



Is health information technology improving interprofessional care team communications? An ethnographic study in critical care



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1. Introduction

1.1. Background

The 2009 Affordable Care Act (ACA) encouraged the ‘meaningful use’ of Health Information Technology (HIT)¹ to achieve improvements in healthcare.^{2–6} Specifically, the Office of the National Coordinator for Health Information Technology notes: “the main goals of HIT adoption are to achieve improved health and health-care quality, safety, and communication among all members of the care team”.⁷ Computers in clinical spaces are thus intended to usher in a new and improved era of care team communication and interaction. Regardless of any changes to, or even the repeal of the ACA, HIT systems have become a pervasive presence in US healthcare, and are unlikely to be removed.⁸ Indeed, their presence in clinical settings at the behest of the federal government is the result of bi-partisan agreement over the course of more than a decade that electronic health records and the infrastructure to

support them are central to modernizing the US system.⁹

This paper uses ethnographic methods to examine the front line communication experiences¹⁰ of care teams in two Intensive Care Units (ICUs) with high levels of HIT adoption. Ethnography is the systematic observation of people living and making sense of their lives in a specific cultural or organizational setting. Using ethnographic data, our paper illustrates how the new, policy-driven computer work on these units is being integrated into the value systems, social relationships, and communication patterns of these interprofessional teams. In this way it provides a view of how a policy is translated into action on the front lines of care,¹¹ and how HIT influences the on-the-ground realities of interprofessionalism in a clinical context.

Our observations and analysis of ICU nurses and physicians working with HIT are grounded in the idea that communications and interactions between clinicians “do not happen in a historical, social or technological vacuum.”¹² As such, we approach HIT as part of a ‘sociotechnical ensemble,’¹³ viewing technical infrastructures and the clinicians who work with them as two sides of a single coin.^{14,15} HIT is on the one hand a suite of hardware, software, and networks. On the other, it is a site of social interaction where ICU professionals negotiate their communications and relationships with one another.

2. The study

2.1. Aims

This paper focuses on understanding how ICU physicians and nurses experience and distribute HIT work. These experiences allow us to see how HIT is being incorporated into the professional worldviews and value systems of ICU clinicians.^{16–18} The paper describes new workloads intersecting with historical interprofessional relationships, and suggests that HIT work, as experienced and distributed by ICU care teams, may not reflect policy makers’ intentions to improve communications.

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2.2. Design

The data we report here are a subset of a broader ethnographic study of interprofessional collaboration on four ICUs.¹⁹ The two locations discussed in this paper implemented the broadest range of HIT of the full sample, and are thus closer to using HIT as envisioned by policymakers. We observed HIT use and care team relationships on each unit simultaneously, giving the ICUs pseudonyms – Lakeside and Mid Valley – to protect their anonymity. The units deployed high-intensity ICU physician staffing, in which dedicated critical care specialists managed or co-managed patients.²⁰ To improve comparability, we purposively recruited units that also matched on medical specialty and bed count.

Our observations began with both authors acting as non-participant observers. These initial impressions were clarified first with informal and then formal interviews with staff. Informal interviews were conducted in natural breaks and pauses in the ICU workflow and sought to clarify the social meanings and motivations that informed clinicians' uses of HIT. Semi-structured formal interviews were recruited opportunistically, and digitally recorded and transcribed for analysis.

2.3. Participants

Over the course of the ethnography 287 unique ICU clinical care team members were identified in our fieldnotes at the Lakeside and Mid Valley sites. Lakeside and Mid Valley had extensive HIT systems in place. Lakeside's 12 patient beds were supplemented with 29 fixed computer workstations and 5 mobile workstations. Of these 11 were dedicated to the use of nurses, 10 to the use of doctors, and 13 were administrative, or at the bedside. Mid Valley's 12 beds were supplemented with 32 fixed, and 6 mobile workstations. Of these 12 were dedicated to the use of nurses, 11 to the use of doctors, and 15 were administrative, or at the bedside. Both ICUs ran a broad range of HIT applications on this hardware, using distinct software applications to enter and manage: nursing notes, medical notes, medication prescribing and dispensing, diagnostic results, and intra-hospital communications.

2.4. Data collection

We kept detailed field notes, recording observations and conversations within minutes of their occurrence, and then writing these up in more detail for future analysis. From December 2012 to December 2013, 369 h of observations were carried out on the two units.

2.5. Ethical considerations

Institutional review boards at both of the hospitals approved the study protocol for this research. Following best practices in the conduct of healthcare ethnography,²¹ all interviews included checks on emerging interpretations of how HIT work was experienced and distributed. In this way the social meanings of HIT work in the ICU presented here emerged from conversations among researchers and with research participants, who had the opportunity to refute or refine emerging interpretations.

2.6. Data analysis

We carried out data analysis using the constant comparative method,^{22,23} with initial themes identified, re-visited, expanded, collapsed and compared across units. Topic identification and coding were facilitated by NVIVO10 software.

2.7. Rigour

Both authors performed the coding, verifying one another's work and iterating the analysis in collaboration with the study's participants. Extracts from the coding are presented in the pages that follow to support our interpretation. The passages have been edited to ensure anonymity and clarity, with omissions or substitutions marked in square brackets. Each passage is attributed to a clinical role (e.g. Staff Nurse; Fellow Physician), with those roles expressing relative seniority within a profession.

3. Findings

3.1. The experience of HIT

Participants' experiences of HIT varied according to their professional background, with distinct patterns of HIT integration emerging for nurses and physicians. Nurses tended to see HIT work as *ancillary* to their 'real' or core professional work, while physicians tended to see HIT work as *central* to their professional activities.

3.2. Nurses and the ancillary nature of computer work

Nurses experienced HIT work as a documentary or accountability-oriented layer of activity that overlaid the work at the heart of their 'real' professional role.

Save all that money [spent on IT and] give us an extra nurse ... and guess what? People will get better care. My favorite thing, and I've told you this before, was the homeless people. I liked it when a homeless person came in. [I could] go in; wash [and] shave them; make them feel like a human being again. Transform them into what they used to be, probably. Do you think people have time to do that now? No. (Lakeside, Staff RN)

Many nurses, and older nurses in particular, contrasted 'the work' – the reason they had become nurses in the first place – with 'the paperwork' which, with the implementation of HIT, had become computerized. HIT was seen as a substitute platform for previously analog documentary and administrative work, and thus as ancillary rather than central to the 'real' work of nursing: hands-on patient care.

While there was grumbling at the time required to "tend to the computer," nurses generally accepted this high volume. Beyond the fact that their employer required them to use HIT, their acceptance hinged in part on their sense that the computers in their work environment were a force for improving care quality. A junior Staff Nurse at Mid Valley noted that the unit's online charting system made it more likely for nurses "to get their vital [signs] in every hour, and more likely to get their assessments done every four hours." The pick-lists, forms, and time stamps of the HIT systems made it both easier to enter information, and more obvious when information had not been entered.

Similarly, another Mid Valley Staff Nurse was "reminded, by looking at [her computer] screen, of several items that slipped her mind amongst all the other work she had been doing since her patient's [emergency] admission." A senior Staff Nurse at Lakeside described how he hoped that documenting his work on the HIT system would facilitate broader safety and quality improvement efforts:

If [the hospital] can take [this ICU's] information and shoot it right to [an off-site quality improvement team] for the things that they need to know, that's wonderful.

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