Using Mobile Technology to Support Nursing Practice

Integrating computers into nursing workflows at the point-of-care has been a challenge since the implementation of the electronic health record (EHR). If we are honest, while technology has made patient care safer in many ways, it also added a variety of speed bumps to our daily nursing workflow.

Pen and paper were the ultimate mobility tools for nurses, as they could be easily carried, but they did not provide up-to-date patient data, allow for data sharing or support data analysis. Receiving test results took hours unless there was a critical value. When one person had the chart, its data was unavailable to everyone else. Manual data abstraction for research required reporting or quality programs, making it labor intensive and expensive.

Until recently, health care organizations had two major choices for providing computers at the point-of-care: computers on carts or wall-mounted computers. Now, the promise of a unified mobile device strategy combining point-of-care documentation and multi-modal communication is being realized. This solution can support nursing practice as well as assist with the cognitive workload of nurses. This article looks at the past to gain a better understanding of where mobile technology for nursing has been, what have been advantages and drawbacks, and finally, what factors need to be considered when constructing a mobility plan for your organization.

**Baby steps in mobile computing**

My nursing informatics practice has focused on the concept of mobile computing since 2006, with the release of the first generation of mobile computers designed specifically for nurses. The potential of those devices was met with great enthusiasm; however, the promise was never quite realized for several reasons. The two major barriers to the widespread adoption of those mobile computing devices prevailed: the inadequate sophistication of wireless technology and EHR software applications.

At the time, wireless networks could barely handle computers that were mounted to carts as nurses pushed them through hospital corridors. Suddenly, we had truly mobile devices that could move at the speed a nurse could walk and had to stay connected to the wireless network, no matter where the nurse went.

The second barrier was EHR applications themselves. These applications were designed to be displayed on the standard sized monitors of the day, which were 17-19 inches wide. When clinicians displayed these applications on a 10.5-inch screen, the text was small enough to cause visibility and usability issues. At that time, touchscreen smartphones and tablets had not yet reached the mainstream of the consumer market. Using a computer without a keyboard was just too uncomfortable for many nurses.

Since those early days of mobile computing, nurses have been asking for a point-of-care documentation device that fits into their pockets, fewer devices to carry, and more recently, the same smartphone functionality they use in their daily lives in their clinical practice.

**Point-of-care computing**

Since the first attempts at truly mobile computing in 2006, supplying computers on carts or affixing computers to walls have been the two basic choices in point-of-care computing. Either choice has been a complex and expensive endeavor, and one which has usually not satisfied nurses. During a presentation several years ago to a group of health care directors, one clinical manager shared that computers on carts had not worked for her staff so the facility planned to install wall-mounted computers. The attendees two tables away from the first speaker chimed in to say that wall-mounted computers had not worked for their facility and they planned to switch to computers on carts. There were no good answers, so we did the best we could with what we had.

The nursing profession is one of the highest at-risk groups for musculoskeletal disorders, according to the Occupational Safety and Health Administration. Yet, to employ point-of-care computing activities, many nurses are pushing computer carts that can weigh from 50 pounds up to more than 160 pounds, in the case of a stocked medication cart.

Computers mounted on walls also have drawbacks. They face the challenge of lack of space in many older facilities or poor placement for engaging with a patient. Poor placement can also lead to improper ergonomics and clinician injury.

**Meeting mobile challenges**

Smartphones have made their mark on the consumer market in the United States. According to Nielsen Research (2014), 65 percent of Americans owned a smartphone in 2013 and spent an average of 34 hours per month using mobile apps. But while 78 percent of physicians are using smartphones in their work environments (Gregg, 2014), most nurses are supposed to put away their smartphones when they work. But this is not always true.

In a 2014 study by Spyglass Consulting, Point of Care Communications for Nursing, 67 percent of hospitals reported that nurses use personal devices to communicate via both voice and text messaging despite hospital policies forbidding such use. These hospital policies included prohibitions on unsecured texting, which could lead to Health Insurance Portability and Accountability Act (HIPAA) privacy violations.
But can we blame nurses who want the same smartphone functionality they use in their personal lives to be available in their professional lives? The time has come to reevaluate the options in mobile computing.

Advances in technology have enabled vendors to design products, based on smartphone technology, that allow flowsheet documentation into the EHR with bi-directional interfaces which allow data to flow back and forth between two software applications, barcoded medication administration, communication using Voice over Internet Protocol (VoIP) and secured text messaging, all on a single device that can fit into a uniform pocket.

Studies on work interruption have shown that even though staff nurses’ average length of task is only 3.1 minutes, they are still interrupted mid-task an average of eight times per shift (Tucker & Spear, 2006). Incoming telephone calls accounted for 7.8 percent of the interruptions. The technology now exists to modify how the nurse is notified of an incoming phone call if she is engaged in medication administration, in a way that lessens the interruption by changing from a ringtone to a message on the screen.

Redding & Robinson (2009) found that 31 percent of interruptions occurred when another employee asked the nurse a question while both were face-to-face. Given that texting has become a standard form of communication—81 percent of cell and smartphone users send and receive text messages (Pew Research Center, 2014), allowing nurses access to secure texting methods might reduce the number of face-to-face interruptions.

Without a truly mobile solution, nurses must be in front of a computer in order to receive notifications from the EHR of new, discontinued or changed orders, overdue tasks or any other cognitive workload support. Contrast this scenario to our personal lives in which our smartphones are seldom far from our hands. They remind us of our next appointment, direct us to the closest gas station, or alert us that our anniversary is fast approaching.

Even so, a handheld device may not be the best option for every nursing workflow. Admission assessments and shift assessments may be best done with a larger screen and keyboard, depending on the amount of free text entry required. But consider the amount of documentation that is done on flowsheets, yet how difficult it can be to access that documentation at the point-of-care or while talking with other providers or the patient and family.

Many EHR vendors have been so inundated with work in order to meet meaningful use criteria that their mobility roadmaps have been delayed. As nurse executives, it is critical to understand these roadmaps and determine if they meet the needs of your organization in a timely fashion or if interim solutions are needed to provide the safest care environment possible.

Visualizing the possibilities

Visualize a truly mobile clinical solution in which nurses have a pocket-sized smartphone device that allows them to:

- Document their patient rounds as they perform them
- See all assigned care team members
- Place a call easily
- Securely text other members of the care team

This device supports the cognitive workload of nurses by:

- Knowing when nurses should not be interrupted because it knows what work they are performing
- Providing them alerts and notifications that they see because they have the device with them, rather than later when they log on
- Allowing access to the latest vital signs, intake and output, medications, pain scores, and other flowsheet documentation with only a few taps

These solutions are on the market now, but it is critical that organizations understand that today’s telecommunication choices have clinical ramifications beyond the purchase of a phone. Clinicians need to be at the table during the evaluation and selection process. Utilizing technology to support the bedside clinician rather than causing barriers to safe practice is a goal to which we all aspire. A new era of mobile computing is here and the potential we envisioned in 2006 is now being fulfilled.

References


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