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UX Case Study: Tracking EHR automation, scarcity of attention, and transaction hazards

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Objective

To track and visually assess how automated attention structures within the electronic health record (EHR) compete for clinicians attention during computer physician order entry that could potentially lead to transactions hazards in the clinical narrative.

Introduction

In recent years, studies in health and medicine have shifted toward eHealth communication and the relationships among human interaction, computer literacy, and digital text content in medical discourses [1-6]. Clinicians, however, continue to struggle with EHR usability, including how to effectively capture patient data without error [7-9]. Usability is especially problematic for clinicians, who must now acquire new skills in electronic documentation [10]. Challenges with the EHR occur because of clinicians' struggle with attention to the non-linear format of clinical content and automated technologies [11]. It is therefore important to understand how attention structures are visually situated within the EHR's narrative architecture and audience for whom electronic text is written. It is equally important to visualize and track how automated language and design in health information technology (HIT) affect users' attention when documenting clinical narratives [12]. In the study of health information technology, researchers of eHealth platforms need to recognize how the construction of human communication lies within the metaphoric expression, design, and delivery of the EHR's information architecture [13]. Many studies of electronic health records (EHR) examine the design and usability in the development stages. Some studies focus on the economic value of the EHR Medicare incentive program, which affects providers' return on investment (ROI). Few studies, however, identify the communicative value of how attention structures within the EHR's information architecture compete for users' attention during the clinical documentation process [9,14].

Methods

This paper highlights methods from an observed EHR pre-launch testing event that analyzes the visual effects of attention structures within the EHR's information landscape. The observation was completed in two separate stages, each with one IT facilitator and two participant demographics: Stage 1. On-site HIT clinical application staff testing and, Stage 2. Twenty-five participants (RN and non-RN clinical staff). During the second stage of the event, one participant's task performance was screencast-recorded. The length of the testing for the one participant totaled 37 minutes. Because the EHR domain is propelled by both the Internet and Intranet, a contextual-rhetorical analysis of the data collected was performed which incorporated Nielsen's 10 Usability Heuristics for Interaction Design [15,16] and Stuart Blythe's methodological approach to analyzing digital writing and technology to defining rhetorical units of analysis in digital Web research [17].

Result

The UX observation and contextual-rhetorical analysis of EHR design supports a 4-year qualitative study consisting of hospital interviews at two acute-care facilities and an online, national survey of revenue integrity and clinical documentation improvement specialists. The testing event served as an opportunity to observe how a healthcare organization user-experience tests the functionality of the EHR's design build before launching it live. The testing event also provides an understanding of clinicians' organizational needs and challenges during the clinical documentation process. The contextual-rhetorical analysis identified how the structure of narrative in the EHR represents rhetorical units of value that might influence how clinicians make decisions about narrative construction.

Conclusions

This UX case study analysis of an EHR testing event identifies how scarcity of attention and clinicians' reliance on technology affect clinical documentation best practices leading to potential transaction hazards in the clinical narrative.The study is relevant in eHealth data surveillance because it shows how visual cues within the design of the EHR's technological landscape affect clinicians' decision-making processes while documenting the EHR-generated clinical narrative

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