



MODERN MEDICINE AND IT PERSPECTIVES

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Abstract: As the best benefit of medicine is health, this article talks about the achievements and advantages of information technology and digitization in every field of medicine to enhance this benefit.

Key words: pacemaker, auditory (cochlear) implants, dental implants, artificial joints, organ transplantation, endoscopic, minimally invasive and robotic operations, ultrasound, CT, MRI, PET/CT scans, bionic prostheses, robotic surgeons.

Patient information and communication systems in hospitals around the world are increasingly being computerized to use the latest technology to improve patient care. Applications range from electronic medical records to digital radiography to intranets that provide local clinical guidelines and policies. Examinations can be ordered and medicines can be prescribed electronically. Although a paperless hospital is probably a distant possibility, many things in the hospital system can be done electronically.

Many technologies that once seemed like science fiction are increasingly being incorporated into medical practice today. Until recently, implantable pacemakers, auditory (cochlear) implants, dental implants, artificial joints, organ transplants, endoscopic, minimally invasive and robotic surgeries were experimental models, but today they are used in many clinics around the world. is used. The same can be said about developments such as the gamma knife, the cyber knife for the treatment of tumor diseases.

Methods of 3D visualization of organs and tissues of the body are being improved with the help of ultrasound, CT, MRI, PET/CT scanners. This allows doctors to study the patient's organs and tissues in a three-dimensional image, including the spatial arrangement of blood vessels or internal organs in more detail.

Biotechnologies are developing rapidly: artificial tissue growth, 3D printing of organs and tissues. For example, China alone has 1.5 million patients on the waiting list for organ transplants. Millions of such patients worldwide die without waiting for surgery. The use of artificial skin, veins, cartilage, bones, dental implants, urinary bladder and pancreas has already been implemented in medical practice. This eliminates the need for donor tissues and completely eliminates the risk of rejection.

Prostheses made with the help of 3D printing allow to match the individual parameters of a person with millimeter accuracy. Individual 3D splints have appeared for fracture immobilization.

Genetics is developing rapidly. The human genome has been completely deciphered, and experiments on editing the human genome—adding, removing, or changing genetic material—are in full swing. For the treatment of rheumatological diseases, severe inflammatory bowel diseases and some infectious diseases (cytokines, interleukins, immunomodulators,

immunosuppressants) genetically engineered effective drugs are produced. Genetic testing and genetic counseling have become commonplace in many countries, enabling healthy births.

Smart gadgets can already measure heart rate, blood pressure, blood sugar level, heart rhythm and take EKG. They can signal problems in the body, including during sleep, call an ambulance through geolocation, make a video call and refer the patient to the doctor. The same gadgets can remind you to drink water, take medicine or exercise, track the number of steps you take in a day or the distance you walk.

Recently, to improve the effectiveness of treatment of obstructive lung diseases (bronchial asthma, chronic obstructive bronchitis), smart inhalers have been developed that connect to smart phones via Bluetooth and record the date and time of each drug dose and whether it was used correctly. notes.. When a smart inhaler was used, the effectiveness of the treatment increased significantly and the dosage of the drug was reduced.

Many medical devices with artificial intelligence systems are now helping doctors to diagnose various diseases and choose the best treatment method. For example, the new DeepMind artificial intelligence system is able to diagnose and prescribe treatment for more than 50 eye diseases.

The use of robots to perform nursing tasks is very important when working with patients with infectious diseases, which reduces the risk of infection of medical personnel.

The next step in the improvement of surgery was robotics to perform operations. Medical robots have been used in the world's leading clinics for more than 30 years. Today, one hundred percent accuracy in performing operations is demonstrated by robots with artificial intelligence. For example, the da Vinci robot performs a wide range of operations, and in the US it is used to perform up to 80% of all cancer operations. Such robotics can increase the accuracy and efficiency of operations, reduce the time of operations and anesthesia, reduce blood loss, the risk of complications, and shorten the recovery period.

What medical problems can IT help solve and what new technologies are being used by doctors?

— I emphasize two directions: improving the quality of life of patients and optimizing the work of doctors.

Bionic prostheses. This is one of the most vivid examples of technological innovation in medicine. We want prostheses not only to be "doll hands", but also to pick them up, move them and throw things. In addition, patients want to feel them. So, In 2013, the DARPA agency presented the first feedback prosthesis that connects directly to the nerve endings.

Robotic surgeons. The first models appeared in the mid-1980s, which facilitated the installation of porous implants. Today, they are used in minimally invasive surgery. In Russia, robots also participate in operations, but for now as assistants. Nevertheless, a surgeon who has performed hundreds of operations is still more efficient than the most expensive machine. On the other hand, the robot does not forget anything inside the patient. Such an attentive assistant who recalculates material, delivers tools, holds and moves something can be useful.

Early detection of cancer. It is often difficult to distinguish a chest X-ray of a healthy person from an image of a patient. Therefore, late detection of oncology is a common medical error. On the other hand, people get fluorography, X-rays every two years — it's a huge collection of data.



Neural networks allow us to detect deviations that the human eye would otherwise miss. Millions of images pass through them, and each time they more accurately identify not only oncology, but also cysts, pneumonia and tuberculosis.

Neural networks don't diagnose, but they make you look at the picture more closely. According to the law, "electronic assistants" do not have the right to diagnose. As with a blood test, a laboratory technician cannot record that a patient has anemia. He only highlights pathological indicators so that they can be evaluated by a doctor.

Summary.

With the addition of software development to the medical field, a new era of unimaginable potential has begun. Technology has emerged as an important ally for healthcare practitioners globally, with surgical robots performing complex procedures with astonishing accuracy, artificial intelligence to aid rapid disease diagnosis.

Medical imaging is one of the newest uses of technology in medicine. X-rays, computed tomography, MRI and other imaging methods have become important tools in the diagnosis and continuous monitoring of a wide range of medical conditions. These imaging techniques allow medical professionals to see a patient's anatomy in detail, allowing for early detection and accurate treatment planning.

The collaboration between technology and medicine has transformed healthcare and made it a vital asset, promising a better future. The transformative impact of software development in medicine is clear, with better patient outcomes, greater accessibility, and new innovations. As we discuss the challenges ahead, health professionals, researchers, and technology experts must work together to chart a path toward a healthier society. By working together, we can clear the way to a better and healthier future because the potential benefits far outweigh the obstacles.

References:

1. Civilization prospects. A kaleidoscope of facts. Problem 8. "Primitive ALLATRA physics" report.
- 2.«Пиши, сокращай», Максим Ильяхов, Людмила Сарычева
- 3.«Ясно, понятно», Максим Ильяхов
- 4.Young RJ, Horsley SD, McKenna M. The potential role of IT in supporting the work of junior doctors. J R Coll Phys Lond2000;34:366–70.PubMedWeb of ScienceGoogle Scholar <https://siit.co/>

