Automated Vital Sign Documentation for Medical Surgical Units: Saving Time and Increasing Accuracy

Fact or Fairytale?

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The vital sign (VS) capture and documentation process is the focus of this study because the most precise vital sign assessment will not lead to an accurate response if it is not calculated and documented correctly. Lockwood, Conroy-Hiller, & Page (2004) also noted the need to research "the role of new technology in patient monitoring."

Technology is available to automate VS documentation, transferring results from the bedside vital sign machine to the electronic medical record. **The purpose of this study was to compare the accuracy and time efficiency of: Manual documentation of vital signs with, a comprehensive automated vital sign documentation system.**

Research Design:

This non-randomized observational study took place Dec, 2007 – Feb 2008, on an acute care medical surgical unit. Quasi-experimental design was used to gather data pre and post implementation of a comprehensive automated vital sign capture and documentation system.

Implications for Practice:

In an era of spiraling costs, competition and the advent of evidence based practice; health care practitioners expect independent studies to aid them in their product purchasing decisions.

- **Accuracy:** Vital Signs (VS) are a tool used to communicate patient deterioration to healthcare providers (Andrews & Waterman, 2005, p. 478). The automated vital sign documentation system decreased errors by 75%. During the study, the software transferred VS results from the bedside to the electronic chart in seconds with 100% accuracy. The system utilizes bar code technology at the point of care, which decreases the potential of human error in the vital sign capture and documentation process. Use of this system could speed VS results to care providers and improve patent care.

- **Clinician Time:** Clinician time is valuable. A recent time and motion study showed that nurses spent 35.3% of working time completing documentation (Hendrich et.al, 2008, p. 30). VS documentation wastes time and the frequent duplication of effort wastes more. In this study the automated vital sign documentation system saved about 30 seconds when compared to the manual bedside entry into the electronic chart and about 60 seconds when compared to the paper and pencil method. Time savings that could be better used meeting the needs of our patients.

Methods:

The RN's LPN's and nurses aides were observed and time studies were completed during routine vitals on consenting patients. VS documentation errors were cataloged in pre-specified categories. This study compared to:

- **Current Vital sign acquisition and documentation workflow:** Use of a vital sign machine to obtain blood pressure, pulse, temperature and oximetry readings and manually obtained the pain and respiration results. All readings were manually documented with a mobile computer or the results were written on paper and the clinician left the patients room to manually document into the electronic chart using computers in the unit hallway.

- **Automated Vital Sign Documentation System.** This system when coupled with a mobile vital sign machine that sends vital sign assessments from the bedside to the electronic chart. The vital sign machine's bar code scanner is used to identify the patient and clinician, and it is used obtain blood pressure, pulse, temperature and oximetry readings. The pain and respiration results are manually obtained and programmed into the vital sign machine. All results are transferred to the electronic chart eliminating the need to manually document.

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Results:

The wireless automated vital sign documentation system was the most time efficient. With one hour of clinician training during its first three days of use, on average, it saved significantly more time than both the paper transfer method (107.50 sec vs. 203.69 sec; $p<0.0001$, t test) and direct entry method) (107.50 sec vs. 131.63 sec; $p=0.01$, t test.)

During the study, 10 out of 144 records had documentation errors. The automated documentation method decreased documentation errors by 75% compared to the manual entry methods (13% vs. 3%, $p=0.02$,).

Average Time Capturing and Documenting Vital Signs
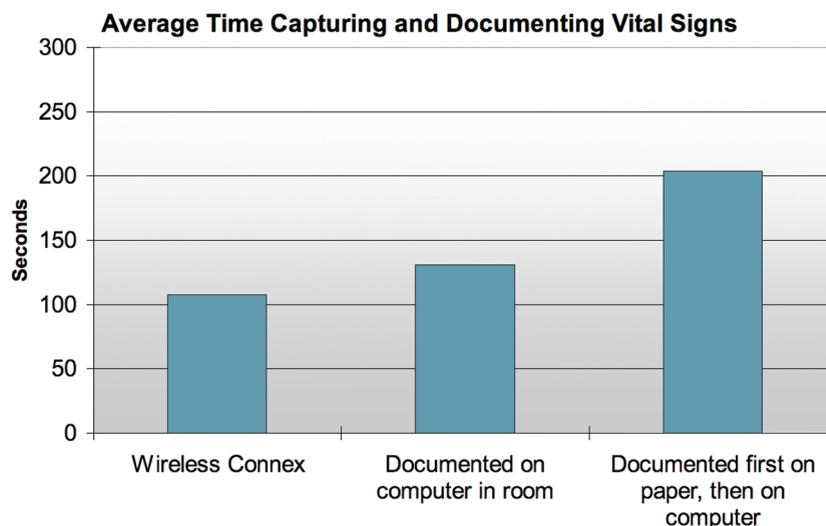
Conclusions:

As healthcare care providers we are often told fairytales about how a new piece of equipment will be safer for patients and a time saver for staff only to purchase it and find out that the system has a steep learning curve or takes more time than the "old way". This often results in frustration for front line staff and a waste of scarce resources. In this study we found that the wireless automated vital sign documentation system *saved time and was more accurate* than the manual documentation methods.

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References

Andrews, T., & Waterman, H. (2005). Packaging: a grounded theory of how to report physiological deterioration effectively. Journal of Advanced Nursing, 52(5), 473-481.

Hendrich, A., Chow, M., Skierczynski, B., & Zhenqiang, L. (2008). A 36-Hospital Time and Motion Study: How Do Medical-Surgical Nurses Spend Their Time? The Permanente Journal, 12, 25-34.

Gearing, P., Olney, C., Davis, K., Lozano, D., Smith, L., & Friedman, B. (2006). Enhancing Patient Safety through Electronic Medical Record Documentation of Vital Signs. Journal of Healthcare Information Management, 20, 40-45

Lockwood, C., Conroy-Hiller, T., & Page, T. (2004). Vital Signs. JBI Reports, 2, 207-230