
Recent Technological Improvements on Healthcare

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Received: 19 June 2019

Published: 28 June 2019

Keywords: *Technology; Healthcare; 3D Printing*

Technology is indispensable part of our daily life and it affects everything including health care implications. One of the products of these improvements is 3D printing. It is a manufacturing technique used even in healthcare systems as additives such as producing 3D drug products, medical devices, tissues and organs from digital designs. Various dosage forms of drugs, prosthetics, medical devices and artificial tissues and organs are all the products of 3D printing. Using 3D printers gives the opportunity to the producers manufacturing the final products forming by successively adding the layers of materials such as plastics, metals, drugs and cell culture. According to a report by Phil Reeves (2013), more than 10 million hearing aids are in circulation that were created by 3D printing. Dental instruments such as crowns, bridges, plaster/stone models and an extensive range of orthodontic appliances have been manufactured by Stratasys, Envisiontec, and Zenith etc. The anatomical models, which are created by using 3Ds are also helpful for teaching process. During that process, virtual surgical planning, algorithm verification and validation are all achieved by using 3D printers. Researches and efforts are continuing to being made to produce a fully functional liver for transplant.

Since the 3D printing is able to manufacture personalized products suited for particular individual, it may increase the quality of deliverable healthcare services. It can print medicine in various shapes, sizes, doses and dosage forms with desired and prespecified characteristics including drug release profile.

Besides 3D applications, one another usage of technology is the diagnosis of diseases. The early diagnosis is such important for some diseases, which are fatal. For instance, the conventional techniques for diagnosing tuberculosis normally take two to three weeks. Sometimes this time period will be too late for the improving

on the diagnosis of the disease. This delay in diagnosis and also further increase in detection complexity due to the emerging risks of XDR-TB (Extensively drug Resistant-TB) and MDR-TB (Multidrug Resistant-TB) are evoking interest of researchers in the field of developing rapid tuberculosis detection techniques such as biosensing and other point-of-care techniques. Biosensing technologies along with the collaboration with nanotechnology have enormous potential to boost the MTB detection and for overall management in clinical diagnosis. A various range of mobile, sensitive and rapid biosensors based on different signal transducer principles and with different biomarkers detection capabilities have been developed for tuberculosis detection in the early stages of the disease. Further, a lot of progress has been achieved over the years in developing various point-of-care diagnostic tools including non-molecular methods and molecular techniques.

Also the integration of wireless communication, sensor, and information technology has opened new paradigms in the field of well-being and healthcare management. The embedded sensors can measure a wide range of physical parameters with the minimal complexity. Due to their lower power consumption and the cheaper production methods, this became very usable. Wearable sensors are the perspective of usage the internet of things (IoT) in the application of technology in health care system. The wearable sensors, which can be watches, pendants, and clothes are designed to achieve the low cost, the easy way of usage and the pervasiveness for healthcare monitoring along with the integration of services and agents like doctors or caregivers.

In conclusion; technology is penetrating to our daily life continuously and it is inevitable to think health care applications without technology including rapid diagnosis, producing effective drugs and even artificial drugs and tissues. It will be the pleasure to us all the positive contributions of technology in order to satisfy better health care conditions.

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