
Identifying Information Errors in Healthcare by Studying Informal Communication

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Abstract

Electronic medical record systems (EMRs) are currently being implemented to help decrease medical errors that can seriously affect patient safety. Although these systems have the potential to help reduce medical errors, they also introduce new errors related to information inaccuracies. Clinical teams make critical patient care decisions based on the information in the EMRs. Therefore, information errors in these systems are a serious issue that must be understood and addressed. This paper argues for the need to study information errors in healthcare by studying the informal communication of the healthcare teams. Informal communication includes any transitional documentation or ad-hoc discussions that occur outside the more formalized EMRs. Studying informal communications can help provide valuable insight into the actual activities that lead to information errors being entered into the EMR systems.

Keywords

Healthcare teams, Electronic medical record, Information errors, Information inaccuracy, Informal communication

ACM Classification Keywords

H.5.3. Group and Organization Interfaces: Collaborative computing, Computer-support cooperative work

Introduction

Medical errors can result in up to 98,000 patient deaths and cost hospitals approximately \$17 million each year [1]. These medical errors present a serious problem that is caused by, “faulty systems, processes, and conditions that lead people to make mistakes or fail to prevent them” [1]. The use of electronic medical records (EMRs) and other health systems are currently being implemented as one way to help reduce these medical errors. In this paper, medical errors include any mistake in administering patient care that may adversely affect the patient.

Researchers are currently studying the design, implementation, and use of EMRs and their effect on medical errors. Many studies recognize that EMRs and other health systems can reduce medical errors by improving legibility of providers’ orders and notes, tracking work processes (e.g., medication orders), improving visibility of patient records, improving communication within healthcare teams, centralizing patient history information, and reminding providers of outstanding tasks and quality improvement suggestions [2,3,4,5]. However, recent studies have also found that these EMRs and other health systems that are specifically used to help reduce medical errors may actually be generating new types of information errors [2,3,4,5]. These information errors include any incorrect or outdated information that could potentially lead to a medical error. Since providers are dependent on the availability of accurate information in order to make well-informed decisions about the diagnosis and treatment of their patients, the information errors within EMRs present a critical issue for patient safety. Therefore, as seen in current research, the implementation of EMR systems could greatly aid in

reducing medical errors. However, it is important that these EMRs do not create new information errors.

This paper describes the current research on information errors in healthcare and presents the importance of studying informal communication to identify how and why these information errors occur.

Information Errors in Healthcare

Many studies seek to quantify information errors in health systems. This includes studies that: classified 22 types of medication errors that occurred in a computerized provider order entry (CPOE) system and quantified the frequency of these errors [4]; identified errors in patient weight entries within EMRs and found that users who made errors in the past were more likely to make errors in the future [6]; and discovered that patient prescription discrepancies frequently occur when the structured field data (e.g., medication, dosage) does not match the instructions in a free-text field [5]. While this type of research provides insight into what kinds of information errors are occurring in health systems, there are only a few studies that examine how and why these information errors occur.

One of the few studies that do this is Ash, Berg, & Coiera’s research of patient care information systems (PCIS) [2]. This study states that information errors resulted from “a mismatch between the functioning of the PCIS and the real-life demands of health care work.” These information errors were found within two critical processes of healthcare: *entering and retrieving information* and *communication and coordination*. The study suggests that the primary issues with health information systems is that they formalize processes, overly structure information entry and retrieval,

emphasize completeness, and turn collaborative, interactive healthcare into a “linear, clear-cut, and predictable workflow” [2]. These system characteristics do not effectively match the highly interactive, interruptive, and unpredictable nature of health care work, which can lead to information errors in health systems. Therefore, this type of qualitative research is important in understanding why these information errors are occurring.

Evidence in our own preliminary studies of EMR use by non-clinicians in an emergency department also shows that information errors frequently occur. This includes a patient purposely giving the wrong telephone number to registrars, registrars incorrectly recalling information provided by a visitor when entering data into the system at a later time, and registrars spelling patients’ names incorrectly leading to search issues [from field notes]. A social worker also stated that inaccurate information was “more dangerous than having no information” when recalling an abuse patient whose boyfriend was listed as the emergency contact and called to come to the hospital; however, the boyfriend was the abuser, so it created “a potentially dangerous situation” for the patient and the hospital [from interview notes]. The social worker also recalled a time when a nurse incorrectly checked a box in the EMR stating that the patient was “forced to have sex against her will.” When the social worker addressed the sensitive topic, the patient became “irate” and “demanded that their record be changed” [from interview notes].

Therefore, because there is limited understanding of how and why these health information errors occur, there is a need for more research that observes and

seeks to understand the actual activities that lead up to the information errors being entered into health systems. Current research suggests that these errors can occur when there is a disconnect between the formal systems and the actual work that is being done [2]. Therefore, it is important to study, not only the formal methods of communication, but also the informal ways in which healthcare teams communicate information to each other and record information within systems.

Using Informal Communication to Study Information Errors

Informal communication in healthcare is considered to be any informal documentation or ad-hoc discussion that carries patient care information until it can be entered into the more formal EMR documentation [7,8]. Recent research that studies how transitional documentation is used by clinicians in a hospital stated that, “documenting the transitional information has led to the gap between the formal EMR documentation and the actual clinical workflow” [8]. This gap further supports the need to study informal communication when trying to identify the temporary documentation and discussions that lead to inaccurate information being entered into EMRs.

Additional research of informal communication shows how studying the actual activities of healthcare teams provide valuable knowledge about important issues. For example, prior research identified how helpful psychosocial patient information that was originally captured on paper documentation was lost in a new CPOE documentation process [9]; revealed the long amount of time between when physicians see patients and when they actually document the patient

information into the system, which can lead to incomplete records for extended periods of time [10]; and described how the time-consuming nature of electronic documentation has led to the "diminished expression of thoughtful assessment in the clinical records" [3].

Conclusion

Based on our understanding of health information errors and the need to better understand how these errors occur, we would like to discuss the following questions with workshop participants:

- How can studying informal communication provide insight into how information errors are created and identified?
- What role does technology play in creating and identifying information errors? How can technology be improved to help decrease information errors?
- What role do informal, collaborative activities play in managing and overcoming information errors?

In conclusion, studying the informal communication of healthcare teams can provide valuable insight into why information errors occur and how they are identified. This insight can help inform procedures and system designs in order to mitigate or eliminate these information errors.

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