EXPERIENCE EXCHANGE

Smartphones and computer tablets: Friend or foe?

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Abstract

The use of smartphones and computer tablets are fast becoming commonplace in healthcare organizations and schools of nursing. Nurses, students, physicians and other providers are using these devices to enhance their practice, improve patient care and outcomes and ease cumbersome and outdated methods of communication. However, smartphone and tablet use is raising serious questions as to potential legal and ethical issues and how well prepared providers are in regards to policy and procedures. Additionally, are providers policing themselves to ensure patient privacy is protected?

Key words

Smartphones, Computer tablets, Nursing, Legal and ethical

Introduction

Technology in healthcare such as, computerized intravenous (IV) infusion pumps (e.g., Smart Pumps), patient controlled analgesia (PCA), bar coded medication administration, voice driven communication (e.g.,Vocera), advanced mobile phones (e.g., smartphones), and tablets have increased quality of care to patients while improving the work environment for providers [1-4]. Technological advancements, including the electronic medical record, have created new legal and ethical concerns related to security and privacy issues [5]. Because nursing professionals must abide by the Health Insurance Portability and Accountability Act (HIPAA) even with the use of smartphones and tablets, it is important to consider all the relevant privacy issues surrounding such devices. When used correctly smartphones and tablets can be valuable assets, as they are small but very efficient computers, allowing users to add different applications to enhance the phone's or tablet's function, search the internet, scan information, and save information for later use.

Consider the use of smartphones and tablets and the various options available to the user such as: traditional telephone calls, instant messaging (i.e., texting), sending and receiving electronic mail (i.e., email), taking photographs, audio and video recording of conversations and storing data, downloading information and searching the internet [6]. This article will provide important information on the use of these small computers in healthcare and discuss case studies to stimulate conversation about the legal and ethical issues that may develop with their use.

Background

The number of smartphone users exceeds one billion world-wide and their use continues to gain popularity, while Android and iPad users are estimated to be around 278 million according to the Global WebIndex Streaming device Q1 study [7, 8].

Seventy-four percent of surveyed physician assistants (PA's) admit use of smartphones during patient consultations, 67% of registered nurses and 60% of advanced practice nurses (APN's) state smartphone use in conjunction with patient care. Forty percent of physicians admit to using smartphones during patient consultations [9]. Mace reported that an internal survey of more than 2,000 Texas Health–affiliated physicians found that 80% used smartphones and 50% used tablets [10]. Allowing for mobility, pagers were once considered the preferred method of keeping connected with a practitioner. This appears to have changed as younger physicians are refusing to use pagers unless there are no other provided ways to communicate [11]. Merrill points out 4 out of 5 practicing physicians use smartphones, computer tablets or other mobile devices and younger tech savvy physicians rely on digital and internet-based strategies to communicate with patients and other providers [12]. Wyatt and Krauskopf reported smartphone use by healthcare providers is a fast growing market [13]. However, little is known about the number of nurse users partly due to the 2.6 million nurses in the US (Bureau of Labor Statistics, 2010, p.1) and poor self-reported practices to gather the information [13, 14]. Springer Publishing's study found 75% (N = 821) of the nurse participants owned a smartphone or tablet [15]. These statistics indicate the growing trend of healthcare providers using smartphones to enhance their practice. Brooks reminds us that texting is a huge part of social communication allowing for an efficient mode of information transmission while preventing unnecessary or prolonged conversations [16].

Texting, as a form of communication, has many benefits is easy, fast, and straight-forward. Texting also streamlines traditional communication through pagers and call-backs that hospitals, physicians and nurses have used for many years [16]. However, texting may be non-secure unless using an encrypted or secure program, and non-compliant with safety and privacy regulations under HIPPA. Messages sent may be readable by anyone, can be forwarded to anyone, are often unencrypted, remain forever, and are often unauthenticated or verified they were sent and received by the right individuals [16-18]. It is because of these safety and privacy concerns that the Joint Commission has taken action to ban physicians from using smartphones and related devices when messages contain electronic protected health information (ePHI) unless protected and will fine violators up to $1.5 million in fines in a single year [16]. The Joint Commission is an independent, non-profit organization that accredits and certifies more than 20,000 hospitals and healthcare organizations in the United States. Their mission is to advance healthcare for all people by steering evaluations of healthcare organizations and moving the organizations to improve the quality of healthcare [19]. It should be noted the Joint Commission did not ban all text messaging but established Administrative Simplification Provisions (AS) to serve as guidelines to develop secure communication systems [16]. There are several secure texting programs for smart phones and tablets such as the physician created HIPPOmsg and TigerText programs used by physicians, physicians assistants, nurse practitioners, registered nurses and more [20, 21].

What may be challenging for healthcare professionals is determining when smartphone use is appropriate and when it is not. The Joint Commission has issued this statement concerning texting of orders:

> "It is not acceptable for physicians or licensed independent practitioners to text orders for patients to the hospital or other healthcare setting. This method provides no ability to verify the identity of the person sending the text and there is no way to keep the original message as validation of what is entered into the medical record" [22].

Mosa, Yoo and Sheets completed a systematic review of healthcare applications for smartphones [2]. The researchers found a variety of applications (i.e., apps) including apps intended for reference guides aimed at disease diagnosis, medications, and medical training. In addition, apps, meant for everyday practice, such as calculators, literature searches, and communication enhancement are readily available. Patient focused apps, such as acute care material and general healthcare, are also options for smartphones. With a wide-range of medical apps available to healthcare professionals, there is little doubt smartphones can be an important asset to providers of care. However, there is debate as to whether a centralized mobile portal direct users to the most utilized health care content, thereby eliminating bogus healthcare information that may confuse the healthcare consumer [23].

The U.S. Department of Health and Human Services endorses mobile health. Mobile health (i.e., m-health) is the use of portable and wireless devices to progress health outcomes, healthcare amenities and health research [24, 25]. It is estimated there are over 40,000 healthcare apps available for smartphones and tablets. In 2012 there were approximately 247 million downloads for healthcare applications, almost doubling from the previous year [25].

Smith, Darling and Searles conducted a study on cell phone use during cardiopulmonary bypass surgery (CPB) [26]. The results were surprising as 55.6% of perfusionists admitted using a cell phone during surgery, 49.2% sent text messages, 21% accessed their email, 15% used the internet and 3.1% posted on social media sites while performing CPB. Interestingly, 78.3% of these same perfusionists indicated cell phone use may produce a significant safety risk to patients, yet the majority continued cell phone use during surgery [26]. These actions pose safety, legal and ethical issues and must be considered carefully because the use of smartphones is not limited to healthcare providers as patients are also users.

Because of the lack of policies related to emerging technologies use, there is a growing concern patient's privacy and safety are not being maintained [27]. In addition, there is also a lack of policing when policies are in place [27]. Patients are more informed today than in the past partly due to instant access to information. Patients use smartphones to research healthcare information via the internet, photograph their own medical procedures, and record physician and nurse conversations about their treatment plan. Employees are frequently using cell phones to video record and/or photograph a medical procedure. If the phone is connected to a social media site via an application such as Google + (G+), the pictures may be instantly uploaded and saved to this site [28]. This is a concern to healthcare providers because often times the recording of conversations are often being done without the consent of the providers.

Roth discusses the positive and negative aspects of patients recording physician visits [29]. Reminding providers that recording patient-physician visits pose legal and ethical concerns, such as recording undermines the privacy of the visit might inhibit the free flow of patient/physician/nurse information and the patient might not admit to some problems. There is also the possibility that a lawsuit could ensue creating a situation where physicians begin to practice defensive medicine [29].

A lack of trust may develop between the patient and provider due to suspicion being placed on all of the information provided [29]. Although there are concerns related to patient-physician recordings, having an auditory archive can help patients make complicated or difficult decisions by reviewing the information several times. Roth explains that cancer patients are urged to video record their visits allowing the patient to review information permitting them to refrain from taking notes during the consultation when their anxiety might be elevated [29]. An issue that might arise is that once patients post sensitive information/photos to social media sites it may not be found by healthcare organizations or providers for days to months later.

Newell reported Kaiser Permanente, the nation's largest health plan, placed their entire electronic healthcare system on a smartphone application [30]. This is significant because Kaiser's nine million users can easily access information via their Android application. For example, appointments, lab results, medications ordering and communication with nurses/ physicians can easily be accessed by the patient via their cell phone. Anecdotally, Kaiser's move to the Android app is paving the way for other healthcare organizations and providers to do the same.

Case studies

The following case studies have been provided to stimulate conversation and bring awareness to how healthcare providers and patients may be misusing their smartphones/tablets.

Case #1

A physician assistant (PA) was performing a pelvic vaginal examine on a client. During the exam, the client's smartphone rang. The client answered the phone and continued to engage in a phone conversation while the pelvic exam was being

conducted. The PA and attending nurse were stunned at the client's behavior. It wasn't until later the PA and nurse considered the ethical and legal ramifications of the client's actions. It is possible that; (a) The provider could be distracted due to the client talking on the phone; therefore possibly making an error; (b) Confidentiality could be breached due to the person on the other end of the phone hearing what is being said by the providers. While the patient may have used the phone as a diversion tactic helping her to relax, her actions may have inadvertently disclosed confidential information. In this case the provider had clearly posted signs in exam rooms asking clients to turn phones off. However, it should be noted clients rarely turned their phones off.

Case #2

Two nursing students were completing a clinical experience in the Post-Anesthesia Outpatient Care Unit (PACU) of a local hospital. The students were assigned to work with registered nurse preceptors. The preceptors asked both students to monitor a stable post anesthesia patient for a few minutes. On their return the two students were found sitting with their backs to the patient while texting on their cell phones. Confronted by the preceptors about the use of their cell phones while on the unit the students admitted they never entered the patients cubical, never introduced themselves to the patient or family, nor ever assessed or took any vital signs on the patient. When asked specifically about the texting, the response was that the unit's nurses were seen texting so the students assumed it was acceptable. It is conceivable that; (a) Because patient satisfaction scores are accessible to the public, the public opinion of the facility could be negatively affected; (b) The patient's quality of care was compromised due to the students failing to safely monitor the patient while in their care; (c) The negative perception of the patient and or family can be reflected on patient satisfaction scores potentially adversely impacting financial reimbursement; and (d) The students' actions could lead to legal issues for them and the hospital.

When school faculty later discussed the inappropriate behavior with the students, it was determined that, although the School of Nursing had a policy of no cell phones in a clinical environment, because nurses were viewed texting the students assumed it was acceptable. The students had not considered the legal and ethical issues that might result from their actions, nor did they see their actions as being inappropriate. When faculty met with each student it was noted that several students entered the meeting with cells phones in hand and one student even placed the phone on the floor and kept looking at it during the meeting. Faculty later questioned if the student had been audio recording the meeting conversations. It was never determined if the student had in fact audio recorded the meeting conversation. Recording of conversations is an interesting consideration because in some states it is a crime. For example, Illinois, Massachusetts and Oregon consider eavesdropping and recording someone's conversation without consent a Class 1 felony [31]. Felony classes are punishable with a prison sentence.

Case #3

Eighty year-old Mr. Albright, while alert and oriented, had difficulty remembering the instructions from his physician once home and questioned by his daughter. On the next visit Mr. Albrights's daughter accompanied her father with the intent on audio recording the physician and nurse using her cell phone. She did request permission from the nurse to audio record and permission was granted. During the visit, the physician changed the dosage for Coumadin, discussed the need to monitor blood levels, but did not order them. Subsequently, the patient did not obtain blood testing for the next two months and suffered a huge hematoma from hitting his head after a fall. The ED physician questioned why the Coumadin levels were so high and when the patient had last had blood testing done. The daughter recalled the audio-recorded physician visit and shared it with her brother. They planned to use the recording as evidence of negligence against the physician and nurse. Unfortunately; (a) Information stated during the visit might have been misconstrued by the family member or shared with others on social media sites; and (b) In the event the patient or family member is upset over quality of care the recorded information may be legally used against the providers of care.

The physician office was found to have no policy in place for patients/family members who request to audio/video record conversations during visits. While the use of audio/video recording can be of great benefit to patients/family members in remembering information provided during visits it can, as noted in the presented case study, create legal/ethical issues for

providers. When questioned the nurse stated she told the patient to continue with the necessary blood testing as he had been doing; however, the daughter had stepped out of the room, and the patient could not remember the instructions. Audio recordings may be a very valuable asset to help patients recall information or share with family members; therefore, we are not advocating this practice be stopped or hindered but done with provider consent and guided by specific policies and procedures.

While the 1996 Health Information Portability and Accountability Act (HIPPA) [24, 32] does not specifically prohibit the use of texting there are serious questions being raised regarding this practice. The Joint Commission [19] has stated that texting patient information should not be done unless strict guidelines are in place and patient information is protected. For example, using a PHI protected secure program, having policies and procedures in place and educating employees on appropriate texting usage are recommended. For instance; (a) If confidential information is being texted to physicians and nurses on personal cell phones who are legally liable if someone other than the providers of care reads the information? (b) Although the user can delete information, many people may not be aware that data may be permanently stored by the text provider or on a phone/tablet and easily retrievable later [33, 34]; (c) If orders are being sent via texting, is the patients name being entered within the text message, if so, is this a violation of patient confidentially and if not, how can the providers verify the patient being discussed? (d) If orders are being given via texting, are the orders then being entered in the patient's medical record, and if so, are the orders considered verbal, telephone or written? (e) It is widely common for cell phone/tablet auto-correct spelling/grammar programs to change wording when texting leading to potential errors [35]. The question then is who is to blame, the nurse, physician or both?

Other considerations are nurses using cell phones to photograph patient information and sending it to the physician and or photographing body parts in place of trying to describe it. Are these acts violation of the HIPPA act? Is a patient consent required?

Nurses often carry smartphones provided by an organization to enable faster response times to a provider and patient calls. However, if nurses answer phones while in patient rooms during direct patient care it may convey the message to the patient/family that the phone call is more important than the care being provided. The potential to violate HIPPA rules of confidentiality should also be considered. Realistically, there are times when it is not possible for the nurse to leave the patient room to take the call, but does this violate any patient confidentially? In addition, there is an infection control concern because the nurses' phones are the organizations' property and handed over to the next shift of nurses not being cleaned with a disinfectant. Nurses may take the phones out of their pockets numerous times during the day without washing their hands potentially spreading germs to others. Could this practice lead to the spread of infection to patients and providers?

Smartphones and tablets can provide advantages to patients living in remote areas making it difficult to travel to physician/advanced practice nurse (APN) visits. The patient or family member may be able to send photographs or valuable information using their phone or tablet to the provider [36]. These situations demonstrate how patients can effectively be treated using advanced technology to help practitioners meet the needs of patients who have difficulty being seen in an office/hospital environment. This results in the following questions: (a) Are the photos taken part of a legal document? and (b) Does that relieve the physician/nurse of any liability when they are prescribing treatment based on a photo?

Student nurses often search medications with their instructors in healthcare organizations, using special applications downloaded onto their smartphones or tablets. While the practice is worthy, it may raise concerns to employees, patients and families as it is perceived as students texting personal content and or surfing the internet. Questions raised with students are: (a) Should healthcare organizations and schools of nursing revisit the no-cell phone policies previously put into place allowing visiting students and employees access to pertinent information when using appropriate secured applications? and (b) How can we better educate providers to the benefits of cell phone use for healthcare?

Discussion

Smartphones and tablets are wonderful and useful devices and their presence in healthcare can be a great asset, but there are also legal and ethical issues that must be considered if smartphones and tablets are to be used successfully in the work environment. We know that texting and the implementation of tablets within healthcare organizations are a growing trend and probably will continue to gain popularity in use over time [11, 33]. It was reported in 2010, that the average person sends 20-300 text messages a day [37]. Over 800 billion text messages were sent during the first half of 2010 alone. In 2011, 52% of Americans used text messaging, while in 2012 it was reported that over 72% of adults were texting [38, 39]. The Joint Commission has indicated using standard texting services (personal phones) is not an acceptable practice and audits from Health and Human Services (HHS) are being done on organizations for mobile compliance [11, 19]. Therefore, secure PHI messaging such as *Tigertext*, Inc, Mobile Connect, must be used in healthcare organizations to protect patient's sensitive private health information [11, 40].

However, there are good reasons for the use of texting in healthcare. In 2011 Brooks reported that the Joint Commission stated that failure to properly communicate may be related to more than 60% of total reported sentinel events for that year [16]. The Robert Wood Johnson Foundation also reported nurses waste on average one hour per shift tracking down physicians for a response regarding their patients [22]. Texting provides a fast, quiet and efficient method to send and receive information and is simpler than traditional phone and paging methods. The HHS is working on several Text 4 Health projects such as; maternal and child care, text4baby program; the American Academy of Pediatrics, txt4tots; and the National Cancer Institute's (NCI) Tobacco Control Research Branch (TCRB), smokefreetxt, smoking cessation service for teens and young adults are a few [41]. Frost and Sullivan reported that mobile applications are a gold mine with revenue expected to reach $392 million by 2015 [42]. This boom in mobile health apps increases false illusions that all IT developers are putting out quality secure products when in fact many are seeking quick profits with minimal investment and resources [43]. John Hopkins University Global M-Health Initiative's group is studying mobile apps in an attempt to determine good from poor programs [43]. In addition, Sensiotec makers of Virtual Medical Assistant, is conducting clinical trials to determine if their product is improving patient outcomes [43]. However, it is yet to be determined how many mobile apps are truly secure with patient's health information.

Evans and Brooks also reported that proper texting can be safer and reduce errors in communication that may occur in a busy, noisy nursing station or other environments where individuals cannot hear correctly or when a language barrier/ accent exist [11].

Nevertheless, Brooks reported that 38% of people have reportedly sent text messages to the wrong person; therefore, making texting on personal smartphones unsecure for patient private medical information [16]. Knowing that the potential for errors exist, providers must ensure that the information texted, emailed or conveyed over the smartphone is correct and secure.

Implications for practice

If organizations are going to implement the use of smartphones and tablets, policies and procedures must be in place to inform and protect the user and the patients. Shepherd suggested organizations have clear polices for smartphones, tablets and other such devices and systematically update them [44]. In addition, it is recommended the policies routinely be reviewed by executives, risk management and legal counsel to ensure adequate coverage and to ensure appropriate implementation. Another suggestion is the use of password protection phones/tablets to secure confidential patient information. How can smartphone and tablet use be effectively monitored and who would do the monitoring? All employees must be educated on the advantages and disadvantages of smartphones and tablets uses in healthcare. Using personal smartphones for work related practices raises many legal and ethical questions such as violations of HIPPA laws, patient and provider rights, state licensing codes and raises the question of access to the information? Because it appears that smartphones and tablets are being successfully used in the workplace, should students be allowed to use them within the context as a medication and procedure reference? Organizations and schools of nursing may need to re-visit their

current policies in light of quickly advancing technology that not only enhance student learning but benefits and may improve patient outcomes. As EHRs gain in popularity, medication information applications are increasingly available on Work Stations on Wheels (WOWs) or Computers on Wheels (COWs) and thereby may eliminate the need for a medication application on smartphones. However, Halamka points out that COWs and WOWs are falling out of favor with nurses for more portable IPad or tablet devices, wall mounted computers and smartphones [45]. Should patients be better educated on the appropriate and inappropriate use of smartphones? What will the institution's policy be for videos, photographs and audio recordings by patients and or families? If orders are given via a secure text, how is it transferred to the patient's medical record and how is the order considered a phone, verbal or written order? Research studies must be done to determine if error rates are impacted by smartphone and tablet use, if quality of care is improved and if communication is enhanced. Nurses must understand they not only are responsible for their organizations policies and procedures, state and federal laws but are also accountable to their state's board of nursing rules and regulations. State boards of nursing investigate unprofessional behavior, unethical conduct, and moral turpitude. State boards also investigate mismanagement of patient medical records and the breaching of patient confidential communications and confidence regarding the use of smartphones, and tablets, and social media sites when working in their respective organizations [33]. Nurses must also consider ethical principles when using smartphones and tablets in an out of the workplace. Ethical principles needing consideration include doing what is right (i.e., justice), doing what is good (i.e., benevolence), doing no harm (i.e., non-maleficence), and finally, keeping the trust of the patient (i.e., fidelity [46, 47].

Conclusion

Technology is rapidly evolving especially with the use of smartphones. As healthcare personnel utilize new technology and bring it into the healthcare settings, appropriate applications and uses will need to be determined by healthcare settings or facilities. Policies and guidelines for approved use must be developed and updated as frequently as the technology is changing. Healthcare personnel will require on-going education for appropriate use of smartphones/computer tablets. Patients, clients or family members will also require education about appropriate technology use in healthcare organizations. Informing the public about the value of and appropriate use of smartphones/tablets in healthcare environments will enable healthcare personnel and patients to benefit from technology and reduce legal and ethical issues that may develop.

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