

## The importance of informatics for health care industry

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There is no industry that does not benefit from the advantages of information technology (IT). Health care industry is no different from them. IT solutions are used to (1) minimize the human resource required for labor-intensive or time consuming tasks by automating them, (2) benefit from the intelligent software solutions that not just store the data in electronic format but also ease the decision making process, (3) accelerate the business processes by providing services simultaneously, and (4) provide maintainable and consistent services. Despite all of these advantages, health care industry spends only 2% of its revenues on technology, which is very limited when it is compared to other industries that spend around 10% (1). According to the report published by University of Illinois at Chicago's Online Health Informatics Program, 50,000 health care informatics professionals will be needed in the next 5-7 years which means 21% projected increase in health care informatics jobs between 2010 and 2020 (2). The advantages of IT solutions for health care industry can be listed as:

- *Clinical decision support systems (CDSSs)* are equipped with various software technologies such as artificial intelligent, fuzzy logic, artificial neural networks, and data mining to evaluate existing patients' data to make a deduction about the patient's diagnosis and make recommendations for the treatment.
- *Electronic health record (EHR)* refers to systematized collection of patient in a digital format (3). This record contains detailed information about the patient such as medical history, medication and allergies, immunization status, laboratory test results, radiology images, vital signs, personal stats like age and weight (4). Since this data is stored in digital format, it is accessible from anywhere and anytime when the access is granted. *EHR* lets patients to be informed about their laboratory test results and treatment processes. Also, storing the data in

digital format makes it possible to backup the whole data easily thanks to the state-of-the-art digital backup solutions. Storing the patient data in a central server is necessary in order to construct a knowledge base for the diseases and regarding treatments.

- *Telemedicine* is the use of communication technology based on the internet to provide health and social care directly to the patient located in a remote area (5). *Telemedicine* lets patients who may not be able to drive to meet physicians face-to-face such as patients with advanced level of muscle diseases, respiratory system diseases, and diabetes (6–8), to have a chance to communicate with their physicians through the internet. Another necessity for the use of *Telemedicine* is that underdeveloped countries are in need of large number of physicians as it is reported that in sub-Saharan Africa, on average, there are fewer than ten physicians per 100,000 people and 14 countries do not have radiologists (9). *Telemedicine* currently is widely used in different medical specialties such as psychiatry, neurology, cardiology, surgery, ophthalmology, genetics, pathology, microbiology, oncology, dermatology, dentistry, geriatrics (10). *Telesurgery* is one of *telemedicine* applications that lets physicians to operate patients with using manageable robots. The communication channel is in need of high bandwidth in order to provide a lag free synchronous communication between the surgeon and the robot.

It is evident that health care industry is in need of IT solutions more than any other industries due to three major reasons: (1) It is necessary to store and process large amount of patient data, (2) physicians need to use intelligent systems to make better diagnosis and arrange patient's treatment with taking the advantage of being able to review arranged



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treatments for similar patients and their courses of disease, (3) physicians need to communicate with patients located in remote places. Informatics will not only ease the things for patients by letting them to drive the whole health care processes by online, but also will help physicians to make better decision for the patients' treatments with using intelligent software systems and will let physicians

to monitor their patients closely. We experiment that telemedicine is not commonly used by the health care industry in Turkey especially when it is compared to overdeveloped countries. Despite that we think that the technological requirements for telemedicine are ready to popularize it in Turkey thanks to the latest developments in the information technology.

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