

E-consultation service supporting Moldovan family doctors

Feasibility study

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The project was carried out in cooperation with Association of Family Doctors of Moldova.



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List of Abbreviations

EHIF – Estonian Health Insurance Fund

EHIS – Estonian Health Information System

EHR – Electronic Health Record

EMR – Electronic Medical Record

FD – Family Doctor

GP – General Practitioner

ICT – Information and Communications Technology

IS – Information System

MHI – Mandatory Health Insurance

NHIC – National Health Insurance Company

PACS – Picture Archiving and Communication System

WHO – World Health Organization

1. Executive summary

Background and expected impact

The development cooperation project was carried out to study the feasibility of implementing e-consultation service supporting family doctors in Moldova. E-consultation allows family doctors to consult with specialty doctors through a health information system (HIS) for more accurate diagnosis and faster treatment. The solution seeks to increase the effective use of time by medical specialists and provide an incentive to solve health problems at the primary care level.

North *et al* (2014) define e-consultation as ‘an asynchronous communication between healthcare providers for the purpose of obtaining expert advice about a clinical question’. E-consultation service process begins with an electronic referral (e-referral) from a general practitioner (GP) to a specialist institution. Based on the e-referral the specialist institution decides on the urgency of the case: whether to provide expertise for the GP explaining how to carry on with the treatment (e-consultation) or to invite the patient to a specialist visit (e-transfer). Thus e-consultation contributes to better integration, cooperation and continuity of care. If well implemented, e-consultation can have a positive effect on quality, accessibility and efficiency.

A broad or even country-wide implementation is a difficult task, as it needs cooperation among different stakeholders in the health system. The aim of the study is to propose the next steps for e-consultation implementation in Moldova. Thus the following questions should be answered: how to implement e-consultation service in Moldova and how it will benefit the health system of Moldova?

In order to achieve the aim, the study included mapping of different needs, preconditions, motivators and barriers for e-consultation implementation in Moldova. Input was gathered from international experience, previous studies, surveys among local GPs and specialist doctors, interviews and a workshop with relevant Moldovan health system stakeholders. As a result the expected e-consultation service process and functionalities were outlined and necessary next steps for implementation provided.

Possibilities for implementation

Readiness to use information and communication technologies (ICT) during care provision is one of the most important preconditions for e-consultation adoption. Moldova has made significant steps towards e-health implementation – there is a framework for secure data transmission, several specialist institutions have in-house information systems and currently primary care information system (PCIS) is being implemented on a country-wide basis. The basic capabilities (digitizing health records, writing referrals, transmitting lab results etc) are existent in the PCIS.

On the other hand, lack of interoperability between the different Moldovan in-house information systems at hospitals and other clinics and the PCIS could be seen as problem. E-consultation service needs cooperation between different institutions and different information systems. Thus the need for standard-setting should not be underestimated – technical and document standards as well as service standards are needed for implementing new e-services in health care. Achieving interoperability through standard-setting is the next important step to be taken in order to make the preconditions for e-consultation adoption. There is also a need for a coordinating institution for bringing together relevant specialties (e.g GPs and cardiologists, GPs and neurologists) in order to decide on the clinical guidelines and service standards regarding communication through the service.

Specific data fields and formats of the digital documents (e-referral and e-consultation) should be determined in case of different specialties and/or clinical conditions.

In lieu with the activities focusing on increasing interoperability, a pilot project should be carried out for e-consultation implementation. The pilot project could include e-consultation service testing in case of a specific specialty and preferably involve family practices from rural areas, where the distances from specialty institutions are high yet having more possibilities for better consulting is the most urgent. The current paper proposes the necessary steps of conducting such a pilot project (see chapter 6.4).

The readiness of e-consultation implementation was also demonstrated in a survey. Both, GP-s and specialist doctors were open to the idea of e-consultation service and found that better communication is needed between GPs and specialist doctors. There is a readiness to use ICT technologies for communicating on patient treatment. Although many prefer face-to-face consulting, also internet-based mediums (e-mail) have been regarded as a possible form of communication.

Building the basis for e-consultation and piloting the service would provide a positive foundation for implementing other telemedicine solutions like Picture Archiving and Communication System (PACS) or tele-pathology, for example. Adding e-consultation functionality could also contribute to the better overall attitude towards e-health in Moldova, as it provides faster benefits for health professionals.

2. Introduction

2.1. Description of the project

The aim of the development cooperation project is to study the feasibility of implementing an e-consultation service supporting family doctors in Moldova. The project is a follow-up to the previous development co-operation activities in Moldova in 2012-2013. The previous Praxis led project 'Promoting the development of the Moldovan health care system with the opportunities of e-services' aimed to strengthen the Moldovan health care system by building capacity to develop practical e-health solutions. It also supported Moldovan e-health strategy development in line with the development of the country's health system and information society. The project involved selection of the next e-health service for a more thorough analysis and feasibility study – the e-service selected was e-consultation and therefore the current project is focused on possibilities for implementing e-consultation.

E-consultation¹ allows a family doctor to consult with a medical specialty doctor through a health information system for more accurate diagnosis and faster treatment. The solution seeks to increase the effective use of time by medical specialists and provide an incentive to solve health problems at the primary care level. The project was conducted in 2014-2015 and was carried out by Praxis – Centre for Policy Studies in cooperation with leading e-health experts in Estonia and Association of Family Doctors of Moldova. The project was co-financed by the Estonian Ministry of Foreign Affairs.

2.2. Aim and research questions

The aim of this paper is to assess the need and feasibility of implementing e-consultation in Moldova. The study includes mapping of different motivators and barriers for e-consultation implementation. In addition different stakeholder requirements and service process aspects are outlined. The study serves as an input for implementation of e-consultation and other e-health services in Moldova and points out important issues to be acknowledged when e-health services are planned and implemented.

The following background information was gathered in order to set up the scope of the study and acquire relevant information for understanding the study setting:

- the current status of e-health development in Moldova;
- the main challenges in primary health care system of Moldova;
- the current situation in Moldova regarding ICT implementation;
- the current situation in Moldova regarding implementation of primary care information system;
- the necessary lessons from Estonian experience of e-consultation implementation, which Moldova could use;
- the international experience of e-consultation implementation.

¹ In scientific literature also the term e-referral is used for describing the whole service.

In order to achieve the aim, the following research questions are addressed.

- What are the possible benefits and barriers for implementing e-consultation in Moldova?
- What are the requirements of different stakeholders for e-consultation implementation?
- How could Moldova implement e-consultation – what are the possible organizational and technical possibilities?

2.3. Methodology and methods

Methodology

To address the task of gathering background information, this study employs methods of literature review and semi-structured interviews. The use of literature search is motivated through the fact that no comprehensive and systematic literature reviews have been carried out with regard to e-consultation. In addition, narrative interviews, document analysis and questionnaires were necessary in order to gather information on the status of Moldova e-health and to realize the challenges Moldovan primary care is experiencing in order to clarify whether the e-consultation system is actually relevant to consider.

To address the research questions the paper is based on an **exploratory case-study methodology** employing an inductive approach. A case study method was selected due to the nature of the problem to be solved. The main research questions are ‘why’ and ‘how’ to implement e-consultation service in Moldova². The unit of analysis is e-consultation service implementation, which makes GP-specialist consultation possible through an information system on a country-wide basis. It should be stressed that the unit of analysis is not only the design of the system, but also the possible implementation of the system in Moldova, including the questions of ‘why’ to implement and ‘how’ to implement.

Data collection methods

Four background information collection methods were used in the current study: a literature search, narrative interview, document analysis and questionnaires. Mainly **qualitative** data collection methods were used in order to gather relevant and comprehensive information about the subject (e-consultation service) and the context (Moldovan health system and its stakeholders), but also about international experience. A literature search was carried out in order to seek previous experience and evaluation articles regarding e-consultation systems, which would fit the following criteria.

- The system works on store-and-forward basis, meaning that the consultation is asynchronous not synchronous.
- The consultation request is provided by general practitioners to a specialty doctor. Thus the communication of patient data involves a GP and a specialist doctor.

² As Yin (2013) puts it: ‘a case-study is an empirical inquiry that investigates a contemporary phenomenon in depth within its real-life context, especially when the boundaries between the phenomenon and the context are not clearly evident’. The approach is relevant, as e-consultation implementation can be described as a contemporary phenomenon and the context is the Moldovan health care system and e-health environment, with loose boundaries amid the phenomenon itself.

- The system is not typically used in-house or inside a hospital, being rather a communication tool for providers in different locations (e.g the GP practice is situated in rural areas and the specialist doctor is in a city).

The literature search had a purpose to find evaluation articles or systematic reviews evaluating such systems. Literature search-words included: e-consultation, e-referral, GP, specialist, store and forward, telemedicine, tele-consultation, tele-expertise.

In addition to international academic literature, the **example of implementing e-consultation in Estonia** was also examined due to four reasons:

- Estonia has recent experience in implementing e-consultation and is currently looking for possibilities to scale the service use;
- Estonian and Moldovan health systems' organization has several similarities – this helps with the context setting exercise of e-consultation implementation;
- similarly to Estonia, Moldova has a high role of government in leading e-health reforms – there is experience which Moldova could use in implementing such reforms;
- Estonia is an active supporter of health reforms and economic development in Moldova and further cooperation between these two countries is important.

Consultations with doctors and specialists active in e-consultation implementation in Estonia were carried out and data analysis of current use levels of e-consultation was performed.

Data collection regarding the **Moldovan health system and e-health context** included:

- analysis of documentation and previous studies on the Moldovan health system and particularly on primary care;
- narrative group interviews with doctors in family practice Peresecina, health center in Stefan Voda, and with hospital specialist doctors and management in Orhei Hospital;
- narrative interviews with the representatives of Ministry of Health and Health Insurance Company.

In order to evaluate the current status about **ICT-usage and communication between the primary and specialist doctors and the readiness** of using an e-consultation system, questionnaires were distributed to family doctors and some specialist doctors in Moldova in April, May and October in 2014.

Study outline

The strategy for achieving the research aim of assessing the need and the feasibility of implementing e-consultation in Moldova is described in several phases. The international experience of e-consultation is presented regarding the definition, nature and process of e-consultation systems (international examples in chapters 3 and 5). E-health in the context of Moldovan health system is described (chapter 4), including current developments regarding e-health implementation, important stakeholders, but also the current problems and challenges regarding primary care, which could be addressed through e-health and e-consultation service.

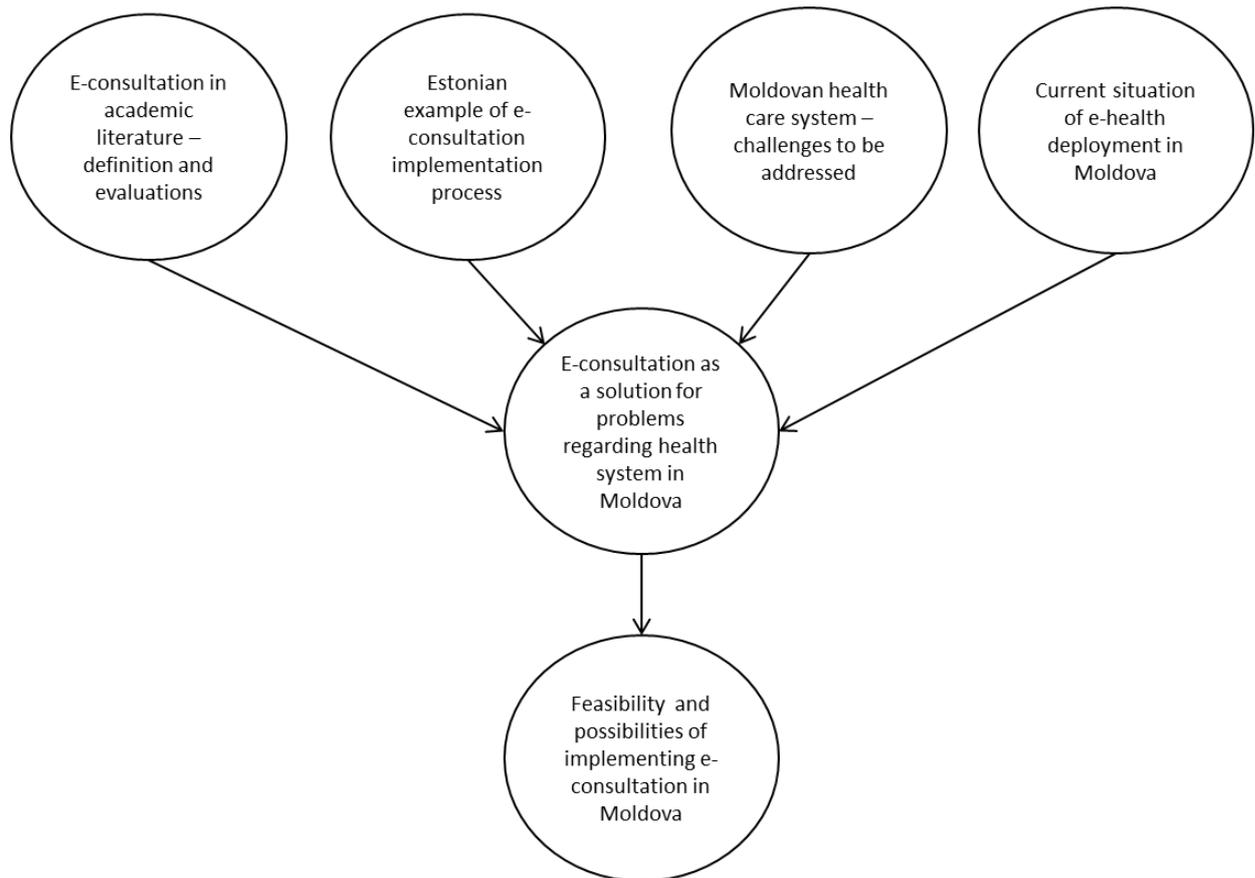


Figure 1. Study outline

The feasibility of implementing e-consultation in Moldova is analyzed in chapter 6. Different aspects are covered, including:

- the process of e-consultation service – from the current process to a digitized process;
- possible risks and system functionality requirements;
- possible motivators and barriers for implementation (including technical, legal, organizational, ethical, financial);
- implementation paths and barriers of implementing e-consultation.

The feasibility analysis was supported by a **policy work-shop** in Moldova, where important health system stakeholders were gathered in order to validate the idea of e-consultation implementation and also serve as an input to a process mapping exercise. The policy work-shop carried the aim of achieving mutual understanding with regard to the **scope, needs, requirements, benefits and risks** of the system. The participants of the workshop included family doctors, specialist doctors, hospital representatives, IT-personnel and state representatives. The two tasks to be carried out in groups included mapping the benefits and risks of e-consultation service in Moldovan context and designing the process with relevant stakeholders of e-consultation. The results of the work-shop are incorporated into the study in chapter 6. The final conclusions are presented in both, chapter 1 – the executive summary – and chapter 7 - conclusions.

3. International experience

The **definition** of e-consultation varies to a considerable extent in academic literature and the term ‘e-consultation’ is also unfamiliar to many medical practitioners. E-consultation is sometimes referred to as e-referral, e-visit, tele-expertize or just doctor-to-doctor telemedicine, yet uneven understanding of the phenomenon could result in difficulties of implementing and evaluating the subject.

E-consultations could be also regarded as a subtype of computerized **provider order entry systems** (CPOE). Black et al (2011) describe such systems as systems that ‘are typically used by clinicians to enter, modify, review, and communicate orders; and return results for laboratory tests, radiological images, and referrals’. Such systems can be a part and integrated into EHRs (electronic health records), and integrate orders with patient data and PACS images. They can also, according to Black *et al.* (2011) have an ‘explicit purpose of electronic transfer of orders and the return of results’ and can contribute to organizational efficiency gains and time savings.

Additional definition can be seen as telemedicine communication between two physicians. the Cocir Telemedicine Toolkit (2011) defines this as **tele-expertize**, which is ‘a remote medical act between at least two healthcare professionals without the presence of the patient for decision purpose’. Both of the definitions can be regarded as asynchronous telemedicine or store-and-forward telemedicine (Craig and Patterson 2005).

Recently, the definition ‘e-consultation’ has gained more emphasis. For example, North, Uthke and Tulledge-Scheitel (2014) define e-consultation as ‘**an asynchronous communication between healthcare providers for the purpose of obtaining expert advice about a clinical question**’. They point out that, the process of e-consultation begins with an electronic referral (e-referral) from one provider to another and “if the purpose of the referral is to seek advice about a clinical problem, then it is called an e-consultation.”



E-consultations can be used for acquiring advice from a **distance** (the referring provider can be at a distant location), but communication can also happen between **closely situated providers** (e.g in the same building).

In some cases in the literature the term ‘e-referral’ is used to describe the whole process, from requesting advice to providing it, but sometimes it only describes part of the process (asking for advice). Wootton et al (2003) see e-consultation as a subtype of e-referral and state that e-referrals can be used for physical transfer of a patient between providers or for consultation between providers. When a patient is transferred based on an e-referral, it is called e-transfer.

In the current paper, the term **e-consultation is used for the whole process (including the initial e-referral)**. Nevertheless it is important to keep in mind that the process starts with a referral and can conclude in giving advice to the referrer (e-consultation) or taking over the patient for specialist treatment (e-transfer). The referral process and organization are thus of high importance in the whole e-consultation service and should be given ample attention.

The literature search **did not detect any relevant systematic reviews** of such a service. E-consultation as a service is rather new and adoption varies a lot among health systems and health care providers. A few articles emerged with considerable depth regarding the service and similar services, yet thorough evaluation reviews were not found.

For example Wootton et al (2003) have discussed the organizational aspects of e-referrals (e-consultations) based on Finnish and UK cases. The article covers the process, the risks, the features and architecture of such systems and points out the reorganization needs and related quality assurance aspects for implementing such systems. On the other hand, Heimly (2009) focuses on describing e-referral systems of which some do and some do not involve an e-consultation. The examples of Finland, Denmark, UK, Netherlands and Norway are included. Nevertheless, only Finland and Netherlands seem to have some sort of a possibility for e-consultation, as others focus on just the electronic referral possibilities and also discuss the online booking systems of hospitals. North et al (2014) also point out the importance of integrating e-consultation service with appointment/booking systems. This gives the possibility to put the e-consultation of the work-schedule of the specialist doctor. Referring and appointment system integration is thus important to keep in mind in studying e-consultation system. Integration can be supported by Cross Enterprise Document Workflow (XDW) specifications³.

Categories of e-consultation

The uptake of e-consultation has increased due to implementation of electronic health records (EHR), making it easier to start using structured and systematized communication solutions. At the same time, the use of e-mails and other communication ways has also increased. The latter are rather unstructured ways of communication and typically not in accordance with medical documentation best practices. Furthermore, the rising levels of chronic diseases and multi-morbidity point to the need for a better communication tool, yet this communication does not have to be urgent and synchronous.

The Finnish and Dutch systems are targeted to GP-s needing specialist's advice. An article based on the example of Mayo Clinic, has also outlined other uses of e-consultation, which is currently used or tested internally (North, Uthke, and Tulledge-Scheitel 2014):

- inter-specialty e-consultation (diverts clinical question flow away from face-to-face consulting and curbside consulting);
- required e-consultation (initiated by care context, not provider choice);
- triage (e-consultation used for better triage);
- surgical (used in pre- and post-surgery);

³ http://wiki.ihe.net/index.php?title=Cross_Enterprise_Workflow

- triggered (e-consultation automatically initiated based on test result);
- intra-specialty (option for subspecialist opinion outside requester's expertise);
- forms-based (e-consultation initiates forms for additional patient provided information prior to e-consultation).

Thus e-consultation has different categories that should be further discussed. Yet the most common seems to be GP-specialist e-consultation, which is the focus of this study.

International experience of GP-specialist e-consultation

Finland. Finland had one of the first e-consultation projects in Europe – examples from Helsinki University and Oulu region are presented in different articles (Heimly 2009, Wootton 2003). All Finnish systems involve e-consultation possibility in the broader e-referral system.

Netherlands. The Netherland's ZorgDomein provides a commercial web-based e-consultation system, which can be integrated with different EMR-s in Netherlands (Heimly 2009). ZorgDomein eConsultation offers each GP the possibility to remotely request referral advice from a specialist, for example teledermatology, telecardiology and telenephrology (www.zorgdomein.nl).

United States. Different internal and inter-provider systems exist. The example of Mayo Clinic Rochester has been detected through the literature review. E-consultation service started in 2008, as a method for primary care providers to obtain expert advice about a clinical question from specialists. Now, e-consultations are available in outpatient setting.

Estonia. Estonia is currently in the process of scaling nation-wide e-consultation service. An important aspect is that Estonia has incorporated the state representatives in the implementation process at the very beginning – the Estonian Health Insurance Fund (social insurance fund) has taken active role in the implementation process and has targeted a countrywide adoption of the system. The service has also been added to the reimbursement list of medical services. Although Estonia has not reached high usage rates, the example of implementation is important, when discussing motivators and barriers for adoption. The Estonian example will be more thoroughly presented in chapter 5.

The international literature has discussed several aspects regarding the **impact of e-consultation**. No comprehensive evaluation reviews were found on the impact of e-consultation. Nevertheless several articles were detected, which covered the possible impact of e-consultation.

North, Uthke, and Tulledge-Scheitel (2014) point out that before e-consultations there were 3 possibilities for the primary care provider to get an answer to a clinical question.

- A self-directed literature search.
- An informal ("curbside") consultation.
- A referral to a specialist.

The latter was the only way for a full documentation in the patient's medical record, yet e-consultation gives primary care providers a new option for a formal consultation, which produces a written recommendation.

North et al (2014) have indicated that e-consultation can provide patients better access to doctors (including distant but also local specialists). An example from Ontario showed that implementing e-consultation could reduce waiting times from 12 months to only 3 days in 75% cases (Keely via North). An example from Ireland shows a 68 week decrease in waiting times. Both clinical and cost-effectiveness have been demonstrated to some extent in the literature (Harno et al. 2000).

Yet in the case of e-health systems, it should be kept in mind that a lot depends on the design and implementation process of the specific e-service. Several qualitative aspects should be considered, and the specific context of the e-health intervention should be taken into account. Therefore the context of Moldovan health system and e-health is presented in the next chapter, followed by a more specific description of Estonian experience on implementing e-consultation (chapter 5).

4. E-health in the context of Moldovan health system

4.1. General health system overview

Moldova received its independence in 1991 and since then the health care system has developed significantly. Although infrastructure was inherited from the Soviet Union, Moldova has been making quick steps to modernize the system.

The health system of Moldova is organized in line with the principles of universal access to basic health services, but also equity and solidarity in health services financing from both the state and individuals through mandatory health insurance mechanisms (Turcanu et al 2012). The Ministry of Health and its agencies is overseeing the health system and have full responsibility for the organization, functioning and regulation of health services provided to individuals and the public, and for ensuring the state surveillance of population health. The financing of most health services however is the responsibility of the National Health Insurance Company (Turcanu et al 2012).

Health financing reforms began in Moldova in 2004 with the implementation of a mandatory health insurance (MHI) system. Since then, MHI has become a sustainable financing mechanism that has improved the technical and allocative efficiency of the system as well as overall transparency and has driven the health system towards universal coverage. (Turcanu et al 2012)

Primary health care is provided by family medicine centres, primary care centres and health centres⁴. National health policy emphasizes the need for primary care services to be universally accessible to everyone in Moldova. (Cruc et al 2009)

4.2. Main challenges of the primary care system in Moldova

The Republic of Moldova has had significant success in reorienting the health system towards primary care, and the primary care system functions wholly on a family medicine basis. In rural areas, primary care services are provided by family doctor offices and health centres while in urban areas, services are provided through big family health centres (formerly the polyclinics). All doctors working at the primary care level practice family medicine and narrow specialists who previously worked in the polyclinics are now attached to hospitals, even if they still work in the same premises alongside family doctors.

The primary care level consists of 37 family medicine centres, covering 216 health centres, 556 family doctor offices and 359 health offices. There were also 46 autonomous health centres, covering 71 family doctor offices and 44 health offices. Additionally, the municipality of Chisinau has 5 territorial medical associations, covering 12 family medicine centres; five consultative and diagnostic centres; and 53 consultative departments (Statistics 2015). Family medicine centres and consultative and diagnostic centres provide both family medicine and specialized outpatient services (Turcanu et al. 2012, WHO 2012a).

⁴ Primary care centers are often also referred to as health centers.

A health centre should serve at least 4500 inhabitants and have at least three family doctors. A family doctor office serves a population of 900–3000 inhabitants and can have one or two family doctors. Health offices are organized in communities with fewer than 900 inhabitants and are staffed only with family medicine nurses. In rural areas, family doctors and family medicine nurses are available 24 hours a day and also provide some emergency care. The health centres have transport that can be used for home visits and the transfer of patients if necessary. In 2010, every second person in need of health care went to a health centre and every fifth person went to a family doctor office (Statistics 2015, Turcanu et al. 2012). In 2013 there were 1792 family doctors in Moldova⁵. The official norm of patients per family doctor is 1500 patients (WHO 2012b).

Primary health care plays an important role in providing preventive and health promotion services, influencing positively peoples' health behavior. As a result, decrease in the high number of specialist visits was expected with shift towards general practitioners in primary health care. (The CNAM ... 2012)

The WHO study "Evaluation of the structure and provision of primary care in the Republic of Moldova" findings based on 250 responses among FD-s show that the reported number of patients referred to medical specialists is very high and shows a considerable variation in several respects. A quarter of all patient visits end up with a referral, urban FDs have 25% more referrals than their rural colleagues. (WHO 2012b) This means that resources of health care system are not efficiently used, and family doctors are not fully able to realize their role as "gatekeepers" in health care in Moldova. To bypass primary care, patients tend to use ambulance services to increase the chance of hospitalization (WHO 2012a).

The reason for avoiding primary health care seems to derive from the (perceived) quality of provided services. Study has shown that people show low satisfaction with the primary health-care level because of the limited scope of services, poor quality of services and waiting times; and higher satisfaction with specialist services and hospital services. Moldovan patients continue to value specialist care and disapprove primary health care's gatekeeping function for referrals to specialist care and hospital care. (WHO 2012a)

Furthermore, using computers for keeping patients' records in primary health care is rather low – in 2012 only 8% of respondents used computer for the records, although availability of a computer in the practice was 81% among responses (WHO 2012b). That may indicate that family doctors are not familiar with using computers for work processes although they could have the possibility to ease their workflow with the help of ICT. This notion is supported by the current study – the larger hospitals seem to be better equipped with ICT, thus this could also impact the perceived quality level differences between GPs and specialist institutions.

The number of primary healthcare physicians is in decline and the deficit in family doctors and nurses is unevenly distributed (some central and southern rayons have been less well-staffed). The burden on existing physicians is high and geographically inequitable – national statistics indicate that family doctors in some regions cover larger numbers of rural populations in underserved rayons and provide more services than in other more highly staffed rayons. (WHO 2012a)

⁵ <http://www.cnms.md/ro/rapoarte/anuar-statistic-medical>

Current patient pathway

In order to fully benefit from the service package, every person facing a health problem should first consult his/her family doctor, who will decide if a further referral is needed. In rural areas, this is usually the pathway as there are simply no other services available. If specialist care is required, the rural family doctor will refer the patient to the specialized ambulatory clinic at the district hospital. The district specialist will investigate further and decide whether to admit the patient to the specialized department of the district hospital, refer the patient to the tertiary care level or refer the patient back to the family doctor: 41% of all inpatients in 2010 were referred by a specialist and 29.7% by the family doctor. Referral from specialists has increased by 5.9% since 2008 and has decreased by 6.7% from family doctors (Statistics 2015). Patients who received treatment in a secondary or tertiary care institution are discharged with an extract from the records and with recommendations for further ambulatory treatment and follow-up. They go back to their family doctors with this documentation and the family doctors are responsible for monitoring the fulfilment of all the recommendations. In some cases, patients might be requested to periodically go back to the tertiary care institution, bypassing the lower levels of care, for follow-up investigations and monitoring (e.g. after cardiac surgery).

In urban areas, the pathways may differ as the spectrum of services available is much wider, including a higher number of private providers at all levels. In urban areas, people also have recourse to emergency health care (ambulances) more readily, being directly transported to secondary or tertiary hospitals in case of need. Finally, some patients may directly self-refer to secondary and tertiary care facilities even though they have to cover the full costs of the treatment. Some patients from rural areas also choose to self-refer directly to tertiary care facilities in the capital (Turcanu et al. 2012). Thus Moldovan patients often have to travel for their care if referred by their family doctor or community nurse.

4.3. Relevant input from surveys, site-visits and interviews

This chapter presents the results of the survey conducted among family doctors (May 2014 - October 2014) and specialist (with the following numbers of respondents: 172 family doctors and 21 specialist doctors), site-visits made to family practice in Peresecina, Stefan Voda and in Orhei and narrative interviews with essential counterparts (Ministry of Health, Health Insurance Company).

Survey – family doctors

The purpose of the survey was to provide an overview of the current situation in patient referrals and consultations between family doctors and specialist doctors. The responses of the survey were aggregated, analysed, and put in use in the feasibility study of implementing an e-consultation service for family doctors and specialist doctors in Moldova. The survey covered different aspects: region, size, number of visits and referrals, waiting times and referral practices, ICT usage and needs for consultations with specialist.

Location and distance from specialist doctors

Of the 172 answers from family doctors 63% stated that their practice is situated in a city (urban practice) and 37% stated that it's situated in a rural area.

The average distance from family doctor's practice to a specialist doctor that a patient has to travel is according to family doctors is as follows: 1-5 km (53%), 6-10 km (12%), 11-15 km (15%), more than 15 km (21%). This shows that some patients can get specialist care relatively close to their family doctor practice, while others have to spend time and resources for travelling distances in order to receive necessary services. Average distances from family doctor's practice to a specialist doctor vary between rural and urban areas. For urban areas, the distance of 1-5 km away from specialist is observed for 72% of family physicians, but only 8% from family physicians in rural area. Nearly half of the rural family physicians are more than 15 km away from a specialist doctor service (see figure 2).⁶

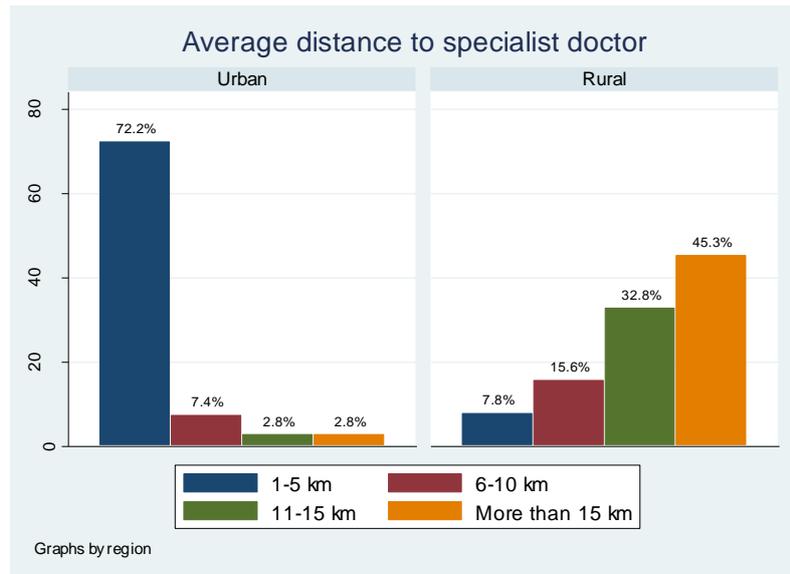


Figure 2. What is the (average) distance from your practice to a specialist doctor that your patient has to travel in order to reach a specialist doctor?

Patient visits

According to the survey results, 57% of family doctors had more than 25 patient visits per day, 31% of doctors had 16-25 visits and other respondents less than 15 patient visits per day. The number of visits per day is similarly distributed across rural and urban areas with a slightly larger proportion of rural doctors, who serve more than 25 patients a day (53% vs. 63%) (see figure 3).

⁶ According to the WHO survey from 2012, in urban areas, only 6.9% of practices have distances of 5 km or more from nearest specialist outpatient facility but 90.5% for rural areas. These results coincide with the current study.

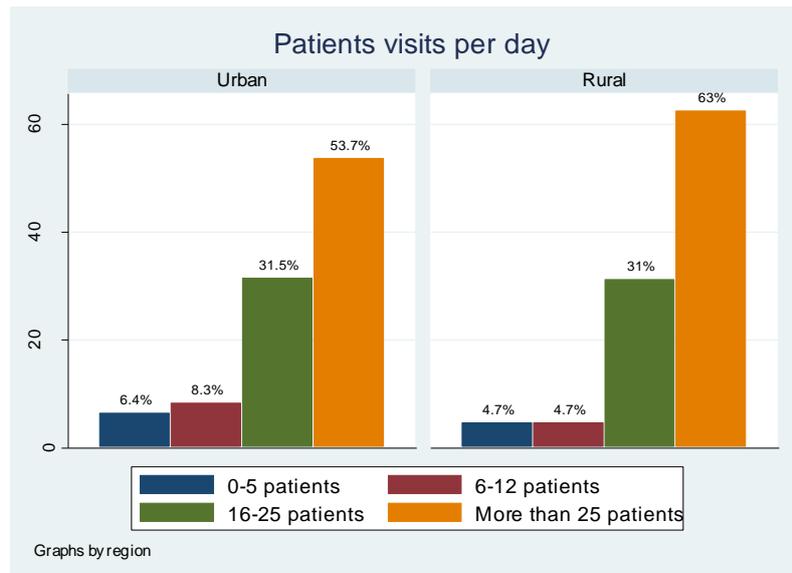


Figure 3. Approximately how many patient visits per day do you have?

In the WHO (2012b) study, patient consultations per day were on average 26.5 in urban and 27.9 in rural areas. The utilization of the practice (the number of patients) is larger in rural areas compared to urban, but the average number of patient consultations per day is similar in both areas. These results coincide with the current study.

Referrals and waiting times

According to the responses of family doctors, 34% of doctors issued 1-2 referral letters per day, 37% of doctors issued 2-4 referral letters per day and 33% of respondents issued more than 4 referral letters per day.⁷ There are no significant differences between urban and rural doctors' referrals (see figure 4).

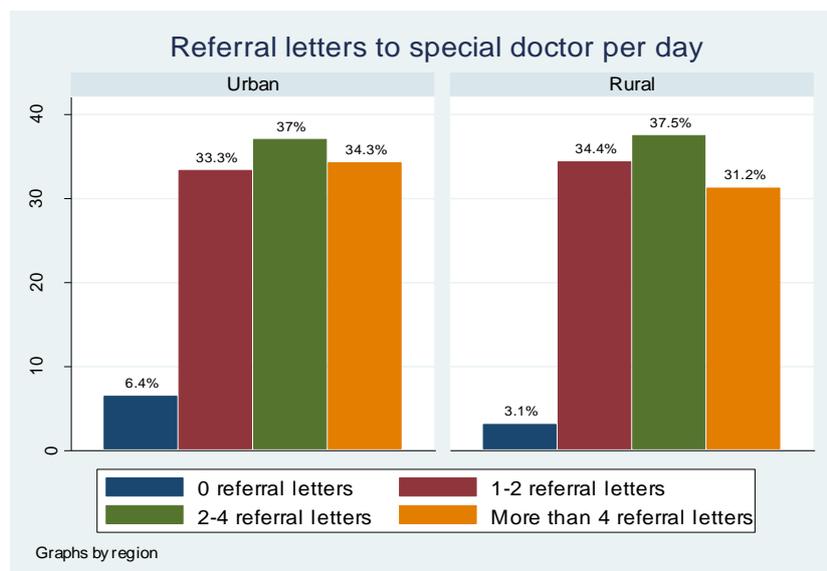


Figure 4. Approximately how many referral letters to special doctor per day do you issue to your patients?

⁷ In some cases the respondents marked several answers regarding the number of referral letters – this is the reason why total distribution exceeds 100%.

The average waiting time for the patients to see a specialist doctor is between 1 to 5 days (according to 46% of responded FDs), 6-10 working days (34%), 11-15 working days (18%) and more than 15 working days (21%). About half of the patients had an appointment with a specialist doctor in 1-5 workdays in urban areas, but 41% in rural areas. The waiting time over 15 days to see a specialist doctor is reported by 30% of family doctors in rural areas and 15% in urban areas (see figure 5). This shows a lower access to specialist doctors in the rural areas.

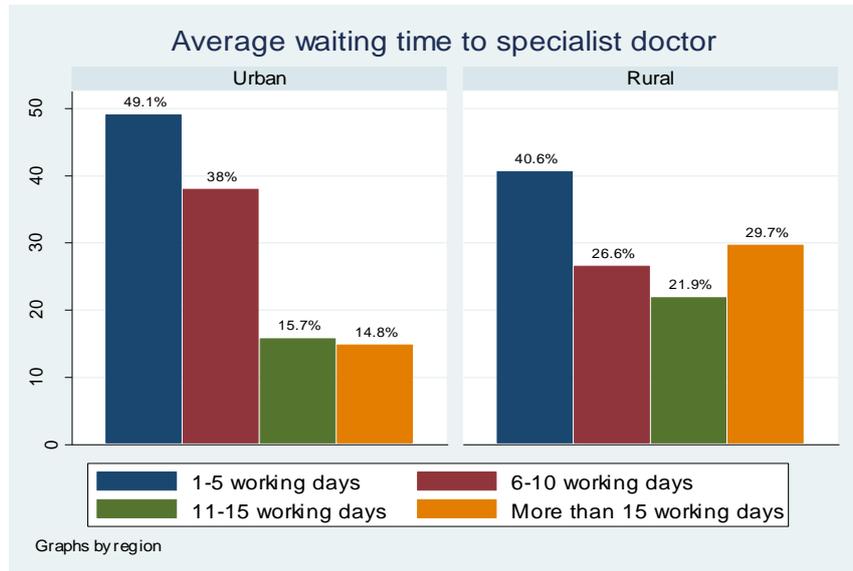


Figure 5. How much time on average your patients have to wait to see a specialist doctor?

ICT usage

According to the survey, 81% of family doctors overall responded that they use a computer at work every day, 7% of respondents use a computer at work once a week and another 12% of respondents do not use a computer at all. The use of computer at work varies across urban and rural areas. In urban areas 94.4% of the respondents report daily use of computers at work, while only 56.3% report the same in rural areas. Moreover, 28% of the respondents from rural areas do not use a computer at all (see figure 6). In the WHO study (2012b) it was found that 9% of urban family doctors and 32% of rural family doctors do not use a computer, thus there has been an increase in computer use by 4% in rural and 6% in urban FD practices.

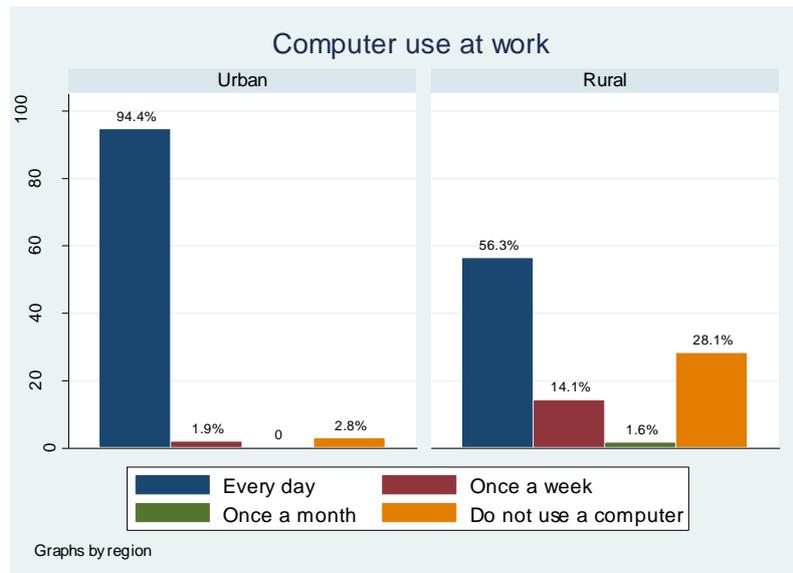


Figure 6. How often do you use a computer at your work?

The survey also included a question about the activities doctors use the computer for. Most common computer based activities among family doctors are web browsing (69% of respondents among family doctors reported this activity), e-mail (57%), institutional electronic system (46%), MS Office (39%), sending medical information by web/Skype (20%) and electronic medical records (17%). Urban doctors are more active users of computers, but the distribution of activities do not vary much between urban and rural areas (see figure 7), except for the use of EMR-s, which is considerably higher in urban areas. The finding that electronic medical records are used among 14% of all of the respondents supports the fact stated in WHO study (WHO 2012b) that the use of computers for keeping patients' medical records and exchange of information with other health care workers should is still rather low.

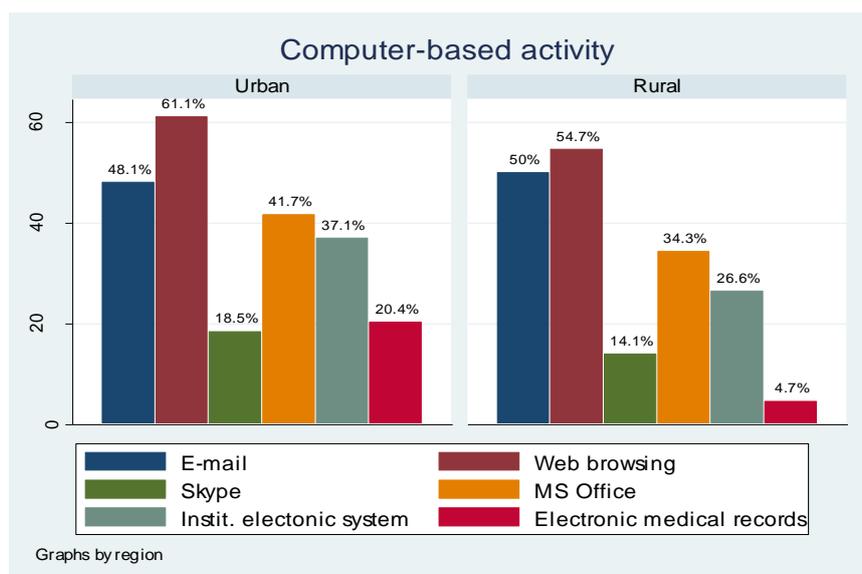


Figure 7. What computer-based activity do you use on usual basis?

Doctors added examples of programmes used daily, these included: CNAM, Access, Slideshare, Facebook, Health Insurance Company system, Medex, other internal EMRs.

Communication with specialist doctors

About half (49%) of the family doctors are contacting specialist doctors in order to schedule an appointment for their patients and the other half of responded family doctors just issue out the referral. In rural area, family doctors contact a specialist doctor in order to schedule consultation/appointments more often (55% vs 46%) and urban family doctors provide referral letters to a specialist consultation/appointment more often (53% vs 47%) (see figure 8).

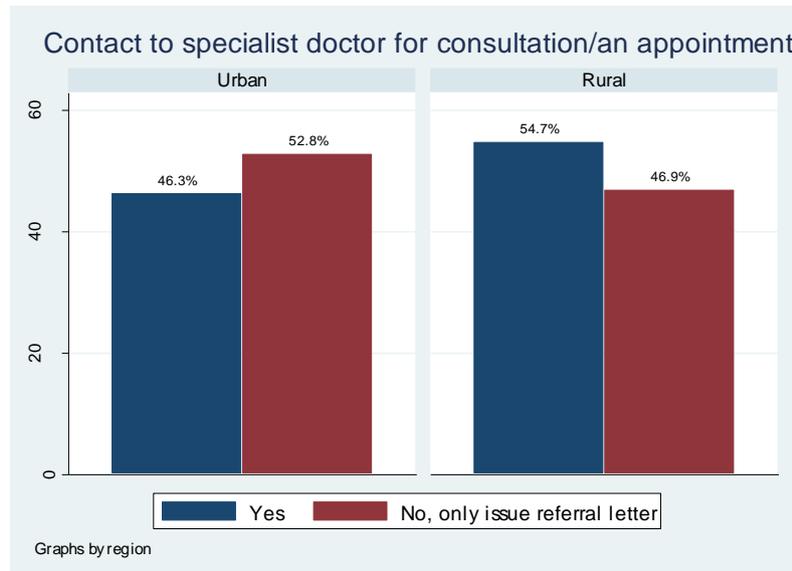


Figure 8. Do you contact a specialist doctor in order to schedule a consultation/an appointment for your patients?

It was also asked whether FD-s consult with specialist doctors regarding patient treatment (see figure 9). In the rural area, family doctors provide referral letters to a specialist treatment more often (27% vs 14%), while the urban family doctors consult with specialist doctors regarding patient treatment more often (79% vs 72%).

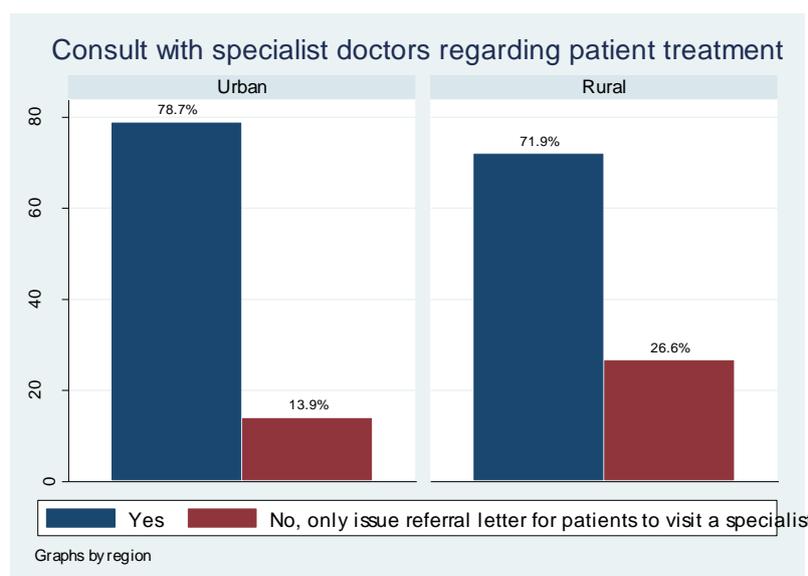


Figure 9. Do you consult with specialist doctors regarding patient treatment?

Among family doctors the most popular way to contact specialist doctors is by phone (85%) followed by e-mail (4%). In rural areas, almost 80% of family doctors contact the specialist by phone, while in urban areas, the rate is only 55%. In the urban area, 22% of the respondents referred to other means of contacting the specialists, such as personal discussions and personally presenting the case to specialist doctor via registration system or EMR.

The most common means to consult with specialist doctors vary across urban and rural areas. Thereby, face-to-face consultations with a specialist are most popular among urban family doctors (73.1%), while in rural area is the phone consultation (70.3%) (see figure 10). This tendency is supported by the notion that in urban areas the family practices have access to specialist doctors (in the primary care centre) and some specialist doctors are in the same building.

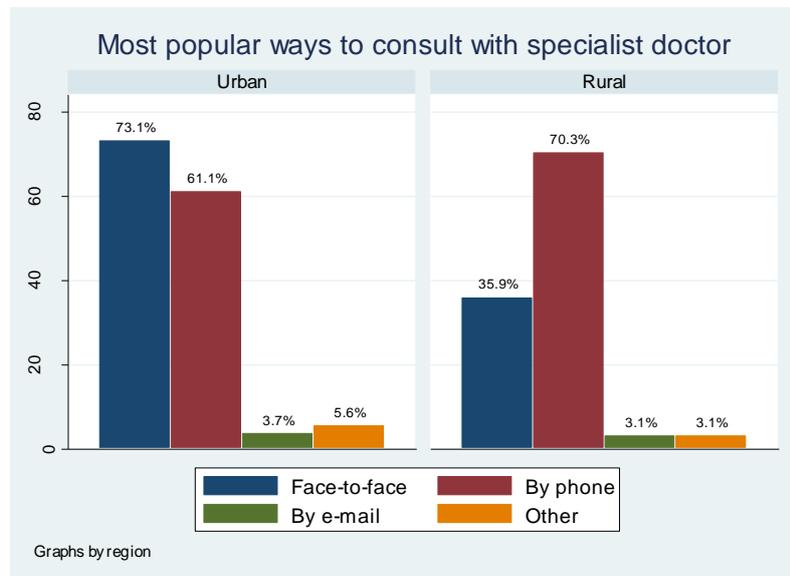


Figure 10. How do you consult with specialist doctors regarding patient treatment?

The average number of face-to-face consultations with specialist doctors regarding patients is 1.1 times per week. Urban area doctors consulted face-to-face more frequently than family doctors in rural areas (1.4 vs 0.6) (see figure 11).

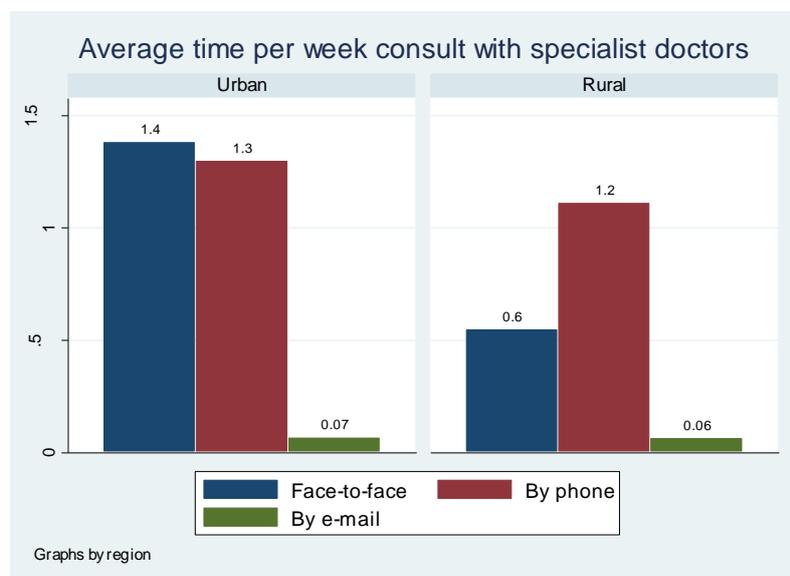


Figure 11. On average how many times per week do you consult with specialist doctors regarding patient treatment?

The average time of receiving a consultation about a treatment is also higher for rural areas – about a quarter of FDs in rural areas have to wait more than 10 days for a consultation from specialist (see figure 12).

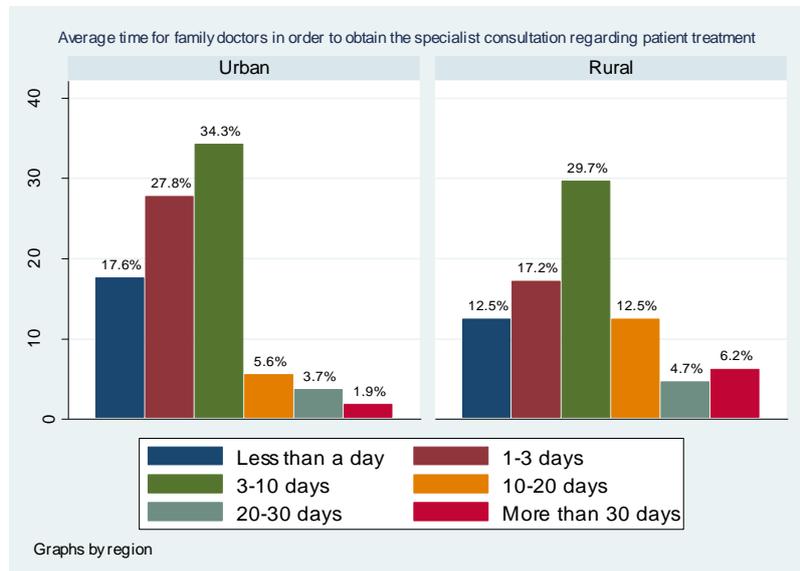


Figure 12. How much time on average does it take you to obtain the specialists' consultation result regarding patient treatment?

Need for consultations

In the survey, the family doctors were asked to name specialties that they feel consultations are most needed from. The most often named specialties/areas are cardiology, neurology, endocrinology, ophthalmology and surgery (see figure 13).

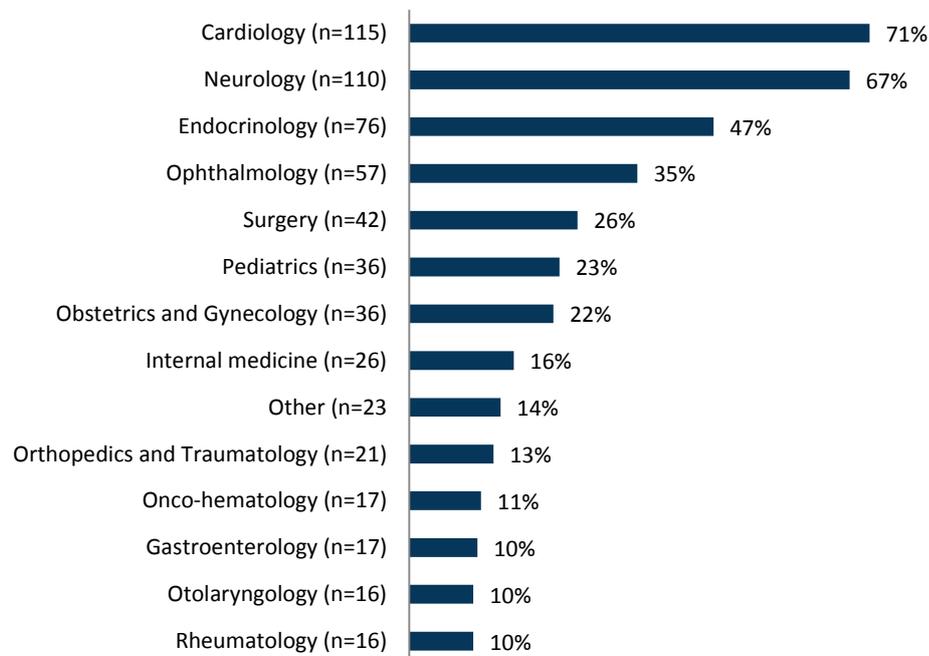


Figure 13. Please name the specialties you feel most needed to obtain consultations from

In addition, the family doctors were asked about the specialties from who it is currently most difficult to obtain consultations. The sequence of most frequently named specialties is the following: neurology, cardiology, endocrinology, ophthalmology and paediatrics (see figure 14).

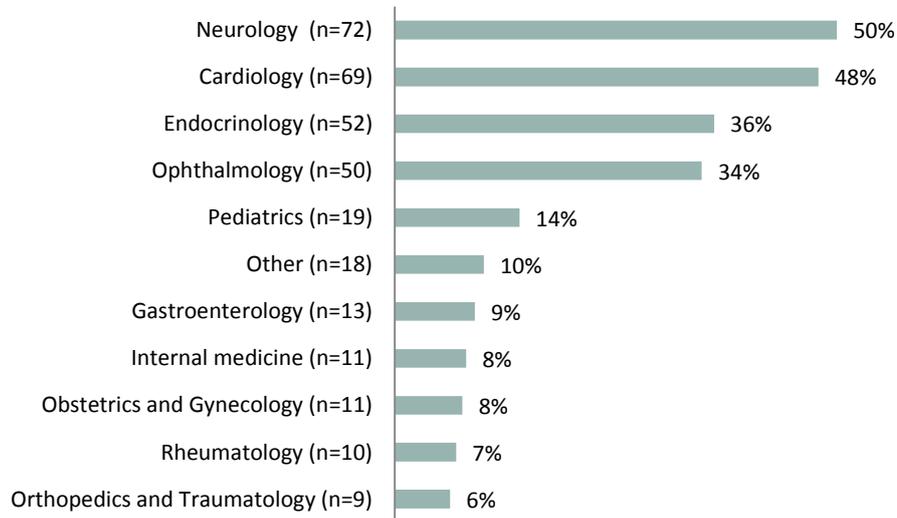


Figure 14. Please name the specialties you feel most difficult to obtain consultations from

Family doctors would like to consult more with specialist doctors compared with their current consulting frequency, only 23% of responded family doctors (26% urban vs 19% rural) said that they do not want to consult more with specialist doctors. 65,7% of urban and 73,4% of rural family doctors would like to consult more with specialist doctors compared with their current consulting frequency. (see figure 15).

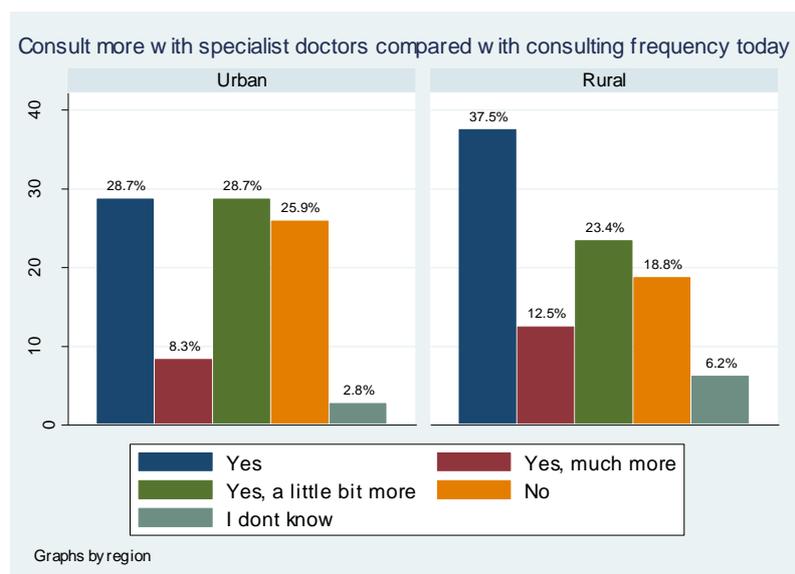


Figure 25. Would you want to consult more with specialist doctors compared with your consulting frequency today?

Convenient ways for obtaining more frequent consulting, according to the survey (see figure 16), would be face-to face consultations (58%), phone consultations (46%) and consultations by e-mail (20%). When the responses are compared across urban and rural areas, a difference can be observed.

Urban family doctors expect more face-to-face consultations (67.6% vs 43.7%) and rural doctors favour more consultations by phone (61% vs 37%) and e-mail (23.4% vs 17.6%), showing the readiness of rural family doctors to consult with specialist with communication technologies.

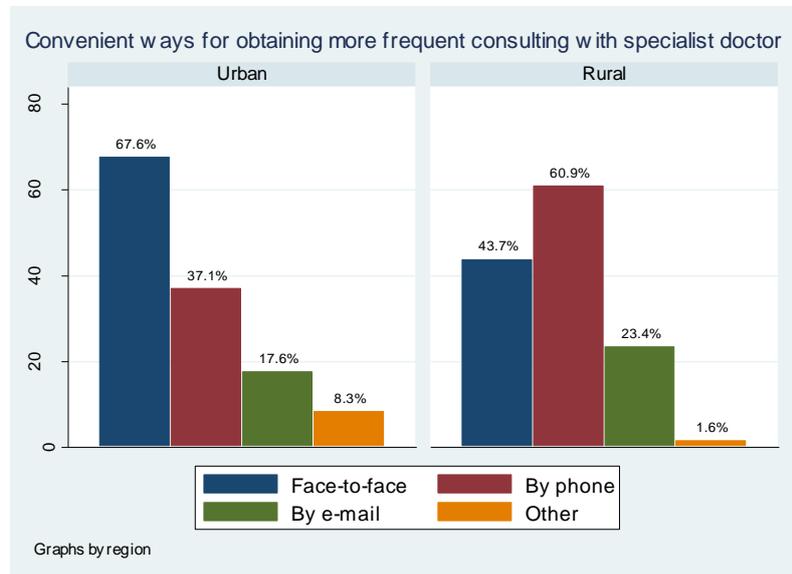


Figure 36. If you want to consult more with specialist doctors then how would you like to do it?

Nevertheless, face-to-face, phone- and e-mail communication has their pros and cons. The latter being lack on structure or formal documentation. Thus, as a final question, the family doctors were described the e-consultation service and asked if they would use this service, if it was based on familiar e-technologies.

81% of family doctors answered that they would use e-consultation, 8% would not use e-consultation and 11% argued that this would depend on the case. Example quotes from respondents: 'It would be good to have a decreasing tendency of family doctors referring patients to specialists'; 'Less arrogant behaviour is needed from specialists' side'; 'specialists have to assume the responsibility for their indications'; 'indications should be made officially, not on a sheet of paper'; patient should not be directed from one specialist to another'; 'would be good to have quick scheduling for urgent cases or a network in which on-line consultation of a specialist would be possible'.

Conclusions based on the survey among family doctors:

- Most of the family doctors see a greater need for consulting with specialist doctors. About 90% of FD would use e-consultation service if it was available.
- It is harder for rural family doctors to seek consultative advice from specialists compared to urban doctors. Family doctors in rural areas have fewer possibilities for face-to-face contacts and thus issue referral letters more often, but also help the patients in scheduling/booking a specialist visit more often.
- The specialties on which there is greater need for consultations are cardiology, neurology and endocrinology.

Survey - Specialist doctors

Also specialist doctors were surveyed regarding e-consultation and referral practices. A small survey concluded in answers from 21 specialist doctors of whom 18 were cardiologists⁸. The number of answers is not representative, but the data will be presented here in a short overview for capturing the general sentiment. The questionnaire can be used in future studies regarding referral practices and e-consultation.

According to the survey 68% of questioned specialist doctors use computer at work every day, 16% use it once a week and 16% of respondents among specialist doctors do not use a computer at work at all. Most specialist doctors use several computer-based technologies on a usual basis: e-mail (94%) and web-browsing (88%), but also MS Word, MS Excel, Skype, PubMed and HINARI were mentioned.

For the question 'do family doctors contact you in order to schedule consultations/appointment times for their patients?' 70% of respondents answered that family doctors do not contact them for scheduling an appointment for the patient. According to the respondents, the most popular way family doctors contact them is a phone-call followed by e-mail, but also personal discussions and presenting the case via a registration system were noted.

Half of the responded specialist doctors answered that usually they have enough previous information about the patient who has been referred to their appointment, the other half pointed out that they do not have enough information about the referred patients or it depends on the case.

Most respondents among specialist doctors (95%) would like the family doctors to prescribe the necessary diagnostic procedures before the patient visits a specialist doctor. Most of specialist doctors said that there are patients that should have gotten help from the family doctors, the average proportion of such patients based on 16 answers was 40%.

Most specialist doctors found that family doctors could be consulted more (95%) and they would prefer to consult family doctors by phone (65%) by face-to-face consultation (47%) or by e-mail consultation (26%). 16 respondents out of 21 said that they would use the e-consultation service for consultations with family doctors. These answers coincide with the previously presented questionnaire results regarding the need for better consulting and readiness for e-consultation.

Site visits and interviews

The survey results can be also supported by gathered information during site-visits and interviews at Prescicna, Stefan Voda, and Orhei. The following aspects were pointed out in discussion at the site-visits:

- The referral rate from family doctors to specialist doctors is rather high.
- In many cases the referral letter is not filled in properly and medical specialist does not have enough information to treat the patient.
- There are cases where the patient has been referred, but there is no information on the referral (tests insufficient and no health record with them). It might indicate that in some regions family doctors have no standardized requirements for referring.

⁸ There are 210 cardiologists in Moldova (2013)

- Some regulations give incentives to refer too much, although a pre-consultation could be helpful.
- In hospitals, information technology is generally old and there are no special finances (reserves) for improving the technology, generally technology is funded only with the help of different projects and such financing is not sustainable.
- High average age of doctors could be a barrier as this means that doctors have no IT-skills, although some doctors are better in using computers.

In sum, the data gathered through surveys, site-visits and interviews and previous studies show the need for developing better consultation possibilities between family doctors and specialist doctors in order to optimize the patient treatment process. This can be supported by e-health services, which are built on sound e-health infrastructure. The status of e-health development in Moldova has to be presented in order to give an overview of the background and possibilities for new e-health services' development (incl e-referring and e-consultation).

4.4. E-health development activities

E-health strategy and e-health components in other strategies

Several activities to promote e-health development are in progress in Moldova. The most important is E-health Strategy 2020. Composing such a strategy is essential because, e-health reforms need comprehensive approach involving all relevant stakeholders (patients, doctors, government, financiers, providers, insurers, pharmaceutical distributors, ICT companies etc.).

The developed strategy sets a goal that by 2020, the citizens of the Republic of Moldova will benefit from improved, transparent and accessible health services, by intelligent use of the ICT (E-health Strategy 2013). Its strategic objectives include improving quality, efficiency, transparency and access to healthcare services; to improve health management and governance through ICT and to ensure reliable and scalable infrastructure for an efficient E-Health system.

These goals are supported by other strategy documents as well. Namely the Healthcare System Development Strategy for the period of 2008-2017 outlines that the general objective is to organize and provide the healthcare services, including in the electronic form, in line with the requirements and tailored to people's needs (Healthcare system ... 2007). Furthermore, the principal payer of health services, the Health Insurance Company points out in its strategy that 'Information technology has a positive effect on increasing the people's awareness of health-related issues and it creates positive pressure on service-providers to ensure transparency and correct information about delivery of services' (The CNAM ... 2012).

Thus several strategic documents put a focus on e-health developments in Moldova. The most hands-on-initiative regarding e-health reforms is the primary care information system, which is, as of November 2014, being piloted in a number of clinics.

The pilot of Primary Care Information System (PCIS)

Based on local interviews and information from implementers, the Primary Care Information System will have several modules and functionalities including a possibility to schedule appointments electronically, a subsystem giving an opportunity to allocate patients (triage), a laboratory sub-system for managing laboratory orders and results. The doctor will have a possibility to process patient's data

electronically and they are able to collect information throughout all processes. PCIS will also have managerial module for clinic managers, which includes financial and clinical data (number of visits, type of visits and statistics for the users). In later phases the specialist doctor's view will be included in the system, but they will have limited access to information in the system (primarily through referrals).

The current piloting of the PCIS gives some information about the challenges and positive experiences, when moving from paper-based system to electronic system and shows how doctors respond to the new system. During the piloting period, clinics and doctors can choose to implement to use some components/modules of the system first (e.g appointment system) and add other modules later.

Two site-visits to piloting clinics were carried out in November 2014. One rural clinic and one urban clinic were visited. The following questions were asked during the site visit at the piloting clinics.

1. When did the pilot start? How long will the pilot last?
2. Are you satisfied with the piloting process? Why / why not?
3. Will you be making recommendations for the system improvement?
4. What kind of recommendations have you made?
5. Do you have the necessary computers to use the system?
6. How many doctors will start using the system?
7. Does the information system support communication with colleagues regarding patient data?
8. What will happen to the current information system (it existent), if the new state provided primary care information system is piloted and implemented? Will you be using both systems or just the new one?

The site-visit to a **rural clinic** (Stefan Voda Health Center) piloting PCIS resulted in several conclusions. They had been piloting the service about a month. The characteristics of the clinic are as follows: 13 GPs working; 65 000 inhabitants in the region and 8000 in the town, the information system addresses 42000 patients.

As observed at the site-visit, the PCIS includes the following functions: registration, triage, doctor's work-desk, laboratory system. At that moment, there were some difficulties with accountancy and human resources. Computers were received for implementation from the Ministry of health.

The feedback procedure for the system is working as follows: Once a week they collect all the feedback from the clinic and send it to the ministry (either e-mail or phone). There is no specific template for error reporting. Some difficulties and problems have been solved during the piloting. For example initially authorization codes were distributed by functions – e.g if the nurse had two roles then they had two codes (login as triage nurse and login as general nurse). They made the suggestion that this should be changed and the nurse has now 1 login password and perform different tasks. This shows some flexibility regarding the improvement of the system.

Other improvement needs were discussed. Currently, the patient centered view is quite well developed (the whole patient history gradually evolves in the system), but aggregated or analytical view is missing (e.g how many visits doctors have performed during a period of time). That kind of statistics has to be ordered from the ministry, but this is time-consuming and it should be available to

GPs. Improvements for the system should also include connection with the near-by villages health offices, which are run by nurses. The PCIS should be usable at the health offices as well and it should be interoperable with the health center – it should be solved, how the data is transferred.

Conclusions based on the visit to the rural clinic.

- The system has no digital documents that have been legally standardized; there is no epicrisis for ambulatory patients, for example. Also digital lab orders and referrals are not standardized. Thus it is important to define the ways how to exchange data.
- Regulations regarding the validity of electronic documents compared to paper documents need to be addressed.
- The clinic's personnel is already seeing the benefits of having the historic patient data available in their work – positive enthusiasm could be detected.
- The implementation process is still time-consuming (in many cases double amount of work has to be done – in paper and on computer).
- The basic pieces for e-consultation implementation from PCIS are there, but there is no interoperability with hospitals or other separate systems.
- PCIS should include health offices and allow communication between health offices and health centres.

The site-visit to **urban clinic** (University Clinic) resulted in a different conclusion. The clinic has 11 doctors servicing 18 000 patients. Although listed as the piloting clinic the clinic had no experience in piloting. This was because the clinic had a well-developed local information system and fully developed process flow. Thus the representatives of the clinic had questions regarding the investments they had made for implementing the current system – changing to new system would be of very high cost and the functionality of the new system is definitely lower than the one developed in-house in the urban clinic.

Conclusions based on the visit to the urban clinic.

- It is important to address the question on primary care practices who have been leading innovators in implementing information systems.
- A clinic, which has a working system, should be able to choose which system to use.
- There is a need to set the standards of medical data transmission in order to provide interoperability between different systems. There is no information of such activities on-going currently.

There is a positive momentum in implementing e-health services in Moldova at the primary care level, yet the most important obstacle could be regarded the lack of solutions for achieving interoperability of different systems and the lack of digital standards for medical documents.

Standard-setting needs broad collaboration among the different stakeholders of the health systems, leadership from the government and a suitable organizational form supporting collaborating for standard selection and implementation. Standard-setting will also be an important precondition for implementing new e-health services, such as e-consultation. This was also the case in Estonia, where e-consultation has been implemented and is in the phase of scaling the service. The experience in Estonia will be described in the next chapter.

5. Estonian experience in implementing e-consultation

Estonian e-health context and preconditions for new e-services

As Estonia has a social insurance system with one central purchaser (EHIF), data transmission between EHIF and health providers, pharmacists and also citizens has been important since the system implementation. Already in year 2000 it was possible for citizens to check their insurance status online by using commercial internet bank authentication systems.

The strategic goals for IT (information technology) development at EHIF were set in 2001, when the whole information system was centralized. The goal was to implement standardized information transmission and develop a possibility for electronic transmission of medical bills and prescription data; the first developments were made in co-operation with the IT-department of one of the leading banks in Estonia. As of October 2002, all the health care providers were obliged by law to transmit the prescriptions for reimbursement to EHIF electronically using the electronic data transmission service called TORU, setting an important precondition for the development of the country-wide e-prescribing system. By the end of 2002, EHIF had signed electronic data-transmission contracts with 76% of healthcare service providers. By 2003 the X-road framework (a secure data transmission service provided by the central government) was already used for some data transmissions between EHIF and its partners. (Kruus 2013)

By 2005 100% of the medical bills for reimbursement were submitted electronically. In 2006, using ID-card (a secure authentication measure provided by the central government) was made compulsory for healthcare service providers sending medical bills for reimbursement, thus supporting the diffusion of ID-card usage among health providers. (*Ibid*)

The development of the Estonian health information system (EHIS) was the second phase of e-health development in Estonia. EHIS is regarded as the fundamental platform for ensuring standardized and fluent data transmission among relevant stakeholders: healthcare service providers, patients, state registries, insurance foundation, pharmacists etc. (Saluse *et al* 2010). By 2005 the level of IT-usage in the Estonian health system was quite diverse. Most care providers had already implemented different IT systems: e.g. the Tartu University Hospital health care image database, IT-solutions by EHIF and information systems of different health providers and pharmacies. Yet the systems were not interoperable to exchange information. (Koppel *et al.* 2008) EHIS was seen as a solution to that problem and a possibility to connect the relevant data to support health services contracting, ensuring quality and protection of patient rights and public health, as well as make it feasible to manage relevant registries and health care on the whole. (Kruus 2013)

The concept of EHIS was presented in 2005 by the Ministry of Social Affairs of Estonia as the main regulatory institution for health policy development and health system stewardship (Koppel *et al.* 2008). The aim of the concept was to implement four e-health projects: electronic health record (EHR), digital image, digital registry and digital prescription (EPS). In order to manage the projects, an independent administrative institution, the Estonian E-health Foundation was formed. The founding institutions were the three largest hospitals in Estonia, Ministry of Social Affairs, the Estonian Society

of Family Doctors, the Estonian Hospitals Association and Union of Estonian Medical Emergency. Thus important stakeholders were gathered for ensuring co-operation and requirement fit. Estonian E-health Foundation is mainly responsible for standardization and development of digital medical documents and managing EHIS. (Saluse *et al* 2010)

In essence EHIS is a state provided framework with the aim of transmitting data through a central server based on agreed document standards. The system does not substitute internal IT systems of healthcare service providers, but provides the possibility to connect the internal IT systems to EHIS and exchange medical data across the entire health system. (Saluse *et al* 2010) Thus EHIS made it also possible to link data to the country-wide EHR, to bring together personal data and medical records, digital pictures and other important health related data. (Kruus 2013)

As a final result three e-health projects were operational and one not. The country-wide EHR had a slow uptake in the beginning yet usage levels increased over the years. The country-wide PACS is operational and the digital prescription system was the biggest success. An online scheduling system has not been implemented as it has faced several barriers regarding work-flow adjustments in hospitals.

Nevertheless, the e-health projects of Estonia and previous developments had set important preconditions for the implementation of new e-health services.

- ICT usage in hospitals and other care providers had increased considerably.
- Country-wide secure data transmission platform x-road was operational.
- Secure identification with ID-card had already been in practice in 2006.
- Secure health data transmission platform EHIS and an institution responsible for standardization of medical documents (Estonian E-Health Foundation).
- Experience with broad e-health project implementations at different institutions (Estonian Health Insurance Fund, Ministry of Social Affairs, E-Health Foundation).
- Successful implementation of electronic prescribing system – also a political success as all of the stakeholders benefited.

Implementation of e-consultation

With regard to e-consultation implementation, the importance and role of family doctors in Estonia should be emphasized. The primary care system was reformed in the beginning of 2000s with stronger independence and more responsibilities given for family doctors. Family doctors have a strong society and national health policy puts strong emphasis on developing primary care – a direction in health system development, which has also broad political consensus. This was also probably the basis, why the idea of implementing e-consultation emerged from a cooperation project between the Estonian Family Doctors' Society and Estonian Hospitals Association.

Although the first ideas of broad e-consultation service arose in 2006, tangible actions followed in 2011, when the Estonian Hospitals' Association submitted an application to add a new healthcare service to the reimbursement list of health care services in Estonia. The application was based on data received during a pilot project, which was carried out by Estonian Family' Doctors Society and North Estonian Regional Hospital in 2011. The pilot tested e-consultation, which would allow a family doctor to consult with the medical specialty doctor through their information system' for more accurate diagnosis and faster treatment. The solution seeks to increase the effective use of time by

medical specialists and provide an incentive to solve problems at the primary care level – this means faster treatment and prevention from more expensive care needs.

Starting from 01.03.2013 Estonian Health Insurance Fund started financing of e-consultation service based on the list of health care services – ‘e-consultation via health information system’. Currently the service is operational in more than 8 specialties including urology, pulmonology, gastroenterology, endocrinology, neurology, otorhinolaryngology, rheumatology and cardiology; new specialties are added every year.

An important aspect of the system is that **service standards** for e-referral and e-consultation are agreed between family doctors, specialty doctors and Estonian Health Insurance Fund and then stipulated into a decree by the Ministry of Social Affairs. The service standards to some extent serve a role of a clinical guideline, for example it lists the cases, when an e-consultation request is relevant and proposes what information should be presented.

Another supporting factor for development was that Estonia had a ready-made **document standard** for e-referrals (classic referrals in electronic form), which were modified to also serve as an e-consultation request. This electronic standard form for e-referrals was used as a technical channel through the EHIS and also gave a legal possibility to easily continue on with implementing e-consultation.

The importance of finding a suitable **financing** model for e-consultation should not be underestimated also. As e-consultation is different from a traditional face-to-face service a financing innovation was implemented regarding fee-for-service payments. Now, the GPs in Estonia have a role in saying whether the e-consultation was ‘useful enough’ and based on that the specialist providing the e-consultation receives reimbursement from the insurance fund. The e-consultation reimbursement for specialist institution is 12,50 euros, which is 68% of the reimbursement cost of an ordinary initial face-to-face visit of specialist doctor.

Currently there is no specific financial incentive for family doctors to use e-consultation, as family doctors are partly funded on capitation payment. This is an aspect which needs further analysis, as it has been seen as one of the reasons for rather slow uptake of the service. Nevertheless, proponents argue that, there are other incentives for GPs to use e-consultation service – such as saved time from curbside discussions and continuous phone-calls to specialist doctors, better documentation and information management. The specific benefits from e-consultation emerge from different process steps and thus should be analyzed in the specific context.

Process and utilization

Process of e-consultation can be divided into several steps and will be described as follows (also please see the figure 17 below).

1. Patient visits the family doctor with a health problem.
2. During the visit the family doctor feels a need to consult a specialist doctor regarding the patient treatment.
3. Instead of referring the patient straight to a specialist doctor the FD sends an e-consultation request (or e-referral) to a specialist hospital or a specific doctor. The e-consultation request describes the situation/diagnostic problem of the patient and can include relevant references of patient health data from EHR.

4. E-consultation request is transmitted via the health information system.
5. Specialist doctor receives e-consultation request via health information system.
6. Specialist doctor has two options: to answer the family doctor with suggestions for next steps of treatment (e-consultation) or to contact patient and schedule an appointment at hospital/specialist doctor (in academic literature: e-transfer).
7. Depending on the answer of the specialist doctor, the patient visits the family doctor or goes to visit the specialist doctor (sometimes takes tests at the hospital before, based on the description by family doctor).
8. As the service is financed by Estonian Health Insurance Fund the family doctor sends the data about the number of e-consultations and the specialist institution receives a reimbursement of 12,50 euros from the Estonian Health Insurance Fund.

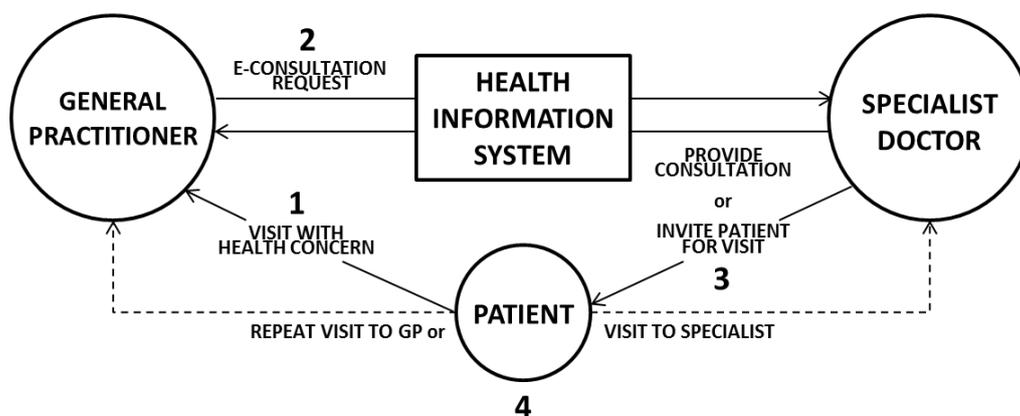


Figure 17. Simplified process of e-consultation

In Estonia, the most active specialties have been pulmonology, urology, endocrinology, otorhinolaryngology and cardiology. The following graph shows the number of e-referrals (or e-consultation requests) initiated in the period of January 2013 – June 2014 (see figure 18).

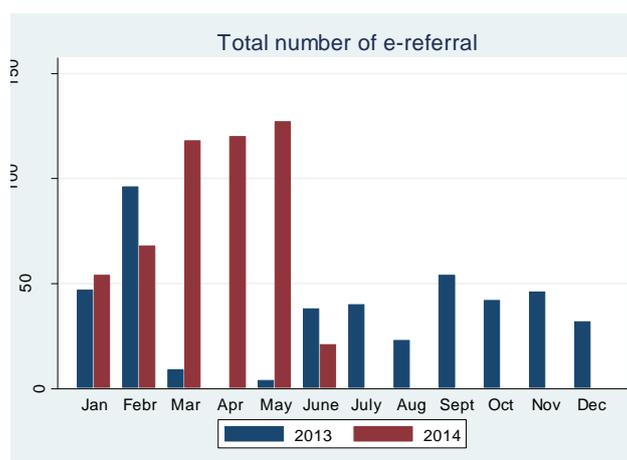


Figure 18. E-referral statistics, Source: E-health Foundation data 2014

Although the beginning of year 2014 shows a positive trend of e-consultation requests, the uptake of the service is still slow. There have been expert estimates that in some specialties more than a

quarter of initial visits should have been GP visits instead of specialist visits and given the total number of initial ambulatory specialist visits in Estonia (more than 1,7 million per year) there is a lot of possibilities for increased use of e-consultation. Yet there are some barriers, which still hinder the pace of uptake of the service, including the following.

- Finances needed for additional development of local (GP, hospital) information systems – every care provider has to make adjustment to their systems, either to send e-referrals or triage e-consultation requests and provide e-consultations.
- It can be hard to change work-practices of doctors – it is still easier for a GP to just write an ordinary referral and some specialist doctors are reluctant to consult through information systems.
- Problems with service standards and agreeing on the specific cases eligible for e-consultation and guidelines. Although the technical standards are existent, it is still important to decide the specific data fields of e-consultation and e-referral cases in every specialty. This needs for numerous discussions/meetings between GPs and consulting specialties.
- Problems with interoperability with medical devices. For example some information systems do not have interoperability with EKGs or other devices making medical images, which means additional time is needed for adding medical data to the e-referral.
- Patients might still have a higher regard to face-to-face specialist advice. Thus it is important to inform patients that the GP can ask advice by e-consultation.

These barriers should be approached in a coherent manner, as well as positive impact communicated and evaluated during the whole implementation process. The initial positive impact which has been perceived (Kruus et al 2014; EHIF 2014⁹) includes increases in:

- time-efficiency – patient saves time as he/she does not have to visit specialist doctor if family doctor is able to help the patient;
- quality – better documentation of health data, care continuity and quality control;
- cost-effectiveness at health system level – easier cases taken care at primary care level, more time for difficult cases at specialist level.

It has been also noted that, e-consultation is especially beneficial for family doctors as it simplifies cooperation with the specialist doctor, helps to receive systematic advice sent by the specialist doctor and gives an opportunity to a family doctor to help the patient faster.

Although the abovementioned benefits have not been demonstrated in rigid evaluation studies, the already perceived outcomes coincide with the benefits (increase of time-savings and cost-effectiveness) brought out in scientific literature regarding similar systems (Harno et al 2000, Keely via North, North 2014). It should be added that as a service with different stakeholders, new communication solutions and high dependency of context and system design, the evaluation of such services with highly objective methods can be ambiguous and more subjective evaluation methods should be acknowledged.

⁹ <http://www.haigekassa.ee/uploads/userfiles/perearst.pdf>

The Estonian e-consultation implementation experience highlights the several important success-factors for the implementation of e-consultation service yet also shows some barriers for faster uptake, which should be taken into account in planning implementation of a similar system in Moldova. The Estonian example with its successes and obstacles could be regarded as a good teaching case for Moldova due to a numerous similarities of the two health systems and e-health development paths. There are several issues common for both Moldova and Estonia, including high referral rates to specialists from GPs, high number of unnecessary visits to specialist doctors and the fact that although trust towards GPs is rising, there is still a higher 'belief' in specialist doctors' expertise. The financing of health systems are under pressure in both countries. Thus e-consultation as a possible contributor to higher cost-effectiveness should be on the table with regard to several future challenges of health systems.

6. Feasibility of implementing e-consultation in Moldova

6.1. Aim of e-consultation service in Moldova

Implementing e-consultation in Moldova can have several aims with regard to the problems and strategic goals in Moldovan health care system. Different strategic documents and previous studies outline goals and impact indicators that could be targeted:

- WHO has indicated that attempts should be made to reduce the extremely high referral rates of FDs to medical specialists and to reduce the high hospitalization rates (WHO 2012b). Also the use of computers for keeping patients' medical records and exchange of information with other health care workers should be promoted (WHO 2012b).
- Continuing human resources shortages in primary health care at rural level calls for the design of new solutions to increase the availability of health services and flexible models of service delivery (WHO 2012a).
- According to the E-health strategy, 100% of public healthcare data should be available online and citizens' perception of the healthcare services quality should be increased by 20% (E-health Strategy 2013).
- One of the strategic challenges for 2013-2017 Moldovan Health Insurance Company is to assure people's access to health services and to improve quality of health care (The CNAM ... 2012).

In many cases these goals coincide with the possible impact of e-consultation systems (as discussed in chapter 3). Thus there are several aspects where e-consultation service could contribute, including accessibility, quality, efficiency, but it could also help to better manage the workflow in the health care organization. E-consultation implementation goals can be also targeted to reduce unnecessary visits to specialist doctors referred by family doctors. Furthermore, strengthening the primary care system is important in Moldova, thus empowering GPs with specialist advice could contribute to a stronger primary care and increase trust in family doctors.

E-consultation can also aim to increase the benefits of the country-wide PCIS for different counterparts and build positive ICT use experience. E-consultation as a service differs from classical digitization of medical data – it provides a basis for communication, thus both counterparts benefit in a short timeframe. In case of digitization of data (EHR), some benefits can only occur later on (e.g. avoiding duplicate tests). It could be argued, that if Moldova were to implement e-consultation in line with EHR, then it would mean taking a different development path compared to Estonia, where e-consultation was implemented after the country-wide EHR, yet the uptake of the latter was somewhat slow.

Last but not least, e-consultation could serve as a better and more fluent form of communication between GPs and specialists – the need for that was also demonstrated in the survey (see chapter 4.3). Thus there can be numerous aspects that e-consultation could aim to improve, yet it should not be forgotten that, in the end, the actual benefits will depend on the design, technical as well as organizational implementation of the system.

Hence the specific process of e-consultation in Moldova should be drafted based on possible impact, motivators and barriers should also be discussed.

6.2. Process of e-consultation service

Current referring and consultation practices

In order to design a fully digitized process of e-consultation in Moldova, the current paper-based practice regarding obtaining advice and referring patients to specialist doctors should be presented for reference.

Different institutions in Moldova have different referring practices. In case of larger health centers, a number of specialist doctors are available for help in the same building, yet in smaller rural practices the amount of available specialists nearby is lower and at health offices in remote locations there are only nurses available. Furthermore, in many cases, necessary medical examinations have to be conducted in an urban hospital. This results in considerable travel time for patients, which could be lowered with better communication between the counterparts at different care levels.

In case the GP finds that the patient needs a specialist's opinion, he/she has two possibilities: either referring the patient to the specialist doctor or contacting a specialist for a brief consultation by phone, e-mail or other communication solution. The survey in this project showed that mostly face-to-face and phone-call based consultations are used and about 27% of GPs in rural areas do not consult with specialist doctors regarding patient treatment at all and just issue the referral letter. If the patient is referred, then another visit to the specialist takes place – in some cases the specialist can take over the treatment, in other cases he/she can direct/refer the patient back to the GP. In either case, the patient has to travel to see the specialist doctor.

As previous studies and the survey of the current study showed, the referral rates to specialist doctors are high and (as a result of a group interview with specialist doctors) the referral letters often lack sufficient information, sometimes not enough data on previous tests have been presented. This means that (new) tests have to be done or the patient is sent back to GP, or the GP contacted. That results in inefficiencies regarding treatment. Patients, whose problem could be solved at primary care level are referred and specialist doctor's time is used for less problematic cases – in turn, lowering access to care for patients with more urgent/complex problems. Extra costs also occur to the patients, who have to travel to see the specialist doctor in another city.

Digitalized process

Relying on the international experience, previous studies and work-shop discussions, a preferred digitized process of e-consultation in Moldova can be described in the following phases.

1. Instead of referring the patient straight to a specialist doctor the GP sends an e-consultation request or e-referral to a specialist hospital / specific specialist doctor. E-consultation request describes the situation / diagnostic problem of the patient and can include relevant references of patient health data from the EHR (e.g. lab tests, previous examinations).
2. E-consultation request / e-referral is securely transmitted via a health information system.
3. Specialist institution (e.g. hospital) receives e-consultation request via health information system. The specialist institution reviews the different e-referrals and classifies the urgency of

every case and allocates the reply (e.g. in case of urgent cases the patient is contacted right away and scheduled for a visit at the hospital).

4. In case of less urgent cases, the specialist doctor has two options: to answer the family doctor with suggestions for next steps of treatment or to contact the patient and schedule an appointment at hospital/specialist doctor.
5. Depending on the answer of a specialist doctor, the patient visits the family doctor again or goes to visit a specialist doctor (sometimes has to take tests before, based on the problem description by family doctor).
6. The transmitted and documented health data is stored in the EHR and the data is available for view to the GP for conducting follow-up visit with the patient. GPs can receive notifications about e-consultations that have been written.
7. If the consultation is financed on a fee-for-service basis, then the service utilization data can be transferred to the insurance provider for reimbursement.
8. Data flow regarding the whole process (number of e-referrals, urgency of cases, e-consultations compiled, patient characteristics, diagnoses, follow-up etc.) will be made available as statistical reports to doctors, providers and state officials.

The process including an e-consultation and GP follow-up can be described also in the table below.

Phase	GP practice	Transmission system	Hospital reviewer (can be specialist doctor)	Hospital scheduler	Specialist doctor	Follow-up (at GP or other)	Reimbursement	Monitoring /statistics
Activities	Consultation request / e-referral	Information transfer	Classifying urgency of case	Allocate reply time	Writing e-consultation	E-consultation available for second patient visit at GP	Transfer data for reimbursement (if fee-for-service financing)	Monitor statistics at all levels

As the e-consultation process should be fully digitized, a number of information systems have to be operational and mutually interoperable for supporting it. The following table presents the possible different information systems.

Phase	GP practice	Transmission system	Hospital reviewer (can be specialist doctor)	Hospital scheduler	Specialist doctor	Follow-up (at GP or other)	Reimbursement	Monitoring/statistics
Relevant information system (IS)	GP IS	Transferring IS	Hospital IS			GP IS	Insurance database	Insurance IS; GP IS; Hospital IS; Government; Patient portal

Although a simple process, different functionalities have to be present for every system in order to ensure a fluent process. The functionalities during the process will be described in bullet points below for the relevant information systems. This is not an exhaustive list, but should give an indication of the different relevant functionalities.

GP information system

- Possibility to write an e-referral in specific data fields (text, numbers etc).
- Possibility to add or refer to previous data from EHR to the referral (e.g test results, medical images).
- Possibility to select a specialty, institution or specialist, who to send the e-referral to.
- After e-consultation: possibility to view the e-consultation (e.g what medication to prescribe).
- After e-transfer: Possibility to view a conclusion of the specialist office visit, if the patient is transferred to the specialist (e.g prescribed medications, treatment) and call patient to follow-up at the GP.
- Using the same e-referral document for sending it to another specialist (e.g. copy or forward function). For example, in case of back-pain the consulting specialist could be both, neurologist or orthopedist.
- Transmitting referral and e-consultation data to insurance provider.
- Analytical overview (summarizing graphs) of e-referral and e-consultation statistics.
- Interoperability with other consulting institutions IS, state IS, and insurer IS to ensure fluent communication between different providers and specialties.

Transmitting system

- Can be a country-wide secure data transmission service (country-wide health information system).
- Should be able to include different standards for communication and possibility to connect different information systems.

Specialist institution / hospital information system

- Possibility to schedule time for a specialist to review e-referrals.
- Possibility to list different e-referrals and allocate them according to the level of urgency (triage).
- Possibility to schedule a visit time for a specialist, if patient is invited to hospital.
- Possibility to follow the process of e-consultations and patient contacting (administrative view and progress overview).
- Possibility to prescribe new tests in the e-consultation for the GP level (e.g easy selection of pre-defined choices).
- Possibility to prescribe tests in the hospital before visiting a specialist doctor.
- Sending data to the patient's EHR.
- Transmitting referral and e-consultation data to an insurance provider.
- Analytical overview (summarizing graphs) of e-referral and e-consultation statistics.
- Interoperability with other GP IS, state IS, and insurer IS to ensure fluent communication between different providers and specialties.

Insurance provider database – government level

- Possibility to receive data on sent e-referrals and written e-consultations.
- Possibility to assess the quality of e-consultation (e.g. GP provides feedback to the insurance provider, that e-consultation was useful for the treatment process).
- Analytical overview of referral and consultation statistics.

The list of functionalities of the main information systems shows the importance of interoperability between different systems, as well as the significant role of scheduling modules in different information systems – managing the bookings of patient visits, reviewing or e-consultation writing time-slots is important in securing fluent service flow. Additionally a patient portal could benefit a patient for tracking the process and seeing his/her medical data online.

6.3. Expected benefits and risks of e-consultation

During the work-shop, the following positive impacts of e-consultation were outlined. As e-consultation has an impact for several aspects of the treatment process, different indicators for measuring success should be followed. The main areas of impact are accessibility, time-efficiency, quality and organizational benefits.

Accessibility

- Using e-consultation could result in **lower waiting-times** to specialist doctors, if some cases are treated at primary care level.
- The **time to final diagnosis** can be shorter, if waiting times for specialist are long, but e-consultation provides confirming support to the GP.
- In **rural areas**, specialty doctor expertise will be more available and GPs can ensure higher adherence and accessibility to specialist opinion.

Quality

- Better quality could emerge from the fact that patients visit GPs more often, which assures **better monitoring** – patients do not “get lost” between different levels of care.
- Using support of e-services, **concordance with national guidelines** can be made easier.
- The service process is better **documented**, which means better trace of work – **supervisors can keep track** of work-flow and statistics.

Time-efficiency

- Provided that GPs use an information system with EHR, they **use the existing health information** from the EHR to compile the e-referral more easily.
- Specialist **doctor time is more efficiently used** – specific tests can be prescribed beforehand, which the patient should take.

Trust and culture

- Knowing that the GPs are empowered by specialist knowledge, they will develop higher **authority** in the community.
- Higher **self-esteem** - GPs have confidence that they can help the patient.
- Specialist doctors have **higher trust towards GPs**, if they can consult beforehand and make necessary tests for the patient before the visit to specialist doctor.

On the other hand there are also risks that should be acknowledged. The following risks were outlined during the work-seminar:

- Higher reliance on **internet connection**.
- There will be **less face-to-face** communication.
- Possible rise in **work-load** regarding e-services.
- **Reluctance to co-operate** with GPs through the system.
- Possible **risk of overusing** the service – easy to ask advice.
- The question of **liability** should be clear – which doctor is responsible in case of medical errors?

These risks should be acknowledged during the implementation of e-consultation service.

6.4. Possibilities and barriers of implementation

Moldova has a positive outlook towards implementing e-consultation. Some of the necessary preconditions for e-consultation service implementation are there: increasing usage of information systems at primary care level (implementing Primary Care Information System) and rising use of computers, focus on strengthening primary care and GPs, positive stance towards implementing e-services in health care and functional authentication technologies.

On the other hand, some preconditions that were existent in implementing e-consultation in Estonia could be also important in the case of Moldova. Although functional, the use of authentication technologies seems to be still low, which could hinder implementation regarding data privacy concerns. There are no digital document standards for referrals and epicrisis, which make it harder for defining the e-consultation service specifications. Currently there is no institution directly responsible for achieving interoperability of different e-health systems.

Thus different ethical, legal, organizational, technical and financial **motivators and barriers** should be acknowledged, in order to find possibilities for implementing the system.

Ethical issues include the aspects of access rights and privacy concerns. When using e-consultation the patient is treated by a number of professionals (GP, specialist, but also nurses and schedulers could have access to the data). Therefore patient communication is important – patients need to understand why they are not referred to the specialty doctor and how their data is processed. If there is lack of trust towards primary care physicians then patients could be disappointed that only primary care physician is active in their treatment. On the other hand, e-consultation can help build trust towards GPs, as they are empowered by specialist advice.

Legal issues can include the aspect of defining the liability in case of medical errors. Although no relevant major legal restrictions could be discovered with regard to broader e-health implementation (Praxis 2013), it should be further studied whether the Moldovan legal framework regarding health services delivery can provide a clear enough understanding of liability and data protection issues in this form of service delivery. The legal basis of clinical guidelines and standards is also important and should be studied further in case of Estonia.

Organizational aspects can give input and solutions for legal and ethical issues. The need for a responsible organization for achieving interoperability between different systems and stakeholders has been stressed several times, but organizational issues should be also solved at care provider level.

In the specialist institution the role of the allocator of consultation requests should be implemented and possibly training is needed. Clinic's work-schedules need to be changed – in order to leave time for e-consultations and if face-to-face visits to hospital decrease, then different financing solutions should be considered. The e-referring systems should be incorporated with local IS (if existent). (Wootton 2003) It is also important to address the question on primary care practices who have been leading innovators in implementing their own information systems – such systems should be able to connect via country-wide information exchange to other information system in order to ensure health data accessibility at different locations.

A responsible organization for maintaining and coordinating workflow and service standard setting (which data should be moving between GPs and specialist doctors on e-referral and e-consultation digital documents) should be selected or formed. In Estonia the Estonian Health Insurance Fund has

taken the role, as they are interested in more efficient care utilization allocation and increasing the role of preventive primary care. In Moldova the National Health Insurance Company has considerable administrative capacity and organizational relationships with the important counterparts (GPs and specialist doctors) and could be an important stakeholder when considering implementing e-consultation on a nation-wide basis.

Technical and infrastructure issues include selecting the technology for e-consultation process. Wooton (2003) has proposed three technologies for e-consultation process: e-mail; message transfer or interoperability between EHRs, and web link (could be regarded as a browser-based system). Message transfer could be facilitated by connecting different systems but also by a national health information exchange. The latter needs state's support and standard setting by the relevant institutions.

From piloting, analysis and stakeholder involvement to implementation

In order to build trust and user experience, a piloting exercise of e-consultation could be conducted among the most innovative GPs and specialists. A specific specialty or clinical condition could be selected. Piloting should involve GPs from rural areas, where the need for better consultations is higher and geographical distances to specialist also longer. A higher willingness of staff and computer literacy should also be considered as selection criteria for the pilot sites. In the beginning, there is no need for full integration of the system, instead flexible technology/IS-s can be used, e.g. e-mail forms, prototyping software or easily adjustable information systems (see figure 19).

Most probably the pilot could be conducted in the specialties of cardiology, endocrinology or neurology, as those were the specialties, from which Moldovan GPs would like to acquire more consultations regarding patient treatment.

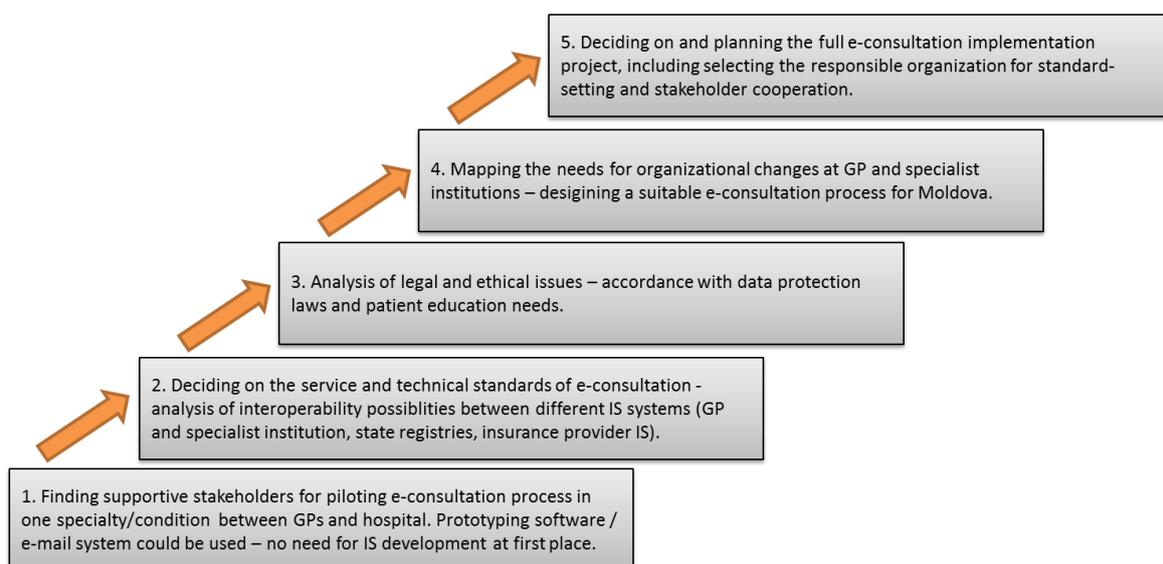


Figure 19. Example piloting process for e-consultation service in Moldova

Piloting new technologies serves as an input for implementing different innovations in the health care system. Piloting should go hand-in-hand with on-going evaluation and gather all the relevant stakeholders affected by the future service. As e-consultation is not a health care technology with clear boundaries (e.g. drugs), it is important to design and test such a technology/service in the

specific context in order to maximize the expected benefits of the service. The forward-looking attitude of the stakeholders of Moldovan health community will help to achieve that.

Conclusions

Readiness to use information and communication technologies (ICT) during care provision is one of the most important preconditions for e-consultation adoption. Moldova has made significant steps towards e-health implementation – there is a framework for secure data transmission, several specialist institutions have in-house information systems and currently primary care information system (PCIS) is being implemented on a country-wide basis. The basic capabilities (digitizing health records, writing referrals, transmitting lab results etc) are existent in the PCIS.

On the other hand, lack of interoperability between the different Moldovan in-house information systems at hospitals and other clinics and the PCIS could be seen as problem. E-consultation service needs cooperation between different institutions and different information systems. Thus the need for standard-setting should not be underestimated – technical and document standards as well as service standards are needed for implementing new e-services in health care.

Achieving interoperability through standard-setting is the next important step to be taken in order to make the preconditions for e-consultation adoption. There is also a need for a coordinating institution for bringing together relevant specialties (e.g GPs and cardiologists, GPs and neurologists) in order to decide on the clinical guidelines and service standards regarding communication through the service. Specific data fields and formats of the digital documents (e-referral and e-consultation) should be determined in case of different specialties and/or clinical conditions.

In lieu with the activities focusing on increasing interoperability, a pilot project should be carried out for e-consultation implementation. The pilot project could include e-consultation service testing in case of a specific specialty and preferably involve family practices from rural areas, where the distances from specialty institutions are high yet having more possibilities for better consulting is the most urgent. The current paper proposes the necessary steps of conducting such a pilot project (see chapter 6.4).

The readiness of e-consultation implementation was also demonstrated in a survey. Both, GP-s and specialist doctors were open to the idea of e-consultation service and found that better communication is needed between GPs and specialist doctors. There is a readiness to use ICT technologies for communicating on patient treatment. Although many prefer face-to-face consulting, also internet-based mediums (e-mail) have been regarded as a possible form of communication.

Building the basis for e-consultation and piloting the service would provide a positive foundation for implementing other telemedicine solutions like Picture Archiving and Communication System (PACS) or tele-pathology, for example. Adding e-consultation functionality could also contribute to the better overall attitude towards e-health in Moldova, as it provides faster benefits for health professionals.

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Appendix 1

QUESTIONNAIRE FOR FAMILY DOCTORS OF MOLDOVA

Dear respondent!

We invite you to participate in the survey that is composed by Praxis Policy Center for Praxis in cooperation with the Association of Family Doctors of Moldova. **The purpose of the survey is to get an overview of the current situation in patients' referral and consultation between family doctors and specialist doctors.** Answers will be analysed aggregated and the results will be used in a feasibility study of an e-consultation service for family doctors and specialist doctors in Moldova.

Please circle or underline answer(s) most appropriate for you. If needed please select multiple answers.

1. Where is your family practice situated?

- a) Rural
- b) City

2. Approximately how many patient visits per day do you have?

- a) 0-5
- b) 6-15
- c) 16-25
- d) More than 25

3. Approximately how many referral letters to special doctor per day do you issue to your patients?

- a) 0
- b) 1-2
- c) 2-4
- d) More than 4

4. How much time on average your patients have to wait to see a specialist doctor?

- a) 1-5 working days
- b) 6-10 working days
- c) 11-15 working days
- d) More than 15 working days

5. What is the (average) distance from your practice to a specialist doctor that your patient has to travel in order to reach a specialist doctor?

- a) 1-5 km
- b) 6-10 km
- c) 11-15 km
- d) More than 15 km

6. How often do you use a computer at your work?

- a) Every day
- b) Once a week
- c) Once a month

d) I do not use a computer (please proceed with question nr 8)

7. What computer-based activity do you use on usual basis? (If needed please select multiple answers)

- a) E-mail
- b) Web browsing
- c) Sending medical information from web
- c) Skype
- d) MS Office
- e) Institutional electronic system
- f) Electronic medical records
- f) Other (please specify) _____

8. Do you contact a specialist doctor in order to schedule a consultation/an appointment for your patients?

- a) Yes
- b) No, I only issue referral letter (please proceed with question nr 10)

9. What is the means of contacting a specialist to schedule a consultation/an appointment for your patient?

- a) Phone
- b) E-mail
- c) Other (please specify) _____

10. Do you consult with specialist doctors regarding patient treatment?

- a) Yes
- b) No, I only issue referral letter for patients to visit a specialist doctor/ I do not consult a specialist doctor (please proceed with question nr 14)

11. How do you consult with specialist doctors regarding patient treatment and on average how many times per day / week / month / year?

(example: By phone 3 times per day / week / month / year)

Face-to-face _____ time(s) per day / week / month / year

By phone _____ time(s) per day / week / month / year

By e-mail _____ time(s) per day / week / month / year

Other _____ (please specify) _____ time(s) per day / week / month / year

12. How much time on average does it take you to obtain the specialists' consultation result regarding patient treatment?

- a) less than a day
- b) 1-3 days
- c) 3-10 days
- d) 10-20 days

- e) 20-30 days
- f) more than 30 days

13. How much time on average does it take you to schedule a consultation of a specialist?

- a) less than a day
- b) 1-3 days
- c) 3-10 days
- d) 10-20 days
- e) 20-30 days
- f) more than 30 days

14. Please name the specialties you feel most needed to obtain consultations from (most needed first)

1. _____
2. _____
3. _____
4. _____
5. _____

15. Please name the specialties you feel most difficult to obtain consultations from (most difficult first)

1. _____
2. _____
3. _____
4. _____
5. _____

16. Would you want to consult more with specialist doctors compared with your consulting frequency today?

- a) Yes
- b) Yes, much more
- c) Yes, a little bit more
- d) No
- e) I don't know

17. If you want to consult more with specialist doctors then how would you like to do it?

- a) Face-to-face
- b) By phone

c) By e-mail

d) Other (please specify) _____

18. Would you use e-consultation if it was based on e-technologies (local information system, web based information system) familiar to you? Why? *(Instead of referring the patient straight to the specialist doctor, family doctor uses e-consultation based on familiar e-technologies to receive consultation from specialist doctor).*

19. If you wish to add any comments regarding this issue then please do it here:

Appendix 2

QUESTIONNAIRE FOR SPECIALIST DOCTORS OF MOLDOVA

Dear respondent!

We invite you to participate in the survey that is composed by Praxis Policy Center for Praxis in cooperation with the Association of Family Doctors of Moldova. **The purpose of the survey is to get an overview of the current situation in patients' referral and consultation between family doctors and specialist doctors.** Answers will be analysed aggregated and the results will be used in a feasibility study of an e-consultation service for family doctors and specialist doctors in Moldova.

Please circle or underline answer(s) most appropriate for you. If needed please select multiple answers.

1. Please name your specialty: _____

2. Approximately how many patient visits per day do you have?

- a) 0-5
- b) 6-15
- c) 16-25
- d) More than 25

3. How often do you use a computer at your work?

- a) Every day
- b) Once a week
- c) Once a month
- d) I do not use a computer (please proceed with question nr 5)

4. What computer-based technologies do you use on usual basis? (Please select appropriate answer(s).)

- a) E-mail
- b) Web browsing
- c) Skype
- d) MS Word
- e) MS Excel
- f) Other (please specify) _____

5. Do family doctors contact you in order to schedule consultations/appointment times for their patients?

- a) Yes
- b) No (please proceed with question nr 7)

6. What is the means for family doctors to contact you as a specialist doctor in order to schedule a consultation/an appointment time for their patient?

- a) Phone
- b) E-mail
- c) Other (please specify) _____

7. Do family doctors consult with you as a specialist doctor regarding patient treatment?

- a) Yes
- b) No, they only issue referral letter for patients to visit me as a specialist doctor (please proceed with question nr 9)

8. How do family doctors consult you as a specialist doctor regarding patient treatment and on average how many times per day or week or month?

(example: By phone 3 times per day / week / month / year)

Face-to-face _____ time(s) per day / week / month / year

By phone _____ time(s) per day / week / month / year

By e-mail _____ time(s) per day / week / month / year

Other _____ (please specify) _____ time(s) per day / week / month / year

9. Do you have enough previous information about the patient who has been referred by the family doctor?

- a) Yes
- b) No
- c) Other (please specify) _____

10. Would you like the family doctor to prescribe previous diagnostic procedures of the patient before patient is visiting you as a specialist doctor?

- a) Yes
- b) Rather yes
- c) Rather no
- d) No
- e) Other (please specify) _____

11. Do you feel that the patients' problems are suitable for your consultation?

- a) Yes
- b) Rather yes
- c) I do not know
- d) Rather no
- e) No

12. What is the proportion of patients that should have gotten help from the family doctor/ How many patients do you "send back" to the family doctor for treatment?

13. Do you feel that family doctors need more consulting?

- a) Yes
- b) Rather yes
- c) I do not know
- d) Rather no
- e) No

14. If you feel that family doctors need more consulting then how you would like to do it?

- a) Face-to-face
- b) By phone
- c) By e-mail
- d) Other (please specify) _____

15. Would you use e-consultation to give consultation to family doctors if it was based on e-technologies (local information system, web based information system) familiar to you? Why? *(Instead of referring the patient straight to the specialist doctor, family doctor uses e-consultation based on familiar e-technologies to receive consultation from specialist doctor).*

16. Do you consult with other specialist doctors?

- a) Yes
- b) No (please proceed with question nr 18)

17. How do you consult with other specialist doctors?

- a) Face-to-face
- b) By phone
- c) By e-mail
- d) Other (please specify) _____

18. If you wish to add any comments regarding this issue then please do it here:

