# Inventory of organizational models for after hours care:

# A questionnaire in 26 western countries

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## Summary

**Background and objective**

In many western countries the organization of after hours care has changed in recent years. Nowadays, different organizational models are used that can differ widely in the various countries. In order to give advice which model is preferable in a certain situation, the first step is to assess which organizational models are used worldwide. The next step is to assess the weak and strong aspects of these models and the role of the general practitioner in the after hours care. By doing so, the intention is to make suggestions for the most desirable set up of the organization of after hours care.

**Method**

An inventorying study was carried out towards existing organizational models for after hours care by means of an internet questionnaire. This questionnaire is sent to key persons in national health organizations in 26 western countries. We asked after the different organizational models, the most used model, the weak and strong aspects of this most used model and the role of the GP.

**Results**

From 26 countries, the data of 72 key persons were collected. The emergency department is the organizational model which exists the most worldwide, in 92,3% of all countries. The rota group is the most mentioned number one organizational model for after hours care, by 36,7% of all respondents. The respondents who indicated the GP cooperatives as the most used organizational model, valued 88,9-100% of all items as no to some problems. In the rota group, 86,4% indicated some to major problems with regard to the satisfaction of physicians. There are many problems in the emergency department with regard to the coordination and continuity of care, efficiency and the satisfaction of other professionals. In countries where the emergency department, deputizing services and minory injury unit are the most used organizational model, there is a relatively lower percentage of GPs active. In countries where rota groups, GP cooperatives and primary care centres are the most used organizational model, the role of the GP is more prominent.

**Discussion**

Within countries a lot of organizational models exist alongside. The GP cooperatives do not seem to have obvious weak aspects. There is a tendency to organize the after hours care more large-scale. A recommendation for further research is to investigate what the motives are regionally to chose for a certain organization for after hours care.

**Table of contents**

**Summary** 2

**Table of contents** 3

**1. Introduction**
Background 4
Questions 6

**2. Method**
Design 7
Population 7
Development of the questionnaire 7
Variables 8
Procedure 9
Data-analysis 10

**3. Results**
In general 11
Most used organizational model 11
Weak and strong aspects of the different organizational models 13
Changes 14
Role of GP 15

**4. Discussion**
Main results 17
Most used organizational models for after hours 17
Weak and strong aspects of the different organizational models 18
Changes 19
Role of GP 19
Conclusion 19

**5. Comments**
Method 20
Response 20
Organization of after hours care 20
Most used organizational model 20
Weak and strong aspects 21

**6. References** 22

**Addendum 1: Telephone triage** 25
**Addendum 2: Covering letter with questionnaire** 28
**Addendum 3: Questionnaire** 29
**Addendum 4: Tables** 35
**Addendum 5: Information per country** 37

# 1. Introduction

## 1.1 Background

Among policy makers all over the world there is a lot of concern about whether it is possible to achieve a high quality and a good continuity of care after hours, particularly in urgent situations[1-4]. Optimal care after hours is crucial for a well-functioning health care and primary care system.

### The Netherlands

In the Netherlands at the end of the last decade, dissatisfaction existed among general practitioners (GPs) about the way after hours care was organized[2-6]. GPs were joined in rota groups, which are clusters of GPs who are active in the same region. They take turns being on duty after hours for the patient population of all (up to 15) members of the rota group. The major issues of dissatisfaction were the high workload, long shifts and the lack of a private life[2-6]. To improve the work conditions and to reduce the workload, the structure of after hours care was drastically changed around the beginning of the new millennium[6]. GP cooperatives were formed, where nowadays almost all GPs are joined for after hours care. In general, 40 to 120 GPs take care of a population ranging from 50,000 to 500,000 inhabitants(see table 1)[2].

**Table 1** Features of Rota groups and GP Cooperatives in the Netherlands (old versus new system of after hours care)[2]

| Rota groups | GP cooperatives |
| --- | --- |
| 5 to 10 GPs | 40 to 120 GPs |
| Small-scale handling of 10,000 to 20,000 patients within distances up to 5 km. | Large-scale handling of 50,000 to 500,000 patients within distances up to 20-30 km. |
| Service delivered from small private practices throughout the city or region. | Mostly situated near or within a hospital. |
| Access daily from 5 pm to 8 am. On the weekend from 5 pm on Friday to 8 am on Monday. | Access daily from 5 pm to 8 am. On the weekend from 5 pm on Friday to 8 am on Monday |
| Access via the patients' own GP's telephone number. | Access via a single regional telephone number. |
| GP uses own car with standard equipment. | Chauffeurs in recognizable GP cars, which are fully equipped (e.g. oxygen, infusion drip, automatic defibrillation). |
| Use of written patient records for communication between GPs. | ICT support*, including electronic patient files, electronic feedback to GPs, and online connection to the GP car. |
| GP or his/her spouse answering the telephone. | Triage nurses on the telephone (i.e. GP nurses or hospital nurses). |
| A mean of 19 hours on call per week. | A mean of 4 hours on call per week. |

**ICT: information and communication technology*

These GP cooperatives are organized following the example of the United Kingdom and Denmark, where the same change occurred for similar reasons in the early 1990s[6-10]. GPs in all three countries were mostly satisfied with the change from rota groups to large-scale cooperatives[3,5-10]. The workload reduced and the job satisfaction increased. The overlap of work and private life and the frequency of

shift have also improved[1-10]. Nevertheless there still remain unresolved issues. One is the amount of self referrals, which are patients that go to the emergency department directly without being referred by a GP[11-13]. This leads to a considerable workload in the emergency department. A considerable part of these patients do not have urgent complaints and could be very well treated by GPs. This would mean no medicalization and/or over treatment and treatment by the right professional. Also, more efficient care would lead to fewer expenses, since treatment in an emergency department is more expensive than by a GP[12].
At present the organization of the after hours care is subject of discussion in the Netherlands[4,14]. Examples of the search requests are: Which professionals can cooperate and where? Are large-scale cooperatives better than small-scale models? Is it a good concept if a GP for example works in an emergency department?

**Organizational models**

In many other countries the organization of after hours care has also changed in recent years[1]. Nowadays, in most Western countries different organizational models are used for after hours care that can differ widely in the various countries[1,15]. Previously, a literature study was conducted at our department about models for after hours care that found descriptions of a number of organizational models for after hours care (table 2) [16].
The individual general family practice, rota groups and emergency departments of hospitals are well known and often described. There are also relatively new models, for example the primary after hours care integrated in the hospital and minor injury centers or walk-in-centers.

**Table 2** Organizational models for after hours care[16]

| Organizational model | Definition |
|---|---|
| Individual general family practice | The GP takes care of his own patients 24 hours a day, 7 days a week. |
| Rota groups | GPs who are active in the same region take turns being on duty after hours for the patient population of all (up to 15) members of the rota group |
| GP cooperatives | GPs work in a non-profit organization and take turns being on duty after hours for the patient population of all participating GPs. These are large-scale organizations that are supported by nurses, management, chauffeurs, et cetera. |
| Emergency departments of hospitals | Emergency departments of hospitals taking care of patients after hours. |
| Primary after hours care integrated in the hospital | Primary after hours care integrated in the hospital (for example, in emergency departments). |
| Deputizing services | Commercial agencies that employ GPs to take over duties of other GPs. |
| Telephone triage and advice services | Patients have contact with a medically trained professional via a fixed, non-regional, telephone number. This person advises or refers the patient to the most suitable professional. |
| Primary care centers | Centers, which patients can visit without an appointment for minor injuries or illnesses. Such centers operate under supervision of a general practitioner or family physician. |
| Minor injury centers or walk-in-centers | Centers, which patients can visit without an appointment for minor injuries or illnesses in order to ask a trained nurse for health information, advice and treatment. |

In the literature study described above[16], the aim was to inventory the different organizational models for after hours care. It was not possible for the authors to make a comparison between models with regard to weak and strong items and therefore to point out a preferable organizational model. Only a few countries are active in the research field of primary care after hours.[16] A lot of information was available from Denmark, Ireland, the Netherlands and the United Kingdom, where the GP functions as a gatekeeper. Limited information was available regarding recent developments in other western countries, such as models for telephone triage. Therefore, much indistinctness regarding the organization of primary after hours care remains.

**Aim of the study**

In order to give advice about which model is preferable in a certain situation, the first step is to assess which organizational models are used worldwide. Moreover, critical evaluations by the people working with these models are required in order to value the various approaches used throughout the world. By doing so, the intention is to make a well founded recommendation for the most desirable set up of after hours care in different situations and perhaps suggest applicable changes of the various models already in use.

### 1.2 Questions:

- What organization models for after hours care in western countries are the most used at this moment?
- What are the weak and strong aspects of the different organizational models for after hours care?
- What is the role of the general practitioner in the after hours care?

## 2. Method

### 2.1 Design

An inventorying study was carried out towards existing organizational models for after hours care by means of an internet questionnaire.

### 2.2 Population

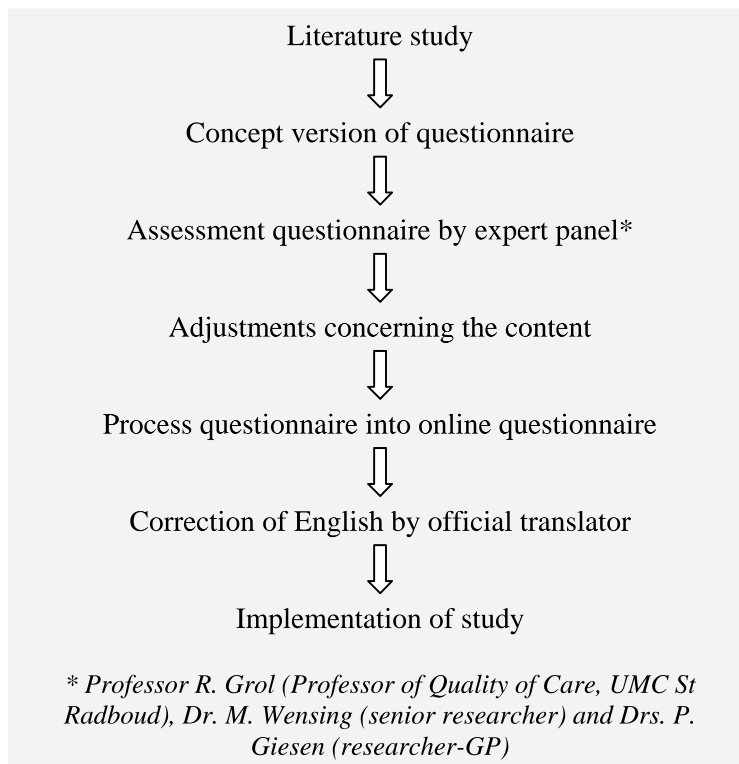
The after hours care professionals that were approached first were delegates of the European Association for Quality in General Practice/ Family Medicine (EQuiP). They are key persons in national health organizations and are directly involved in making health policy within their country. Therefore, they know how after hours care in their country is organized and are, as to be expected, able to reliably fill in the questionnaire.

For Europe, nearly all EQuiP countries were included, except for a few countries (Romania, Turkey, Russia, Estonia and Latvia). These countries were excluded because they do not have a health care system according to western standards[17]. Also excluded is EQuiP country Malta, since this is a very small country and therefore the comparability with other countries is difficult.
Also included in this study are the United States of America, Mexico, Canada, Australia and New Zealand, which are other major western countries in the world. For the USA, Canada and Australia the questionnaire was sent to professionals from various states, because of the differences between the health systems in every state. This approach was chosen to result in a more reliable outcome of the after hours care nationwide.
The aim was to have at least 2 respondents for each country. Based on previous experiences, this would be sufficient to get a reliable all-embracing answer to the questions.
The total population consisted of professionals from the selected countries by means of a “snowball effect method”.

### 2.3 Development of the questionnaire

A concept questionnaire has been made by members of the research team as a result of the above-mentioned literature study. After various deliberations with an expert panel with ample experience with international health care, a definitive version was approved and turned into an online questionnaire. We have chosen to use an online questionnaire, because it would take too much time for the mail to arrive in all the different countries and then back again with the response.

**Figure 1** Development of the measuring instrument




**2.4 Variables**

- General information
    - Kind of organization the respondent works for
    - Country and province/state
- Organizational models for after hours care
    - Inventory of organizational models for after hours care being used at this moment (in a country) (in advance defined)
    - Most used organizational model for after hours
    - Weak and strong aspects with regard to this most used organizational model for after hours care (in advance defined)
- Triage (see addendum 1)
    - Most used model of telephone triage after hours
    - Triagist in the most used model of telephone triage
- Changes
    - Plans to make changes in the after hours care in the near future
    - Kind and reason for the changes

- Role of the GP
    - The percentage of GPs participating in after hours care (in advance defined)
- Reliability
    - Respondent reliability

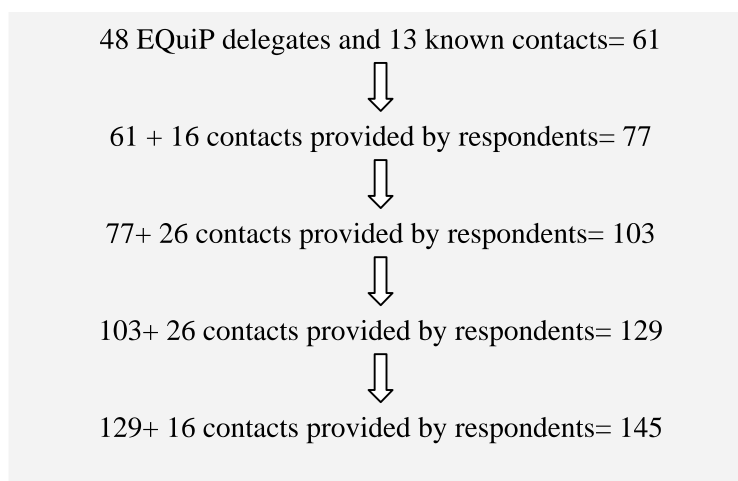
### 2.5 Procedure

Forty-eight EQuiP delegates and thirteen contacts of both Professor Richard Grol and Professor Chris van Weel (Professor of general practice, UMC St Radboud) from the United States, Canada, Australia, New Zealand and Mexico were first sent an e-mail with an announcement of the research inventory and a request to provide names and e-mail addresses of other professionals with knowledge of this field.

A week later, all contacts received an e-mail containing a link to the online questionnaire with a unique invitation code. Because of this code, all respondents were able to fill in the questionnaire only once. This was done to prevent any false double filled-in questionnaires and to have information about the responders in order to send reminders. There was no opportunity to leave questions unanswered. In the questionnaire, all respondents were again asked to provide names and e-mail addresses of other key persons in the health system within the same country. Due to the snowball effect we received more and more e-mail addresses of contacts after every announcement e-mail and questionnaire (figure 2). Finally, eighty-four contacts provided by respondents were also sent the announcement e-mail and a week later the e-mail with the link to the questionnaire in different phases.

After one and two weeks a reminder is sent to further increase the response rate.

**Figure 2** Snowball effect method in amount of contacts



### 2.6 Data-analysis

The received data was processed using Microsoft Access and SPSS 12.0. The results are presented in frequency tables and cross tables.

Respondents had to name one most used model for after hours care. For this organizational model they rated nine questions about experienced problems on a 5 point Likert scale. For the analysis these results were converted to a 3 point scale, by means of combining no and few problems, as well as many and major problems, while some problems remained central. So the differences enlarged and it was possible to make more powerful statements.

The answers on the open questions are clustered by the country and summarized in addendum 5.

## 3. Results

### 3.1 In general

Seventy-two out of 145 people who come from 26 countries filled in the questionnaire, therefore reaching an response rate of 50%. Of those, 33 out of 48 EQuiP delegates (69%) filled in the questionnaire. We aimed to receive 2 responses from each country, which we achieved in 18 countries (see table 3). From Argentina, Finland, Hungary, Singapore and South Africa we did not receive a response at all.

**Table 3** Response

| | Frequency (EQuiP delegates) | | Frequency (EQuiP delegates) |
|---|---|---|---|
| Australia | 2 | Mexico | 1 |
| Austria | 3 (1) | The Netherlands | 2 (1) |
| Belgium | 7 (3) | New Zealand | 2 |
| Canada | 2 | Norway | 6 (2) |
| Croatia | 1 (1) | Poland | 3 (2) |
| Czech Republic | 2 (1) | Portugal | 1 (1) |
| Denmark | 1 (1) | Slovenia | 6 (2) |
| France | 3 (2) | Spain | 1 (1) |
| Germany | 1 (1) | Sweden | 5 (2) |
| Greece | 5 (2) | Switzerland | 4 (2) |
| Iceland | 2 (2) | United Kingdom | 4 (2) |
| Ireland | 1 (1) | United States of America | 2 |
| Israel | 1 (1) | **Total** | **72 (33)** |
| Italy | 4 (2) | | |

### 3.2 Most used organizational model

Many organizational models for after hours care exist alongside in a lot of countries (see table 4). Different respondents from the same country often gave different answers concerning the question which organizational models are used in their country at this moment. The number of models in one country varies from three till ten models, which are all models mentioned in the questionnaire. All nine different organizational models ( “other” not included) exist side by side in every one of the English-speaking countries Australia, Canada, Ireland, New Zealand, United Kingdom and the United States of America.

The emergency department exists in almost all countries included in the study. Only the respondents in the Czech Republic and Denmark report the emergency department is not being used in their country at this moment. The primary care centre exist in twenty-one countries. The minory injury unit is the organizational model the least applied with a presence in twelve countries.

**Table 4** Presence of organizational models per country

| | Ind. GP practice | Rota group | GP coop. | Em. Dep. | Primary care int. in hosp. | Dep. service | Tel. triage and advice service | Primary care centre | Min. injury unit | Other | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Australia | x* | x | x* | x | x | x | x | x | x | x | **10** |
| Austria | x* | x* | x | x* | x | | x | | | x | **7** |
| Belgium | x | x* | x | x° | | x | | x | x | | **7** |
| Canada | x | x | x | x* | x | x | x | x | x | | **9** |
| Croatia | x | x | | x* | | | | | | | **3** |
| Czech Republic | | x* | x* | | x* | | | | | | **3** |
| Denmark | | | | | | x | x* | x | | x | **4** |
| France | x | x* | x | x° | x | x | x | x | | | **8** |
| Germany | x | x* | | x | x | | | x | | | **5** |
| Greece | x* | | x | x | x | x | | x* | | x | **7** |
| Iceland | | x | x* | x | | | | x* | | | **4** |
| Ireland | x | x | x* | x | x | x | x | x | x | x | **10** |
| Israel | | | | x | | x | x | x | | | **4** |
| Italy | | x | x | x* | x | x* | x | x | x* | x | **9** |
| Mexico | x | | | x* | x | | | x | x | | **5** |
| The Netherlands | | | x* | x | x | | x | | | x | **5** |
| New Zealand | x | x* | x* | x | x | x | x | x | x | | **9** |
| Norway | x | x* | x | x | x | x | x | x | x | x | **10** |
| Poland | x | x | x | x* | x* | x | | | | x | **7** |
| Portugal | | | | x | x | | x | x* | | | **4** |
| Slovenia | | x* | x° | x | x | | x | x* | | | **6** |
| Spain | | x | x | x | | | x* | x | | x | **6** |
| Sweden | | | x* | x° | x | x | x° | x° | x | | **7** |
| Switzerland | x | x* | | x | x | x | x | x | x | | **8** |
| United Kingdom | x | x | x | x | x | x* | x° | x | x | x° | **10** |
| United States of America | x | x* | x | x | x | x | x | x | x | x | **10** |
| **Total** | **16** | **19** | **19** | **24** | **20** | **16** | **16** | **21** | **12** | **12** | |

*X presence of organizational model according to at least one respondent*
** Most used organizational model*
*° Other mentioned most used organizational models*

Twenty-two respondents (37%) from nine different countries named the rota group the most used organizational model of after hours care in their country. The GP cooperatives was the model mentioned in 15% by 9 responders (7 countries).

The third model was the emergency department (9 responders in 8 different countries). Primary care centres were the most used organizational model according to six respondents from five different countries. The individual GP practice and telephone triage and advice services were mentioned by four respondents as the most used model of after hours care.

The least mentioned number 1 organizational models for after hours care are the minory injury unit, primary care integrated in the hospital, deputizing services and “other”. A total of 6 respondents (10%)

in three different countries named these models the number 1 organizational model of after hours care in their country (see table 5). “Other” is described as paramedics visiting people at home, possibly linked to ambulance services.

**Table 5** Most used organizational model

| | Frequency | Percent |
|---|---|---|
| Rota group | 22 | 36,7 |
| GP cooperative | 9 | 15,0 |
| Emergency department | 9 | 15,0 |
| Primary care centre | 6 | 10,0 |
| Telephone triage and advice service | 4 | 6,7 |
| Individual GP practice | 4 | 6,7 |
| Deputizing service | 3 | 5,0 |
| Primary care integrated in hospital | 1 | 1,7 |
| Minory injury unit | 1 | 1,7 |
| Other | 1 | 1,7 |
| **Total** | **60** | **100,0** |

*12 missings: (people who did not indicated one most used organizational model)*

### 3.3 Weak and strong aspects of the different organizational models

The assumption is that the organizational models are identical in the different countries that use them, and therefore it is possible to compare them with regard to different aspects.

In relation to the rota group, 87% indicate some to major problems with regard to the satisfaction of physicians (see table 6).

The respondents who indicated the GP cooperative as the most used organizational model mentioned frequently no to some problems, with percentages varying between 88 and 100%. Many to major problems is reported with frequencies between 0 and 11%.

Regarding the emergency department, 100% point out some to major problems in the coordination of care. 89% point out some to major problems in continuity of care, efficiency and the satisfaction of other professionals.

67% of the six respondents who indicated the primary care centres as the most used organizational model, report many to major problems in continuity of care, efficiency, coordination of care and the satisfaction of physicians.

With regard to the deputizing service, all 3 respondents report many to major problems in continuity and coordination of care.

For the rest of the organizational models and their weak and strong aspects, see addendum 4, table 1.

**Table 6** Weak and strong aspects of the most used models

| Most used organizational model | Quantity of respondents | | no to few problems (%) | some problems (%) | many to major problems(%) |
|---|---|---|---|---|---|
| **Rota group** | 22 | Continuity of care | 36 | 41 | 28 |
| | | Efficiency | 41 | 32 | 27 |
| | | Accesibility | 73* | 18 | 9 |
| | | Coordination of care | 37 | 32 | 32 |
| | | Satisfaction physicians | 14 | 23 | 64* |
| | | Satisfaction other professionals | 50 | 27 | 23 |
| | | Satisfaction patients | 64* | 32 | 5 |
| **GP cooperative** | 9 | Continuity of care | 44 | 44 | 11 |
| | | Efficiency | 100* | 0 | 0 |
| | | Accesibility | 78* | 11 | 11 |
| | | Coordination of care | 78* | 11 | 11 |
| | | Satisfaction physicians | 44 | 44 | 11 |
| | | Satisfaction other professionals | 67* | 33 | 0 |
| | | Satisfaction patients | 67* | 22 | 11 |
| **Emergency department** | 9 | Continuity of care | 11 | 11 | 78* |
| | | Efficiency | 11 | 22 | 67* |
| | | Accesibility | 22 | 22 | 56 |
| | | Coordination of care | 0 | 22 | 78* |
| | | Satisfaction physicians | 33 | 22 | 44 |
| | | Satisfaction other professionals | 11 | 44 | 44 |
| | | Satisfaction patients | 44 | 11 | 44 |
| **Primary care centre** | 6 | Continuity of care | 33 | 0 | 67* |
| | | Efficiency | 17 | 17 | 67* |
| | | Accesibility | 83* | 17 | 0 |
| | | Coordination of care | 17 | 17 | 67* |
| | | Satisfaction physicians | 17 | 17 | 67* |
| | | Satisfaction other professionals | 17 | 50 | 33 |
| | | Satisfaction patients | 17 | 33 | 50 |
| **Deputizing service** | 3 | Continuity of care | 0 | 0 | 100* |
| | | Efficiency | 0 | 33 | 67* |
| | | Accesibility | 33 | 33 | 33 |
| | | Coordination of care | 0 | 0 | 100* |
| | | Satisfaction physicians | 33 | 33 | 33 |
| | | Satisfaction other professionals | 67* | 0 | 33 |
| | | Satisfaction patients | 0 | 67* | 33 |

**: >60% of respondents*

## 3.5 Changes

Of the 26 countries included in the study, in 18 countries (69% of all countries) one or more respondents indicate there are plans to make changes in the after hours care in their country or region in the near future (see table 7). In 8 countries no respondent answered affirmative, from which in 2 countries no respondent knows whether there are plans.

In ten countries, for example Norway, Sweden, Slovenia and Greece, the different respondents in one country give different answers to the question.

**Table 7** Plans for changes in the near future per country

| | Plans for changes | | | Total |
|---|---|---|---|---|
| | Yes | No | Don't know | |
| Australia | 2 | 0 | 0 | **2** |
| Austria | 2 | 1 | 0 | **3** |
| Belgium | 7 | 0 | 0 | **7** |
| Canada | 1 | 0 | 1 | **2** |
| Croatia | 0 | 1 | 0 | **1** |
| Czech Republic | 2 | 0 | 0 | **2** |
| Denmark | 1 | 0 | 0 | **1** |
| France | 2 | 1 | 0 | **3** |
| Germany | 0 | 0 | 1 | **1** |
| Greece | 2 | 1 | 2 | **5** |
| Iceland | 0 | 1 | 1 | **2** |
| Ireland | 1 | 0 | 0 | **1** |
| Israel | 0 | 1 | 0 | **1** |
| Italy | 3 | 1 | 0 | **4** |
| Mexico | 0 | 0 | 1 | **1** |
| The Netherlands | 2 | 0 | 0 | **2** |
| New Zealand | 0 | 1 | 1 | **2** |
| Norway | 3 | 3 | 0 | **6** |
| Poland | 1 | 2 | 0 | **3** |
| Portugal | 0 | 1 | 0 | **1** |
| Slovenia | 2 | 1 | 3 | **6** |
| Spain | 1 | 0 | 0 | **1** |
| Sweden | 3 | 2 | 0 | **5** |
| Switzerland | 3 | 1 | 0 | **4** |
| United Kingdom | 0 | 1 | 3 | **4** |
| United States of America | 1 | 1 | 0 | **2** |
| **Total** | **39** | **20** | **13** | **72** |

There are a lot of different changes mentioned. The changes which are most mentioned are the change toward more large-scale after hours care, to integrate the primary care with the emergency departments, to introduce one national telephone number and to create a more equal after hours care in countries where this care is highly fragmentized.

The major reasons for changes that were mentioned are work dissatisfaction among GPs, shortage of GPs or a lack of motivated GPs for after hours care. Other reasons are the use of emergency departments by primary care patients (so called self referrals), to reduce the costs and to improve safety, the quality of care and continuity of care.

### 3.6 Role of GP

18% of the respondents report that 1-25% of the GPs are active in the after hours care, while 28% of the respondents report a participation figure of 76-100%.

In Italy, United Kingdom, Canada, Israel, Mexico and Poland there is a tendency that not many GPs are active in the after hours care. Countries where high percentages of GPs work in the after hours care are the Netherlands, Portugal, Norway, Switzerland, Australia, Iceland and the United States (see table 8).

In countries where the emergency department, deputizing services and minory injury unit are the most used organizational model, there is a relatively lower percentage of GPs active (see addendum table 2). In countries where rota groups, GP cooperatives and primary care centres are the most used organizational model, the role of the GP is more prominent.

**Table 8** Role of GPs per country

| | 1-25% | 26-50% | 51-75% | 76-99% | 100% | Don't know | Total |
|---|---|---|---|---|---|---|---|
| Australia | | | | 1 | | 1 | **2** |
| Austria | 1 | | 1 | 1 | | | **3** |
| Belgium | | 1 | 1 | 3 | 1 | 1 | **7** |
| Canada | 1 | 1 | | | | | **2** |
| Croatia | | 1 | | | | | **1** |
| Czech Republic | | 1 | 1 | | | | **2** |
| Denmark | | | 1 | | | | **1** |
| France | 1 | | 2 | | | | **3** |
| Germany | | | 1 | | | | **1** |
| Greece | | 1 | 1 | 1 | 1 | 1 | **5** |
| Iceland | | | 1 | 1 | | | **2** |
| Ireland | | | | | | 1 | **1** |
| Israel | 1 | | | | | | **1** |
| Italy | 4 | | | | | | **4** |
| Mexico | 1 | | | | | | **1** |
| The Netherlands | | | | 2 | | | **2** |
| New Zealand | | 1 | | | | 1 | **2** |
| Norway | | | 4 | 1 | | 1 | **6** |
| Poland | 1 | 1 | | | | 1 | **3** |
| Portugal | | | | 1 | | | **1** |
| Slovenia | | 1 | 2 | 3 | | | **6** |
| Spain | | | 1 | | | | **1** |
| Sweden | 1 | 1 | 1 | 1 | | 1 | **5** |
| Switzerland | | | 1 | 1 | 1 | 1 | **4** |
| United Kingdom | 2 | 1 | | | | 1 | **4** |
| United States of America | | | 1 | 1 | | | **2** |
| **Total** | **13** | **10** | **19** | **17** | **3** | **10** | **72** |

## 4. Discussion

### 4.1 Main results

- The emergency department is the organizational model which exist the most worldwide, in 92% of all countries.
- The rota group is the most mentioned number one organizational model for after hours care, by 37% of all respondents.
- The main problem in relation to the rota group seems to be the satisfaction of physicians, 86% indicate some to major problems.
- The GP cooperatives do not seem to have obvious weak aspects, 89-100% of all items are valued no to some problems.
- There are many problems in the emergency department with regard to the coordination and continuity of care, efficiency and the satisfaction of other professionals.
- In 69% of all countries people indicate there are plans to make changes in the near future in the after hours care.
- In countries where the emergency department, deputizing services and minory injury unit are the number 1 organizational model, there is a relatively lower percentage of GPs active. In countries where rota groups, GP cooperatives and primary care centres are the most used organizational model, the role of the GP is more prominent.

### 4.2 Most used organization models for after hours

The Emergency department is the organizational model which exist the most worldwide, in 92% of all countries. Only the respondents from the Czech Republic and Denmark indicated that an emergency department does not exist in their country. In the Czech Republic there is primary care integrated in the hospital which is the most used organizational model according to one respondent. In the questionnaire a few Czech respondents mentioned the hospital emergency or emergency care. Apparently the emergency department does exist in the Czech Republic, but not in the form described in the questionnaire.

According to the World Health Organization[17], in Denmark many hospitals also provide open emergency services, although some counties have restricted access to these services to cases referred by general practitioners or brought in by special emergency services.

The rota group is the most mentioned number one organizational model for after hours care, by 37% of all respondents in ten countries.

These countries are Austria, Belgium, the Czech Republic, France, Germany, New Zealand, Norway, Slovenia, Switzerland and the United States. Except for the United States all these countries are

relatively small or sparsely populated outside the big cities. Large-scale organizations could be impractical in these countries.

All nine different organizational models ("other" not included) exist side by side in all English-speaking countries, Australia, Canada, Ireland, New Zealand, United Kingdom and the United States of America. A number of these countries is very large, so in every state probably different organizational models exist. In Ireland and the United Kingdom several new initiatives started alongside during the last decades[15].

**4.3 Weak and strong aspects of the different organizational models**

For patients and their families, the experience of continuity is the perception that providers know what has happened before, that different providers agree on a management plan, and that a provider who knows them will care for them in the future. For providers, the experience of continuity relates to their perception that they have sufficient knowledge and information about a patient to best apply their professional competence and the confidence that their care inputs will be recognised and pursued by other providers[18]. Continuity of care provision seems to cause less problems in rota groups and GP cooperatives and more problems in emergency department, primary care centre, telephone triage and advice service and deputizing service. In rota groups the after hours care is provided by a small number of GPs for relatively known patients, which could mean an experience of continuity for patients. In rota groups and GP cooperatives a good transfer of information about patients is often present, especially about chronically and terminally ill patients [19-24]. Patient information is available in the computer and therefore continuity of care could cause less problems.

The main problem in relation to the rota group seems to be satisfaction of physicians, as 86% indicate some to major problems. Previously is mentioned that the reason for changing the structure of after hours care in the Netherlands was the dissatisfaction of GPs with the rota groups in reference to the high workload, long shifts and the lack of a private life. Therefore the GP cooperatives were formed[2-5].

There are many problems in the emergency department with regard to the coordination and continuity of care, efficiency and the satisfaction of other professionals.
Causes of the perceived low efficiency could be that less experienced physicians often work in an emergency department, the bureaucracy in hospitals with regard to consultations with other specialisms and the physician in charge, the long waiting on the complementary examinations for example X-rays and lab results, a more defensive medicine, and in some countries possibly a fee per patient consultation.

A problem mentioned several times is an overuse and abuse of after hours care by patients (self referrals) leading to overcrowding of the after hours care. Patients visit after hours care organizations with minor problems which could have waited till the next day so they could visit their own GP. This problem is known for a long time in emergency departments in the United States[25]. There is a tendency more and more people use the after hours care as an extension of the regular care[26].

**4.5 Changes**

Remarkable in the table is the number of respondents from one country that differ in their opinion about whether or not there are plans to make changes in the after hours care in their country or region in the near future. Perhaps these are regional differences within a country, or some respondents have inside information and know about the changes earlier.

**4.6 Role of GP**

It is noticeably that the answers from the different respondents differ a lot in Belgium, France, Greece and Sweden. It is possible that in different regions there are differences in participation of GPs in the after hours care. It is also possible that respondents did not know the answer exactly, and did not answer this question reliably.

In countries where the emergency department, deputizing services and minory injury unit are the number one organizational model, there is a relatively lower percentage of GPs active. In countries where rota groups, GP cooperatives and primary care centres are the most used organizational model, the role of the GP is more prominent.
The rota groups, GP cooperatives and primary care centres are based on primary medical care provided by GPs and therefore it is likely that more GPs are active.

**4.7 Conclusion**

The GP cooperatives do not seem to have obvious weak aspects. Within countries a lot of organizational models exist alongside. There is a tendency to organize the after hours care more large-scale.
In order to achieve a better outcome reliability, it is important to develop a new study with a better and more extensive inventarisation of contacts. Further, in large countries multiple respondents per region should be included. Also, it is essential to get a consensus per region or small country regarding the most used organizational model, either by letting the respondents reach a consensus together or by actively inquire after reasons for the discrepancies. Furthermore, it is interesting to investigate what regional the motives are to chose for a certain organization for after hours care.

## 5. Comments

### 5.1 Method

The selection of the population by choosing for EQuiP delegates and contacts of members of our research department is no guaranty for a reliable filled in questionnaire. The same goes for contacts provided by respondents. Perhaps they do not know much about the situation of after hours in their country. Probably there are a lot of people within every country who are experts on this topic but who are not invited in the survey. There is a possible selection bias, when only acquaintances of a respondent within a country are asked to fill in the questionnaire. The chances are that they have the same objectives as the first respondent.

### 5.2 Response

A few countries are very active in filling in the questionnaire and providing information about other possible reliable respondents.

From Denmark and Ireland only one person responded. The reason could be that because there is already a lot available in literature. People from these countries might think that it is not useful to fill in the questionnaire.

To prevent information loss, countries with only one respondent were also included.

### 5.3 Organization of after hours care

In many countries there is a lot of fragmentation of the after hours care. There is a great variation of different organizational models, sometimes even within the same region. For many respondents it is apparently not so easy to explain the situation in the whole country and sometimes there is not enough (updated) information regarding all issues. Consequently, respondents within one country often answer differently. Some respondents indicate they only filled in the questionnaire regarding the situation in their own region. In the analysis all results are generalized for the whole country. This is perhaps not always correct. A too quick conclusion could be drawn which does not account for the regional differences which justify furthermore the choice for a certain model.

### 5.4 Most used organizational model

One question was to give a ranking of the organizational models and assign one number 1, 2 and 3. For 10 respondents is was difficult to select just one model, so they put more than one model on the first position. Consequently these responses were excluded for the next question where different items of quality were asked for the most used organizational model, because these results were not interpretable. Therefore the total respondents dropped. The number of respondents for each number one model were not very high. Therefore no statistical values can be reached.

### 5.5 Weak and strong aspects

The aim was to assess certain aspects which could provide more information about the way the different organizational models for after hours care are functioning. A few of these aspects, as provided in the questionnaire, could be unclear, for example continuity of care, efficiency and coordination of care. People can easily give different interpretations to the same term. In this way it could be possible that all respondents intended distinct meanings and in fact should not be compared.

It is not easy to generalize the way one thinks for example about continuity of care. Respondents should answer the question only for the most used organizational model, but perhaps the whole organization of after hours care in their country is in consideration. Then there is a mix of organizational models and their experienced weak and strong aspects.

People could give desirable answers. For example indicate there are very few problems in their most used organizational model, especially if they are very proud about their model. It would not look good if their model scored negatively in comparison with other models.

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## Addendum 1 Telephone triage

### Introduction

The GP cooperatives in the Netherlands utilize telephone triage to prioritize patient treatment [27-29]. With the use of telephone triage the urgency of the patient's problem is assessed and a decision is made about the appropriate level of care to be given. The options of care are giving self-care advice without seeing the patient, advising patients to visit their own GP the next day, referring patients to a GP at the cooperative or planning home visits. At most Dutch GP cooperatives the telephone is staffed by triage nurses (80% GP nurses and 20% hospital nurses)[29]. The triage nurse is supervised by a GP, who can be consulted at any time in case of doubt or emergency and who checks and authorizes all calls handled by the triage nurses[28]. At all GP cooperatives in the Netherlands triage protocols and guidelines are available to support the triage nurses[30]. Some GP cooperatives use computer-based decision software to assist the triage nurses[2].

### Question

Which models for telephone triage are most used in western countries?

### Method

Variables:

- The most used model of telephone triage after hours
- Triagist in the most used model of telephone triage

### Results

The different models known for telephone triage were all three equally used (see table 1). 25% of the respondents replied that one national telephone number is the model used the most in their country. A regional telephone numbers is mostly used according to 36% and numbers with direct access to a GP according tot 32%. 5 respondents (7%) replied "other", which includes NHS direct, no model of telephone triage or different telephone numbers.

**Table 1** Model telephone triage

| | Frequency | Percent | Number of countries |
|---|---|---|---|
| One national telephone number | 18 | 25,0 | 11 |
| Regional telephone numbers | 26 | 36,1 | 16 |
| Numbers with direct acces to a GP | 23 | 31,9 | 12 |
| Other | 5 | 6,9 | 5 |
| **Total** | **72** | **100,0** | |

The telephone triage is mostly performed by a nurse, overall in 56% (see table 2). In 25% the nurse is supervised by a computer system and in 21% by a GP. 10% of the nurses is not supervised by a computer system or a GP. 43% of all respondents indicate the GP is involved in the telephone triage, from which 52% of the triage is done by the GP autonomously. 8% of the respondents indicate the telephone triage is performed by a non-medically trained person. The telephone triage is also performed by others. Examples are: members of the red cross, trained firemen, an emergency medicine doctor, a paramedic and specialists, such as gynaecologists and ophthalmologists.

A GP is involved in 65% of the triage in the model "numbers with direct access to a GP". Of these 39% is done by the GP himself and 26,1% the GP supervises (see table 2). In case of regional telephone numbers, a large part of the telephone triage is performed by a nurse, either supervised by a GP (33%), a computer system (21%) or individual (17%). The triage of one national telephone number is performed in 40% by a nurse supervised by a computer system and in 27% by a GP.

**Table 2** telephone triage

| | | Triagist | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | **A non-medically trained person** | **A hospital or GP nurse** | **A nurse, supervised by a GP** | **A nurse, supervised by a computer system** | **A GP** | **Other** | **Total** |
| Model telephone triage | One national telephone number | 2 (11%) | 2 (11%) | 1 (6%) | 6 (33%) | 4 (22%) | 3 (17%) | **18 (100%)** |
| | Regional telephone numbers | 2 (8%) | 4 (15%) | 8 (31%) | 7 (27%) | 3 (12%) | 2 (8%) | **26 (100%)** |
| | Numbers with direct acces to a GP | 0 | 1 (4%) | 6 (26%) | 3 (13%) | 9 (39%) | 4 (17%) | **23 (100%)** |
| | Other | 2 (40%) | 0 | 0 | 2 (40%) | 0 | 1 (20%) | **5 (100%)** |
| **Total** | | **6 (8%)** | **7 (10%)** | **15 (21%)** | **18 (25%)** | **16 (22%)** | **10 (14%)** | **72 (100%)** |

75% of all respondents who mentioned "numbers with direct access to a GP" as the most used model of telephone triage, also indicated the GP cooperative and rota group as the most used model. Countries where the emergency department is the most used model, most often have telephone triage through regional telephone numbers (see table 3).

**Table 3** Most used organizational model versus telephone triage model

| | **One national telephone number** | **Regional telephone numbers** | **Numbers with direct acces to a GP** | **Other** | **Total** |
|---|---|---|---|---|---|
| Individual GP practice | 3 | 0 | 1 | 0 | **4** |
| Rota group | 3 | 8 | 10 | 1 | **22** |
| GP cooperative | 0 | 4 | 5 | 0 | **9** |
| Emergency department | 1 | 7 | 0 | 1 | **9** |

| | | | | | |
|---|---|---|---|---|---|
| Primary care integrated in hospital | 0 | 1 | 0 | 0 | **1** |
| Deputizing service | 0 | 0 | 1 | 2 | **3** |
| Telephone triage and advice service | 1 | 2 | 1 | 0 | **4** |
| Primary care centre | 2 | 3 | 1 | 0 | **6** |
| Minory injury unit | 1 | 0 | 0 | 0 | **1** |
| Other | 0 | 0 | 1 | 0 | **1** |
| **Total** | **11** | **25** | **20** | **4** | **60** |

**Reflection**

- The three different models for telephone triage are used in nearly equal numbers.
- In 56% the telephone triage is performed by a nurse. 43% of all respondents indicate the GP is involved in the telephone triage, from which 22% of the triage is done by the GP himself.

The three different models for telephone triage are used in nearly equal numbers.
The majority of the telephone triage is performed by a nurse. 43% of all respondents indicate the GP is involved in the telephone triage, in 22% the triage is done by the GP himself.

Telephone triage and advice services form one common model in the provision of after hours primary medical care. Most frequently these services are embedded in other after hours services such as GP cooperatives in the United Kingdom and the county-based service arrangements now operating in Denmark[31]. In addition, a small number of standalone services have been established. NHS Direct, the national after hours telephone triage service system in the United Kingdom, based on nurses using proprietary health call centre software, is the most important of these. An outcome of the recent review of after hours services in the United Kingdom is that NHS Direct has become the point of first contact for people accessing after hours services in the United Kingdom. It is now also better integrated with other after hours service providers, beside GPs, and operates with improved functionality[32].

In the United States 100 million people are estimated to have access to telephone triage, while in Ontario, Canada, a similar approach is instituted for a population of more than 10 million people. In 1999, Western Australia launched Health Direct, which operates from a call centre with 33 full-time-equivalent operational staff (48 nurses) and is available to the whole of the State, 24 hours a day, seven days a week[33].

Probably almost all different models for telephone triage are used in all countries, but the most used model differs. The telephone triage is done by a variety of professionals and non professionals, which differs in every country. According to one respondent the telephone triage is done by the physician on duty of the local emergency rota. There are often specialists in this rota, for example gynaecologists, but even ophthalmologists etcetera. Perhaps it is less safe when a ophthalmologist performs the triage.

## Addendum 2 Covering letter with questionnaire

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Dear Colleagues and friends,

Recently you received an e-mail in which we asked you to help us with an inventory of the different ways after hours care is organized. Thank you very much for your positive reaction. Information at the international level is needed to critically evaluate current organizational models. This information helps us to define recommendations on how after hours care should ideally be organized. Therefore, we have developed a short questionnaire to be sent to key people in the health system in various western countries. We would be very grateful if you would complete this questionnaire within the next days. (ultimately before 4 April 2007)

It is possible that some questions may not apply to the situation in your country or that the answers are already known from other research. Considering the uniformity and comparability, we have chosen to use one standard questionnaire for all countries. If you do not completely recognize a description of an organizational model given, you can describe the specific variation in the "comments" space.

We invite you to participate in our research by filling in our on-line questionnaire at http://www.kenniscentrumhuisartsenposten.nl/AHC.
(To access the questionnaire, please click on this link or copy and paste it in the address bar of your Internet browser).

The questionnaire will take approximately 10 minutes to complete. If you have any questions, please do not hesitate to contact Nadine Vermue or Linda Huibers, telephone +31 24 361 07 57 or L.Huibers@kwazo.umcn.nl

The deadline for completing the questionnaire is the 4th of April 2007. After we have received all the data, we will make a report that will be sent to you.

Thank you very much for your cooperation!

Yours sincerely,

Richard Grol

On behalf of the project team

Paul Giesen, Project Leader and GP Researcher
Nadine Vermue, Junior Researcher
Linda Huibers, MD, Junior Researcher
Maartje Willekens, MD, Junior Researcher

**Addendum 3 Questionnaire**

## Addendum 4 Tables

**Table 8**

| **Most used organizational model** | **Quantity of respondents** | | **no to few problems (%)** | **some problems (%)** | **many to major problems(%)** |
|---|---|---|---|---|---|
| **Rota group** | 22 | Continuity of care | 36 | 41 | 28 |
| | | Efficiency | 41 | 32 | 27 |
| | | Accesibility | 73 | 18 | 9 |
| | | Coordination of care | 37 | 32 | 32 |
| | | Clarity for patients | 59 | 9 | 32 |
| | | Satisfaction physicians | 14 | 23 | 64 |
| | | Satisfaction other professionals | 50 | 27 | 23 |
| | | Satisfaction patients | 64 | 32 | 5 |
| | | Safety of triage | 55 | 32 | 14 |
| **GP cooperative** | 9 | Continuity of care | 44 | 44 | 11 |
| | | Efficiency | 100 | 0 | 0 |
| | | Accesibility | 78 | 11 | 11 |
| | | Coordination of care | 78 | 11 | 11 |
| | | Clarity for patients | 56 | 33 | 11 |
| | | Satisfaction physicians | 44 | 44 | 11 |
| | | Satisfaction other professionals | 67 | 33 | 0 |
| | | Satisfaction patients | 67 | 22 | 11 |
| | | Safety of triage | 67 | 22 | 11 |
| **Emergency department** | 9 | Continuity of care | 11 | 11 | 78 |
| | | Efficiency | 11 | 22 | 67 |
| | | Accesibility | 22 | 22 | 56 |
| | | Coordination of care | 0 | 22 | 78 |
| | | Clarity for patients | 56 | 22 | 22 |
| | | Satisfaction physicians | 33 | 22 | 44 |
| | | Satisfaction other professionals | 11 | 44 | 44 |
| | | Satisfaction patients | 44 | 11 | 44 |
| | | Safety of triage | 44 | 22 | 33 |
| **Primary care centre** | 6 | Continuity of care | 33 | 0 | 67 |
| | | Efficiency | 17 | 17 | 67 |
| | | Accesibility | 83 | 17 | 0 |
| | | Coordination of care | 17 | 17 | 67 |
| | | Clarity for patients | 50 | 33 | 17 |
| | | Satisfaction physicians | 17 | 17 | 67 |
| | | Satisfaction other professionals | 17 | 50 | 33 |
| | | Satisfaction patients | 17 | 33 | 50 |
| | | Safety of triage | 17 | 33 | 50 |
| **Telephone triage and advice service** | 4 | Continuity of care | 0 | 25 | 75 |
| | | Efficiency | 50 | 25 | 25 |
| | | Accesibility | 75 | 0 | 25 |
| | | Coordination of care | 50 | 25 | 25 |
| | | Clarity for patients | 75 | 0 | 25 |
| | | Satisfaction physicians | 50 | 0 | 50 |
| | | Satisfaction other professionals | 50 | 0 | 50 |
| | | Satisfaction patients | 50 | 25 | 25 |
| | | Safety of triage | 0 | 50 | 50 |
| **Individual GP practice** | 4 | Continuity of care | 50 | 0 | 50 |
| | | Efficiency | 50 | 50 | 0 |
| | | Accesibility | 75 | 25 | 0 |
| | | Coordination of care | 50 | 25 | 25 |
| | | Clarity for patients | 25 | 25 | 50 |
| | | Satisfaction physicians | 25 | 25 | 50 |
| | | Satisfaction other professionals | 0 | 75 | 25 |
| | | Satisfaction patients | 50 | 50 | 0 |
| | | Safety of triage | 50 | 25 | 25 |

| Deputizing service | 3 | Continuity of care | 0 | 0 | 100 |
|---|---|---|---|---|---|
| | | Efficiency | 0 | 33 | 67 |
| | | Accesibility | 33 | 33 | 33 |
| | | Coordination of care | 0 | 0 | 100 |
| | | Clarity for patients | 67 | 0 | 33 |
| | | Satisfaction physicians | 33 | 33 | 33 |
| | | Satisfaction other professionals | 67 | 0 | 33 |
| | | Satisfaction patients | 0 | 67 | 33 |
| | | Safety of triage | 33 | 67 | 0 |
| **Primary care integrated in hospital** | 1 | Continuity of care | 100 | 0 | 0 |
| | | Efficiency | 100 | 0 | 0 |
| | | Accesibility | 0 | 100 | 0 |
| | | Coordination of care | 100 | 0 | 0 |
| | | Clarity for patients | 100 | 0 | 0 |
| | | Satisfaction physicians | 0 | 100 | 0 |
| | | Satisfaction other professionals | 0 | 100 | 0 |
| | | Satisfaction patients | 0 | 0 | 100 |
| | | Safety of triage | 100 | 0 | 0 |
| **Minory injury unit** | 1 | Continuity of care | 0 | 0 | 100 |
| | | Efficiency | 0 | 0 | 100 |
| | | Accesibility | 0 | 100 | 0 |
| | | Coordination of care | 0 | 0 | 100 |
| | | Clarity for patients | 100 | 0 | 0 |
| | | Satisfaction physicians | 0 | 100 | 0 |
| | | Satisfaction other professionals | 0 | 100 | 0 |
| | | Satisfaction patients | 0 | 100 | 0 |
| | | Safety of triage | 0 | 0 | 100 |
| **Other** | | Continuity of care | 0 | 0 | 100 |
| | | Efficiency | 0 | 100 | 0 |
| | | Accesibility | 0 | 100 | 0 |
| | | Coordination of care | 0 | 0 | 100 |
| | | Clarity for patients | 0 | 0 | 100 |
| | | Satisfaction physicians | 0 | 0 | 100 |
| | | Satisfaction other professionals | 100 | 0 | 0 |
| | | Satisfaction patients | 0 | 100 | 0 |
| | | Safety of triage | 0 | 100 | 0 |

**Table 2** Most used organizational model versus role of GPs

| | **1-25%** | **26-50%** | **51-75%** | **76-99%** | **100%** | **Don't know** | **Total** |
|---|---|---|---|---|---|---|---|
| Rota group | 1 | 1 | 8 | 6 | 2 | 4 | **22** |
| GP cooperative | 0 | 1 | 2 | 4 | 0 | 2 | **9** |
| Emergency department | 4 | 2 | 2 | 0 | 0 | 1 | **9** |
| Primary care centre | 0 | 1 | 2 | 2 | 1 | 0 | **6** |
| Telephone triage and advice service | 1 | 0 | 2 | 0 | 0 | 1 | **4** |
| Individual GP practice | 0 | 1 | 0 | 2 | 0 | 1 | **4** |
| Deputizing service | 3 | 0 | 0 | 0 | 0 | 0 | **3** |
| Primary care integrated in hospital | 0 | 0 | 1 | 0 | 0 | 0 | **1** |
| Minory injury unit | 1 | 0 | 0 | 0 | 0 | 0 | **1** |
| Other | 0 | 1 | 0 | 0 | 0 | 0 | **1** |
| **Total** | **10** | **7** | **17** | **14** | **3** | **9** | **60** |

**<u>Addendum 5 Information per country</u>**

**Australia**

There are differences between services available to people in big cities and large regional centers and those in small rural towns and more remote locations. An example of a very remote service is the satellite telephone, and radio, triage service available through the bases of the Royal Flying Doctor Service.

<u>Problems</u>: workforce pressures and GP shortages leading to burn out of individual general practitioners and reduction in services available.

The problems with coops are the perceived lack of willingness of younger GPs to participate, the apparently increasing likelihood that the GP will leave in a different location to where they practice, and the fee-for-service structure of after hours payments which does not cover the full average cost of call out and being on-call (including the social cost to the GP).

Care outside normal opening hours is a key criterion in the Standards for General Practices of The Royal Australian College of General Practitioners. The majority of Australian general practices are accredited against these standards and therefore are required to have in place one (or a combination) of the following for their patients: our practices GP provides their own care for patients outside normal opening hours of the practice either individually or through a roster, or formal arrangements for cooperative care outside the normal opening hours of our practice exist through a cooperative of one or more local practices, or formal arrangements exist with an accredited medical deputizing service or an appropriately accredited local hospital or an after hours facility. The college also has an after hours chapter reviewing the evidence and formulating policy on this aspect of care in our country. However figures on the percentage of people who attend hospital emergency departments instead of their local general practice are not available at a national level. And, as mentioned earlier, there are particular challenges for rural and remote communities.

**Austria**

In Austria exists a wide range of different possibilities. Every federal state (9) has different solutions. In some states there exists no official structure, it is grounded on voluntariness of the GPs. There are great differences between city and rural regions. One model for the patients is, to go to the next hospital with their complaints. The colleagues there are obliged to give first aid. It is a pathway which gets more and more out of control.

Near Vienna 8 individual GPs with a practice of their own are cooperating. They are responsible for about 20.000 people, two villages and are on duty from 7 am - 7 pm, voluntarily. In the nights during the week exists telephone triage (Nr 141) with an GP, conveying to one GP on duty organized by an GP cooperative, structured by Ärztkammer, paid by health insurance and federal state. In the weekend there is a rota group, on duty Saturday 7am to Monday 7am. There exists a second nation wide

emergency number 144, for the red cross or similar organizations, conveying ambulance cars from only transporting to mobile intensive care units and helicopters.
In lower Austria exists a rivalry between GPs and the red cross, or between telephone number 141 conveying medical help and 144 conveying transport to an hospital. The problem has been enlarged since the red cross has outsourced the call enter for number 144. The commercial agency gets an fee of 7 euros for each conveyed transport and 0 euros for calling an GP. You can guess which of the two possibilities is chosen.
In the cities GP cooperatives are taking care after hours, in rural areas general practitioners of the same area take care in a rota group, in both areas emergency service is working parallel.
The weekend duty for GPs of a certain district is from Saturday 7:00 to Monday 7:00, patient phones call center (private run by red cross and government) emergency car, helicopter is sent or GP is on call. During the week after hours service does not exist, the same call center sends an ambulance, helicopter, or what else to bring a patient in a hospital, every clinic has a free access for all patients around the clock by showing an e-card.
In upper Austria there is an after hours service run by GPs in a defined district ("gesundheitssprengel"). One GP is on call with an open office to go out, or for the patient to show up, once a week a GP is for 24h on call. There is no telephone consultation. In Vienna there is a "ärztefunkdienst", a visiting doctor, (14 for the 1 million people in whole Vienna) and an emergency car system with a special trained emergency doctor on board and a helicopter doctor service. A patient calls a call center – there the decision is made who's going out: the ambulance, a doctor, or an emergency doctor. The problem about this model is that the patient who calls for assistance can refuse treatment. He is even allowed to change his mind, no name or address is needed to do so. In general on the countryside a mean of 88% of emergency services are unnecessary, even helicopters, because local GPs are not embedded in after hours and emergency services in whole Austria. This causes a lot of frustration for GPs and it costs a lot of trouble. Who's to pay for it is not indicated when emergency services are not needed.
Changes: after hours duty organized for larger areas.
Reason: colleagues are not so much in favour for additional work and financial considerations.

**Belgium**

After-hours care differs according to the regions. For example there are pilot walk-in clinics and a few central call numbers. Deputizing services, the SOS médecins in Brussels, are not available in an other region. Primary care centers are not very frequent and a GP cooperative ('wachtpost') works in several cities for night (after 20h) care in the weekends. In the last 2 years there is a trend of groups of GPs to organize rota groups in the evenings during the week. GPs can call upon this facultatively. There is a trend of having patients to pay a substantial fee for non-appropriate use of hospital emergencies.

Problems: many GPs do not want anymore to be on duty after hours. They feel the daily job is sufficiently demanding and there is an ageing of the GP population. There is an overflow of hospital emergencies by primary care patients. Hospital based care and emergency services are open to all patients without restriction as well for general care as for psychiatric one (unpublished study), there is no gate keeper role and an active competition between GPs and Medical specialists.
Triage: every patient calls to his GP, the GP answers or an emergency number from the rota group is mentioned. There may be a GP or a non-medical trained person answering otherwise he calls 112 where a trained person answers and sends an ambulance.
The triage is also done by trained fireman at the level of the national service (triage only on the base of the decision to send a medicalised ambulance) and untrained lay people at the level of Rota Group where no triage exists. If asked, a home visit becomes mandatory.
Changes: more walk-in centers and centralization of the after-hours calls and triage. Local regional centers with GPs, nurses, secretary, and perhaps social and psychological health workers, outside hospitals. In the future perhaps the extending of the weekend duty also during the week in the evenings. A project of a primary care center, a national initiative, is paralyzed by the dispersion of interest and responsibilities in health care policy makers (5 different ministries, hospital based care lobby, specialist lobby, universities lobby, politically oriented health care networks).
Reasons: the GP is not available and there are difficulties to find GPs for duty, local dissatisfaction of GPs about their status, the fight against the influence of the emergency department, the lack of continuity outside hospitals and security problems for GP (aggression and physical assault towards GPs).

**Canada**

The health care is a provincial responsibility, so there are ten different systems.
Problems: the unrealistic expectations of the population.

**Croatia**

Individual GPs work on the islands and remote areas, GP cooperatives are active in villages and emergency departments in towns with more than 200.000 inhabitants.
Problems: not urgent problems in emergency departments.
The triage is performed by a physician with broad experience in work in an emergency outpatient department.

**Czech Republic**

Commercial agencies are about to start deputizing services. In some regions rota groups are in function.

Problems: less qualified and experienced physicians work after hours, especially in towns. After hours service is abused by patients. It is easy accessible and patients don't have to pay. An other problem is the transport of patients.
Changes: to charge a patient's contribution (fee) for all after hours services based in hospital to decrease the number of stations providing emergency services.
To join the after hours care with the emergency care.
Reasons: abuse of after hours service by patients and to increase the satisfaction of patients.

**Denmark**

The after hour care is organized by region. All patients call a telephone triage centre, and talk to a GP, who either gives advice or sets up the patient for a visit at a primary care centre, a home call or sends the patient directly to the hospital. Patients expect to be advised by a GP but not to see their own GP after hours. GPs are private enterprises in Denmark and there is shared ownership of the after hours service organized by the GPs of the region. GPs can decide whether or not they want to participate in after hours work or want the duties to be delegated to others. Its relatively well paid and therefore many younger specialists and GPs are willing to take over. Some of the duties are performed by specialists in family medicine that are not GPs.
Hospitals also have emergency rooms, but they are mostly for injuries that need x-rays etcetera.
Changes: by January 2007 13 counties fused to 5 regions. The regions are therefore currently reforming all services, and minor changes in the system are being discussed and planned. Especially politicians want to close down hospital based after hour services and give that over to GP led services.
Reason: saving money. Previously many patients were seeking unnecessary hospital care during nights and weekends and consequently making it difficult for hospital staff to take care of the most injured and ill.

**France**

There is a great variation of organization according to localization of a practice, even within the same region. After hours care are only delivers between 20 to midnight and during the weekend Saturday from 12 to 24, and Sunday from 8 to 24 o'clock.
Changes: organizing "Maisons médicales" (medical centers). The system exists and will probably be developed. In those centers patients can come and see a GP. GPs provide after hours care as in a rota group but they don't provide home visits, only consultations. The center is open from 19h to 24h, and on Saturday and Sunday. There may be a guard to make the job safe for the GP.
Reasons: GP's disengament in emergencies and after hours care.
Too many patients go to the emergency services in the hospitals for primary care problems. This is not efficient and makes it difficult for emergency services to dedicate their care to patients who really need them.

**Germany**

There are many different models in place with huge regional differences.

**Greece**

In urban areas the emergency departments of hospitals take care of patients after hours. In non-urban areas the health centers (NHS) operate with one or two GPs, nurse, ambulances and drivers for any kind of injury, emergency illness of any person anonymously of age, race and sex.
In each province capital there is a model of turns of all doctors operating in the area, but not well organized neither known by patients.
Changes: GPs in the same region will be organized to offer services linked with the local Health Care center. The aim is to have one network of services covering both, rural and urban areas, and a better coordinated care between primary and secondary care.
Reasons: easy access, better medical performance confronting a patient in primary care level and a better continuity of care.

**Ireland**

Irish medical care is a mixed private / public model. So all of the mentioned models exist and are used in different proportions across the country.
Changes: a major reform of the Irish healthcare system is ongoing. Extension of GP cooperatives and standardization of the GP cooperative model throughout the country. Primary care centers and minor injuries units are also being established. Doctors contracts of employment are being reviewed.
Reasons: there is a substantial emergency department overcrowding. Emergency admissions are putting pressure on beds for elective procedures.

**Israel**

A major problem is overuse of the health care system.

**Italy**

The National Health System in Italy is complex. Patients can choose a direct access to the emergency services into the hospitals (fee for service only in the case of true emergency) or by telephone contact with an emergency network (national number 118, with local organization) or contact with "guardia medica" an employed doctor who works only after hours in surgeries diffused into territorial services of NHS.
There are deputizing services, directly run by the NHS, which cover about > 95% of the after hours care. Other services are experimental and only used in some regions.
The services are called "Continuità Assistenziale" and "DEU 118". The first works every day from 8 pm to 8 am and 24 hours on Saturdays, Sundays and holidays. DEU 118 works 24 hours a day always.

Primary care units composed by GPs and Continuità Assistenziale doctors will take place soon. A call center (the number is 118 all over the nation) answers to patients and sends a doctor if needed. The doctor sends the patient to a hospital if necessary by an ambulance, with or without a doctor aboard, according to gravity.
There is no triage system used in Italy.
Changes: an integrated system between large practice groups of GPs and doctors as yet employed as physician of after hours service, in a rotation system. The creation of primary care units as described. To organize a group of GPs.
Reasons: for a mayor continuity of care, a better use of resources and to lower the costs of emergency and after hours service.

**The Netherlands**

There might be the odd GP who takes up the responsibility for his patients 24/7 in person. Triage numbers have been tried, but at the moment no such number is in regular use.
Changes: coordination of out of hours care using the GP cooperative as a basic service for medically non complex care and out-reaching services, and the Hospital Emergency Unit as a referral Unit for complex medical care. Ambulance services (out-reaching triage, out-reaching complex care) can stabilize patients and bring them to GP cooperative or Hospital Emergency Unit for either non-complex or complex medical care. More integration GP cooperatives and emergency department.
Reasons: efficiency, effectiveness and cost containment.

**New Zealand**

After hours care in New Zealand is highly fragmented with a range of local solutions implemented at a local level.

**Norway**

Primary care centers are found in larger cities. The municipalities are responsible for establishing out of hour services. This is often done in intermunicipal cooperation, especially in minor municipalities. The conditions in various parts of Norway differ a lot. 30 GPs take part in a community runned after hours service located in the hospital but separately organized.
Problems: a lack of general practitioners in the rural parts, which results in a wide use of substitutes.
Changes: shift from Rota groups to GP Cooperatives, there is a movement towards bigger intermunicipal services. Because of big differences in geography, and regional care, the state department plans to make systems more alike.
Reasons: to reduce the strain on the GPs having out of hour service several times a week, and create larger services and increase the quality of the services.

**Poland**

There is a transition period in Poland. This year the Emergency Care Act is introduced. The implementation is not the same everywhere. The variety between regions is very big. For example in Malopolska a family doctor is responsible for the patients and most of them are hiring professionals for profit agencies. In the Northern part of Poland existing emergency departments take over this care, like it was before family medicine was introduced in Poland.

Changes: a defined role of the GP based of law act of primary care responsibilities. Also the role of hospital emergency units and the possible combination of police and fire brigades activity.

Reason: earlier there were no clear responsibilities for GPs in the after hours care.

**Portugal**

A large number of Health Centers organize 24 hours a day, 7 days a week services for minor injuries or illnesses mainly because of the low accessibility of the health centers for acute illnesses. There are major differences between the big cities and the rural areas.

**Slovenia**

Changes: reorganization of home visit (GP)- continually (night) home visit in semi-urgent situation reorganization of pediatric emergency service.

Employing doctors and nurses to take over the provision of after hours care.

Reasons: the use of emergency departments by primary care patients, physicians' increasing workload, and the complexity of health care problems.

**Spain**

Spain is divided into 17 different health services (each Administrative community has their own Health Service). Each one has its own model.

In the region Murcia the Public Health Service covers almost 100% of the population, some of them have also private insurance. To attend after hours primary care or emergency care (1700-0800 on labour days and 24 hours on the rest of them) we have SEDU (Servicio Especial de Urgencias) runned also by the Servicio Murciano de Salud.

If you can not visit the emergency premises you can call the 112 Call centre with a central telephone number. They arrange emergency care after hours, for example home visits and help with accidents.

Changes: **r**ecently created and introduced but not yet fully implemented in the whole territory are centres of primary care emergencies. These are equipped with X-ray, minor surgery, traumatology and instant lab results.

Reason: to reduce the waiting time and serve as triage of the hospital emergency departments.

**Sweden**

The country has 24 separate County Councils handling health services without coordination.
Out of hours one of the health centers is functioning as the out of hours centre which is staffed by nurses. Patients should dial the usual telephone number from their health center and are automatically directed to the nurse at the out of hours centre. She will give advice and if necessary an out of hours appointment with a GP at the out of hours center. All GPs in the area are sharing the out of hours work at this center. Another GP is on duty at home ready to do the house calls and legal assistance to the police etcetera. There is a non-regional number, 112, which is only used for real emergencies. In many areas, mainly in the big cities, the after hours care is deputized to services where most often young hospital doctors work doing extra money.
Problem: there is a problem to ensure that the medical record from the out of hours centre is available for the patients GP already the next day.
Changes: the new conservative alliance prefers to close minor injury centers or walk-in-centers and give the money to the local GP-practice instead for keeping the practice open until 9 pm. Late night emergencies is still unclear. The county is planning to introduce visits at home by GPs in the after hours care. An other change is a national telephone number with nurses nurse supported by a computerized telephone advice system.
Reasons: minor injury centers or walk-in-centers are pretty expensive and the most common conditions handled are common colds. The politicians are stressing the importance of availability in front of everything else and are underestimating the importance of the nurses access to medical records and the nurses knowledge of the local area and the local health service resources.

**Switzerland**

Out of hours care in Switzerland is extremely fragmented. Over 100 local organization-units without cooperation on a regional or national level. There was 2006 a national debate evolving.
There are 27 different health care systems. The majority of systems use rota groups, but call centers are sometimes mandatory (for patients of some sick funds or care models) Primary after hours care integrated in the hospital are starting in other, based on the Dutch model.
Triage is done by a physician on duty of the local emergency rota. Often there are also specialists in the rota, for example gynecologists and even ophthalmologists etcetera.
Changes: call center service may became mandatory for a majority of after hours care (allowing lower premiums). GP led emergency departments next to hospital emergency care (in pilot phase/few localizations), and bigger rayons for after hours services.
Reasons: overload of emergency rooms of hospitals, lack of GPs in rural areas, work dissatisfaction of physicians, quality of emergency care.

**United Kingdom**

Provision in the UK is complex and varies according to local circumstance, e.g. urban/rural mixed models operate. GPs in practices do not have to provide after hours care, so most practices no longer run out of hours services themselves. Some do it for the money still. In many places, the local administrative body (the primary care trust) commissions services. These can be of various types, and may include paramedics visiting patients in their own homes, backed up by a primary care centre. Problems: there is very little known about safety of triage. GPs like not having after hours care responsibility, but the continuity is much less and poorer quality of care for patients is highly likely. The system in different parts of the country can be different, so there is an opportunity for patient confusion.

**United States of America**

With 250,000 primary care physicians, 200,000 nurse practitioners and physician assistants, and 300 million people, one can find nearly every imaginable form of after hours coverage in the U.S. Problems: limited availability of certain specialties after hours (e.g., neurosurgery) has made it necessary for hospitals (which normally do not employ the specialists) to pay the specialists for after hours coverage.

Some of the initial enthusiasm for nurse triage systems developed by HMOs has decreased because of concerns about inadequate assessments or excessive referrals to emergency departments.