

Telemedicine - a challenge rather than solution for payers and service providers in EU



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ABSTRACT

Telemedicine a part of E-health fascinates both payers, Ministries of Health of all European Union (EU) states as well as service providers. But fascination does not correspond with uptake of solutions implemented in EU states. The major obstacle in broad adoption of such services is legislation. Not in all EU countries legislation allows proper implementation and reimbursement of the services. Today the most common limitations are associated with necessity of the presence of a health care worker and the patient in the same place and legal problems in terms of reimbursement for telemedicine services to providers. France, Italy and Spain have powerful examples of successful implementation of telemedicine services mainly telemonitoring. However numerous clinical studies have proven significant improvement in compliance in chronically ill patients but also improvement in disease-specific clinical outcomes including mortality.

With the advancement of technology more and more new solutions have been introduced for widely understood e-health. Telemedicine is one of the components of this system. Defining of the concept of telemedicine by different organizations is not identical, however, a common component of these definitions is transmitting information over a distance when the patient and doctor are not in the same place. According to the definition proposed by the European Commission, telemedicine should be understood as providing healthcare services, using information and communication technologies (ICT) in a situation where the health professional and the patient (or two health professionals) are not in the same place. It includes transfer of data and medical information in the form of text, image, sound, or in other forms, which are necessary for the prevention, diagnosis, treatment and follow-up [1]. In the European Union telemedicine should be understood as providing services such as teleconsulta-

tion (including e-visits to the doctor, videoconferences between health professionals), telemonitoring, teleradiology and teledermatology. Some services like telesurgery, health information portals, electronic cards and electronic prescriptions are not always taken into account [2,3]. Telemedical services were originally performed primarily using stationary equipment, but currently thanks to continuous development of mobile technology, some telemedicine services can be implemented using mobile devices like for example advanced smartphones.

Telemedicine services can be divided into two main types: one related to the implementation of medical procedures and telemonitoring.

Services related to the implementation of medical procedures refer to situations in which a doctor performs a medical act at a distance using specific information and communication technologies, eg. teleradiology - remote evaluation of X-ray images, telepathology - remote rating of biopsy sampling cells or tissues, teledermatology - remote evaluation of skin images sent by the patient or another doctor. This type of telemedicine is a typical example of B2B (business-to-business) service. Telemonitoring relates to the provision of medical care through a combination of specific desktop or mobile device with the corresponding sensors that allow to monitor the health status of the patient. Data can be collected automatically or a patient can input specific parameters to the device himself. Telemonitoring increases the frequency of contacts, that is the integration between a patient and his doctor without a necessity of face to face outpatient/ hospital visits (they are in the majority of cases linked with time consuming travelling). It ensures a better continuity of care in particular for patients with chronic diseases. The level of stress for a patient can be reduced. In addition, an early detection of abnormal parameters gives the possibili-



ty of rapid intervention and can prevent later complications. This can generate savings for healthcare system as through the use of this type of telemedicine services, not only the quality of care for chronically ill patients is improved, but also the frequency and duration of hospitalizations are reduced [2,4].

The implementation of telemedicine solutions enables the provision of more personalized medical care, focusing on adapting to the needs of each individual patient. At the same time it can help health systems with limited financial resources to face the challenges of aging populations, the multiple expectations of patients and increased mobility of patients and health care professionals. The main factors that in the near future may have an impact on the development of telemedicine services are: the relative increase in the number of patients with chronic diseases (including young adults), the increasing number of older people with decreasing revenues from constantly declining group of people paying taxes and finally decrease in the number of professionals in the field of medical care in



the European Union countries [4]. The global market for telemedicine services despite the economic crisis grew from 9.8 billion dollars in 2010 to 11.6 billion in 2011 and expected its value in 2016 is 27.3 billion dollars, which gives an average annual growth rate of 18,6% [5].

In the European Union (EU) legislation has been established. In the provisions of those legal acts the description of functioning of e-health systems, including telemedicine, both on individual countries as well as in the context of cross-border care is described.

However not in all EU countries, including Poland there are established legal frameworks which enable telemedicine services to be implemented. The most common limitations are associated with necessity of the presence of a health care worker and the patient in the same place and legal problems in terms of reimbursement for telemedicine services to providers [2].

However, there are already some member states with legislation for the provision of telemedicine services. Its range is very diverse – sometimes legal acts describe only a framework of courses of actions in relation to the implementation of telemedicine services to the health system, but in other cases legislation precisely regulates the functioning of the various telemedicine services in the system.

Poland is still lacking legislation. Thus as of today none of the services can be reimbursed by the public payer. There has been attempts to establish at least basic legal framework for introduction of telemedicine services within public healthcare system.

On a contrary, in France, the official regulations in the field of telemedicine already appeared in July 2009. In October 2010, a decree was published. In the document the main areas, that telemedicine covers (including teleconsultation, teleex-

pertises, telemonitoring, teleassist, remote monitoring) as well as the rules of implementation and organization of telemedicine are described. The decree has been added to the Public Health Code and from a legal stand point, telemedicine services have become standard medical act. Also developed guidelines have been provided to a regional medical agencies for the development and implementation of telemedicine programs at the regional level [6]. Since October 2011, the telemedicine services have been reimbursed at the same level as a standard visits, if you can qualify them to one of the categories specified in the Social Security Code [7].

In Scotland there is no specific legislation regarding the use of the telemedicine technology in health and social care, but increasing attention to IT systems associated with the patients can be observed. The first strategy for eHealth was established in 2008. In December 2012 the document "National Telehealth and Telecare Delivery Plan for Scotland to 2015" was prepared which sets the strategic lines of action for telehealth and telecare [6].

Legislative solutions in the field of telemedicine in Spain vary depending on the region. For example, in Catalonia, the local level strategy for the development of telemedicine was implemented already in 2012. In addition, they implemented other strategies related to health or IT, which individual parts also refer to telemedicine eg. the treatment of chronic diseases from 2012, IT in health from 2008 [6].

In practice, European countries have already introduced many different activities in the field of telemedicine.

One of the most well-known project in the field of telemedicine in France is Cardiauvergne. It works in the Auvergne region, but it will be replicated in other regions. It is designed for patients with

severe heart failure (stage III and IV NYHA) who were hospitalized at least once during the year prior to inclusion to the program. The program builds on telemonitoring system by which the current state of each individual patient is monitored, the messages are sent automatically to nurses' smartphones at intervals dependent on the severity of the disease also laboratory test results and information from the pharmacist are included. The data is entered into the electronic patient record and the IT system generates an alarm depending on defined parameters. The coordinating team takes appropriate action. In the first two years after introduction 558 patients were included into the system (mean duration of patient monitoring amounted to 355 days). Annual mortality decreased by 12% (which is more than twice better value than in traditional monitoring), whereas the incidence of hospitalization during the year decreased by 13.6% (while length of hospital reduced from 13 to 9.2 days) [6].

An interesting example of another regional implementation of telemedicine comes from Italy and is called "Telecardiology Puglia". The program has been performed in the region of Puglia. It focuses on supporting doctors in routine everyday clinical practice. In emergency cases, doctor or a trained person records 20 seconds of 12-lead ECG, and then sends the recordings to the center of cardiology (Cardio On Line Europe) available 24 hours, 7 days a week. In the mentioned above center cardiologist reads the recording and based on it and an interview performed during the teleconference, provides his opinion to the registering person and sends a corresponding report. On this basis, ambulance center determines the need of hospitalization for a patient. Five years after introduction, the system helped to reduce by half the mortality from acute myocardial infarction, as well as it helped to reduce the time from diagnosis to initiation of therapy. Additionally sav-

ings associated with avoiding unnecessary admissions to hospital were shown [6].

Today the most common pan-European telemedical service is teleradiology [2]. It involves the transmission of radiological images for interpretation or consultation. Teleradiology services are usually outsourced to external outsourcing centers, within the country as well as across borders. The European Society of Radiology published results of a study designed to evaluate the use of teleradiology in Europe. The study involved 368 specialists in radiology from 35 European countries. Of the surveyed doctors 65% were using teleradiology. The main advantages, that were pointed out are: the possibility of cooperation with other radiologists and efficient distribution of workload. In addition, 35% of specialists used outsourcing (65% of them using commercial services). The outsourcing biggest benefits were the ability to seek a second opinion as well as the possibility of telephone consultation. In general, most experts spoke positively about the future of teleradiology [4].

To identify advantages and disadvantages of the use of different types of telemedicine services numerous clinical studies have been founded. They evaluate both services using stationary equipment as well as mobile applications.

For example, in a systematic review from 2015, 107 studies were included. It focused on evaluation of the efficacy of m-health services (telemedicine services using mobile devices) in helping patients with chronic diseases. In the review usability, acceptability and preferences of patients in relation to the systems supporting adherence have generally been rated as high. In addition, 56% of randomized trials demonstrated a significant improvement in adherence and 39% of the studies showed a significant improvement in disease-specific clinical

outcomes. The review identifies the large potential of the tools used in the context of m-health to improve adherence of people with chronic diseases, despite incomplete consistency of data. The authors suggest the necessity to carry out further studies to fully understand the tools by which the best results can be achieved [8].

As a part of the systematic review, the scientific evidence regarding telemedicine services used in the treatment of diabetes, gestational diabetes and diabetic retinopathy was evaluated. 73 studies meeting the inclusion criteria were identified. Applied forms of telemedicine services differed between studies, but the evidence obtained was consistent and showed a positive effect of telemonitoring and tele-screening in relation to glycemic control, weight reduction and increased physical exercise. Furthermore, the authors highlighted the potential of telemedicine to changing behaviors and habits of patients, which is extremely important in controlling the disease, particularly in the case of diabetes type II and gestational diabetes [9].

As the payer in Poland together with some national consultants refer to low efficacy of expensive biologics and unnecessary hospitalizations in drug programs, implementation of telemedicine can be a solution.

One can assume, that the level of costly hospitalizations linked only with administering of drugs in drug programs can be significantly reduce. Also the compliance and adherence should improve.

Patients in drug programs can get medicine for the period of three months. M-health will provide greater control of administration. Reminder to administer the medicine will be send to each patient, every time. In case of questions televisit with a use of smartphone can be performed.

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