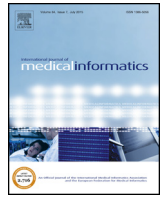




Contents lists available at ScienceDirect

International Journal of Medical Informatics

journal homepage: www.ijmijournal.com

Mapping communication spaces: The development and use of a tool for analyzing the impact of EHRs on interprofessional collaborative practice



Judy Rashotte^{a,b,*}, Lara Varpio^{c,d}, Kathy Day^e, Craig Kuziemsky^f, Avi Parush^g, Pat Elliott-Miller^h, James W. King^{i,j}, Tyson Roffey^k

^a Nursing Research, Children's Hospital of Eastern Ontario, 401 Smyth Road, Ottawa, Ontario, Canada

^b School of Nursing, Faculty of Health Sciences, University of Ottawa, 451 Smyth Road, Ottawa, Ontario, Canada

^c Academy of Innovation in Medical Education, Faculty of Medicine, University of Ottawa, 451 Smyth Road, Ottawa, Ontario, Canada

^d Department of Medicine, Uniformed Services for the Health Sciences, 4301 Jones Bridge Road, Bethesda, MD, USA

^e Academy of Innovation in Medical Education, Faculty of Medicine, University of Ottawa, 451 Smyth Road, Ottawa, Ontario, Canada

^f Telfer School of Management, University of Ottawa, 55 Laurier Avenue East, Ottawa, Ontario, Canada

^g Department of Psychology, Carleton University, Loeb B550, 1125 Colonel By Drive, Ottawa, Ontario, Canada

^h Nursing & Patient Services, Children's Hospital of Eastern Ontario, 401 Smyth Road, Ottawa, Ontario, Canada

ⁱ Department of Pediatrics, Children's Hospital of Eastern Ontario, 401 Smyth Road, Ottawa, Ontario, Canada

^j Faculty of Medicine, University of Ottawa, 451 Smyth Road, Ottawa, Ontario, Canada

^k Information Technology Services, Children's Hospital of Eastern Ontario, 401 Smyth Road, Ottawa, Ontario, Canada

ARTICLE INFO

Article history:

Received 3 March 2016

Received in revised form 18 May 2016

Accepted 19 May 2016

Keywords:

Communication spaces

Electronic health record

Grounded theory

Interprofessional collaboration practice

Mapping tool

ABSTRACT

Introduction: Members of the healthcare team must access and share patient information to coordinate interprofessional collaborative practice (ICP). Although some evidence suggests that electronic health records (EHRs) contribute to in-team communication breakdowns, EHRs are still widely hailed as tools that support ICP. If EHRs are expected to promote ICP, researchers must be able to longitudinally study the impact of EHRs on ICP across communication types, users, and physical locations.

Objective: This paper presents a data collection and analysis tool, named the Map of the Clinical Interprofessional Communication Spaces (MCICS), which supports examining how EHRs impact ICP over time, and across communication types, users, and physical locations.

Methods: The tool's development evolved during a large prospective longitudinal study conducted at a Canadian pediatric academic tertiary-care hospital. This two-phased study [i.e., pre-implementation (phase 1) and post implementation (phase 2)] of an EHR employed a constructivist grounded theory approach and triangulated data collection strategies (i.e., non-participant observations, interviews, think-alouds, and document analysis). The MCICS was created through a five-step process: (i) preliminary structural development based on the use of the paper-based chart (phase 1); (ii) confirmatory review and modification process (phase 1); (iii) ongoing data collection and analysis facilitated by the map (phase 1); (iv) data collection and modification of map based on impact of EHR (phase 2); and (v) confirmatory review and modification process (phase 2).

Results: Creating and using the MCICS enabled our research team to locate, observe, and analyze the impact of the EHR on ICP, (a) across oral, electronic, and paper communications, (b) through a patient's passage across different units in the hospital, (c) across the duration of the patient's stay in hospital, and (d) across multiple healthcare providers. By using the MCICS, we captured a comprehensive, detailed picture of the clinical milieu in which the EHR was implemented, and of the intended and unintended consequences of the EHR's deployment. The map supported our observations and analysis of ICP communication spaces, and of the role of the patient chart in these spaces.

Conclusions: If EHRs are expected to help resolve ICP challenges, it is important that researchers be able to longitudinally assess the impact of EHRs on ICP across multiple modes of communication, users, and physical locations. Mapping the clinical communication spaces can help EHR designers, clinicians, educators and researchers understand these spaces, appreciate their complexity, and navigate their way

* Corresponding author at: Nursing Research, Children's Hospital of Eastern Ontario, 401 Smyth Road, Ottawa, Ontario, K1H 8L1, Canada.

E-mail addresses: rashotte@cheo.on.ca (J. Rashotte), lara.varpio@usuhs.edu (L. Varpio), kathy.day@uottawa.ca (K. Day), kuziemsky@telfer.uottawa.ca (C. Kuziemsky), Avi.Parush@carleton.ca (A. Parush), pelliottmiller@cna-aiic.ca (P. Elliott-Miller), king@cheo.on.ca (J.W. King), tyson.roffey@hds.com (T. Roffey).

towards effective use of EHRs as means for supporting ICP. We propose that the MCICS can be used “as is” in other academic tertiary-care pediatric hospitals, and can be tailored for use in other healthcare institutions.

© 2016 Elsevier Ireland Ltd. All rights reserved.

1. Introduction

Interprofessional collaborative practice (ICP) and electronic health records (EHRs) are lauded for bringing considerable benefits to clinical practices. ICP is praised for its positive impact on health workforce resources [44], improving cohesion among members of the team, and for reducing burnout [15,38]. ICP also benefits patients by reducing adverse events [21], decreasing hospital lengths of stay [53], improving pain management [39], and improving end-of-life care management [36]. EHRs are extolled for increasing healthcare centre productivity [10], by maximizing provider time [35], improving care coordination [40], and reducing healthcare costs [7]. There is also evidence suggesting EHRs improve quality of care, including mitigation of medical errors [24,31], adherence to and effectiveness of practice guidelines [7], and better health outcomes, including mortality, morbidity, adverse events and length of stay [14,45].

And yet, when ICP is conducted through an EHR in clinical contexts, often something goes wrong. Recent research contends that healthcare providers working in interprofessional teams often find EHRs troublesome. Researchers have demonstrated that EHR standards and frameworks effectively support individual, rather than team-based, healthcare delivery [1,13]. Clinicians report having to develop workarounds to share information interprofessionally [12,19]. They recount how EHRs contribute to information overload and other workload problems, including requiring excessive time to navigate functionalities and architectures, and increased amounts of documentation [5,11,25]. There is a growing body of evidence suggesting that EHRs problematize clinical practice and may fail to provide a satisfactory overview of the patient [42,48]. Furthermore, evidence indicates that EHRs result in communication breakdowns between practitioners—such as lack of information and content clarity, or missing information—resulting in errors and patient care delivery delays [5,43]. Certainly, EHRs are having a significant and often unexpected impact on ICP [35,49].

Smith and Koppel [41] advocate proactively identifying unintended consequences. A major obstacle impeding this goal is the problem of scope: healthcare teams communicate (1) synchronously and asynchronously, (2) through paper-based notations, oral conversations and electronic documents, (3) in formal, informal, and hybrid contexts, and (4) across multiple clinical areas. To address this problem of scope, analysis must consider how these sociomaterial practices are bound together [3]. Conceptualizing the ways in which EHRs impact ICP requires us to consider how “artefacts, locations, and movements” ([3], p. 7) are bound in various ways across clinical areas and across the patient’s care trajectory. To design EHRs that facilitate ICP, we need to better understand how ICP problems are bound in the use of an EHR. As research has suggested, without sufficient attention to how technological artifacts impact healthcare teams and settings, many EHR system fail [23].

When an electronic documentation system was implemented in our institution, we set out to develop a tool for proactively mapping how EHR use impacted ICP, both positively and negatively, across sociomaterial practices. Two overarching research questions shaped this mapping activity:

1. How do individual clinicians and teams of clinicians acquire and engage with patient information?
2. How does the implementation of an EHR impact communication across the entire healthcare team,
 - a) over extended periods of time,
 - b) in synchronous and asynchronous situations,
 - c) through multiple communication modalities [i.e., paper-, oral- and electronic-communications],
 - d) across all levels of formality [e.g., from casual conversation and post-its, to the formal, legal patient chart], and
 - e) distributed across the hospital’s clinical areas?

To conduct this mapping, we needed a means for identifying the specific forms of communication, physical locations, and communication moments when ICP was impacted by the EHR. In this paper, we present a map—named the Mapping Clinical Interprofessional Communication Spaces (MCICS)—that we created to facilitate the examination of how the EHR impacted ICP. We begin this paper with a description of the study’s overarching research method to enable the reader to fully contextualize the development and use of the map, and to demonstrate its commensurability with the study design. Next, we describe the 5 step process we used for designing the map and implementing it in our research. We then provide an illustration of how the map was used to identify and investigate one instance in which the EHR impacted on ICP in our setting. Finally, we discuss the potential for applying the MCICS in other contexts, including the strengths and challenges associated with its development and use.

2. Method

We employed a constructivist grounded theory approach [9] in this prospective, two phase, longitudinal study. In phase 1, we explored how ICP was enacted through a paper-based documentation system during the 11-months prior to the implementation of the electronic system. Phase 2 of the study began on the electronic documentation system’s go-live date and ended 18 months later. The hospital’s and its affiliated university’s research ethics boards approved the study.

2.1. Setting and participants

This study was conducted at a 167-bedded, Canadian, tertiary-care, paediatric teaching hospital. The implementation of the EHR (Sunrise Clinical Manager Version 5.0; AllScripts Healthcare Solutions, Inc., Chicago, IL) consisted of results review and nurses’ and allied health professionals’ (AHPs) documentation on inpatient units. Physician documentation, order entry, and documentation of medication administration remained paper-based.

In support of a patient-centered model of collaborative practice [28], we collected data by tracking individual patients through the hospital. We followed the intra- and inter-professional care delivered to each recruited patient, starting within the pediatric intensive care unit (ICU), through placement on one of two participating general medical units, and through to their discharge from the hospital. We intentionally selected the ICU as the point of entry into the study because (1) patients were complex, defined in this

Download English Version:

<https://daneshyari.com/en/article/516051>

Download Persian Version:

<https://daneshyari.com/article/516051>

[Daneshyari.com](https://daneshyari.com)