



The EHR and *building the patient's story*: A qualitative investigation of how EHR use obstructs a vital clinical activity



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ABSTRACT

Background: Recent research has suggested that using electronic health records (EHRs) can negatively impact clinical reasoning (CR) and interprofessional collaborative practices (ICPs). Understanding the benefits and obstacles that EHR use introduces into clinical activities is essential for improving medical documentation, while also supporting CR and ICP.

Methods: This qualitative study was a longitudinal pre/post investigation of the impact of EHR implementation on CR and ICP at a large pediatric hospital. We collected data via observations, interviews, document analysis, and think-aloud/-after sessions. Using constructivist Grounded Theory's iterative cycles of data collection and analysis, we identified and explored an emerging theme that clinicians described as central to their CR and ICP activities: *building the patient's story*. We studied how *building the patient's story* was impacted by the introduction and implementation of an EHR.

Results: Clinicians described *the patient's story* as a cognitive awareness and overview understanding of the patient's (1) current status, (2) relevant history, (3) data patterns that emerged during care, and (4) the future-oriented care plan. Constructed by consolidating and interpreting a wide array of patient data, *building the patient's story* was described as a vitally important skill that was required to provide patient-centered care, within an interprofessional team, that safeguards patient safety and clinicians' professional credibility. Our data revealed that EHR use obstructed clinicians' ability to *build the patient's story* by fragmenting data interconnections. Further, the EHR limited the number and size of free-text spaces available for narrative notes. This constraint inhibited clinicians' ability to read the *why* and *how* interpretations of clinical activities from other team members. This resulted in the loss of shared interprofessional understanding of *the patient's story*, and the increased time required to *build the patient's story*.

Conclusions: We discuss these findings in relation to research on the role of narratives for enabling CR and ICP. We conclude that EHRs have yet to truly fulfill their promise to support clinicians in their patient care activities, including the essential work of *building the patient's story*.

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1. Introduction

As patient caseloads continue to grow, healthcare providers increasingly depend on patient charts to collect and distribute patient information with team members. In so doing, clinicians rely on patient chart-based information to support clinical reasoning and decision-making. As health centers adopt electronic health

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records (EHRs), the healthcare community must attend to the growing body of research showing that EHRs impact care delivery by effecting clinical reasoning skills [28,34] and interprofessional collaborative practice (ICP) [32,33]. Being reliant on EHRs means that clinicians' care decisions are increasingly influenced, for good or for ill, by the EHRs they use.

EHRs have been shown to provide tangible benefits to patient care including ease of access to patient records, mitigation of some medical errors, and the ability to provide continuity of care [19,12,31]. While such research underscores the benefits of accessing and sharing patient information via EHRs, the move from paper to electronic patient charts has created problems because the move changed workflows and communication routines [29]. A recent literature review noted that, while an EHR makes more information available to clinicians, it is more difficult to get useful information out of an EHR [9]. Problematically, few studies have examined the impact of implementing and adopting an EHR on the documentation practices and clinical reasoning activities of healthcare providers who work as part of interprofessional teams in complex care delivery settings [9].

Our interdisciplinary research team conducted a longitudinal (29 month), pre/post study investigating the impact of implementing an EHR on the documentation and care practices of individual clinicians and those of clinician teams working in a large, pediatric teaching hospital. Across the study, one theme emerged as being absolutely central to healthcare professionals' clinical practices. Our participants described the vital importance of a skill they labeled *building the patient's story*. Using Grounded Theory's iterative cycles of data collection and analysis, we investigated the complexity and boundaries of this theme, and the ways *building the patient's story* changed with the introduction of an EHR in the clinical setting.

In this paper, we describe our exploration of the *building the patient's story* theme and its relationship to the implementation of an EHR by answering six interrelated questions. These questions were sequentially developed and answered during analysis over the course of the study to define and progress our understanding of this clinical skill:

1. What is *the patient's story*?
2. How is *the patient's story* built?
3. Why is *building the patient's story* a vitally important clinical skill?
4. What happens when the *patient's story* is housed in the EHR?
5. What happens to the *building the patient's story* activity when the EHR restricts the space available for narrative notes?
6. What is the impact of splintering narratives and of emphasizing objective data points on a clinician's *building the patient's story* skill?

2. Methods

We conducted the study using a constructivist Grounded Theory methodology [8]. Ethics approval was obtained from the hospital's and affiliated university's Research Ethics Boards. Other study findings, distinct from those reported in this publication, have been published elsewhere [34]. The following description of Methods thus echoes those detailed in this other publication.

2.1. Study design and sample

We conducted this investigation at a 167-bed Canadian, pediatric tertiary care teaching hospital from June 2009 to December 2011. The hospital, following a medical record review, was preparing to launch an EHR implementation with the goal of having a

single chart for each patient. We collected and analyzed data when clinicians used a paper patient chart (Phase 1: 11 months) and when the EHR was launched (June 2010) and adopted by these same teams (Phase 2: 18 months). Using a previously tested approach [23], we followed individual patients (22 in total: 10 in phase 1; 12 in phase 2) from the pediatric intensive care unit (PICU), through hospital discharge via transfer to an inpatient unit. We collected all patient-related communications used by clinicians to respond to patient needs. These included formal and informal communications, using paper-, oral- and electronic-media. We purposefully recruited patients requiring collaboration from at least three healthcare professions over extended periods of time to maximize the range of communications employed. We did not sample patients for disease category, nor for any other patient population criteria.

There were 354 participants involved in this study: 22 patients, 32 parents, 40 staff physicians, 66 residents, 11 medical students, 121 nurses, and 62 allied health professionals (AHPs). Patients and their parents participated in single phases of the study and so were not tracked across EHR implementation. In contrast, some care providers participated in both phases: 14 staff physicians (35%), 12 residents (18.2%), 23 nurses (19%), and 11 AHPs (17.7%).

2.2. Data collection

We used four different data collection techniques, conducted concurrently and integrated with analysis. Our study's research assistant (RA), trained in qualitative research techniques, conducted non-participant field observations [5] (146 h) of all collaborations of, and communications within, the interprofessional teams. She also conducted 39 individual semi-structured interviews [7] with patients/family members and with clinicians. Using purposive sampling [25], we ensured a broad representation of professions and levels of experience in these interviews. Further, she collected 392 paper- and electronic-documents that were formally and informally used to support care delivery. Finally, she conducted 13 think-aloud [10,11] and 11 think-after [6] sessions of clinicians' EHR use to capture the challenges and successes to clinicians' cognitive and affective processes when engaged with the EHR for the purposes of *building a patient's story*.

2.3. Data analysis

We analyzed the data employing an iterative, constant comparison approach [8]. All authors participated in three coding cycles: open, axial, and theoretical [8]. During open coding, we created descriptive codes, clustered by similarity into categories that represented concepts common across the data set. We explored patterns and interconnections between categories during axial coding. We reviewed a range of literatures (both theoretical- and research topic-oriented) to inform our understanding of emerging themes. During axial coding, we generated additional analysis questions. We collected additional data to vet these emerging questions until no new insights were generated. During theoretical coding, we finalized the interconnections between the coding levels and the literature reviewed. Across all three coding phases, we developed and iteratively refined the theme of *building the patient's story* presented in this paper. The final coding structure was applied to the entire data set using NVivo™. An audit trail of all study processes was maintained using the Study CV [35] format. In January 2012, we presented a summary of study findings with approximately 35 hospital employees (including staff physicians, nurses, AHPs, and members of the hospital's leadership) in an interactive workshop as a member checking activity. These strategies supported methodological trustworthiness [21].

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