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**"Digitalization is the
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6 December, 2021

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DIGITALIZATION OF HEALTHCARE: PROBLEMS AND PROSPECTS FOR THE DEVELOPMENT OF A “MEDICAL ELECTRONIC RECORD” IN UZBEKISTAN.

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Annotation: The following articles discuss the importance of digitalization in medicine, specifically introduction of electronic health cards to Uzbekistan and the advantage this may bring for healthcare professionals and patients. Problems that the government may face while accomplishing it are also mentioned.

Key words: digital medical card, digital health card, electronic health card healthcare digitalization.

In the last few years, many industries and businesses have gone through the process of digital transformation. The trend of digital transformation no doubt continues to revolutionize reshaping the business landscapes. However, [Healthcare industry is also growing](#), and keeping with the pace of this growth seems to be overwhelming. Choosing the right emerging technologies worth investing in and getting the team on board is also the most challenging. Although adopting the digital era in the healthcare department requires a risk-free mindset, letting go of outdated digital processes will yield big business benefits [1].

Several definitions of digitalization have been proposed. From an academic perspective, [Brennen and Kriess](#) define digitalization through digital communication and digital media's impact on contemporary social life [2]. In [Gartner](#)'s IT glossary, digitalization is “the use of digital technologies to change a business model and provide new revenue and value-producing opportunities; it is the process of moving to a digital business” [3]. However, this begs the question: what is a digital business? [I-SCOOP](#) offers an answer. They argue that a digital business is the result of a multitude of digitalization processes (i.e. going from supply chains to digital supply chains) and an essential step towards digital transformation [4].

In this time of rapid change, hospitals, health systems and other healthcare provider organizations around the world are building strategies to improve capacity. There is a clear need to manage surges in demand for care, supply chain and logistics effectiveness, and building of new virtual care delivery models that ensure meaningful connectivity with patients when care is needed most.

Healthcare digitalization is reshaping the way we interact with healthcare professionals, share medical data or make decisions related to treatment and outcomes. Nowadays it is possible with a smartphone to determine, round-the-clock, whether a patient has taken prescribed medications, as well as monitor vital data, (pulse, blood pressure, oxygen saturation) and it is also possible to determine through body temperature and movement patterns, whether a patient has fallen down in the home. Apple has developed its health-monitoring watch and Google with contact lens with glucose monitoring function Cardio Messenger system for a remote domestic

monitoring of arrhythmia patients contributes to avoiding unnecessary hospital admissions as well as reducing the treatment cost of patients by approximately 10%.

In a digitalized “Continuum of Care,” medicine comes to the patient, which is enabled by smartphone technology in combination with the telemedical infrastructure and leads to a change in the doctor-patient relationship. The Medgate approach is a good example, which, via the

Internet, provides the patient with the option to come into contact with an appropriate doctor for his or her particular complaint and to make an appointment directly, as well as to receive medical treatment through a teleconsultation. During this teleconsultation, health data, including that provided by the patient (e.g. through Apple Watch) as well as data from the Internet of Things (Home Care Monitoring), is integrated. All data is saved securely by means of Blockchain technology. Through a «Smart Contract» function, the hospitals receive the accounting data derived from the treatment data.

3D models are useful in medicine in order to obtain a precise understanding of the anatomical particularities of an individual patient with the aim of preparing for complex operations. The production of a model (e.g. heart, hip, arteries), proceeds on the basis of MRT and CT data, which by means of special software is converted into a 3D model and produced by means of a 3D printer.

On the other hand, the concept of POCT has gone beyond its use in laboratory services to also encounter technologies like ECG pulse oximeter, ultrasound and echocardiography based on smartphone devices (Lumify), and patient data management systems (PDMS) as well as physician order entry systems whereby diagnostic results were presented electronically to the physician at the point of care. POCT devices contribute to enhanced clinical quality, higher patient outcome, more efficient use of resources and reduced costs.

One aim of health-related AI applications is to analyze relationships between prevention, diagnostic or treatment techniques and patient outcomes. Furthermore, AI programs are used to improve diagnostic procedures, to develop treatment protocols (e.g. in cancer therapy), and to personalize medical regimes. Also, in medication management, AI applications contribute to enhanced patient safety, higher effectivity of therapy and cost containment when using algorithms to identify drug-drug interactions.

Hospital Management 4.0 contains “procurement management 4.0,” “personnel management 4.0,” “OT management 4.0,” “imaging management 4.0,” etc., and connects all of these subdivisions so that they are oriented towards the processes [5].

There are plenty of examples that substantiate the digitalization of healthcare today, such as Artificial Intelligence-powered medical devices, telemedicine, blockchain, remote-patient monitoring, and electronic health records.

“The digitalization of the healthcare system is a big process. The matter cannot be solved by only switching the computer on. It is necessary to create a database, which is telemedicine, diagnosing with remote interaction. This is a very complex system; it cannot be created in one day” the President of the Republic of Uzbekistan noted [6].

The head of government has also noted that according to the presidential decree, Uzbekistan will completely switch to the compulsory health insurance system by 2025. By this time, it is planned to fully implement the "e-health" project.

The digital health card is another example of digital health application. E-health cards have the potential to improve the patient experience by storing key medical data and medication history, and by serving as an electronic prescription. These cards can also be used to securely store social security numbers. As every application and new development has its good and bad side, digital health card does the same.

Named possible advantages of the e-medical card include:

- Every doctor has quick access to all important data.

- In an emergency, doctors in the hospital can immediately see which previous illnesses a patient has and whether he or she cannot tolerate certain drugs.
 - Patients can store and manage medical data independently of the documentation obligations of doctors and dentists to improve their information situation in the healthcare system.
 - For insurance companies, efficiency advantages arise when referral slips, prescriptions and doctors' letters are electronically issued to the patient.
 - Using statistical procedures (Big Data), accumulations of disease patterns can be determined from anonymized patient data and thus, if necessary, precautions can be taken.
- Named possible disadvantages of e-health cards are:
- Many doctors reject the electronic medical record. They believe that handwritten records are more detailed and contain more relevant details.
 - Because of the personal style, relevant information could be extracted more quickly from handwritten notes.
 - Since the patient has the power to decide which data are stored and which are not, the health data are of limited value due to the only partially contained information. The doctors or dentists accessing it cannot rely on its completeness and derive diagnostic or therapeutic consequences from it alone.
 - Input errors, misdiagnosis or manipulated input can lead to wrong medical conclusions.
 - Future covetousness of the data by politicians, health insurance companies, insurers or employers cannot be ruled out.
 - Data protection, also in the sense of medical confidentiality, will have to be regularly adapted to the progress of information technology, otherwise, it will not last forever [7].

An important stage in the development of the data processing system in Uzbekistan within the framework of the current system for collecting primary information in a single organizational, and information space of the republic's health care. The source of data for it will become information systems of various medical institutions, that contain personalized demographic data and information about a citizen's health, plans, prescriptions and results of medical, diagnostic, preventive, rehabilitation, sanitary and hygienic and other measures [8].

But there are still some obstacles the government and private sector need to overcome, such as slow Internet speeds and power outages. The education system is also still struggling to shift to modern technology in rural areas. Initially the Smart IC Card will be applicable only for internal use, at this point domestic use, because many medical types of equipment and conditions are not yet standardized around the world. I think many hospitals need to adopt similar standards. Hospitals will need to register for the system to obtain information about medical research projects and diagnoses for many illnesses.

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ЦИФРОВИЗАЦИЯ МЕДИЦИНЫ-ИЗМЕНЕНИЕ ВЗАИМООТНОШЕНИЙ “ВРАЧ-ПАЦИЕНТ”

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Аннотация. В этой статье рассмотрены вопросы развития цифровизации в медицине. Обозначены основные преимущества развития IT-технологий в сфере здравоохранения, а также связанные с ним изменения в взаимоотношениях «врач-пациент». Выделены возникающие биоэтические проблемы в связи изменениями моральных ценностей в современном обществе.

Ключевые слова: цифровизация, взаимоотношения «врач-пациент», биоэтика, мораль, ценности, «врачебная тайна», биомедицинские данные.

21 век можно назвать веком IT-технологий, никому не секрет, что цифровизация (цифровизация- внедрение цифровых технологий куда-либо; перевод или переход на цифровой способ связи, записи и передачи данных с помощью цифровых устройств [1]) проникла во все сферы жизнедеятельности человека. Она не обошла стороной и медицину, и такие научные достижения как искусственный интеллект, электронные карты пациентов, дистанционные операции, онлайн-консультации, мобильные медицинские предложения вполне обычным явлением. Надо признать, что с одной стороны цифровизации повышает скорость и точность процессов, а с другой конфиденциальность данных, обоснованность методов, а также этика остаются под большим вопросом, тем самым возникают новые этические проблемы в медицине.

Нельзя отрицать, что IT-технологии имеют огромный потенциал для развития медицины. Они позволят предоставить более персонализированный подход к уходу, расширят права и возможности пациентов, повысят безопасность пациентов, улучшат доступность общения между поставщиками медицинских услуг и пациентами, расширят доступ к медицинской информации, лучшему ведению и профилактике хронических заболеваний, повысят эффективность системы здравоохранения, улучшат доступ к

