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Electronic error-reporting systems: A case study into the impact on nurse reporting of medical errors

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ABSTRACT

Background: Underreporting of errors in hospitals persists despite the claims of technology companies that electronic systems will facilitate reporting. This study builds on previous analyses to examine error reporting by nurses in hospitals using electronic media.

Purpose: This research asks whether the electronic media creates additional barriers to error reporting, and, if so, what practical steps can all hospitals take to reduce these barriers.

Method: This is a mixed-method case study nurses' use of an error reporting system, RiskMan, in two hospitals. The case study involved one large private hospital and one large public hospital in Victoria, Australia, both of which use the RiskMan medical error reporting system.

Conclusion: Information technology–based error reporting systems have unique access problems and time demands and can encourage nurses to develop alternative reporting mechanisms. This research focuses on nurses and raises important findings for hospitals using such systems or considering installation. This article suggests organizational and technical responses that could reduce some of the identified barriers.

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The reduction of errors in hospitals is an important area of research and endeavor. Hospital managers depend on staff reporting errors and events via computer systems and see these systems as faster, more cost-efficient, and an easy way to audit error rates. Nurses, doctors, and other hospital staff simply stop at a computer in their ward, use specific software to enter incidents, and then go on with their work. Executives believe they receive high-quality information about errors in their institutions, are confident they can spot problem areas and system failures, and can move to fix them quickly. But, do these systems really work? Why then have reporting rates not risen in recent years with these computer systems (Braithwaite, 2008; Pfeiffer, 2010)? Does the technology create barriers that lead staff to refrain from reporting?

This article examines these questions through a case study of RiskMan (incident reporting software, RiskMan International, Melbourne, Australia) from the perspective of nurses and nurse managers in two hospitals. RiskMan covers 80% of beds in the Australian public system and 65% of Australia's private hospitals.

Appendices to this article can be found at http://cis.unimelb.edu.au/people/staff.php?person_ID=5168.

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RiskMan is used by administrators to monitor near misses, sentinel events, and other incidents in hospitals. The results have implications for public safety in both the private and the public hospital systems.

Background

Hospitals worldwide have introduced information technology (IT) systems for medical staff to report adverse events that occur. However, the productivity paradox (Brynjolfsson, 1993) cautions about presuming that all computerization leads to benefits. One study of a computerized error reporting system found that, since implementation, 22.7% of 2185 subjects reported more incidents and 21.8% reported fewer. This is a very small improvement in the total reporting rate given the cost and effort involved (Braithwaite, 2008, p. 230). Despite widespread computerization, underreporting of medical errors by nurses and other medical staff persists (Pfeiffer, 2010).

Previous studies have examined barriers to reporting medical errors, mainly in paper-based systems (Evans et al., 2006; Sanghera, Franklin, & Dhillon, 2007; Ulanimo, O'Leary-Kelley, & Connolly, 2007; Vincent, 2007). There are several reasons behind a failure to report medical errors including fear, a belief that reporting will not result in improvements (Evans et al., 2006; Leape, 1999), and a lack of feedback from management (Evans et al., 2006; Kingston, Evans, Smith, & Berry, 2004; Sanghera et al., 2007; Walker & Lowe, 1998) linked to a lack of management support or pressure for reporting (Sanghera et al., 2007). Nurses fear appearing incompetent and being judged by peers and management (Chiang & Pepper, 2006; Mayo & Duncan, 2004; Sanghera et al., 2007; Schelbred & Nord, 2007; Ulanimo et al., 2007) and coworkers may be unsupportive (Evans et al., 2006). Nurses also fear disciplinary action (Sanghera et al., 2007); 18% (Evans et al., 2006), 16% (Ulanimo et al., 2007), and 20% (Mayo & Duncan, 2004) of nurses failed to report for fear they would be disciplined or their position terminated. Some were afraid that reports would damage their reputation (Kingston et al., 2004). There were also concerns about litigation resulting from reporting (Evans et al., 2006; Kingston et al., 2004). Evans et al. (2006) identified these attitudes as being stronger in nurses than in doctors.

A lack of knowledge of the advantages of incident reporting systems impacted on nurse incentive to report (Smetzer, Cohen, & Milazzo, 2000), especially where the systems were seen to be poorly designed (Karsh, Escoto, Beasley, & Holder, 2006). In some cases, discussing the incident with the person involved was believed to be adequate; thus, a report did not need to be made (Evans et al., 2006).

A lack of time is a barrier to reporting (Kingston et al., 2004; Sanghera et al., 2007; Ulanimo et al., 2007) because of complex reporting processes and forms (Evans et al., 2006; Kingston et al., 2004; Sanghera et al., 2007) and because nurses may forget to report (Evans et al., 2006) or give reporting low priority because of their heavy workload (Smetzer et al., 2000).

There is also a lack of understanding and clear definitions of reportable errors (Karsh et al., 2006; Pfeiffer, 2010), including what to report and by whom an error should be reported (Kingston et al., 2004). Some nurses create their own criteria (Baker, 1997). Furthermore, there is a lack of awareness of the reporting process (Kingston et al., 2004; Sanghera et al., 2007) or in locating the reporting form (Evans et al., 2006).

Reporting has an emotional impact on nurses (Schelbred & Nord, 2007), deterring reporting (Sanghera et al., 2007). In addition, nurses thought there was no value in reporting near misses or incidents they found trivial (Evans et al., 2006). Some disliked reporting other's mistakes, fearing a negative impact on the other nurse (Sanghera et al., 2007), or thought it was not their responsibility to report the incident (Evans et al., 2006).

The benefits of features such as the ability to produce standardized reports, data analyses, and risk profiles (e.g., http://www.riskman.net.au/) are emphasized by vendors, but it is possible that persistent reports would aggravate nurses' fear of disciplinary action. Consequently, the management goals of computerized system implementation may be disconnected from nurses' goals.

Nurses are part of complex organizational environments and have responsibilities and relationships with patients, other nurses, doctors, medical staff, and management. Consequently, reporting systems may fit nurses in ways different from doctors or management. For example, a nurse's general identity might suggest a desire to report errors; however, the nurse's commitment to and fear for other members of the team and wariness of entrenched power structures in the hospital might lead to unexpected behaviors (Pfeiffer, 2010). Thus, our research question is the following: are there barriers specific to the fit of the technology with nursing practice that make nurses reluctant to report medical errors? If so, what can health institutions do to reduce these barriers?

Method

This article reports a case study of the RiskMan medical error reporting software in two Australian hospitals in a large Australian city. The first hospital was private with 130 beds. The second was a tertiary public hospital with 390 beds. RiskMan is the most widely used reporting software in Australia.

A case study approach was used with both quantitative and qualitative data collected. An interpretive approach was adopted for analyzing the qualitative data because it enabled the researchers to understand