A.

Health Information Technologies (HIT) have transformed the quality of health care. Adaptation and implementation of EHRs hallmark a new era of health care. These EHRs are useful in many facets of healthcare, including supporting clinical workflows, CDSS, enhancing patient safety, and resolving the challenges of data maintenance. All of these are possible with the apt usage of these technologies in various fields of healthcare. Data entry has become seamless and the contributing features to this are auto-population and split screening options available with EHRs (Khan et al., 2017). With the advancements in patient portals, it has become possible to monitor the records of patients and aid in these data entry tasks. This has further contributed to improved health education. Good usability of these functional EHRS had resulted in ease of communication between physicians with regard to interoperability and prevention of medical errors through constant alerts (Rizvi et al., 2017).

B.

Health Information Technologies find immense application in various fields of health. Poor usability of these advancements can impede their successful implementation. The initial setup and maintenance of EHRS are quite expensive and their improper usage can lead to suboptimal usage and de-installation of the equipment (Staggers et al., 2013). The second major challenge of poor usability is compromised patient safety. When used effectively, EHRs aid in CDSS and prevent medical errors. All these features contribute to improved health outcomes. Another challenge associated is a disruption in the workflow and care coordination. This can lead to user frustration and productivity loss (Rizvi et al., 2017). All these factors ultimately lead to poor health care delivery.

C. Explain how usability can promote patient safety

EHRs contain vast information to improve patient safety. This information plays a vital role in Evidence-Based Practice (EBP) and contributes significantly to CDSS. CDSS also supports interoperability and enhances treatment outcomes. Proper implementation of HITs can lead to improved diagnosis and communication. EHR implementation on a larger scale can combat medical and medication errors to a great extent. Modern EHRs have software technologies to detect drug interactions and thus aid in the prescription of medication. Alarming systems and patient monitoring devices contribute further to improved quality of care and patient safety. Patient Experience Design (PXD) holds importance as the current usability methods had experienced failure in Patient Education Materials (PEM) (Meloncon, 2017). So, improving the PXD and their usability can solve the problems of communication and information design and result in better engagement of patients in health care. It is also mandatory and ethical to use certified Health Information Technology to improve patient safety (The Office of the National Coordinator for Health Information Technology, 2022). The above-discussed factors ultimately account for improvements in patient safety.

D.

I.

Electronic Health Records have transformed the administrative process and clinical workflows. These incorporate various software technologies to store and maintain clinical data. Traditional data entry is quite a laborious task and had scope for manual errors. But with the advent of these advancements, it is possible to have data entered by patients or clinicians. It is also possible to edit, add and delete any information stored in these systems. Data retrieval and communication across the connected systems improved the quality of care and reduced the time to deliver the treatment. Using action research (AR) to design a patient administration system proved to improve the task of data entries in real time (Adaba & Kebebew, 2018). Also, the usability of EHRs on a regular basis compensates for data loss which is a common drawback of traditional approaches. Physicians greatly benefit when implemented on large scale basis as the data stored can facilitate interoperability leading to improvement in the quality of care delivered. Various options available within these systems for the patient like appointment scheduling, medical history, and lab reports can lead to improved patient participation. Prescription errors can be reduced to a great extent in the clinical workflows with the EHR usability approach (Patel et al., 2021, p. 167).

II.

Usability methods are often derived from cognitive science. These include the evaluation of infusion pumps, patient management devices, physician entry orders, and information retrieval systems (Patel et al., 2021, p. 157). Development of patient portals and incorporating of software features like graphic user interface designs aid in seamless entry and retrieval of data (Rizvi et al., 2017). Some of the EHRs incorporate complex designs hampering their usage by clinicians. Screen splitting is one of the effective ways to improve user interaction with EHRs. To improve the quality of care and patient outcomes, CDSS must be integrated to support clinicians with workflows. The incorporation of Evidence-Based Medicine (EBM) into EHRs can contribute to patient safety. The latest software contains models to predict future complications based on current patient data which can contribute to cognitive support for clinicians. Medication errors can be reduced to the maximum extent possible as modern EHRs contain data related to drug interactions.

4.

Health Level Seven (HL7) is the standard implemented to facilitate the exchange of information across medical information systems. It contributes significantly to interoperability in health care. HL7 includes various terminologies and standards within it. Uniform code is provided across all the connected systems to look up the necessary information. HL7 facilitates access to information from multiple EHRs at the same time contributing to improved diagnosis and treatment outcomes for the patient. One such resource used is FHIR under HL7. This integrates the data from various sources like laboratory results, clinical diagnosis, and genomic information (The Office of the National Coordinator for Health Information Technology, 2022). Other like ICD-10 aid in the process of diagnosis (The Office of the National Coordinator for Health Information Technology, 2022). SNOMED-CT codes are widely used to share data across connected systems (The Office of the National Coordinator for Health Information Technology, 2022). RX-NORM is the standard used exclusively for medications (The Office of the National Coordinator for Health Information Technology, 2022). They contain information about various aspects like the mechanism of action, possible drug interactions, and dosage (The Office of the National Coordinator for Health Information Technology, 2022). Furthermore, HL7 supports automated clinical decision support and model-based processing. All this structured data can be accessed across multiple systems at the same time contributing to the benefits of interoperability and ultimately to patient safety.

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Hello Vaishali,

I am impressed by the way you answered all the questions. I see that you outlined all the administrative benefits of using EHRs to describe the impact of good usability on health/healthcare. Can you think of any clinical advantages of using EHRs?

Apart from managing the clinical workflows, EHRs play a key role in early diagnosis and serve as a base for CDSS (Middlenton et al., 2013). The system's data points can be used to draw conclusions and forecast the patient's potential future illnesses. All these ultimately contribute to improved patient safety and treatment outcomes.

Reference:

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Cartoon video response:

Without a doubt, HL7 facilitates interoperability in healthcare. According to the given sources in readings, there isn’t sufficient evidence to support that HL7 promotes patient safety except for hyperlink of PHIN messaging guide for syndromic surveillance. I found various standards to facilitate transfer of data across various systems that can either result in improved outcomes or can be subjected to data breaches. However there is no specific documentation supporting the patient safety with HL7.

Proveen:

Implementing HL7 definitely encourages patient safety since it makes interoperability easier. However, I discovered that there isn't much evidence to back up this claim in the sources that were provided. Additionally, it took me a long time to identify the proper standards accountable for patient safety.