



Technology Department

Smartphone Use in Pediatric Settings

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Communication errors are attributed to 70% of adverse events in health care (Guttman et al., 2018). Within the past decade, health care providers have made impressive efforts to improve communication and have implemented communication tools in an effort to minimize adverse effects.

I remember a time early in my career as a neonatal nurse, when physicians were the only healthcare providers in the hospital that carried a pager. The nurse would contact the provider using a phone, page the physician, and wait for a return call. It also seems a short time ago when “cell phones” were prohibited in the intensive care unit (ICUs) for fear that they would interact with a cardiac monitor or pacemaker. I remember asking many unhappy family members to remove their cell phones from the unit. Cellphones were not permitted in ICUs in the past because they emitted enough electromagnetic (EM) radiation to interfere with medical devices (e.g., monitors, ventilators, and infusion pumps) (Mariappan, Raghavan, Shady, Aleem, & Zobia, 2016). Cellular phones emit energy while in the “standby mode,” and during the ringing phase, the phone emits a large amount of energy.

Today healthcare providers often communicate with one another in the hospital via Smartphones, by either bringing their own device (BYOD) to work or using one distributed by the organization. The difference today is that medical devices are adapting “to have better immunity to EM radiations from cellular phones” (Mariappan et al., 2016, p.729). Given the rapid increase in technology in the healthcare setting, it is essential that all medical devices and Radio Frequency Devices (RFID), used for patient identification, are monitored for EM interference before they are used for patient care.

Similar to the general population, most physicians and nurses own Smartphones; this can improve the speed of communication (McCartney, 2015). The Smartphone “is the most popular technology used among doctors since the stethoscope” (The Boston Consulting Group and Telenor Group, 2012, para. 2).

Not all hospitals support Smartphone use, personal or otherwise. There are differences in preferences for using Smartphones at work among younger and older nurses. Younger nurses (<35 years of age) tend to use Smartphones more frequently at work than older nurses (≥55) (McBride & LeVasseur, 2017).

This column will review Smartphone use in the pediatric setting and accuracy of care. Also, best practices to minimize distraction, ensure that patients’ and families’ privacy is maintained, and safeguards that can be put into place patients so that Smartphones do not transmit nosocomial infections.

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Smartphone use and improving the accuracy of care

Health care providers quickly recognized that Smartphones could be used to rapidly communicate with one another in the clinical arena (McCartney, 2015). Smartphones are mobile, and using one to send a text message is convenient and reduces wait time for callbacks from providers.

The Joint Commission (2016a) acknowledging advancements in technology; requires healthcare organizations to follow a litany of regulations when Smartphones are used in the clinical setting to ensure patient privacy and security. Organizations are required to maintain a policy that prohibits the communication of protected health information (PHI) via text messages from personal, unsecured mobile devices (The Joint Commission, 2016a). In partnership with the Centers for Medicare and Medicaid Services (CMS), The Joint Commission (2016b) further clarified Smartphone use by prohibiting their use for patient care orders. The concerns of sending orders via text messaging include 1) anticipating an increase in workload for nurses (e.g., nurses may be required to transcribe text orders into the electronic health record (EHR), 2) clinical decisions support (CDS) is not available with orders sent via text and 3) a lack of ability to clarify an order with a prescriber. Computerized physician order entry (CPOE), remains the gold standard for communicating patient care orders. Errors are minimized when a practitioner directly inputs orders into the EHR where CDS is available.

In a Web-based survey sent to members of the Academy of Medical-Surgical Nurses (10,978 members) and the Society of Pediatric Nurses (3819 members) 64.94% of nurses (1268 respondents) reported using a personal communication device (PCD) “often or always while at work” (McBride & LeVasseur, 2017, para.7). Nurses reported using their PCD at work for these top three items: “1) checking or sending text messages or emails to other health care team members, 2) as a calculator, and 3) accessing work-related medical information” (McBride & LeVasseur, 2017, para. 8). Nurses also reported using a PCD while at work for reviewing patient policies and procedures, accessing evidenced-based standards of care, accessing drug information, and patient teaching materials.

Of course, having a PCD at work, allows nurses to respond to personal calls, which have the potential to hinder the nurse-patient relationship. In the Web-based survey conducted by McBride and LeVasseur (2017) nurses reported using their PCD while on the job for non-worked related activities such as “calling, checking or sending text messages or emails to family or friends, reading online news, checking or posting on social networking sites, shopping and playing

online games” (para. 8). However, when comparing the amount of work and non-work related behaviors where nurses used their PCD, “work-related activities were found to be statistically significantly more likely than non-work-related activities at the 5% significance level ($t_2 = 2.67, P < .001$)” (McBride & LeVasseur, 2017, para. 7). Results of this study indicate that nurses use their PCDs to support their work caring for patients at a higher rate than non-work-related activities.

Smartphone use and minimizing clinician distraction

When using Smartphones in the clinical setting, there is a potential for an increase in errors associated with distraction. Human cognition has a limit to how much information it can process at one time; cognitive overload can occur (Guttman et al., 2018). Once a health care provider is interrupted while completing a task, their focus shifts increasing the likelihood of an error. In the Web-based survey conducted by McBride and LeVasseur (2017) 1268, nurses self-reported low levels of distraction when using a PCD during patient care. Conversely, nurses reported witnessing colleagues with Smartphones display an increase in the level of distraction (69.41%, 860/1239), “miss important clinical information (30.6%, 378/1235), or make a medical error (12.51%/1239)” (McBride & LeVasseur, 2017, para. 10). Overall, 69.06% of respondents (848/1228) viewed PCDs as having a “negative effect on other nurses’ work performance” (McBride & LeVasseur, 2017, para. 10). There are strategies that providers can put into place to minimize distractions; however, these strategies may prohibit having full Smartphone functionality (Guttman et al., 2018).

Smartphone use and maintaining patient privacy

Private health information (PHI) sent using a PCD such as a Smartphone, over a public network, makes information susceptible to unauthorized access (McCartney, 2015). There are reports that despite hospital policies restricting personal Smartphone use, nurses are using their own devices (Spyglass Consulting Group ©, 2014). Nurses use their Smartphones at work, mainly due to the increased pressure that they face communicating, coordinating, and collaborating complex patient care. “Despite advancements in mobile devices and unified communications, hospital IT has underinvested in technologies and processes to support nurses at the point of care” (Spyglass Consulting Group ©, 2014, p.1).

Health care organizations and clinicians must ensure that PHI remains secure when collecting and exchanging patient data while using PCDs. The mobile health industry has indicated its understanding of this privacy issue; therefore, many device manufacturers have prioritized patient data security by integrating HIPAA-compliant communication systems (Lau et al., 2013). Standards created by the Health Information Technology Economic and Clinical Health Act (HITECH) and National Institute of Standards and Technology (NIST) guide health care organizations to use “HITECH-certified commercial technologies with data encryption and centralized mobile device management to secure electronic PHI on mobile devices” (McCartney, 2015, p.61). Additionally, organizations should maintain a policy that outlines the security of PHI on PCDs. An electronic ePHI policy should include what type of PCD may be used to communicate within the organization, what organizational information can be accessed, and how PHI on the device will be secured. Because there are risks of violating patient privacy, the policy should also contain how PHI will be cleared from the PCD at the end of the provider’s shift (McCartney, 2015).

When using the electronic health record (EHR), all communication around decisions of care is documented in the EHR. Standard Short Message Service (SMS) and other text messaging services like iMessage and WhatsApp© are not encrypted; the sender cannot identify who reads the information sent nor if messages are discarded once they have been read (Marco, 2017). There is also a concern that because text messages involve patient care decisions, that clinicians do not overlook

documenting this information in the EHR (McCartney, 2015). There are new software programs available that “integrate (text) messages into the (electronic) record system, track messages, and escalate unanswered messages” (McCartney, 2015, p. 61). Although this software is available, it would be essential to ensure that it integrates with all Smartphones used by providers on the clinical units before investing in a purchase.

Regardless, organizations need to put policies in place for SMS and train providers what can and cannot be shared. Even though it is vital to encrypt Smartphones to protect the information if the device is lost or stolen, the SMS can still be stored and accessed on the phone or at the phone carrier level (Marco, 2017).

Smartphone use and hospital acquired infections

Medical devices harbor harmful pathogens and the potential to spread nosocomial infections in the healthcare environment. Hand hygiene has been an important initiative to decrease the spread of hospital-acquired infections (HAI) in healthcare organizations. Adding another PCD, a Smartphone, into the patient care providers’ hands, adds a pathogen vector for patients. Research has shown that the same pathogens found on health care worker’s hands are found on medical handheld devices (Pal et al., 2015). Healthcare providers use and touch Smartphones in-between, caring for patients. A study by Pal et al. (2015) found 100% contamination of health care worker’s phones and hands indicating that phones can be a potential source of HAI.

Wentz and Bowles (2018) conducted a literature review to determine evidence for cleaning and disinfecting handheld medical devices; minimal information was available. Choosing “best practice guidelines for disinfecting medical devices” (p.58), Wentz and Bowles (2018) made a recommendation for cleaning Smartphones in their unit and conducted a study to determine efficacy. Nurses ($N = 50$) were instructed to clean their Smartphones in a circular motion for 15 seconds, with 70% isopropyl alcohol wipes. Results of pre and post swabbing of Smartphones for bacterial contamination indicated that the recommended cleaning technique, reduced bacterial contamination within a “clean” range (Wentz & Bowles, 2018, p. 58). Cleaning of handled medical devices such as Smartphones and ensuring that devices are not vectors of nosocomial infections is an area in need of further research to determine best practices.

Summary

With an increase in the complexity of pediatric patients there is no doubt that there is a need for technology that allows clinicians to communicate quickly and efficiently. The Smartphone is a device that clinicians are using to communicate within organizations; therefore, investments need to be made in information technologies and processes to support nurses at the point of care. For clinicians to use SMS for patient care orders, software that protects PHI and integrates text messaging with the EHR is also necessary. Nurses need to investigate best practices for minimizing all distractions during inpatient care. Lastly, nurses will need to evaluate Smartphone manufacturers recommendations for cleaning the device and conduct research to create evidence-based protocols to prevent HAI.

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