

INNOVATIONS IN THE MANAGEMENT OF HEALTH SERVICE IN POLAND

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ABSTRACT

The notion “innovations in health service” is associated in the majority of cases with the newest medical equipment, new methods of treatment and diagnostics or with medicines of a new generation. All these elements are definitely a base of innovations and thanks to them the progress in medicine is made; however they do not show all the aspects of this notion. New organizational forms of health service activities, new sources of financing as well as forms and patters defining the behavior of personnel and the relations of personnel with patients can be also regarded as innovations. One of such organizational innovations is clusters -- innovative solution based on the transfer of knowledge and direct personal contacts, as a geographical concentration of selected suppliers, service providers and associated institutions in the branches of industry which are connected together. Other aspect describes Information and Communication Technologies (ICT) in health service management. Based on own author’s research, this paper describes organizational innovations -- including clusters -- implemented in recent years in Poland, together with selected case studies of organizational innovations implemented in South East part of the country.

1. THE NEED OF ORGANIZATIONAL INNOVATIONS IN HEALTH SERVICE

Civilization development together with life span that is continuously lengthening and the changing situations of the different diseases create a lot of challenges for the medical practice. These challenges can be only overcome by the dynamic development of medical knowledge and wide access to its achievements can help to realize them. Innovations in health service are both necessary and inevitable.

The notion “innovations in health service” is associated in the majority of cases with the newest medical equipment, new methods of treatment and diagnostics or with medicines of a new generation. All these elements are definitely a base of innovations and thanks to them the progress in medicine is made; however they do not show all the aspects of this notion. New organizational forms of health service activities, new sources of financing as well as forms and patters defining the behavior of personnel and the relations of personnel with patients can be also regarded as innovations.

There is a common consent that a patient’s welfare is the aim of innovations in medicine. Such an understanding of their aims does not mean automatically that they are always approved and ready to be implemented in the sector of health service. The financial expenditure connected with them can constitute a barrier, especially in the countries like Poland, where health service suffers from a lot of shortages. However, it is known that innovations often become a source of savings in the future. On the other hand it is also known that new possibilities in medicine create new demand for its services. It is said that necessity is the mother of innovations; however innovation is also the mother of necessity.

Apart from some obvious financial issues, there are many social and organizational factors which can be the barriers and which make it difficult or delay the adaptation of innovations. The most general one is the proper level of system “civilization” which is to absorb an innovation (of knowledge, qualifications, organization). Definitely the introduction of new innovative medicines is the least

troublesome aspect, more troublesome is the introduction of new technologies and new equipment which often require specific knowledge, an acceptance of new responsibility or changes in the current schemes of work organization. The last issues have their own social conditionings; it is necessary to accept innovations as such and the readiness to changes is an appreciated social value.

All these above mentioned factors -- which are enumerated at random -- show that the introduction of innovations in medicine is a multi dimensional process which can face some specific limits and which often requires an interdisciplinary approach, taking its medical, economical and social aspects into consideration.

The paper presents the organizational innovations that have been implemented in the recent years in Poland and which were to improve the management of health service units.

2. MEDICAL CLUSTERS IN POLAND

Clusters are innovative solutions based on the transfer of knowledge and direct personal contacts. The geographical closeness is an important issue for this kind of knowledge flow; a cluster is a geographical concentration of: companies which are connected together, selected suppliers, service providers and associated institutions in the branches of industry which are also connected -- the partners can both compete and cooperate in some areas. In comparison to regional or national innovation systems, the intensity of knowledge proliferation is the biggest in clusters thanks to staff members' mobility. The institutional aspects in the creation of clusters are of a minor importance. Companies and issues connected with innovations are the most important. Local or regional authorities can more effectively support innovations in companies which are parts of clusters. On the local level, the dialogue of industry, scientists and public authorities can be the most effective.

The examples of medical clusters in Poland:

- Medicine of Poland South -- East Cluster (Tarnów)
 - Life Science Cluster (Kraków)
 - Silesian Network of Medical Products (Katowice)
 - E--Health (Wrocław)
 - East Polish Medical Cluster (Białystok).

The essence and the most important aims of medical clusters are as follows:

- The delivery of widely understood health and rehabilitation services (Medicine of Poland);
- The support of entrepreneurship and innovations and the creations of conditions for the effective commercialization of research and development results (Life Science);
- The increase of companies' competitiveness by the creation of sector cooperation network (Silesian Network of Medical Products);
- The assurance in all--Polish scale of lucrative conditions for the transfer of knowledge and technologies in the field of health, the creation of regional program of informatization of services in the sector of health protection (E--Health);
- The support and development of biotechnology sector, of medical technologies and of health protection (East Polish Medical Cluster).

Chart 1 presents the features of medical clusters in Poland.

Chart 1. The characteristics of medical clusters in Poland.

Participants	<ul style="list-style-type: none"> – 28 members including: medical group, health resort group and research and development group and more than 20 cooperating companies from five voivodeships: Lesser Poland Voivodeship, Silesian Voivodeship, Subcarpathian Voivodeship, Świętokrzyskie Voivodeship and Lubusz Voivodeship (Medicine of Poland). – About 70 units, including higher education institutions, 7 hospitals (with the Center of Oncology in Kraków), 16 specialistic medical institutions -- limited liability companies and civil partnerships, Kraków Technology Park, Centers of Technology Transfers, – 8 scientific institutes, including Polish Academy of Sciences, self-government institutions (Life Science); – More than 150 companies from medical and related branches (Silesian Network
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	<p>of Medical Products)</p> <ul style="list-style-type: none"> – Initiative with an open character (E-Health); – 13 units, including 4 higher education institutions, 6 limited liabilities companies and others, Scientific and Technological Park of Lublin Voivodeship Joint Stock Company (East Polish Medical Cluster).
The way of creation	<ul style="list-style-type: none"> – The Association “Medicine of Poland” has its headquarters in Tarnów. It was registered in 2007 and it was the initiative of people connected with medical branch (Medicine of Poland); – The Jagiellonian University was the initiator of the cluster’s creation (Life Science), – The cluster was created in connection with the realization of a project “The creation of sector networks of cooperation and supporting structures in Silesian Voivodeship” (Silesian Network of Medical Products); – Created in connection with the project realization (E-Health); – Created in 2008 in Białystok during the 2nd Forum of Innovative Technologies for Medicine (East Polish Medical Cluster).
Organizational structure and management	<ul style="list-style-type: none"> – The cluster’s authorities are as follows: General Gathering of Members, Audit Committee and Board (The Medicine of Poland); – The Cluster’s authorities are defined by the statute and the cooperation contract and are as follows: Cluster Council, Presidium of Cluster Council, task groups (Life Science); – Cluster’s coordinator is Upper Silesian Agency of Enterprises Transformation Joint-Stock Company with the headquarters in Katowice (Silesian Network of Medical Products); – Wrocław Medical and Technological Park Ltd with the headquarters in Wrocław manages the cluster. The counseling functions in the cluster are fulfilled by the appointed members of Wrocław Medical Academy and Wrocław University of Technology (E-Health); – The coordinator is the Association of Innovative Eastern Poland and the authorities are as follows: Cluster’s Council, head of Cluster’s Council (East Polish Medical Cluster).
Source of financing	<ul style="list-style-type: none"> – The assets of the association are constituted by: immovables, movables and funds. The assets are created by membership fees, subsidies, donations, legacies, bequests, income from statutory activities, income from public donations, units appointed for certain business activities (The Medicine of Poland), – The Administrator -- Jagiellonian Center of Innovations Ltd covers the organizational and administrative costs. Other funds are covered by European grants, membership fees and contracts for counseling services (Life Science); – The cluster will be financed mainly from external subsidies, for example from the European Social Fund (Silesian Network of Medical Products); – The public funds and company resources (E-Health); – The funds of the European Union and the partners’ funds (East Polish Medical Cluster).
Legal and organizational form	<ul style="list-style-type: none"> – Association (The Medicine of Poland); – Cooperation contract (Life Science); – Civil law contract (Silesian Network of Medical Products), – Cooperation Agreement (East Polish Medical Cluster).

Source: own preparation

2.1 The Medicine of Poland South - East Cluster -- case study

The Medicine of Poland South - East Cluster (MedCluster) was created in 2007. It is the first and unique medical cluster in Poland. The extended network is created by medical units (clinics and hospitals), health resorts (spa centers), companies of related branches (producers and suppliers of medical equipment, IT companies, counseling companies). Nowadays it has more than 30 members

and more than 20 cooperating units from five voivodeships of Southern and Eastern Poland. Research and development centers, higher education institutions, self-government units and government units support the cluster initiative. The mission of the cluster is: the creation of coordinated health services for the inhabitants of the region of Southern and Eastern Poland, the delivery of complex medical services including telemedicine and the services of medical tourism with the usage of the most modern and innovative technologies. Operating in five voivodeships of Southern and Eastern Poland, its activities can embrace up to 13 490 500 people.

The main aims of the Medicine of Poland South - East Cluster are:

- The creation of common IT platform,
- The exchange of information between the units providing medical services, the unique system of patients' service (health accounts), the creation of managing and counseling system and prognosis system in health protection and data security -- VPN.
- The creation of medical and health resort centers of competencies.
- Maintaining the competition between units the different units, pointing at the best services and products in the cluster -- medical and health resort services.
- The creation of telemedicine in cardiology, radio diagnostics, analytical diagnostics and ophthalmology.
- The creation of medical tourism centers.
- The coordination and complex activities which aim is the delivery of medical services, health resort services, spa services, rehabilitation services, revitalizing services and tourism services for Polish citizens and for foreigners. The members of the cluster base the activities on the resources available in the Southern and Eastern part of Poland.

Key projects realized in the framework of cooperation in the cluster are as follows:

1. VPN medNetwork

The creation of a homogenous IT system in IPVPN technology, created in order to enable a communication and a safe exchange of medical data between the units in the network.

2. Medical Regional Scientific and Technological Park:

The aims of the project are:

- The development of infrastructure activating the local and regional entrepreneurship and scientific circles,
- The transfer of knowledge and technology to medical industry, IT and related branches,
- The development of cooperation of medical universities and research institutes with medical branch and related branches in the whole country,
- The cooperation with Polish and foreign scientific institutes and research institutes,
- The development of competitiveness of companies operating in Health Park,
- Trainings, counseling and improvement programs for health service units. Development of e-learning.
- The creation and support of Academic Incubator of Entrepreneurship.
- The transfer of scientific results into modern and effective technologies ready for implementation.

3. "Galician health resorts."

The promotion of regional experienced resorts with long traditions. A stay in any of Galician health resorts provides a possibility to combine medical procedures with active tourism, three thousand of tourist tracks, historical resorts, attractive historical buildings, natural monuments and a lot of other tourist attractions.

4. "Healthy-me Program"

The participants of health program are equipped with plastic cards identifying them in numerous modern clinics of Southern and Eastern Poland. Thanks to these cards, they can obtain an offer designed purposefully for them, can get to know about pro-health and prophylactic programs. The very cards offer a lot of advantages by the different partners of Healthy-me Program offering health services and products in the forms of reductions or special offers. In the framework of Healthy-me Program medical partners realize their authors' projects. One of them is the Program of Healthy-me kindergarteners and pupils. In some selected kindergartens and schools, the meetings with children are organized during which they are presented the rules of healthy and safe life styles. The publication of

bulletins and magazines of Healthy-me Programs is other field of activities. The principal idea of the Program is the promotion of prophylaxis.

5. Regional Centers of Telemedicine and Telecare

The telemedical and telecare centers are created. Medical care for remote areas is provided.

6. Centers of competencies

The creation of medical centers of competencies and specialist treatment by using the best resources identified in the region.

7. Medical Tourism -- PolMedTour

The promotion of the region and the intensification of medical tourism. The project is realized mainly for patients from other regions of Poland, from the countries of the European Union, Russia and Ukraine.

8. Transfer of Knowledge and Information

The aim of the project is to strengthen the cluster's competitiveness by exchanging information, knowledge and technology. In order to achieve the aim the cluster Medicine of Poland South – East signed a Letter of Intention with Healthcare&Bioscience iNet cluster (Nottingham, Great Britain) -- an experienced cluster possessing a technical infrastructure and qualified staff. The project scope includes the creation of a communication platform, trainings on telemedical technologies and innovations in health protection, study visit in a partner institution of the project and a conference summing up the whole project. The foreign partners are involved in activities as much as possible. The communication platform is a useful device that helps to get knowledge and information on solutions and novelties on the market; it will also be useful for long-term and multi-dimensional international cooperation which will enable to obtain knowledge necessary to implement innovative solutions in the field of medical services. The system will enable a quick and effective exchange of information between partners.

3. INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT) IN HEALTH SERVICE MANAGEMENT

The progress of the development of IT technologies and their applications changes instantly and in many ways the medical research practice and the management of health service units.

Information system can be defined as a system of procedures that help to gather, process and send information in order to support and improve the process of management, taking decisions and control.

IT system, in the context of the above-mentioned information, is a set of procedures which serve to gather, process and send information means of IT tools.

Information system is such a necessary element of every company and institution as a coordinated process of products or services supply to customers. Information system is a part of organization and it also consists of many levels and specialties. In order to understand and create a proper information system, it is necessary to understand a structure, function and the aims of company's activities and processes which take place inside it.

In compliance with the ways of operations and processes that are handled, the following levels can be differentiated in an information system: operational, managerial and strategical:

- Operational system handles the basic functions in an organization. In a hospital, it is e.g. a system which helps to register patients and discharge them. The basic function of such a system is to deliver data and information and answer questions connected with routine procedures at this level. The information in such a system must be easily and quickly accessible, updated and must be precise.
- Managerial level -- it serves to monitor, control and take current decisions in an organization. The information system on this level must be able to provide certain global and aggregated data with a particular need to categorize and standardize them. This type of information is widely used, usually every day.
- Strategical level provides information for people who take strategical decisions, long-term decisions referring to the directions of further development, organizational changes and principles for a company's financing. This level must take into consideration data and information obtained from the previous levels as well as information coming from the environment. On the strategical level analytical capacities of a system play an important role, mainly the ones based on comparisons and benchmarks.

Below the advantages connected with ICT solutions for certain groups of partners are presented.

The advantages from the point of view of health service:

- Decrease of the costs of diagnostics and treatment which has a key importance in the context of identified demographic trends and pressure on the decrease of expenditure on medical services, decrease of the number of necessary tests, medical consultations and hospitalizations, better control of services, minimalization of abuse risk during calculations and refunds.

The advantages for medical centers and their founders:

- Better return on investments within 2 -- 7 years, better costs control in medical centers,
- Optimalization of internal administrative and logistic processes (the decrease of transaction costs e.g. the usage of electronic documentation),
- Possibility to "co-share" the personnel costs in the network of cooperating medical centers in order to use resources in an optimal way and to guarantee an access to specialists in case of personnel shortages.

The advantages for medical personnel:

- Improvement of information flow and access to information on patients (e.g. case history, tests results and so on), improved documentation processing, improvement of quality and effectiveness of diagnostic and treatment processes, decrease of the number of mistakes,
- Possibility to improve qualifications of medical personnel thanks to the access to modern solutions, consultations and cooperation with specialists from other centers.

The advantages for patients:

- Increase of the quality and accessibility of medical services,
- Decrease of waiting time for an intervention or for a medical service (including the elimination of abuses in the management of waiting lists for different services),
- Possibility of an independent functioning or care at home -- the limitation of a necessity to use the services of closed medical facilities and in turn the improvement of the life comfort during a therapy or in the time of recovery.

In Poland there are many examples of successful ICT innovations. The success factors for ICT development in health service and in telemedicine in Poland are as follows:

- The adoption of a national strategy promoting e-health. The services of health protection are given a major importance in the Strategy for the development of informatization in Poland until 2013. The strategy of Health Ministry on the development of information system in health protection was created and a project of a law is being prepared.
- Some voivodeships have created their own strategies in this field. However, it seems necessary to create and make publicly available a document referring to a wide spectrum of e-health issues and defining a timetable of activities connected with it.
- Refinancing by Polish National Health Fund of some medical procedures using tele IT solutions. The lack of refinancing of telemedical services is the main barrier in their dissemination. In the situation when private medical insurances constitute a margin part of the market and they are offered on purely commercial basis, telemedical services are too expensive for a large number of patients.
- The development of private medical insurances. So far, the lack of a list of non-guaranteed services was slowing down the development of private insurances. Nowadays, insuring companies pay attention to the fact that on the basis of a list presented by Health Ministry and a project of insurances law, it is difficult to define what would be placed in an offer of insurance. The experience of other countries show that additional medical insurance can include e.g. medical services which are delivered remotely (telediagnosics, telemonitoring and so on). The creation of conditions for the development of additional insurances should be treated as a priority which means the flow of additional financial resources to a system.
- The proposals of projects on regional level. It is observed that medical units (mainly public hospitals) are interested in the implementation of IT systems and other advanced solutions for medicine. However, it is necessary to realize that the important advantages can be achieved not by individual undertakings but by the cooperation within a network of

institutions (e.g. on a regional level) which provides a possibility to share infrastructure, communication, effective usage of personnel and so on.

- The education of doctors and patients. In the research of TNS OBOP from 2008, 65% of citizens have never heard of telemedical services. In the medical environment ICT solutions are treated more as an interesting experiment and not as a chance for the durable change of a way an institution operates and a new standard of medical services delivery. That is why patients' education is necessary as well as the education of medical environments; their aims will be the creation of a conviction that e-services in health service are safe, effective and successfully used in many countries of the European Union, can increase the comfort and improve the quality of medical services, guarantee a bigger availability of services and enable the transfer of knowledge and experiences in medical environment.

ICT solutions for the transformation of health care:

1. Systems supporting diagnostics and a process of treatment.
 - Systems of telecare (distant care)
 - Systems of on-line consultations between a doctor and a patient
 - Systems supporting medical diagnostics
 - Brokers of medical services on line
 - Telemedical systems -- on line diagnostics
 - On-line purchase of medicines
 - On line procedures: E106, E109, E111, E121, E123
2. Information systems:
 - Registers:
 - Register of the insured,
 - Register of providers of public services,
 - Medicines register,
 - Register of doctors,
 - Register of dentists,
 - Register of nurses,
 - Register of patients.
 - Public information
 - Official health portals
 - Multimedia support of health promotion.
3. Systems of management support
 - Systems supporting the management of health protection institutions,
 - Systems supporting mutual settlements,
 - Health insurance card,
 - Electronic registration of case history,
 - Electronic prescription.

3.1. E-health cluster -- case study

The work over the creation of e-health cluster started in 2007 and it was the initiative of Wrocław Medical University, Wrocław University of Technology and Wrocław Medical Scientifically -- Technological Park.

It was decided to create it as the result of the series of market analysis conducted both in Poland and abroad from which it resulted that Poland lacks an integrated center of information and transfer of technology connected with the usage of knowledge, experience and IT technologies in a medical branch.

The project "E-health cluster" will have started by the end of 2013. In its framework the Medical Center of Data Processing will be set up and it will create the conditions for the development of telemedical services. The medical databases will be created as well as the statistical and multimedia ones for the needs of science, education and business. All-Poland and integrated platform for e learning in medical branch will be created. A center that will be testing innovative projects in the field of e-health will be created. The Center of Business and Patent Counseling will be also appointed.

The project with total cost of € 17 million is co-financed in 85% by the European Funds, 15% is the own financing.

While creating the project “E-health cluster” it was taken for granted that it will exert influence on the territory of the whole country. The partners in this project are medical universities in Poland, hospitals, scientific institutes of the Polish Academy of Science, Ministry of Health, centers of advanced technologies, branch chambers, IT companies, laboratories, clinics, pharmacies.

The main aim of the project is the realization of cooperation between medical universities and research institutes with business from a widely understood medical branch, pharmaceutical branch and branches related to medicine.

Nowadays, in the framework of the project an undertaking “from a graduate to a micro entrepreneur” is being realized, co financed by the European Social Fund.

In the framework of this activity 36 people who wanted to set up their own business e.g. physiotherapist cabinet, individual medical practice or a pharmacy were trained in two editions. Having started such an activity, during the period of 12 months they were getting a support from the Park in the height of 700,000 PLN (Polish Zloties) per month. The participants of the project also get an investment donation in the height of 20,000 PLN (recalculated in €) which can constitute up to 75% of the investment’s value. After the end of the training own business activity in the form of an individual medical practice, medical services, IT technologies, cosmetic and care services, dentist services were set up by 12 people.

The second undertaking is “Assistant of an elderly person with a different degree of disability.” Altogether 200 people participated in the training preparing for a new profession e.g. nurses, physiotherapists and other medical staff members from public medical institutes.

The project aim is the improvement of the qualifications of health service administration staff in the field of IT technologies and English.

In eight editions, 96 people are trained in basic IT programs and English. In this project the participants are mainly the employees of clinical hospitals of medical universities. This training is co-financed in 75% by the European Social Fund.

Summing up, the cluster’s activities are to integrate scientific environment and economical environment around the topic of e-Health ensuring a considerable technological progress and the implementation of optimal IT solutions in the health service units both in the Lower Silesia and in the whole Poland. The realization of the aims is connected with the advantages for all parties participating in the undertaking.

The cluster’s aim is turning the region of Lower Silesia into a leading region in Poland in the implementation of IT technologies in medical branch, increasing the competitiveness of companies, and optimizing the costs of diagnostics and treatment and modernizing the management of health service. In this way the activities of e-Health will influence also some specific effects for the different voivodeships:

- The mobilization of cooperation in medical branch, pharmaceutical branch and in related branches;
- The creation of modern places of work;
- The inflow of foreign investors from medical, pharmaceutical, IT branches and related branches,
- The development of small and medium-sized enterprises based on innovative medical technologies, pharmaceutical technologies, IT and technologies related to medicine,
- The increase of the scientific, research and development potential of higher education institutions and enterprises,
- The increase of the regions’ competitiveness,
- The increase of the offer of medical services thanks to the implementation of new telemedical services,
- The reduction of the costs of medical service thanks to telemedical services.

Thanks to the participation in this undertaking, universities can use their know-how which in turn will enable them to finance their research and development. It brings them a lot of advantages:

- Cooperation with medical and pharmaceutical industries,
- Development of IT and telemedical applications in medicine,
- Usage of new data bases, including the telemedical ones,
- Preparation and the sale of patents, licenses, know-how to enterprises,
- Realization of new research and business projects,

- Support of innovative projects of academics by ensuring them an access to the infrastructure of the Park,
- Support of the entrepreneurship development among students and academics.

The advantages for enterprises and businessmen:

- Improvement of competitiveness thanks to the decrease of operational costs (transport costs, costs of using infrastructure, costs of welfare exploitation),
- Ability to obtain grants from the European Union in the framework of the projects realized by companies participating in the cluster,
- Possibility to participate on preferential conditions in the system of distant trainings via the Internet (trainings with educational points)
- Possibility to use accompanying services (business counseling, access to know-how, law service),
- Possibility to support businessmen in the process of setting up a business,
- Improvement of the marketing image of enterprises,
- Cooperation and exchange of experience between enterprises.

The advantages for other participants of the cluster.

The activities will lead to the improvement of the functioning of health service units optimizing at the same time their costs and will ensure a better access to health service (all telemedical services) and will increase the patients' satisfaction.

3.2. Implementation of Medical Insurance Card in Silesian voivodeship -- case study.

Register of Medical Services is an institutional, organizational and technical way of registering medical services realized in the framework of health care system, created for the needs of organization and management of it. The main aim of the system is an electronic registration of the data of services already delivered in the very place of delivery and a possibility to authorize services thanks to the usage of electronic card (a card of health insurance). Such an organization of the system causes that every service is connected with a patient to whom it was delivered and the information on its delivery is sent in an electronic form to Health Insurance Fund.

This system enables the service of the following processes:

- Patient's identification,
- Institution identification and identification of a doctor who is prescribing a service,
- Institution identification and identification of a doctor who is delivering a service,
- Code of medical service,
- Reason for delivering a service,
- Dates: of the order and execution of a service,
- Data on service financing.

System describes all or almost all the activities in the contacts of a patient with health service (medical services) by means of a homogenous system of data sufficient for the realization of basic reports, controls and plans. It combines the data on medical services that were executed, medicines prescribed together with a patient's PESEL number.

Data gathered in START RUM database in the Silesian voivodeship is used by people who are authorized -- the employees of National Health Fund as the supporting materials in the calculation of contracts, contracting and negotiating contracts for medical services. People who are entitled, by having a direct access to this data by using a computer network with authorizing mechanisms, download the interesting data in the form of standard reports. Additionally, depending on the needs, the analytical reports and statistical reports are prepared in the forms of charts, diagrams and maps. They include specialized data on the services which were delivered including the place of delivery, a person who delivered them, address, age and sex of a patient's and a medical problem which was recognized. It allows to realize a wide analysis of the medical services which were delivered, population's incidence, places where certain diseases are more common and plan the health care system for patients in a given voivodeship. Besides people mentioned above, only the providers of services can use this data and only in the range in which they deliver medical services. Other units for

which it is necessary to plan and analyze health care can also use this data. These are mainly the units of local administration and self-governments and the units of state administration of central level.

3.3. The implementation of telemedical innovation in the Clinic of Pediatrics in Warsaw -- case study

Clinic of Pediatrics is a leading pediatrics institution in Poland employing specialists with rare competencies, implementing and using the newest diagnostic and treating technologies. The unique competencies of staff members and the access to the abovementioned technologies are in practice difficult to copy in other centers in Poland and in some neighboring countries.

The Clinic fulfills a role of a reference center for other medical centers in the country. The following tasks result from this fact:

- Creation and promotion of health service standards, help in their implementation and supervision over their usage,
- Implementation of new medical technologies and their development,
- Monitoring of the treatment effects, especially in certain, specialistic fields,
- The realization of highly specialistic medical treatments for patients who cannot be treated in other centers as the result of the complexity of a problem and the necessity to have access to the unique methods of treatment.

The criterion to qualify a patient to be treated in the clinic is different. Very often the process of diagnostic requires a lot of experience and the access to advanced technologies. The creation of a good communication between the different centers in Poland and the Clinic will facilitate the cooperation which effect will be the elimination of delays in diagnostics and the reduction of health care costs by the rationalization of the applied diagnostic and treating methods.

The majority of patients who are sent to the Clinic require a long-term, specialistic care. Keeping in mind that a big part of patients live outside of the city in which the Clinic is placed, in many situations the problems with the access to treatment are observed (the necessity of numerous visits and hospitalization in the Clinic). It is connected with the necessity to cover costs of travels and stay in the city for families of children who are treated in the Clinic.

Practice of diagnostics and therapy in case of diseases that are not so common in the centers dispersed in the whole country is different and it sometimes leads to the results of treatment below an optimal level.

In line with the concept which was presented, the Clinic creates a network of cooperating centers on the basis of existing hospitals and children clinics which will operate on the following basis:

- Affiliated centers -- separated from the Clinic but combined functionally, by enabling the consultations and supervision over the treatment process by the specialists from the Clinic,
- Out-of-owner units -- which are organizational units of the Clinic and which are run by the personnel who is formally treated as staff members of the Clinic.

Cooperation between the centers will be based on:

- Preparation and implementation of the platform enabling the development of telemedicine in certain fields (radiography, electrophysiological diagnosis, histopathology diagnostics) in order to optimize access to the above mentioned diagnostics, improve its quality and to shorten the time necessary to conduct all required diagnostic research,
- Preparation and implementation of tools which will allow for the quick and effective mutual exchange of information between the cooperating centers (video conferences, medical consultation between the centers, workshops),
- Preparation and implementation of tools to monitor the treatment of certain groups of illnesses that is the preparation of data bases and registers which group the patients with relatively rare illnesses, enabling a homogenous access to diagnostics and treatment of certain groups of diseases, the creation of tools for the effective gathering and processing of data.

Summing up, aims of the implemented innovations are as follows:

1. Improvement of accessibility, quality and effectiveness of care of children who require highly specialistic medical interventions,
2. Optimalization of the usage of highly specialist competencies of the Clinic's staff members,

3. Permanent increase of the level of knowledge and competencies of staff members in smaller centers,
4. Facilitation of education processes and specialization processes for doctors in the field of pediatrics and related fields,
5. Decrease of the costs of a child illness incurred by a family.

According to these convictions, the economical advantages which result from the undertaking are experienced by:

- Patients- who do not have to travel long distances in order to carry out a necessary diagnostic and therapy, especially in the phase of supervising the process of treatment,
- Centers cooperating with the Clinic as they can treat patients whom so far they were not able to treat,
- The Clinic itself as it can earn on consultations.