
Health Service Research

Out-of-hours primary care in 26 European countries: an overview of organizational models

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Abstract

Background: Various models exist to organize out-of-hours primary care (OOH-PC). We aimed to provide an up-to-date overview of prevailing organizational models in the European Union (EU), implemented changes over the last decade and future plans. This baseline overview may provide information for countries considering remodelling their OOH-PC system.

Methods: A cross-sectional web-based questionnaire among 93 key informants from EU countries, Norway and Switzerland. Key informants with expertise in the field of primary health care were invited to participate. Themes in the questionnaire were the existing organizational models for OOH-PC, model characteristics, major organizational changes implemented in the past decade and future plans.

Results: All 26 included countries had different coexisting OOH-PC models, varying from 3 to 10 models per country. 'GP cooperative was the dominant model in most countries followed by primary care centre and rota group'. There was a large variation in characteristics between the models, but also within the models, caused by differences between countries and regions. Almost all countries had implemented changes over the past 10 years, mostly concerning the implementation of telephone triage and a change of organizational model by means of upscaling and centralization of OOH-PC. Planned changes varied from fine-tuning the prevailing OOH-PC system to radical nationwide organizational transitions in OOH-PC.

Conclusions: Different organizational models for OOH-PC exist on international and national level. Compared with a decade ago, more primary care-oriented organizational models are now dominant. There is a trend towards upscaling and centralization; it should be evaluated whether this improves the quality of health care.

Keywords: After hours care, European Union, organizational models, out-of-hours medical care, practitioner cooperative, primary health care.

Background

Out-of-hours primary care (OOH-PC) is important for a well-functioning health care system (1–3). Policymakers and physicians all over the world find it difficult to achieve high quality and good

continuity of primary care during out-of-hours (3,4). Delivering safe, efficient and cost-effective OOH care is more and more challenging due to increasing demands (e.g. because of ageing and population growth) and a high number of medically non-urgent or unnecessary

Key Messages

- Organizational models for out-of-hours (OOH) primary care vary in Europe.
- Three to 10 organizational models coexist within one country.
- There is a trend towards upscaling and centralization of OOH primary care.

contacts (5–8). However, from the patient's perspective, some patients perceive the need to contact a physician immediately (6). General practitioners (GPs) providing out-of-hours care experience an increasing workload, inadequate compensation and shortage of personnel, resulting in a reduced motivation (4,9–11). Consequently, re-organization is needed, and several countries are searching for solutions to tackle these challenges (4,12). Various models are implemented whilst others are abandoned, when they no longer fulfil newly arising needs.

Differences between the primary health care systems of European countries exist, especially for OOH-PC (3,13,14). In 2007, existing organizational models of OOH-PC in 25 western countries were assessed, identifying a total of nine different organizational models, listed in Table 1 (14). The participating key informants in 2007 indicated that most countries had plans to change OOH-PC in the future (14).

The aim of our study was to provide an up-to-date overview of prevailing organizational models for OOH-PC in the European Union (EU). We made an inventory of the existing dominant models in the different EU countries, implemented changes over the last decade and future plans of reforming OOH-PC. The outcomes of this study will provide opportunities for countries considering re-modelling their OOH-PC system.

Methods

Design

We performed a cross-sectional international web-based questionnaire among key informants from EU countries.

Study population

We included all 28 EU countries, Norway and Switzerland. The latter are closely connected to the EU and are members of the European research network for out-of-hours primary health care (EurOOHnet)

(13). Key informants with expertise in primary health care were retrieved by addressing the national delegates of the following three international organizations: EurOOHnet, the European Association for Quality in General Practice/Family Medicine (EQUIP) and the World Association of Family Doctors (Wonca). To ensure maximum inclusion of experts with experience in the area, the selected 119 national delegates were asked to provide contact information of expert colleague key informants whom they considered able to fill in the questionnaire. The snowball effect culminated in a total of 223 key informants, including the national delegates. The recruitment procedure was similar to the procedure used in the 2007 study (14).

Measures

Our questionnaire was adapted from the 2007 study (14) using findings from recent literature on OOH-PC (9–13,15). The original questionnaire was based on literature review and internal and external feedback rounds by experts in this field.

We made slight adjustments in the definitions of the pre-defined models and added extra questions on the specific characteristics of the models. The adjusted questionnaire was reviewed in six separate rounds by Dutch GP experts and researchers. The final draft of the updated questionnaire was sent to an international expert panel for external review. The panel consisted of six members of EurOOHnet from four different countries. They provided input and comments to the questionnaire, leading to several adjustments. In this way, the face and content validity of the questionnaire was increased. The final questionnaire (see [Supplementary material 1](#)) was converted into a web-based questionnaire using Limesurvey 2.0.6.

The primary outcome measures were the prevailing organizational models of OOH-PC in the EU countries. The national key informants had to indicate which of the nine organizational models (Table 1) existed in their country and which was the dominant model. Furthermore, they were asked to describe the

Table 1. Description of organizational models derived from the previous study (2007) (14)

Individual GP practice:	The GP takes care of his own patients 24 hours a day, 7 days a week.
Rota groups:	Small-scale GP groups of about 4–15 members working in the same region. Each GP takes turns being on duty during out-of-hours, for the patient population of all members of the rota group.
GP cooperatives:	Large-scale organizations of about 15 to more than 250 GPs. GPs take turns being on duty during out-of-hours, for the patient population of all participating GPs. GP cooperatives may be supported by nurses, management, drivers, etc.
Emergency departments:	The GP has no role in the care for patients during out-of-hours; instead, the emergency department of hospitals take care of primary care patients during out-of-hours.
Integrated primary care in hospitals:	GPs working at the emergency department of the hospital during out-of-hours
Deputizing services:	Commercial agencies employ GPs to take over duties of GPs.
Telephone triage and advice services:	Patients can contact a medically trained professional via a national/regional telephone number. This professional gives advice or refers the patient to the most suitable professional. If telephone triage is implemented in another organizational model (e.g. GP cooperative), this category is not applicable.
Primary care centres:	Centres that patients can visit without an appointment for minor injuries or illnesses. Health care professionals in such centres operate under the supervision of a GP.
Minor injury centres or walk-in-centres:	Centres that patients can visit without an appointment for minor injuries or illnesses and to ask a trained nurse for health information, advice and treatment.

dominant model's essential characteristics (i.e. opening hours, inhabitant coverage, reimbursement of GPs, financial threshold patients, availability of professionals, triage, physical consultation and availability of diagnostic tests). In case an organizational model did not fit into one of the pre-defined models, key informants could describe their model in an open text field. In addition, major organizational changes of OOH-PC that were implemented in the past decade and future plans could be written down in an open text field. The questionnaire was only available in English; the key informants (all highly educated) were assumed to be fluent in English.

Data collection

In June 2018, the key informants received an e-mail with an individual access link to the questionnaire. Reminders were sent to non-responders after 1 and 2 weeks. In case there was no response from a country, we asked respondents from neighbour countries to provide contact details of possible key informants in these countries. When responses were not clear, we sent the respondents an e-mail and asked controlling and clarifying questions to make sure that the interpretation of the data was correct. Information from these additional questions was processed and data were corrected when necessary.

Analyses

We determined the dominant organizational model(s) per country, selecting the model(s) that were designated by the majority (>50%) of respondents in the country. Characteristics of each dominant model were described when mentioned by >30% of all respondents who indicated the model as dominant in their country. This way we aimed to make the overview of characteristics more explicit, disregarding model variations that existed in only a few countries. To account for the unequal number of informants per country, all countries were given an equal weight in the calculation of this percentage. This way we prevented that countries with relatively many respondents had a large influence on the results. All analyses were performed using IBM SPSS statistics (version 22). Free text concerning implemented major changes and future plans were categorized per country by one researcher (LS) and checked by a second researcher (MU).

Results

Characteristics of respondents

In total, 93 respondents completed the questionnaire (43%), representing 26 of the 30 included countries. The mean number of respondents per country was 3.6, with three or more key informants in 69% of the countries. We did not receive response from Cyprus, France, Greece and Lithuania.

Most respondents were GPs (86%; $n = 80$). Of all GPs, 30% also worked as a researcher, policymaker or emergency physician. Other respondents were researcher ($n = 8$), emergency physician ($n = 3$), manager ($n = 1$) or GP trainee ($n = 1$).

Organizational models

In all 26 countries, multiple OOH-PC models existed next to each other, varying from 3 to 10 models within one country (Table 2). In 25 countries, between one and three dominant models could be identified. For Slovenia, none of the existing models could be identified as a dominant model.

Models that were mentioned as dominant most frequently were 'GP cooperatives' ($n = 10$), 'primary care centres' ($n = 6$) and 'rota groups' ($n = 5$), followed by 'integrated primary care in hospitals' ($n = 3$), 'individual GP practices' ($n = 3$) and 'emergency departments' ($n = 3$). Rare models were 'deputizing services' ($n = 1$) and 'telephone triage and advice services' ($n = 1$). According to the informants, 'emergency departments' existed in all countries, but these were dominant for providing OOH-PC in only three countries.

In two countries, Bulgaria and Italy, a dominant model existed, which could not sufficiently be categorized by the nine pre-defined organizational models. In Bulgaria, individual GPs are responsible for the care of their own patients 24/7, but they can opt to organize OOH-PC for their patients via a private special health centre financed by GPs and private patients. Six respondents from Italy described another model, which approaches the structure of 'primary care centres' with elements of 'rota groups'.

In North-western European countries, the 'GP cooperative' was often a uniform dominant national model, while, in countries in Southern and Eastern Europe, 'GP cooperatives' functioned regionally as a dominant model or just as one of several alternatives for OOH-PC.

Characteristics of dominant models

There was a large variation in characteristics between the models, but also within the models, caused by differences between countries and regions (Supplementary material 2). All nine organizational models were open in weekends, evenings and nights and during national holidays. The models 'telephone triage and advice centres and minor injury centres or walk-in centres' had a larger catchment area with more inhabitants than the other seven models. In most cases, no financial barrier to access OOH-PC existed; only in four models, some countries had a form of co-payment by patients ('rota groups', 'GP cooperatives', 'integrated primary care in hospitals' and 'primary care centres'). In part of the models, the co-payment was specifically for OOH care (e.g. a telephone fee per minute or an out-of-pocket payment for use of the OOH service) and, in other models, the co-payment was the same as in day-time practice. No triage existed in 'minor injury centres or walk-in centres', while the other models used different forms of triage. In most organizational models, patients' help requests could be handled by telephone consultation without a face-to-face contact, whereas in 'minor injury centres or walk-in centres' and, sometimes, in 'individual GP practices and deputizing services', patients always received a face-to-face contact with a health care professional.

Implemented changes, future wishes and plans

Almost all countries implemented changes over the past 10 years (Table 3). The most frequently mentioned changes were implementation and improvement of the quality of (national) telephone triage, a change or implementation of organizational model and upscaling and centralization of OOH-PC.

Most respondents indicated future wishes, which were related to the improvement of quality aspects, with subsequent plans to achieve this (Table 4). Planned changes varied from alterations to fine-tuning the existing OOH-PC systems, such as designing protocols to standardize medical treatment, to radical nationwide organizational transitions in OOH-PC, such as changing from various organizational models to one uniform national model.

Table 2. Overview of the number of models per country and the model mentioned as dominant by the majority of the 93 respondents of 26 EU countries in the current study (2018) and the model mentioned as dominant by the majority of the 71 respondents of 25 EU countries in the previous study (2007)

Country	Respondents (<i>n</i>)	Models (<i>n</i>)	Dominant model(s)	Dominant model in 2007 (14)
Austria	2	4	Rota groups Primary care integrated in hospitals	Rota groups
Belgium	3	6	GP cooperatives	Rota groups
Bulgaria	3	6	Individual GP practice Emergency departments Other	Not known
Croatia	4	7	GP cooperatives	Emergency departments
Czech Republic	2	4	Rota groups Primary care integrated in hospitals	Primary care integrated in hospitals
Denmark	5	4	GP cooperatives	Telephone triage and advice services
Estonia	3	4	Emergency departments	Not known
Finland	4	8	Primary care integrated in hospitals	Not known
Germany	6	8	GP cooperatives	Rota groups
Hungary	5	9	Rota groups	Not known
Ireland	3	7	GP cooperatives	GP cooperatives
Italy	6	7	Primary care centres Other	Other
Latvia	1	3	Emergency departments	Not known
Luxembourg	1	4	Primary care centres	Not known
Malta	5	6	Individual GP practice	Not known
The Netherlands	5	5	GP cooperatives	GP cooperatives
Norway	6	5	GP cooperatives	Rota groups
Poland	1	7	Primary care centres	Not known
Portugal	3	7	Primary care centres	Primary care centres
Romania	2	4	Individual GP practice Rota groups	Not known
Slovakia	3	6	Rota groups GP cooperatives Deputizing services	Not known
Slovenia	10	9	No clear dominant model	Rota groups
Spain	2	4	GP cooperatives Primary care centres	Telephone triage and advice services
Sweden	1	4	Primary care centres	GP cooperatives
Switzerland	4	10	GP cooperatives	Rota groups
United Kingdom	3	8	Telephone triage and advice services	Deputizing services

Discussion

Summary

There is a large diversity in the organizational models for OOH-PC between and within EU countries, with 3–10 coexisting models within one country. Characteristics differed between the models but also within one model in different countries or regions. ‘GP cooperatives’ was the dominant model in most countries followed by ‘primary care centres’ and ‘rota groups’. Rare models were ‘deputizing services’ and ‘telephone triage and advice services’.

In the past 10 years, most countries realized changes, such as implementing or improving telephone triage, changing the organizational model and increasing the size of the settings by upscaling and centralization of OOH-PC. Future plans mostly concerned also upscaling and centralization, as well as professionalization: for example, implementing electronic patient registration systems, care protocols and increased diagnostic options.

The large diversity in existing models within the countries indicates that OOH-PC is frequently organized on a regional level, which may be in line with the different organization of the health care systems. Yet, it may cause a lack of clarity for patients, which could lead to inequality of care. It could also contribute to fragmentation of care, which is likely to be cost-ineffective (16). Finally,

providing a variety of health care services might lead to supplier induced demand (17).

Strengths and limitations

We were able to include key informants from 26 out of 30 European countries, resulting in an almost complete overview of organizational models of OOH-PC in Europe. In addition, we received multiple responses for most countries, which enabled us to get a better understanding of regional differences.

Our study also has some limitations. Our sample was a convenience sample using key informants from leading primary health care organizations, who suggested additional informants. Our recruitment method might have caused some selection bias in the comparison of the results with the 2007 study (both convenience samples). The response rate was 43%, introducing potential non-response bias. Part of the non-response might have resulted from our recruitment method. The initial group of national delegates from EQuIP and Wonca could have included informants with too little knowledge about the organization out-of-hours primary care. We asked them to suggest relevant key informants. Our aim was to include the right informants in the study; contacting a broad initial group lowered the response rate but did not introduce additional bias to the results.

Table 3. Implemented changes in the past 10 years according to 93 key informants from 26 EU countries (2018)

Categories	Implemented changes	Countries
Organization	Upscaling and centralization OOH-PC (increased size)	Austria, Belgium, Germany, Ireland, Malta, Norway, Slovenia and Switzerland
	Implementation and quality improvement of (national) telephone triage	Austria, Belgium, Denmark, Finland, Germany, Hungary, Latvia, Netherlands, Norway, Portugal, Slovenia, Switzerland and UK
	Collaboration (intensified), co-location or integration of emergency departments and OOH-PC Change of model/implementation of new model; emergency department, telephone consultation, central dispatch systems, deputizing services and multidisciplinary teams Changing opening hours/shift duration More OOH service centres	Belgium, Finland, Germany, Netherlands, Slovenia and Switzerland Czech Republic, Denmark, Estonia, Hungary, Romania, Slovenia, Spain, Switzerland and UK Austria and Slovakia Luxembourg, Norway and Portugal
Coordination	Reduction of health centres for OOH Free access emergency department Increasing gatekeeping role of GPs	Finland Croatia Denmark, Netherlands, Slovenia and Switzerland
	Improving patient awareness and education of patients Increase of occupation professionals during OOH Redistribution tasks GPs to other professionals	Malta and Netherlands Italy and Slovenia Denmark, Finland, Malta, Netherlands, Norway and Slovakia Italy, Norway and Slovenia
Professionals	Education and training of professionals working in OOH, introduction of competence requirements Relieving (certain) GPs of duty/obligation to work OOH-PC Implementing duty system GPs for working OOH	Croatia and UK Latvia
Professionalization	Patient registration and improved administration Standardization into protocols and introduction of quality demands Increased diagnostic options and improved equipment	Malta Norway and Slovenia Malta, Netherlands and Slovenia
Financing	Implementation and change of imbursement system for professionals working OOH Increased funding OOH-PC/government subsidization Financial motivation for professional working OOH	Bulgaria, Finland and Romania Hungary, Ireland and Slovakia Czech Republic, Estonia and Romania
	Decreasing financial threshold patients Privatization/competition	Germany and Ireland Croatia, Ireland, Poland and UK

Table 4. A summary of future wishes and plans according to 93 key informants from 26 EU countries (2018)

Future wishes	Future plans
- Efficiency	- Harmonization of different models and uniformity of OOH-PC
- Effectiveness	- Enhance gatekeeping role of GPs
- Safety of patient and physician	- Cooperation and integration of OOH-PC and emergency department
- Equity	- Increase adequate competence personnel
- Accessibility	- Standardize medical care to ensure equal quality
- Patient-centredness	- Centralize coordination of care and upscaling - Prevent loss of resources and increase cost-effectiveness - Decrease workload of GPs

Another limitation is the variation in number of respondents per country from 1 to 10. Because some informants indicated that they were only able to complete the questionnaire on a regional level rather than the national level, we allowed differences in answers of

the same country. This is of particular relevance for larger countries where health care is organized on a regional level.

The use of pre-defined models and answering categories enabled us to present a clear overview of existing models. Yet, as even similar models have varying characteristics, there is a possibility of misclassification.

Comparison with existing literature

Our results correspond with previous literature describing the major diversity in the different health care models for OOH-PC between and even within countries (3,14). In comparison with the results of our previous study a decade ago, a tendency can be perceived towards upscaling and centralization of organizational models: countries with 'rota groups' as the dominant model 10 years ago have upscaled towards large 'GP cooperatives' (3,14).

Furthermore, primary health care seems to develop a more prominent role in out-of-hours care: 'emergency department' was often described as a dominant model in the past; we now notice that more primary care-oriented organizational models are dominant (3). This development could be an attempt to handle major problems, such as overcrowding, inappropriate presentation and misuse of emergency departments, risk of overtreatment, and unnecessary costs (11,18–22).

Plans for organizational changes are in line with the already implemented changes that were reported over the past decade, mostly concerning upscaling, centralization and professionalization of OOH-PC. These plans are closely related to the wish of improving core elements of care, largely in line with the six domains of quality of care: ‘effectiveness’, ‘efficiency’, ‘accessibility’, ‘patient-centredness’, ‘patient safety’ and ‘equity’ (23). However, small-scaled models (i.e. individual GP practice and rota groups) will likely have a more personal approach, more continuity of care and relatively short communication lines, which are expected to have a positive impact on the quality of care (24,25).

Implications for research and practice

Our overview of organizational models of OOH-PC serves as baseline study for future studies. We recommend in-depth analyses of the different models, individual characteristics and planned organizational changes, taking the role of the GP, the overall coordination of OOH-PC and patient perspectives into consideration. A detailed evaluation of the identified key elements of each of the organizational models could be used to define general recommendations for implementation (26). Yet, one should take national and regional differences into consideration as the choice of a model is imbedded in a larger system (e.g. culture, health care, staff, geography and financing). As some respondents indicated that some other model existed in their country, more elaborate research could provide more information on the details of these models. Finally, as future plans seem to aim to enhance the quality of care, further assessment of the quality of care of present organizational models is important.

Conclusions

We found that organizational models for OOH-PC vary on an international and national level. The coexistence of different organizational models within a country may be less efficient for health care systems. Compared with a decade ago, more primary care-oriented organizational models are now dominant. There is a trend of upscaling and centralization; it should be evaluated whether this improves the quality of health care. Our overview of organizational models of OOH-PC serves as baseline study for future studies with in-depth analyses of the different models.

Supplementary material

Supplementary material is available at *Family Practice* online.
Supplementary material 1. Questionnaire for key informants
Supplementary material 2. Table 1. Characteristics of organizational models mentioned by >30% of the key informants who indicated the model as dominant in their country (2018).

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Declarations

Funding: this work was not financially supported.

Ethical approval: prior to participation in the study, all key informants were informed on the aim of the study. We declared that their answers in the questionnaire would be treated anonymously in our paper and would be kept strictly confidential. Key informants gave their written permission for participation in the study by filling out the questionnaire. Complying with national guidelines, the study did not need formal ethics approval because respondents were not subjected to any physical actions, no behavioural rules were imposed on them and no sensitive information was requested (27).

Conflict of interest: the authors declare that they have no competing interests.

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