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Management Information Systems and Health Care

A question that is commonly asked nowadays is how technology is going to change future jobs in the next ten to fifteen years. Especially for the older generations, this can be particularly worrisome. Will they be able to keep up with the new technological advances that are changing their careers? Will they lose their jobs to young information technology students or even worse a robot? These questions are not ones to be taken lightly because technology already has changed many industries including health care and will continue to do so. I have worked in a pharmacy for the past five years and I have seen first-hand how innovative technologies have helped and also hurt this industry. I will try to create an image for you as to how technology has warped the way a pharmacy and hospital works and how I believe it will also do so in the future.

Technology has already had large impacts on health care including electronic prescriptions, WebMD, Patient and Nursing Home Portals, medication packaging machines, fitness plans, electronic health records, and so on. Electronic prescriptions have provided doctors' offices the ability to send scripts via a fax machine or doctor/pharmacy portal. They are now able to avoid the many hours of calling the pharmacy and reading off what the prescription is for, who it is for, the directions, etc. For example a pharmacy could receive thirty to fifty e-scripts in an hour while they would not be able to take that many calls and input all of the information corresponding to the prescriptions into their system in an hour. WebMD has also changed health care because it has provided anyone with access to the Internet the ability to search certain symptoms, diseases, and medications without needing to call a doctor or pharmacist. Of course this also has its drawbacks because most of them people are diagnosing themselves incorrectly and one never knows how factual everything is that is on the Internet. An example of how this website has positively helped people would be the article we discussed about the woman who was able to correctly diagnosis

herself with a disease by researching information online. WebMD and the Internet in general is not only helpful to patients but can also be useful for pharmacists as well. There are occasions where a pharmacist will not remember the generic name of a medication or wants to know the affects a medication can have on a person with diabetes for example. There are many reliable websites that they can go on and look up this information.

Patient and Nursing Home Portals have also changed the way the health care industry works. They allow for pharmacists to go to a certain patient's profile and look up past medications they have received. This is extremely helpful for the elderly who may not remember which medications worked or did not work for them. For example if a patient calls a pharmacy and wants to know if they were previously on a certain medication and whether or not it was working for them, a pharmacist or technician can go into their history and look for certain notes that may say why the medication was discontinued. Pharmacists are also able to input certain allergies a patient has to medications so if they are prescribed to something they have told us they are allergic to, a pharmacist is able to call the doctor's office and ask them to switch the medication to something else. Another example of how these patient portals are helpful is they allow for nursing homes and pharmacies to see every medication a patient is currently taking and if a patient has decided to stop taking a certain medication, a nurse at the nursing home can update their system and it will show up on our system as well.

Medication packaging machines such as a PacMed or MedsPro have changed the way patients receive their medications and have also decreased mistakes on the pharmacy's side. These machines allow for patients to receive their medications in weekly blister packs instead of vials. This is helpful for those who are taking many medications and cannot remember to take them or what time they are supposed to take them. This weekly packages have days and times on them with wells corresponding to those times. A patient

no longer has to read the directions on vials each time they need to take a medication; these packages prevent them from forgetting whether or not they took their morning/evening medications that day or not. Another thing that is helpful about them is that they package the medications in these machines without a technician needing to grab all of the pills off of a shelf and put them in the wells manually. This can avoid certain mistakes from occurring such as grabbing the wrong medication or putting it in the wrong time slot. Of course technology is not mistake-proof, machine errors can also occur which is why a technician and pharmacist still check each pack before they leave the facility.

Fitness technologies such as Wii fit and online health programs are something that have become extremely popular in recent years and will continue to do so. Since it has been proven that technology has hurt our fitness and healthcare tremendously such as video games, why not try to use this addictive tool to also make people more healthy and active. Wii fit is just the beginning of this process, and could endanger the jobs of personal trainers or even physical therapists. All of these new technologies are just a few examples of how health care has changed in just the last couple decades.

Management Information Systems, which is my major has also changed health care particularly through the use of data analysis. Many people are aware that Google is able to track who searches for what and then markets to them based on search engine searches. This comes across as an invasion of privacy to many people and they are opposed to it. Fortunately there is some good that has come out of this as well. Since Google and cookies can see what websites certain computers go on, they have been able to analyze medical trends and to prevent future outbreaks as well. Data analysis tools are also able to track the demographics of medical outbreaks such as in which regions, climate, and time of year that these diseases/symptoms are occurring. For example one may be wondering why we only get flu shots during a certain time of the year. That is because data analysis has shown the

medical industry when the flu outbreaks occur and when one needs to get the shot to prevent getting this illness.

Future technologies are currently in the process of becoming a reality for the health care industry as well. Some examples of these include advanced patient monitors and webcams, emotion sensors, and even artificial intelligence. What I believe could be and should be invented are monitors that notify a patient and caregiver when a medication needs to be taken and repeatedly alerts them if it has not be given. Many times in long-term facilities the patients are still taking the medications themselves instead of being dispensed to them by the nurses. This enables forgetfulness especially for elderly who may not necessarily know what time of day it is most of the time. With these monitors it would prevent them from forgetting to take a medication or accidentally taking two doses of something that could be harmful to them.

Another technology I believe is not far from the future is computers with artificial intelligence in hospitals that can be used by patients to tell the computer their symptoms or that the computer can tell the patient certain post-surgery directions that need to be implemented. For example, if a patient wakes up after a surgery a nurse may come in a check them but then a computer could explain to them everything that occurred and what their next steps are. This would be helpful because the patient would be able to repeat these directions as many times as they'd like without a nurse or doctor getting frustrated by this or forgetting something. It is also something that may seem appealing to people who are embarrassed by certain symptoms they are having. They may feel more comfortable telling a computer what they are at the hospital for that an actual human being.

Monitors could also be invented that alert a nurse what is going inside a patient's room such as a heart attack without them needing to run to the room first to find out what is happening. If this occurs, and a computer tells the nurse what is happening and what

medication or procedure needs to be done before they get to the room it will save a large amount of time and may even save a life. Computers also do not have emotions therefore they do not crack under pressure like many nurses can sometimes do when they are put into a situation with a patient that they have never experienced before. For this reason, these monitors could also be extremely helpful because they will know exactly what is going on with a patient without a nurse needed to try to figure it out, especially if the patient is not able to speak. Speaking for myself, I would prefer sensors and monitors telling a doctor exactly what is going on inside my body than a human merely playing a guessing game.

Emotion sensors called 'Q-sensors' are currently in the process of becoming a reality. They are put on a patient in hidden places and are able to track the changes in emotion that are occurring. These can be extremely helpful for patients with autism; they can track and then predict when a patient is going to have an outbreak and when they are calming down. These sensors would drastically alter treatment plans, such as giving a higher dosage or lower dosage of a medication at certain times of the day when it is not needed as much.

Going off of these Q-sensors, advanced webcams called Cardiocams are also in the process of being made. They can do what the Q-sensors can do and more without a patient needing to be wearing the sensors. Again these may be more helpful in hospitals where there a multitude of patients and sometimes not enough nurses to give their full attention to them. There are many patients that believe that the medications they are on are not doing what they need to for them. These Cardiocams could track changes in the body to tell whether or not a treatment plan is working without needing to run hundreds of tests and then wait for the results. Doctors would more quickly be able to treat patients and alter their treatment plans if they knew exactly how medications affected patients within hours of them receiving it.

These technologies lead to one asking whether or not the job of a nurse, a doctor, a pharmacist, or a technician will ever be completely taken over by technology. Many people believe that eventually it will and many also hope that it does. People put a lot of faith in technology and they believe that it makes less mistakes than humans do. I personally do not believe that the role of a doctor or nurse will ever be completely taken over by a robot. I think that people like the personal side of doctors. For example, if your child has just been diagnosed with cancer would you want to hear that from a cold, hard robot or from a human who is just like you and has emotions just like you? I think the answer to that for most people would be from a human doctor, but I could be wrong. Another issue with this idea is that technology can easily be hacked into and shut down or malfunction. When it comes to ones health, malfunctions in technology can become a life or death situation.

All in all technology is rapidly changing every single industry, and I believe that everyone is either going to keep up with the technology or fall behind and wind up unemployed. For this reason I changed my major to Management Information Systems because it is based on the idea of using innovative technologies to make business processes easier and more effective. With this major I will constantly be using technology and keeping up with the new advances that come with this technological era that we are now in. Every company is looking for IT people who know the ins and outs of technology because they fear falling behind the competition. I do not think that my major is in any harm by technology, more of opposite. MIS majors from Temple have had one hundred percent placement in the past few years and this just goes to show how needed IT people are right now. Although my major will change with upcoming technology, it will not put MIS majors into unemployment. If only I could say the same for many other majors and career paths.