

## INFORMATION TECHNOLOGIES IN MEDICINE

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**Annotation.** The possibility of using information technologies in medicine is considered. The author defines the main directions for the development and implementation of information technologies in the healthcare sector. The article highlights the usage level of information technologies in medicine and the ways of their development.

**Keywords:** information systems, medicine, medical informatics

**Introduction.** In the context of the development of modern society, information technologies penetrate deeply into people's lives. Nowadays it is difficult to find an area that does not use information technology. Rapidly accelerating in recent decades, progress against the backdrop of the widespread introduction of computer information technologies (IT) has also covered medicine. Today information systems in medicine are used more and more widely: when creating a serious clinic, it is no longer possible to do without an IT component [1].

**Main part.** The key link in healthcare informatization is the information system. The classification of medical information systems corresponds to a multi-level healthcare system, among which there are medical information systems at the basic level, the level of medical institutions, and the territorial level. In turn, basic level systems are divided into information and reference systems (for searching and issuing medical information); consultative and diagnostic systems (for diagnosing pathological conditions in diseases of various profiles); instrument-computer systems (for information support and/or automation of the diagnostic and treatment process); automated workstations for specialists (to automate the entire technological process of a doctor of the relevant specialty). The systems of medical and preventive institutions are divided into: information systems of consultation centers (designed to ensure the functioning of the relevant departments and information support for doctors in consulting, diagnosing and making decisions in emergency conditions); information banks of medical services (contain the necessary qualitative and quantitative information); personalized registers (contain information on the assigned or observed contingent based on a formalized medical history or outpatient card); screening systems (for conducting pre-medical preventive examination of the population); information systems of medical institutions (provide automation of various types of activities of the institution); information systems of research institutes and medical universities (solve three main tasks: informatization of the technological process of education, research work and management activities) [2].

These information systems are studied by medical informatics. Medical informatics is a scientific discipline that studies the processes of receiving, transmitting, processing, storing, distributing, and presenting information using computer technology and information technology in medicine and healthcare. The main goal of this science is to optimize information processes in medicine through the use of computer technologies.

The main practical issues related to the further development of medical information systems include: the need for widespread introduction of proven means and methods of information influence into clinical practice; stimulating and encouraging the development and creation of new means and methods of influencing the human body that comply with the principles and postulates of information medicine. One of the main ways to solve a number of medical, social and economic problems at present is to inform the work of medical personnel. Problems include the search for effective tools that can ensure an increase in the three most important indicators of healthcare: the quality of treatment, the level of patient safety, and the economic efficiency of medical care [3].

When using a computer in laboratory medical research, the main diagnostic algorithm is incorporated into the program. First, a database of diseases is created, where each disease corresponds to certain symptoms or syndromes. Next, using an algorithm, the person is asked certain questions. Based on his answers, the main symptoms are selected that best correspond to the group of diseases. Based on the test results, this group of diseases is displayed with a percentage designation. The higher percentage value corresponds to the most probable disease from the entire group. Today there are only 200 such expert machines.

During the research, it was found that, thanks to the development of information technology the concept of telemedicine appeared. Telemedicine is a complex of modern treatment and diagnostic techniques that provide for remote management of medical information. A telemedicine network can be considered fully specified if the following are known for it: the scale of the network (local, regional, etc.); types of objects (centers and telemedicine points) included in its composition; hierarchy of network objects; types of health care services provided by the network; types of communication channels between network objects. This algorithm can be represented as follows in Figure 1.

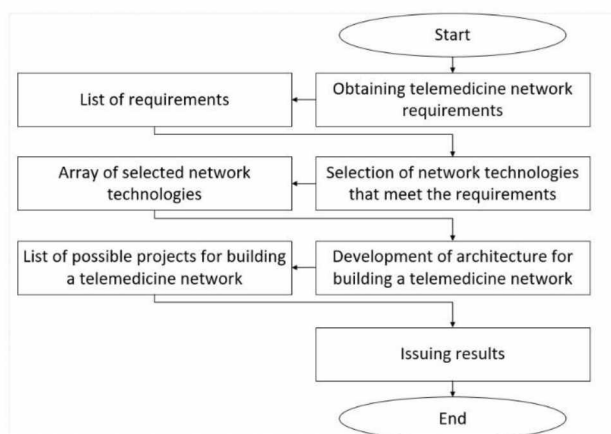


Figure 1 – Algorithm for building a telemedicine network

Telemedicine is used for various purposes: serving those populations that are located far from medical centers or have limited access to medical services; a situation where urgent consultation with specialists from central medical institutions is required to save the patient or determine treatment tactics; distance medical education [4].

**Conclusion.** An analysis of the use of information technology in medicine has been carried out. Methods for optimizing information processes through the use of computer technologies have been identified, ensuring an improvement in the quality of public health care, and the search for effective tools that can ensure an increase in the three most important indicators of healthcare: the quality of treatment, the level of patient safety, and the economic efficiency of medical care. The main directions of the development of information technologies in medicine have been identified.

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