Big Data is an extremely large volume of data and data sets that include structured and unstructured data from multiple sources. (Duggal, 2022) These data can come from sources that are publicly accessible such as websites, social media, mobile apps, and many more. Big data have brought a new perspective on the technology used in health care and how the health care industry can be improved. There are some challenges that we must face but we have more advantages that big data has gifted to health care.

**Potential benefit of using big data:**

Big data, when analyzed as a fully integrated data set can give us more information compared to the smaller data sets that are not integrated.  (Thew, 2016) These data can be overwhelming sometimes, but they provide us the opportunity to grip data mining tool so that they can be converted into actionable knowledge.  (McGonigle et al., 2022) One big benefit that big data can bring to the healthcare industry is the reduction of costs in areas such as admission rates, staffing, and medications. Using the data, hospitals can predict admission rates over a period of two to 3 weeks, doing this allows the hospital to better allocate staff based on needs which will ultimately decrease staffing issues and increase patient efficiency. The unit I work currently had an issue before where we were staffed based on the beds but not patients, we normally have few open beds at the beginning of the shift, and we may or may not get admission later in the shift. In our ICUs Nurse to patient ratio is 1:2 and there are times we were staffed in such a way that if there is any admission, multiple nurses are available to take that patient but we are never sure if we get admission or not, sometimes if there is no admission we only have one patient entire shift and I think that is costly to the organization, on the other hand, there are times when we have a critically ill patient that needs to be singled and in that case, if there is an admission, we don’t have any nurse to take the patient.  I think this is one of the times when big data can be beneficial. The hospital using data over a period of a few weeks and staff nurses based on the data will reduce costs and improves nurses' satisfaction. Along with this, big data can analyze patient records that include but are not limited to allergies, past meds prescribed, and dosage amount, after all the records are scanned, data analyzing software will point out any missing information or alert you if there is anything that looks skeptical. On top of this big data assists in informed decisions making about the prevention, diagnosis, and treatment of patients. For centuries, patient treatment was completely based on doctors judgment, nowadays Evidence-based medicine is being more important as a result of systematic analysis of data and decision-making based on the best information available.  (Batko & Ślęzak, 2022)

**Potential challenge of using big data**

Potential challenges can be during downtime or when they are doing any kind of system upgrades. It's not easy to keep the system running during this time. Last week we have downtime for an hour that got extended to 5 hours and at that time our unit got super busy, the patient almost coded, and physicians were not able to go to the patient chart and assess the information, it was frustrating, we were going through the paper documents for the information but of course, we only got very minimal information form the paper documentation. So, I feel like this was the biggest challenge of using big data that can affect patient care. Along with this, there might be unplanned power outages due to extreme weather that can affect big data warehouses.

**Strategy**

Every hospital should have a read-only mode where healthcare providers can see everything about the patient during downtime, they cannot document but they have access to the read-only mode where they can see everything. The read-only mode can be beneficial, and also if downtimes are conducted during holidays or when there is a low census, this can be a great help to the healthcare workers. Backup generators can be a great way to manage unplanned power outages in big data warehouses.

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RESPONSE1:

Hello Martha

Nicely done, I would like to add one potential benefit of using big data and that is it helps in better decision-making. One prime example is tracking the asthma patient using GPS-enabled inhalers. Because of big data, physicians can now track if the patient is taking his or her medication via GPS-enabled inhalers. This information usually helps physicians in making better and more personalized treatment plans for an individual patient that can prevent further injury or illness.

You also brought up an interesting potential challenge that can come up with using big data. In today's data-driven world, Big data is very much essential for any organization including health care to prosper. Because big data contains huge and complex data sets, standard privacy mechanisms or traditional privacy processes cannot keep up with the scale and cannot handle the scale and velocity required and there is always a risk on the rise as the technology is emerging every day. (PricewaterhouseCoopers) In order to protect the data, there should be a framework of data protection that can accommodate the volume and velocity of big data while it is being transferred, analyzed, or shared. (Antonenko)

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RESPONSE2:

Hi Regina

Health care organizations can provide quality real-time care today and this is all possible because of bigdata. In order to provide high-quality care there is constant monitoring of patient vital signs, medications if the symptoms are improved or not, and more, and this constant monitoring is achieved more efficiently via Big data. The advantage of real-time care is that it can provide a trail of clinical data that was recorded during the time of professional assessment which is then automatically stored and can be used to track things. (Branch, 2022)

In case of non-emergency or nonurgent situations, providers can review the analysis and transfer it to the right department. Patients can also receive the right care or evaluation via phone or computers without going to the hospital which saves time and money. For instance, I have to have my appointment with my provider every 6 months and it’s something that they either increase or decrease the dose of my medication based on blood results and I usually do my blood work 1 to 2 days prior to my virtual appointment. The lab must send the report to my provider, I and my provider's office will set up a virtual appointment via email. During this process, there is a high chance of privacy breaches. I might get an email that was not sent by my doctor's office but by some unknown source who is may be trying to get my information, Internet pirates are stealing our personal information and that is called phising, they are thieves in the digital world, we have to be very careful before opening any suspected emails because we are even a target of future spam if spammers get any indication that the email was opened and so, in this case, I would say Using a strong and unique password and turning on two-way authentication can be a strategy to mitigate the challenge and If we find anything suspicious, we should never click on the link provided in an email we believe is fraudulent, we can call the person or organization sending the email to make sure its them not someone else.

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