TECHNOLOGY DEPARTMENT

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Strategies to Deliver Safe, Technology-Enhanced Care in Pediatric Settings

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THE HEALTH CARE environment is becoming increasingly complex. In free standing children's hospitals, advances in technology occur frequently not only to improve care but to enhance patient safety. Specific types of health information technology (IT) can improve patient safety under the right conditions. Pediatric nurses come to work with the best of intentions to care for a vulnerable patient population and nurses are acutely aware of their responsibility to provide safe care to children. Even with the best of intentions, what happens when the nurse is lacking in informatics competencies, or when the electronic health record (EHR) is not design to meet the needs of the nurse's work flow? In some cases, nurses may choose to work around the health IT systems that were built with the intent of protecting patients (Scalise, 2015). It is troublesome to think that some nurses might knowingly take a risk and choose to *workaround* the EHR (Scalise, 2015). To understand why nurses might take this risk, it is important to understand why nurses create *workarounds*. "Workarounds are claimed to increase when the complexity of the task is incompatible with the degree of structure imposed by the system and when users feel 'controlled' by the system, with end user resistance contributing to their implementation" (Debono et al., 2012, p.2). When end users (nurses) avoid using technology, it created challenges to units' "culture, processes, data collection/analysis, budget, and ultimately patient safety" (Scalise, 2015, para.11).

Numerous health care agencies wrote reports calling for technology to be utilized in creating a safer, more efficient healthcare system including: the Institute of Medicine (IOM), the American Hospital Association (AHA), the Robert Wood Johnson Foundation (RWJF), and The Joint Commission (TJC) (Hebda & Calderone, 2009). As a result "health IT spending topped over $6.8 billion in 2014" (Scalise, 2015, para.11), but has the money invested created a safer system? The purpose of this column is to heighten pediatric nurses' awareness of the national health IT agenda, review the current state of patient safety in relationship to health information technology (IT), share informatics competencies that nurses need in order to deliver safe care to children, and explore the integral role that nurses play in building safer health IT systems.

> *Staff educators need to continually assess nurses' informatics competencies, an imperative part of patient care delivery.*

The National Health IT Agenda

The American Reinvestment & Recovery Act (ARRA) "had its beginnings with President George W. Bush, who in his 2004, State of the Union Address" proposed a national healthcare IT agenda (Mihalko, 2012, p. 88). Bush called for the creation of an EHR for every American by the year 2014; this has yet to be realized. Bush (2004) explained, "by computerizing health records, we can avoid dangerous medical mistakes, reduce costs, and improve care" (The TIGER Initiative, 2009, para. 51).

On February 17, 2009 President Obama signed the landmark ARRA legislation into law. The ARRA (2009) included measures to revolutionize our nation's health care and create a new health IT infrastructure. Part of the ARRA

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included the enactment of the Health Information Technology for Economic and Clinical Health Act (HITECH Act) which allocated $25.8 billion in investments to advance science and health (IT) and provided for incentive payments (Centers for Disease and Prevention [CDC], 2012). "Health IT includes a broad range of products, including EHRs, patient engagement tools (e.g., personal health records [PHRs] and secure patient portals), and health information exchanges" (Institute of Medicine [IOM], 2010, p. 2).

With the anticipated enormous expansion of the exchange of electronic health information, the HITECH Act increased the scope of the security and privacy protection available under the Health Insurance Portability and Accountability Act (HIPPA), increased the potential legal liability for non-compliance, and provided for more enforcement (CDC, 2012). The HITECH Act also supported the concept of EHRs and meaningful use (MU). "The use of EHRs must be 'meaningful' in advancing the goals of improving health care safety, minimizing health discrepancies, improving communication, and reducing cost" (Mihalko, 2012, p. 88).

Efforts led by the Centers for Medicare and Medicaid Services (CMS) and the Office of the National Coordinator for Health IT (ONC) granted incentive payments to eligible professionals or eligible hospitals, who demonstrated that they engaged in efforts to adopt, implement or upgrade certified EHR technology. Participation in the CMS EHR incentive program is totally voluntary: however, if providers failed to join by 2015, negative adjustments will be made to their Medicare/Medicaid fees starting at 1% reduction and escalating to 3% reduction by 2017 and beyond. Starting in 2011, the incentive payments ranged from $44,000 over 5 years for Medicare providers to $63,750 over 6 years for Medicaid providers (CDC, 2012).

As health professionals are being provided monetary incentives to adopt new health IT systems and products, stories of patient injuries and deaths associated with health IT appear all too frequently (IOM, 2012, ix). Adding an additional layer of complexity to an already complex health care environment, with increasing reports of EHR deployment, problems have begun to emerge leading to unintended adverse events (i.e. med dosing errors, failure to detect fatal illnesses, and delayed treatment due to poor human–computer interactions or loss of data) (IOM, 2012, p.2). In May, 2014 the CDC reported concerns about too many EHR issues impacting patients and that these seemed to be directly related to system design. Specifically, the lack of participation in health IT design details prior to implementation, outdated software, and issues related to staff time and expertise.

Health IT Competencies Required for Contemporary Nursing Practice

Currently, there are over 2.9 million nurses in the U.S. (The U.S Department of Health and Human Services [HRSA], 2013) representing five generations and all with varying levels of informatics competencies (Reinbeck & Fitzsimons, 2014). The larger sociotechnical health IT system is comprised of computers and software that operate in concert with hardware, software, people (nurses), and work processes (IOM, 2012, p. 2). The intended product of the health IT system is the delivery of safe care; however, if nurses lag behind in informatics skills this can lead to uncoordinated care and patient safety issues (Sittig & Singh, 2011).

The average age of a practicing nurse in the U.S. is 47 years (The TIGER Initiative, 2008) the majority of nurses are "*digital immigrants,* people that grew up without using digital technology, and had to adopt it as it emerged" (Prensky, 2001, p. 2) Many nurses may not have had the opportunity to become educated on the use of technology nor had the time to become comfortable using it (The TIGER Initiative, 2008). This is opposed to "*digital natives*, younger nurses who have grown up with digital technology" (Prensky, 2001, p.1). There is often an assumption that students entering nursing programs are *digital natives* when actually novice nurses are a mix of traditional and non-traditional students with a wide variety of computer skills (The TIGER Initiative, 2008). Still the majority of those nurses from the millennial generation are comfortable with technology. Although they may not be the clinical expert, it is a wise to harness the technology skills of the millennials and utilize them as subject matter experts (SMEs) on the unit.

The Role of Staff Educators

Staff educators routinely evaluate nurses' clinical competencies (expected level of performance from an integration of knowledge, skills, abilities, and judgment) and human interaction skills (i.e. communication, handoffs, and time outs). However, do staff educators evaluate nurses' informatics competencies on a regular basis? Few nurse educators are familiar with the Technology Informatics Guiding Education Reform (TIGER) Initiative and the role that this initiative played in shaping educational outcomes, and informatics competencies (Hebda & Calderone, 2009). The TIGER Initiative, "formed in 2004 in an effort to bring together nursing stakeholders to develop a shared vision, strategies, and specific actions for improving nursing practice, education, and the delivery of patient care through the use of health IT" (The TIGER Initiative, 2008, para. 1). The TIGER Initiative (2008) developed a model for informatics competencies which include: 1) basic computer competencies, 2) information literacy competencies, and 3) information management competencies. Tools are readily available for educators to evaluate informatics competencies of both novice and experienced nurses at http://www.thetigerinitiative.org/docs/tigerreport_informaticscompetencies.pdf. Staff educators need to continually assess nurses' informatics competencies, an imperative part of patient care delivery.