Плохова Анастасия Юрьевна
Тюменский государственный университет
Кафедра программной и системной инженерии
Студент группы 25ПИм185м
3757640@mail.ru

ВЛИЯНИЕ ТЕХНОЛОГИЙ НА ЗДРАВООХРАНЕНИЕ

Plokhova Anastasia Yurievna
Tyumen State University
Program and System Engineering Department
Student of 25AIm185m gr.
3757640@mail.ru

THE IMPACT OF TECHNOLOGY ON HEALTHCARE

АННОТАЦИЯ. Технологические разработки в области здравоохранения спасли бесчисленное количество жизней и повысили качество жизней еще большего количества. Технологии внесли изменения не только в жизни пациентов и их семей, но и оказали огромное влияние на медицинские процессы и практику медицинских работников.

В статье рассматриваются последние технологические инновации, а также на преимущества и недостатки, которые они приносят как пациентам, так и специалистам.

КЛЮЧЕВЫЕ СЛОВА: здравоохранение, информационный технологии, медицина

ANNOTATION. Continuous technological developments in healthcare have saved countless lives and improved the quality of life for even more. Not only has technology changed experiences for patients and their families, but it's also had a huge impact on medical processes and the practices of healthcare professionals. The article reviews the latest technological innovations, and the benefits and disadvantages they bring to both patients and professionals.

KEY WORDS: Healthcare, IT, Medicine

The Digitalization of Health Records

The introduction of Electronic Health Records (EHRs) in replacing paper records has been a game changer for many allied healthcare professionals. Medical assistants, medical records and health information technicians (MRHITs), medical billing and coding professionals, and registered nurses are just some of the allied healthcare roles impacted by this implementation.

Nurses and technicians are now responsible for inputting patient data such as vital signs, weight, test results, etc. into a central, digitized system. On the administration side of things, medical billers and coders use EHRs for scheduling appointments, updating patient records with diagnostic codes, and submitting medical claims.

Among the many benefits EHR technology has brought to healthcare include:

- Enhanced Patient Care

EHR can automatically alert the treating physician to potential issues, such as allergies or intolerances to certain medicines. EHRs can be accessed in any medical facility, which is extremely useful for doctors to access their medical history. This is especially important if the patient is unconscious.

- Improved Public Health

EHRs provide invaluable data to clinical researchers, which advances medical knowledge and the development of new treatments for common health problems.

Additionally, a central and standardized system throughout the entire healthcare industry can identify a viral or bacterial infection quickly. This can give insights into how widespread an outbreak is, enabling preventative measures to be put in place much more quickly.

- Ease of Workflow

Medical billers and coders are perhaps most impacted by EHRs, as the number of medical codes recently jumped from 13,600 to 69,000. Despite this huge jump, the introduction of EHRs has made life for medical billers and coders much easier. Entering data into a computerized system is much less time-consuming than paper-based methods. It also reduces the risk of errors in patient data and financial details. Accessing patient records digitally can be done in an instant and viewed via portable devices, increasing efficiency and productivity.

- Lower Healthcare Costs

According to a study from the the University of Michigan, the shift from paper to electronic health records reduces the cost of outpatient care by 3%. These researchers estimated this as $5.14 in savings per patient each month.

Big Data and The Cloud

'Big Data' is the buzzword of the digital age The term refers to the enormous amounts of data collected from a variety of sources that are then processed and used for analytics.

As an industry dealing with the public, healthcare naturally collects and stores huge amounts of data. When analyzed by data experts, this information has multiple benefits, such as:

- Reducing healthcare costs
- Predicting epidemics
- Avoiding preventable deaths
- Improving quality of life

- Reducing healthcare wastage
- Improving efficiency and quality of care
- Developing new drugs and treatments
-

With the shift to EHRs (and the fact that even one research study can amount to 100 terabytes of data), healthcare facilities need to have expandable, cost-effective, and safe storage solutions. This is where The Cloud comes in.

- What is Cloud Computing?

This is perhaps one of the most innovative products in healthcare technology today. The Cloud uses hardware and software to deliver services via the internet. In this case, healthcare professionals and patients are able to access certain files and data, and use applications from any internet-enabled device.

- Better and Safer Data Storage

Cloud computer technology allows for masses of information to be stored at a low cost, without the limitations or expense of additional hardware or servers. With an increased reliance on EHR systems, Cloud storage protects against the loss of sensitive data with strong backup and recovery services.

- Improved Access to Big Data

The Cloud is an invaluable tool for medical research, as well as for sharing medical information. In a survey of 105 healthcare industry IT professionals, 59% said they were using/planning to use the cloud for data analysis, and more than 75% for health information exchange. This new ability to share big data easily has helped lead to the development of life-saving drugs.

Information and Communication Technology

Approximately 270 million Americans own a mobile phone, and even more are connected online. As with any industry, healthcare has needed to transform its communication processes to connect with people wherever they are.

Information and communication technology (ICT) link healthcare professionals, as well as professionals with patients. It's especially useful in rural areas and places with a lack of facilities and/or specialist services.

Email, smartphones, webcam, telemedicine, and telemonitoring systems are all currently being used to share information. They serve many purposes, such as diagnostics, management, counseling, education, and support.

- Telemedicine

The terms 'telemedicine' and 'telehealth' can be used to refer to two-way video consultations, or the transmission of healthcare data like electrocardiograms (ECGs). Telemedicine can be used in many fields, such as cardiovascular healthcare.

Telemonitoring technology can monitor vital signs and symptoms remotely. There are even plans to develop remote ultrasound technology, which is exciting news for anyone interested in a career as a diagnostic medical sonographer.

- What Are The Benefits of Telemedicine?

Telehealth is improving allied healthcare jobs, including some of the top-paying roles in the field, such as medical assistants. The implementation of these telemedicine options means less crowded waiting rooms and easing the pressure on front desk teams.

Other benefits include:

- Shorter waiting times for patients
- Improved access for rural areas
- Improved efficiency leading to savings

- Mobility

Mobile health, or ‘mhealth’ is the term used to refer to healthcare and medical information supported by mobile technology. Approximately 80% of physicians use mobile devices and medical apps, while 25% use them to provide patient care.
There are many pros and cons to using mobile technology in the medical field.

- The Advantages of Using Mobile Equipment

Smartphones allow practitioners to complete tasks in remote locations. For example, a physician can use their smartphone or tablet to access a patient’s EHR, review medical histories, send follow-up emails, and even complete prescriptions.

Improved communication aids the role of medical billers, allowing them to send text message alerts about payment schedules and outstanding bills. Mobile communication can also cut down on snail mail, paper use, and time spent on phone calls.

- The Disadvantages of Mobility

Even with advanced technology, human error can’t be erased completely. Mobile devices can be easily lost or stolen. Smartphones and tablets are also vulnerable to hacking, malware, and viruses – especially if the devices are used on unsecured internet connections.

- **Mobile App Technology in the Medical Field**

There’s an app for almost everything these days, and healthcare apps are constantly being developed for both healthcare professionals and patient use. In fact, healthcare apps are one of the fastest-growing markets in mobile application development. There are approximately 100,000 health appscurrently available, and 300 thousand paid apps are downloaded every day.

- What Do Mobile Health Apps Do?

Mobile health apps give professionals, administrators, and patients greater flexibility. They are an inexpensive way for facilities to provide more high-quality services, and – at the same time – are cheaper for patients to access.

Some generate better health awareness, while others assist communication between patient and care providers. Here are some of the areas that 'mhealth' apps can assist with:

- Chronic care management
- Medication management
- Medical reference
- Diagnostics
- Personal health records
- Women's health
- Fitness and weight-loss
- Mental health

Are There Dangers Associated With Medical Technology?

We can't deny that there are many advantages of technology in healthcare, but as with all tech breakthroughs, there are some issues to be worked out.

- Centralized Data Point

While having a central point for all data information may be extremely usefulHowever, the main concern rising from Cloud computing technology and increased mobile use is security and data protection.

- The Risk of Medical Records Hacking

In 2015, the largest healthcare-related data theft took place. Hackers stole records for almost 80 million Anthem customers and employees, the second-largest health insurance company in the US. Only names and addresses were stolen, and no details of illnesses or treatments were exposed.

However, if this can happen to an insurance giant such as Anthem, it raises questions about how safe patient records really are in your local clinic. Patient records are apparently big business, with stolen health credentials fetching $10 each – about 10 or 20 times the value of a credit card number. The information on these records can be used to create fake IDs to purchase medical equipment or drugs, or even to submit false insurance claims.

The Verdict on Healthcare Technology

Despite the obvious dangers, the impact of technology on healthcare is overall positive, with the benefits far outweighing the disadvantages.

REFERENCES

1. Cutler D. M., McClellan M. (2001) Is technological change in medicine worth it? *Health affairs*. T. 20, №. 5, pp. 11-29.
2. Jennett B. (1986) High technology medicine: benefits and burdens. Oxford: Oxford University Press, pp. 1-137.
3. Reiser S. J., Reiser S. J. (1981) Medicine and the Reign of Technology. Cambridge University Press.
4. Thomas L. (1971) The technology of medicine.