Technology In Healthcare

Raven Scotland

11/6/24

CSIT 100

Healthcare technology is the use of technology that aids healthcare practices and administrative productivity. This includes medical devices, artificial intelligence (AI), telehealth, and more. Healthcare technology, also referred to as "HealthTech", is now a major part of modern healthcare. Technology has been used to improve the healthcare industry to provide better care, easier access, and boost important research and development. For people who interact with healthcare, workers and patients alike, technology has undeniably been an incredible addition to the world of healthcare. What we have now is revolutionary, and HealthTech will keep evolving into something bigger and better. However, the growth of healthcare also raises concerns about security, costs, ethics, and jobs. The integration of technology into healthcare is continuously transforming the field, providing many benefits for both workers and patients, yet it also raises concerns.

Today, healthcare technology is used in several parts of healthcare and performs a variety of different functions. Things like Xray technology and computers for billing and coding have been used for decades, but newer innovations include robots that can perform or aid in procedures or 3D printers making artificial body parts. To be more specific of just how much technology does for healthcare, there are key areas that can be identified. Technology works for administrative functions like scheduling and billing using spreadsheet programs, data collection in research, assistance in surgeries using robots and AR (Augmented Reality), disease diagnosis and treatment, medical imaging, telehealth, drug development, wearable health trackers, security, and more. The limits are pretty much endless with the goal since the beginning of HealthTech to make healthcare more efficient, cost effective, and high quality for the patient.

From the start of healthcare practices centuries ago, there have always been advances that were beneficial to the masses like developing tools and machines. Things like the invention of x-ray technology in 1895 are an example of a machine that revolutionized healthcare. However, there is no denying the substantial impact of digital technology in the last few decades. The digital revolution of the past few decades introduced Electronic Health Records (EHRs), which has made the use of paper records almost obsolete now. Patient information is more accessible across different providers and has a lesser chance of being lost or things being missed. Another early digital health tools also include the finances of healthcare facilities being digitalized which makes for easier billing procedures. More recent innovations to healthcare have been developed to make the patient more comfortable, aid providers in their jobs, and provide security and services in uncertain times such as the pandemic we experienced in 2020. Examples of these

recent innovations include telemedicine, portable and wearable healthcare technologies, robotics, virtual and augmented reality, 3d printing and more. The impact of these technologies are all large in their own respects and are improving continuously.

Each technology that has been developed has different functions and benefits the healthcare system in a different way. Diagnostic tools like radiology technology revolutionized healthcare by allowing healthcare professionals to see what's going on in the body without invasive procedures. The discovery of X-ray technology which uses rays to capture images through the body came in 1895 with other inventions following during the 1900s. In 1955 the portable ultrasound machine, in 1972 the first CT scanner, and 1977 the MRI scanner. These tools that have improved over time to even be displayed digitally or in 3-D are a huge part of healthcare. Another large part of healthcare today is telemedicine. The introduction of video calling allowed telemedicine to take off. The impact of this technology is that it improves access to healthcare for people in remote areas or people that may not be able to travel to their healthcare providers. Being able to talk to a provider through video calls allows patients to get the care they need, and it's only improving. Wearable technology uses sensors and scanners and brings a new benefit to healthcare by providing continuous monitoring of health signs like heart rate, sleep, physical activity, and more. The future of wearable technology is to include more sophisticated and advanced biometric scanners so users can measure more of their health biometrics and have a better grasp of their overall health. Virtual and Augmented reality are huge for the future of healthcare because they can provide further assistance with diagnosis and treatment compared to what we used in the past by displaying information and images that doctors pay need during surgery. Robotics in healthcare ranges from surgical robots that are programed to do specific tasks in surgeries, robotic companions that can aid in mental health and people who may not be physically able to complete tasks, and exoskeletons that are controlled by the brain that can help disabled use their bodies. Lastly, 3D printing has a bright future since the healthcare industry plans to make organs so that we aren't reliant on the donor system anymore. However, today 3D printings abilities are limited to producing casts, prosthetics, surgical preparation devices, pharmaceuticals, and more. With all these new technologies and the advances made, there is also a raised concern about these technologies as well.

The first issue that has been raised about the reliance on technology on healthcare is the fact that there's always a chance of data being hacked and patient records being leaked. This problem is huge because patients should be able to have trust with their providers to keep their

information protected and confidential. A potential breach of information could be very dangerous. Telehealth applications must follow specific rules and regulations to be safe to operate and to protect the security of healthcare facilities. Another concern is that using advanced technology can be very costly for facilities to operate, which also makes it expensive for the patient to receive care. The purchase and maintenance of costly medical machinery and devices might not be possible for certain facilities and too expensive for patients to use. New technologies may only be able to be integrated in hospitals with a lot of funding and money, and the same goes for the patients. Patients can get turned down or go into massive amounts of debt for the care they need because they don't have the means to pay for it, which can be detrimental. Many people also have concerns on whether it's right to depend on technology for the daily functioning of healthcare systems, like using it for patients records. Machinery also can spew out inaccurate results if they aren't updated or maintained properly, which means patients can be misdiagnosed. There is always a chance that these systems can suddenly not function properly, or information can be lost. This is a valid concern, but it should be realized that technology is here to make our lives easier, but it shouldn't be relied on. Everyone should be able to perform their job duties even if a system suddenly crashes because patients need to receive their care regardless of anything else going on. Facilities also must be sure that their machinery is working properly by performing routine checks and performing maintenance when needed. Another concern with the use of technology is that there's always the need to adapt and train for the use of new things. A lot of providers like to do things a certain way and don't want to change what they do; however, healthcare is always changing, and everyone needs to adapt to new things. Furthermore, there are also concerns with how much technology will be integrated into healthcare. People fear that their jobs would be replaced by robots and AI, which is fair because technology has replaced certain industries in the past. Healthcare, however, seems safe from digital takeover. Healthcare is extremely complex and requires many moving parts and relationships, and technology is not advanced enough to handle every single part. Robots would have to be improved substantially to perform surgeries and be able to adapt and change with possible complications. Even, if possible, it would take an extremely long time for technology to be advanced enough to start replacing jobs. Every single concern is valid and are real issues, but the benefits of healthcare technology outweigh any of the concerns or challenges.

To start, HealthTech improves efficiency because it makes wait times shorter, and procedures are being done faster with the use of technology. The use of devices makes

administrative duties get done way faster compared to things being done manually or solely by humans. Instead of doing patient records or billing manually, there are digital systems. HealthTech also improves the quality of care by tailoring the experience for every single patient, which helps with patient satisfaction. Collaboration and personalization are becoming a huge part of healthcare because patients want options for their care. The use of technology also allows for quicker diagnosis and the reduction of human error. There are many tools that can help detect issues early and allow doctors to diagnose patients faster and with more accuracy. HealthTech also improves accessibility for populations that may not have access due to distance or money, and the use of technology can possibly lower healthcare costs over time. There are large populations that live nowhere near a health facility, and it isn't always feasible to travel far for the treatment they need. Especially for older populations or people with disabilities, telemedicine provides people with more opportunities to get the care they need. Lastly, healthcare technology allows for further research to be done in the field that will advance the field faster than we could previously do. Overall, there are so many benefits with technology, especially digital technology being in healthcare. The sky is truly the limit with using technology to improve the healthcare system.

All things considered, healthcare technology has propelled the industry forward, making continuous advancements the scope of what we can do. From the start of healthcare practices, innovators have looked for ways to do tackle we previously thought were impossible. Innovations over the years have allowed us to provide treatment for disease, identify previously unknown diseases, and make the jobs duties within the healthcare system more seamless and organized. We've seen and discovered things about the body that would've been unimaginable in the past. With each new tool and device, the potential to broaden the understanding of medicine expands, which gives us nearly limitless room to grow. The history of healthcare technology illustrates just how much the industry has changed and has been committed to enhancing the possibilities of patient care. Although there are concerns about the introduction of new technologies, it is good to note that it takes many years for new things to be developed and implemented into clinical settings. The decision to include new things is only approved with the confidence that it will only improve the industry and provide better outcomes for patients and healthcare workers alike. As more innovations emerge, there must be adaptability and openness to change from everyone that interacts with the healthcare system. Technology is forever evolving and there's always going to be something new rolling out with the hope of making

things better. From when computer systems were introduced to now, healthcare has made amazing strides. There should be continued investment in healthcare technology driven by a focus on safety, quality, and preventative care, keeping patients safe and healthy. At the forefront should be a commitment to patient centered care over potential profits. Through various advancements, the life spans of the human race have been increased, and there is a minimization of life altering errors. The path ahead for healthcare has even greater possibilities, and with continued openness to innovation, there can be remarkable feats in patient care, accuracy, and health outcomes.

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