

Informatics in Nursing and Healthcare

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**Introduction:**

In today’s complex health care system health information technology has played an important role in improving health care, but also hasintroduced challenges and consequences, therefore safety of health Information technology and its use in clinical environment has emerged as a key challenge. There have been multiple attempts from the scientific community to better understand the complicated interactions between people, environment, and technologies as they attempt to safely initiate, develop, implement, and maintain the technology. The purpose of this paper is propose strategies for the hospital to overcome the challenges associated with health information technologies.

**Vocabulary standards**

Observational data such as symptoms, diagnosis, vital signs, prescriptions, and many more that are created from patient encounter creates part of clinical database. Data collected is turned into information only when correct terminology standard is used by the system. Theses terminology standards or the language within the computer system used helps in communication among health systems, saving time and reporting tests during the patient journey.

Medical field is huge and complex making it nearly impossible to just come with one standard list of terminologies that can satisfy needs of every individual. Challenges associated with vocabulary standards is the amount of effort placed in finding the correct diagnosis from a long list of standardized terminologies that takes a lot of time away from direct patient care to both nurses and providers.

Hospital can use Standardized nursing data as an strategy to overcome this challenge as this can provide decision support, discover disparities, report outcomes and improved performance. Along with this A comprehensive multilingual clinical health care terminology called SNOMED CT can be implemented in the hospital. SNOMED CT is coding scheme that assist in identifying terms and enables concept to be related to each other when integrated into health information technology dispensing a multidisciplinary approach that represent clinical content consistently in EHRs and It solutions. High quality clinical content and a standardized route to record and document clinical data enabling meaning-based retrieval and exchange. This provides a standardized way of representing clinical information captured by clinicians.(Chang & Mostafa, 2021)

**Interoperability**

Challenges associated with Interoperability can be inadequate knowledge, data inconsistency, compatibility issue, high data volume, duplicate clinical records, and human errors. An average clinic holds **up to 12% of duplicated medical records, 14% of records are incorrect patient data.** (Telychko, 2023)

Clinical data can be exchanged electronically by 88% of hospitals because the rest 12 % are able to share information only at a basic level or unable to exchange information at all due t the challenges they are unable to overcome. (Telychko, 2023).

To overcome this challenge hospital can provide additional training to their staff so that they can implement new software in clinical settings. cloud-based systems implementations authorize healthcare providers to store patient data efficiently and securely. Stored data in a cloud can be easily retrieved by different software adjusting Storage space and computing power of cloud-based servers to spend resources wisely. Developing rules on medical data composition and following them when new records are created can be a strategy for inconsistent data challenge. Testing all the software in organization to make sure that messages are composed and shared error-free for detection of possible data interoperability issues in healthcare in the early stages can be another strategy to overcome the challenge associated with interoperability. (Telychko, 2023)

**Workarounds**

Workarounds in Electronic health might be harmless, but they can also make difference between life and death. For instance, placing the copies of ID band everywhere so that it is easier for Nurses to scan, dispensing the medication from pyxis without checking if it is verified by pharmacy or not, administering medication without checking the MAR if it is verified or not. Sometimes this can be harmless, but it can also be life threatening also especially if the patient is allergic to that medication, if that medication interacts with the other medication, he/she have already taken, this can be life-threatening. Sometimes Nurse separates the scanner from COW (Computer on wheels) leaving the COW at the door and scan the medication and administer the medication because they don’t want to disturb the patient at night with the noise of COW moving in the room. Nurses are supposed to bring the COW in the room and check the screen after scanning the medication because sometimes there are POP-ops saying that patient is allergic to this medication, it is too early to administer this medication and many more.

Strategy to overcome this challenge is to be more aware of the possible negative consequences of certain workarounds and Health care organizations should invest in resolving the reason for the harmful workarounds. Continuous education and training need to be provided regarding patent safety and workarounds. (Boonstra et al., 2021)

**Patient safety**

Health care providers are likely to make errors such as inappropriate dosing, forgetting to order yearly exams, failure to order treatments that are evidence based. The strategy to overcome this challenge is via implementation of clinical decision support system in the organization as it will alert and remind clinicians if anything is missed.

Another safety risk can be inaccurate patient matching within and across organizations, communities EHRs, and nations. Therefore, methods for accurately linking patients across organizations needs to be implemented. Failure to recognize the same patient’s data in two different locations is potentially as important as incorrectly matching two different patients’ data. (Sittig et al., 2020)

**Security/privacy**

. Security and privacy are a key component that needs to be taken into consideration while exchanging electronic health. Personal data security is constantly increasing, mainly in health, and can be seriously threatened by hackers and viruses. In today's digital world, there is a high number of cyberattacks, and nurses spend a lot of time in EHR and they could click on a link that could affect their whole healthcare system in a blink of eye leading to the leakage of patient information, and identification theft for different purpose.Strategies such as Involving health care providers in crafting policy and receiving training that fosters connections between nursing staff and IT leaders.Implementation of blockchain technology to ensure privacy and security of EMR can be another strategy to overcome this challenge. (Kiania et al., 2023) Providing education on security to everyone who uses electronic documentation, and this can be enhanced permanently by education, consultation, and function of staff. Development of a new field of nursing informatics that can manage nursing information with the least security damage according to the progress of information technology can be another strategy to overcome this challenge.

**Change Theory in convincing the health care organization**

Everyone in the health care industry plays a significant role in ensuring effective change. Best practices extracted from change theories can help bring change for better outcomes. Lewin’s theory of planned change, a simple and practical model for understating change can assist in convincing hospital administration to implement EHR solutions.

The theory consists of following change stages: Unfreezing (understanding change is needed), Moving (the process of initiating change), Refreezing (establishing a new status quo). (Barrow et al., 2022)

For instance, lets imagine we have a big cube of ice, and we want to change it and based on Lewin’s theory of planned change firstly we unfreeze the ice, once it is melted into water, we then transfer into a mold that looks like the shape that we wanted to achieve and then refreeze into a new shape we that we want to achieve. Unlike this if we want to introduce a new EHR in our organization to overcome the above-mentioned challenges, according to Lewin’s change theory, firstly based on the theory we must unfreeze it, where the organization identify that there is a need for a change to overcome this challenges, communicate with every employee involved and make them understand that need for change. During change stage training on a new EHR that can help overcoming these challenges is provided on how to use the technology and during the last stage the organization will launches the new EHR technology, monitor the effectiveness, and provide continuous ongoing support to make sure it is successful.

**How EHR benefit data analysis for the promotion of improved health outcomes**

EHR benefit data analysis for improved health outcomes by harnessing HER data to unlatch its full possibilities. Analyzing EHR data, healthcare professionals can identify areas where care is lacking and improvements can be made, following this the information can then be used to grow targeted strategies for improved patient outcomes. Doctor and Nurses are able to understand effective treatments by analyzing data from prior residents with similar conditions in long term care facilities to provide effective treatment plans for residents resulting in improved health care. Data analysis can predict the cost of future treatments on past treatments helping long term care facilities budget for care and make informed decisions about the most cost-effective treatments. EHR data can be used to identify high risk for falls patients so that staff can use this information to develop a care plan including fall prevention or other preventative measures. For instance, we have Fall risk assessment embedded in our EHR (Epic) that should be done every shift and based on the score we place the patient on fall precautions. Data in EHR help us identify patterns that might indicate need for a visit to emergency room and that can be sudden change in vita signs in long term care facilities, Nurses can catch these signs early and provide needed care avoiding unnecessary emergency room visits. Data from EHR can be used by administrator to identify areas where more education and training is needed, and they can use this data to improve quality of care by providing adequate education and training to their staff.

**Real-time alerting is possible via** analyzing EHR data, alerts can be set up based on the data to notify health care providers of warning signs and prevent potential complications. (Wanga, 2022)

**Conclusion:**

There is ongoing need of improvement in health information technology safety. Despite improvement in scientific knowledge there is still a lot that need to be done. These challenges when looked together indicates a necessary work to be done before we except a safe and reliable health information technology-based system that is required to care for a patient. These challenges should be a high priority for any organizations that uses the system and the government to help with the fud needed to establish policies.

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