium en mede-oprichter van de Medicijnwinkel in Nijmegen.

Na het volgen van de huisartsenopleiding in 1980 besloot hij om in het ziekenhuis te gaan werken om zijn kennis en vaardigheden ten behoeve van de huisartsengeneeskunde en spoedzorg verder uit te breiden. Hij werkte gedurende 4 jaar als arts in het Elisabeth ziekenhuis in Venray en later in het Canisius-Wilhelmina ziekenhuis te Nijmegen. Hier verdiepte hij zich in de chirurgie, verloskunde, interne geneeskunde en cardiologie. Daarnaast was hij gedurende 4 jaar docent chirurgie en verloskunde. Om zich te verdiepen in gesprekstherapie volgde hij gedurende 4 jaar (parttime) de opleiding tot Gestalt therapeut.

Van 1984 tot heden is hij (verloskundig actief) huisarts in Gezondheidscentrum 't Weeshuis te Nijmegen. Van 1988 tot 2002 werkte hij tevens op de huisartsenopleiding als Huisarts-Groepsbegeleider (HAB) en later als coördinator van het 3^e jaar. Hij schreef het curriculum, een groot aantal onderwijsprogramma's en was mede-auteur van de "Eindtermen voor de beroepsopleiding tot huisarts".

Vanaf 1996 was hij voorzitter van de commissie "kwaliteit spoedeisende hulpverlening" in Nijmegen, waaruit de Coöperatieve Huisartsendienst Nijmegen geboren werd. Hiervan was hij, behalve mede-oprichter, ook bestuursvoorzitter van 1999 tot begin 2003.

Zijn speciale affiniteit met de spoedeisende geneeskunde kwam het best tot uitdrukking als voorzitter van het NHG congres "met Spoed en Goed" in 2000.

Sinds 2000 houdt hij zich bezig met onderzoek rond het thema huisartsenposten en kreeg hij hiervoor de VVAA prijs "spoedeisende geneeskunde". In 2002 startte zijn parttime promotieonderzoek naar de kwaliteit van zorg op huisartsenposten. Tijdens dit promotietraject heeft hij zich bezig gehouden met de opzet van een landelijk

kennisnetwerk rond het thema huisartsenposten en spoedzorg. In dit kennisnetwerk wordt samengewerkt met andere universiteiten, huisartsenposten, NHG en VHN. Het kennisnetwerk draait inmiddels op volle toeren met meerdere promotietrajecten.

Paul Giesen publiceerde frequent in medische tijdschriften:

- 11 artikelen: huisartsgeneeskundige aandoeningen (ganglion, ooglid aandoeningen, otitis externa, fissura ani, hartfalen en verloskunde).
- 35 artikelen: huisartsenposten en spoedzorg.

Paul Giesen is getrouwd met Angeline Vermeulen en heeft vier kinderen: Gijs, Noortje, Joske en Bart.