Faculty of Medicine

Adverse Health Event Management in Newfoundland and Labrador: Avoiding Engineering Error
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Adverse Health Event Management in Newfoundland and Labrador:

Avoiding Engineering Error

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Introduction

In accordance with the Government of Newfoundland and Labrador’s Task Force on Adverse Health Events mandate to examine the current approach of the health and community service systems in handling adverse health events, the eHealth Research Unit, housed in Memorial University’s Faculty of Medicine, offers the following submission. As the mission of the eHealth Research Unit is to engage in research related to the development, use, and impact of information systems in health care in Newfoundland and Labrador, the unit is uniquely positioned to contribute to the discussion. The eHealth Research Unit submits that the scope of consideration for adverse events should be expanded to include a broad spectrum of occurrences of which adverse events are simply the most obvious outcome. Further, the approach to avoiding and remediating such incidents should include Human Factors Engineering practices.

Discussion

Policy evaluation regarding reactions to adverse health events is an essential component in the successful management of critical incidents. However, to develop effective strategies for adverse health event management in community service and health sectors, it is important to consider the full spectrum of circumstances that can culminate in an adverse event. An effective risk management methodology should recognize the continuum of occurrences, with identification and reporting of hazards, near misses, and close calls as well as full-blown adverse events. Patterns of cause precede adverse events.
Industries such as aviation, nuclear power technology, and petrochemical processing have instituted procedures for reporting and investigating near misses or close calls as a vital way to prevent adverse events. By focusing on such warning signs, many more opportunities for learning about and improving management strategies are presented than would be the case if only a relatively small number of adverse events were considered (Barach & Small, 2000). The greater volume of data allows these industries to implement mitigation strategies that prevent rather than react to an adverse event.

Health care systems must address this omission by introducing hazard, near miss, and close call reporting strategies that are confidential, non-judgmental, and non-punitive to provide consistent means to evaluate current practice. As well, increasing the attention paid to human factors in medical environments will better equip health care settings to accommodate the people who work within them and how they work.

Another critical component in efforts to improve patient safety and avoid adverse health events is the implementation of Human Factors Engineering (HFE). HFE seeks to include in the design of work environments mechanisms that support improved provider performance as well as identify means to eliminate factors inherent in the workplace that predispose to error. Therefore, HFE strives to identify and understand the human performance requirements of a work environment and then design systems and practices that accommodate to
those needs. Consideration of human capabilities and limitations is integral in the development of safe, effective, and efficient products, processes, and systems. In practice, human factors engineers design products, technologies, equipment, or procedures to fit the people who live and work in a given environment. The objective is to have the tools and technologies in a given system fit the people working in it, not the other way around (Scanlon, Karsh, & Densmore, 2006). HFE focuses on designing systems to support performance, safety, and efficiency, while reducing predisposition to error.

Despite the maturity of the field of HFE in other industries, it remains under utilized in health care delivery. The irony is that HFE is particularly relevant to health care. That health systems such as community services, hospitals, and clinics must be designed to support performance of providers as well as the safety of patients is clear. Traditional thinking in health care organizations emphasizes the need for health care providers to conform to new work systems through a series of educational opportunities, in-service training, and professional development (change management). In some cases, this change management underestimates the complexity of health care and the considerable experience of the provider that has lead to the behaviour to be changed. In an effort to address this, some health care organizations are now embracing HFE and incorporating its practices into their risk management processes (Karsh, Holden, Alper & Or, 2006). By implementing HFE principles and methods into health care delivery, some health care organizations have begun a proactive shift towards designing
and selecting technologies and practices that best suit system needs rather than imposing the limitations of ill matched initiatives.

In recent years, information technology has been advocated as a solution to errors, specifically in health care. Use of information technology to improve the efficiency of information exchange between providers and the quality of the information exchanged has been touted by some to be the answer to the problems created by a system that still relies predominantly on paper and pen for much of its documentation. This line of thinking presumes that the interaction between the human and the technology will facilitate information efficiency and will suit provision of health care. While in some cases this will be true, evidence is beginning to emerge that poorly designed technology can in fact increase the volume of and efficiency by which errors occur. Empirical evidence demonstrates that errors facilitated by the software can actually increase the potential for mistakes in drug prescriptions and administration (Koppel et al, 2005). It cannot be taken as a given that information technology will be the panacea that some propose in avoiding the spectrum of behaviors that can culminate in an adverse event.

To ensure that information technology use will facilitate prevention of those behaviors that could result in adverse events, the processes through which information technology procurement decisions are made must include explicit evaluation of human factor engineering considerations. In addition to assessing the technology to determine if it meets the needs for which it is being acquired, a
formal evaluation of the technology to ensure that it conforms to the pattern of practice of healthcare providers for which it is intended and that it does not predispose the practitioner to error must be performed. Otherwise, we may find that information technology increases the efficiency and volume of adverse events rather than desired goal of decreasing such outcomes.

Summary

In summary, it is important that the consideration of adverse health events in Newfoundland and Labrador recognize the full continuum of events and include strategies for identifying and reporting hazards, near misses, and close calls as well as full-blown adverse events. In addressing and developing policy to handle adverse events it is imperative that HFE practices are considered so that community and health care systems are equipped to enable our health care providers to deliver quality services in a safe and efficient manner from within a respectful and supportive work environment. Finally, HFE guidelines should be an integral part of future software acquisitions to ensure a good fit with workplace environments as well as to reduce risk of future adverse events within community and health service systems.

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References


