

**THE ROLE OF MEDICAL APPARATUS- COMPUTER SYSTEMS IN
THE ERA OF GLOBALIZATION**

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Abstract

The article discusses the effectiveness of computer systems and medical devices in the diagnosis and treatment of patients in medical institutions.

The results show that it is appropriate to solve the problem of medical equipment for the diagnosis of the disease together with the problem of computerization of the patient treatment process.

Keywords: system, information, medical apparatus, computerized system, medical diagnosis, TAKT, treatment, medical device, equipment, signal, processing.

An important variety of specialized medical information systems is medical equipment - computer systems (TAKT). Currently, one of the fields of medical informatization is the computerization of medical equipment. In medical practice, the use in combination with computerized calculation and control equipment made it possible to create new effective tools that ensure the patient's condition, its real-time processing and automated collection of information about the patient's condition. This process led to the creation of medical device-computer systems, which raised instrumental research methods and intensive care to a new level.

TAKT is designed to provide information, that is, to automate the process of diagnosis and treatment, which is carried out in direct contact with the patient's body. TAKT is also called hardware-software complexes (devices, tools) or more widely, hardware-computer and information systems.

TAKT refers to medical information systems at the basic level, information supply systems for technological processes. The main difference between these classroom systems is working in direct contact with the learning object and, as a rule, in real time. They are complex hardware and software systems. In addition to computers, their operation requires special medical devices, equipment, video equipment and communication equipment.

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Typical representatives of TAKT are medical systems for monitoring the condition of patients; systems for computer analysis of tomography data, ultrasound diagnostics, EEG, ECG, radiography; are automated systems for microbiological and virological research, analysis of human cells and tissues.

Systems of this category can improve the quality of preventive and diagnostic work, especially in the context of public service when skilled professionals and time are scarce.

TAKT helps to increase the productivity of medical workers and the quality of the diagnostic process by introducing computer technologies in diagnosis and treatment. In modern TAKT, a significant improvement in the quality of the diagnostic and treatment process has been achieved due to the speed and completeness of biomedical processing.

With the development of computer technology, the disadvantages in each field were reduced and the opportunities were gradually equalized. With the advent of personal computers and their use in medical devices, another qualitative leap occurred in medical technology. The amazing computing power of the computer, the combination of the medical device and the computer made it possible to achieve amazing results.

Today, both directions are almost close to each other, and we can assume that TAKT, equipped with specialized computers, has the ability to process medical data and systems built using universal computers. Analog-to-digital converter (ARC). in the biomedical data acquisition apparatus, the physical characteristics of the patient's condition are converted into analog electrical signals. An analog signal means a constant electrical signal, one of whose parameters (for example, voltage) corresponds to the intensity of biophysical properties (for example, body, organ, tissue temperature).

At the same time, the computer can only process the data presented in numerical form. All other data must be digitized for computer processing. Therefore, it is necessary to convert the analog signals received by the equipment into digital form in order to record the biomedical information for entry into the computer.

An analog-to-digital converter serves as one of the standard devices for converting a continuous signal into a sequence of discrete digital signals for input to a computer or microprocessor. To enter the form, here we mean the representation of the signal in the binary number system, where the presence of an electrical signal corresponds to the number 1 and its absence corresponds to the number 0. The most important characteristics of an analog-to-digital signal (ARS) are charge

and speed. Bit depth is related to the accuracy of signal conversion. It varies rapidly with the speed associated with the ability to transmit signals. It is known that any signal can be represented by a certain number of harmonics (sinusoidal signals). The faster the signal changes, the more harmonics there are for the signal to be adequately represented. The representation of a signal as a set of sinusoids is called the signal spectrum. It is customary to talk about the TAKT frequency of the spectral region occupied by the signal. For satisfactory signal transmission, the ARS must operate at twice the TAKT frequency of the signal spectrum.

As a computing tool, TAKT uses both specialized microprocessor devices and general-purpose computers. In both cases, the principles of building additional devices are similar. Computer peripherals allow the use of standard software products and standard data storage media such as laser discs, hard drives, diskettes, etc.

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