The Importance of Obtaining Verbal Confirmation of Patient Identifiers While Using Technology during Medication Administration

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Abstract

The use of technology in healthcare provides phenomenal opportunity for improved workflow and safer patient care. There is a concern that due to the ability to expedite patient care processes, technology can lead to nurses abandoning the need to continue the use of the "five rights" of medication administration, specifically with the use of a barcode medication administration system. This study examines the practices of nurses at a local acute care facility to determine the usage of verbal patient verification during medication administration through direct observation. The information gained from the direct observations will be used to educate the nursing staff of the importance to continue the usage of patient safety measures to reduce medication errors and sentinel events. The results of the observations will be reported to a third party reporting agency (LeapFrog) to provide area healthcare consumers with a patient safety score for the facility.

Keywords: barcode administration system, direct observation, patient safety, electronic medication administration

Technology is key in early diagnosis, treatment, and administration of care for some of the most devastating diseases (Zhang, Liu, Zhu, & Si, 2015). It is used to improve patient experiences, patient knowledge, and overall patient safety (Smith, Yount, & Sorra, 2017).In all the wonderful features that technology offers, it has its very significant shortcomings. Technology is only as good as the information and data entered into the programming. There must be a consideration for the level of human error that goes into information and data entry. This can be a concern with reference to medication administration within an acute care facility.

Attitudes toward basic patient care have changed with the implementation of technology(Nápoleset al., 2016). With the added responsibilities placed on nurses, along with higher nurse patient ratios due to nursing shortage, nurses use the technology to aid in making time with each patient more efficient. This desire for efficiency and expediency can compromise patient safety during care.

Safety is an emergent system property that should be addressed throughout all health information technology design, implementation, and use (Vicente Oliveros et al., 2017). Safety concerns tend to emerge from interactions of health information components and human users. Patient safety should be addressed during and after the implementation of these systems and promptly mitigated (Vicente Oliveros et al., 2017). Keers et al. (2015) assert that research evidence reveals that patients may suffer from a preventable injury resulting from miscommunication of information and medication errors. The existence of a safety culture will encourage users to report errors and seek to mitigate future repetitions (Smith, Yount, and Sorra, 2017). In facilities where technology is used for documentation of patient care, how does verbal patient identification during medication administration compared to only scanning a patient's armband influence patient safety? The goal of this study will identify the importance of verbal confirmation of patient identifiers while administering medication, although there is the capability to scan a patient's armband during medication administration. This importance will be determined through literature review and direct nurse observation during patient care.

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Significance of the Problem to Nursing Practice

The primary goal of medication therapy is to achieve a desired outcome to improve a patient's wellbeing and quality of life and to prevent risk to patient safety in the process (Billstein-Leber, Carrillo, Cassano, Moline, & Robertson, 2018). Medical errors and adverse drug events are two of the largest sources of healthcare related accidents, contributing to almost 98,000 deaths per year (Lee, Lee, Kwon, & Yi, 2015). Over fifteen years have passed since the release of the Institute of Medicine's "To Err is Human" report (2009), and there remains a significant amount of room for improvement for patient safety. Some progress toward improvements has been made but the momentum of improvement is sluggish.

The development of healthcare information technology has given the prospect for expediting improvement (Vicente Oliveros et al., 2017). The nature of the patient care process, intermingled with a system-defined process can cause a disconnect within the actual working process and result in negative patient outcomes (Lee, Lee, Kwon, & Yi, 2015). The significance of this problem lies with the errors that are occurring and the gap in understanding of how to address the errors to prevent re-occurrence.

Statement of Purpose

Medication errors should not be taken lightly. Risk reduction strategies must be established to mitigate harm. Humans are not perfect, mistakes will happen, but a healthcare system approach must be implemented to prevent any re-occurrence of mistakes. A newly implemented system without consideration of current workflows and end user adaptation can create resentment, the use of noncompliant behaviors, and the introduction of workarounds (Lee, Lee, Kwon, & Yi, 2015). Errors can occur during any time during the medication use system, thus placing medication administration safety as a priority can help develop a culture of safety (Billstein-Leber, Carrillo, Cassano, Moline, & Robertson, 2018). A culture of safety provides a solid foundation for effective systems and teamwork. The entire system must support it, at every level, end users must feel safe to report, and willing to participate in continuous improvement and risk management. The culture of safety must teach all levels of the medication system the proper protocols for safety.

During administration of medications, the five rights of medication administration must be observed. The clinician must verify the right patient's name and date of birth verbally, the right medication, the right dose, the right route, and the right time (Billstein-Leber, Carrillo, Cassano, Moline, & Robertson, 2018).Care providers at the bedside are the last defense in prevention of medication errors. Healthcare systems have implemented barcode medication administration systems to aid in the prevention of medication errors. These systems become useless when end users do not follow the predefined procedures and implement workarounds (Lee, Lee, Kwon, & Yi, 2015).

The bedside practitioner must follow established protocols. Independent double checks for high-alert medications should be completed; a patient's allergies should be verified verbally, as well as, two patient identifiers verified (Billstein-Leber, Carrillo, Cassano, Moline, & Robertson, 2018). The goal of this study is to identify the need to continue verbal patient identification and allergy verification along with the use of a barcode medication administration system.

Theoretical Framework

The introduction of technology to the healthcare field was meant to aid in efficiency, productivity, and patient safety. Technology was not meant to replace basic nursing care. Many capabilities of technology will often aid an end-user in discounting the basics and skipping vital steps in safety. Errors in medication administration are a major concern for patient safety. Technology is intended to reduce medication errors and distractions for nurses during a critical skill intervention with patients (McMahon, 2017). With the amount of data available today, nurses should develop the necessary skill set to understand and manage quality and safety data (Easter, &Tamburri, 2018). The use of technology can be included as a health promotion technique for nurses. Nurses use health promotion techniques to educate patients on safe, healthy choices. Nola Pender (1996) developed the Health Promotion Model to use as a guide for exploring the processes that motivate behaviors directed toward health improvement (McEwen, & Wills, 2014). The major concepts of the Health Promotion Model are individual characteristics and experiences, behavior-specific cognitions and affect, and behavioral outcomes (McEwen, & Wills, 2014).Health promotion interventions are paramount for improving the health of the populations being served. In an acute care facility, nurses are taking care of an acutely ill population. The use of technology aids in that care. When the reliance on technology starts to overshadow the basic, fundamental skills of patient care, errors can occur.

Under Pender's Health Promotion Model, nurses should use their prior related behaviors with patient care, along with personal experience, and apply it to their care of their patient. The use of personal characteristics and experiences can assist a nurse in providing safe, competent care to their patients. All nurses go through training in patient care, to verify their patient's information. Nurses are trained to ensure they are safe with their care, to use behavior-specific cognitions and affect. To use the training received in situational context and react appropriately. Following care, nurses are trained to determine the outcomes of the performed interventions.

Pender's Health Promotion Model is useful in this study because along with literature review, the direct observation of nurses can aid in the understanding of where breakdowns occur in patient care with the use of technology. The data collected during the direct observation can provide insight on the individual characteristics and experiences, the behavior-specific cognitions and affect, and the behavioral outcomes used by the nurses. Are the nurses using their basic, fundamental training while caring for patients? Are nurses utilizing the resources available to them to effectively, efficiently and safely care for their patients? Are the perceived benefits to actions rooted in evidence based, best practice or methods of cutting corners? Are the behavioral outcomes health promoting, or did they endanger the patient? The use of Pender's Health Promotion Model will provide the necessary framework to explore the above questions, along with determining the percentage of observed nurses at a local acute care facility that still use their fundamental skills in practice.

Review of Literature

To determine articles appropriate for this project, the following key words and article yields were used as a basis to begin research into verbal patient identification while using an electronic mediation administration program. An active search was performed in the Georgia Library Learning Online Scholar (GALILEO) program. The parameters within the search query were set to seek out full-text, peer reviewed, scholarly journal articles within a five-year time frame of 2014-2019. The keywords used were: Hospital safety grades (58,154 yield); Leapfrog surveys (1454 yield); medication errors related to technology use during medication administration (14,796 yield). To narrow query results, only the articles that were listed as a full Adobe portable document format (pdf) document were selected, then the abstracts of articles would be reviewed as these are typically the most applicable results toward the initial query. The decision was made to use no more than thirty articles from each query search. From the initial thirty articles, only the articles that directly related to the research were selected.

Medication Administration and Errors

Medical errors and adverse drug events are among the two largest sources of healthcare related injuries, they contribute to nearly 44,000 to 98,000 deaths per year (Lee, Lee, Kwon, & Yi, 2015). Medication noncompliance behaviors, on average, have been estimated at seven percent, with an error occurring on every other admission. To address these errors, health information systems have been implemented to aid in error alleviation. If end-users are not positive about the newly implemented programs, the system will become useless and noncompliance behaviors will begin to emerge and cause workflow disruption (Lee, Lee, Kwon, & Yi, 2015). Billstein-Leber, Carrillo, Cassano, Moline, and Robertson (2018) stress that a medication error can occur during any moment in the medication-use system. The end goal for medication administration is to achieve a desired outcome that will improve a patient's quality of life at minimal risk. To ensure minimal risk, the five rights of medication administration should be observed—the right patient, the right drug, the right dose, the right route, and the right time. The list of rights should be confirmed prior to medication administration to aid in the prevention of medication dispensing and administration errors (Billstein-Leber, Carrillo, Cassano, Moline, & Robertson, 2018).

Patient Safety

Vicente Oliveros et al. (2017) discuss patient safety with the use of technology, specifically an electronic medication administration record. The implementation of health information technology has provided the means to continually improve patient safety outcomes. Widespread use of computerized order entry systems, and electronic medication records can improve care delivery efficacy, but the potential to introduce new errors and risks should be considered. Direct observation of end-users working in the electronic health record can provide data on effective technology use for the safety of medication administration (Vicente et al., 2017).

Self-Reporting to a Third Party

With the implementation of health information technology, self-reporting has become much easier for health care systems. The information provided in the self-report typically is obtained through direct observation of the tasks being evaluated.

There are several third-party reporting services, examples include Consumer Reports Hospital Safety Score, U.S. News and World Report Hospital Rankings, and the Leapfrog Hospital Safety Score, who monitor acute care facility patient safety scores and report them in a user-friendly, easy to read format for health care consumers to review (Smith, Yount, &Sorra, 2017).The reliance on a patient safety score can provide acute care facilities the data needed to educate staff of the importance to follow the basics of care. The score will provide the important feedback to utilize and follow safety standards and measures. The safety scores will aid a facility in the development of a culture of safety (Smith, Yount, &Sorra, 2017).

Culture of Safety

The establishment of a safety culture will foster the growth of compliance behaviors. The safety culture of an organization has impact on staff opinions, attitudes, and behaviors toward safety practices (Omidi, Akbari, Hadavandi, &Zarei, 2018). The lack of a culture of safety can render a poor safety score. The complex and dynamic nature of patient care processes and the various types of system end-users can trigger gaps between the intended process and the actual process. This can render negative perceptions about technology. Nurses, at times, will not verify or update medication orders within the electronic medication administration record. These noncompliance behaviors are detrimental to patient safety, the culture of safety, and overall safe workflow (Lee, Lee, Kwon, & Yi, 2015).

Conclusion

Overall, there is an abundance of literature to support the need to use verbal patient identifiers when administering medications while using an electronic medication administration program. Several researchers are calling for a culture of safety within care facilities to aid in ensuring nurses are using every safety measure possible when caring for patients. According to Vicente Oliveros et al. (2016) medication errors are the most common mistakes affecting patient care and can be costly. To alleviate this burden, there has been a shift toward the use of standardized technology to aid in communicating patient safety data. There are alerts within medication administration records, there are physical labels placed on medications, and there are bands placed on patients, all of this to draw attention to patient safety needs (Vicente Oliveros et al., 2016).

Many hospitals have implemented the patient safety culture to assess for areas of improvement and to provide information to the staff on what is important in the healthcare organization. Hospitals with higher patient safety culture scores tend to have more positive assessments of care on third party hospital safety surveys (Smith, Yount, &Sorra, 2017). The safety culture has an influence on staff attitudes and behaviors. Buy-in with organizational patient safety cultures can enhance the quality and safety within the healthcare setting (Omidi, Akbari, Hadavandi, &Zarei, 2018).

To mitigate safety concerns, healthcare organizations have implemented health information systems to solve issues with safety (Lee, Lee, Kwon, & Yi, 2015). Health information systems (i.e. barcode medication administration-BCMA) become useless when users do not follow established protocols. Nurses sometimes will not verify orders, or update orders in the BCMA system and thereby interrupt workflow. These workflow interruptions and noncompliance behaviors lead to an increase in risk for errors. Currently, there is no clear understanding of the root of noncompliance behaviors and a resolution (Lee, Lee, Kwon, & Yi, 2015).

The purpose of the BCMA system is to reduce errors in the medication administration process. The process is a four-step system for nurses to follow:

- Preparation- the nurse obtains the medications and supplies need to administer the mediations;
- Scan- the nurse scans the patient's armband and medication barcodes;
- Match- the nurse ensures the patient information and medication information from the medication administration record matches the right patient, the right medication, the right dose, and the right route;
- Follow-up- medications are prepared and administered, the scanner is returned to the docking station, medication administration information is logged and saved, and the nurse logs out of the system (Lee, Lee, Kwon, & Yi, 2015).

As noted in the match step of the BCMA usage system, nurses are still required to identify the patient, although the method of identification is not specified. This project will investigate the verbal method of patient identification with the use of technology during medication administration.

Methodology

The purpose of this paper is to identify the use of fundamental nursing skills and reinforce the importance of verbal patient identification while using electronic medication administration programs, specifically barcode medication administration (BCMA). To investigate this concern, several articles have been surveyed to determine the research and literature available on the topic. In an effort to determine the concept in action, a local acute care facility approved the direct observation of the nursing staff in various departments to determine the percentage of observed staff using the correct methods and policies when administering medication to patients.

The target audience for this research is the nursing profession. The target audience will include individuals from early nursing education to those in active practice. The information gathered from this study will be used to educate learners on the importance of maintaining the fundamental nursing skills and always returning to the basics. The results of this project will be used to determine the acute care facilities patient safety score on the Leapfrog Survey.

Implementation

Over the course of three months, the nurses at an acute care facility were directly observed while administering medications to patients. The nurses were advised that the observer was not present to watch the actual medication administration, but merely on the floor to learn how end-users use the electronic health record (EHR) and observing nurses accessing the medication administration record is the quickest method for observing documentation and electronic health record usage. During the observation, notes were taken concerning the patient's situation and the context of EHR use. A tool was provided by the information systems department (Appendix A) for use during observation.

The observation tool asked a series of questions that the observer would specifically seek to witness. When completing the tool, the observer would mark a yes or a no in the column for the applicable question. The observer did not disclose the days, times, or shifts for observation. Arrival to the desired observation location would be random, the charge nurse for the unit would be address and advised of the observer's presence, and observation would ensue. The observer's goal per observation shift would be four nurses per experience, with a grand total of sixty nurses observed.

Of the nurses observed, percentages were derived based on select factors:

- Is the nurse a regular employee;
- Is the nurse a traveler;
- Did the nurse follow protocol?

The data derived from the tool were used to determine the acute care facility's Patient Safety Score through a third-party survey company. The selected survey company was Leapfrog (Appendix B). Acute care facilities participate in these self-reporting surveys to aid in patient care improvement, patient safety improvement, and to facilitate health-care consumer access to information.

Discussion

The use of technology in health care has provided a vast array of benefits to both the consumer and providers. Technology has provided the healthcare consumer the opportunity to gain more in-depth information on healthcare practices and options available. There is such a plethora of information now available to consumers, there is a need to assist with the research and provide direction toward the desired information. To aid consumers with obtaining the information required to make informed decisions, third party reporting and survey companies offer the patient safety score. The patient safety score provides healthcare consumers with the information on infection rates, nurse to patient ratios, physician infection and patient death rates, and medication administration safety rates. The third party reporting agency used for this study is Leapfrog. The desire to obtain a high patient safety score pressed the local acute care facility to begin educating staff on best practice and standards. Following the education, the facility began to perform anonymous direct observation of end-users while they are accessing the medication administration record and administering medications.

The observer would make note on the patient safety features used during medication administration along with any workarounds the end-user might use to expedite care or avoid a disturbance in workflow. The number of the initial observed group of nurses at the local acute care facility was sixty.

Every department was represented through an observation. Nurses were selected at random and were not made aware of the nature of the observation. The initial results were surprising to the acute care facility. Of the sixty nurses observed, 82% of the nurses were witnessed using verbal patient identification and 90% were observed not using workarounds during their workflow.

This study continues this research. There is a desire by the acute care facility to improve safety scores and to determine the level of information was retained by the nursing staff based on the education received in the previous year based on the observed results. The observations of nurses were conducted in the same manner as the initial observations. The observer would select nurses at random and would not advise of the purpose of the observation. Nurses were lead to believe that an information systems student would be coming to the floor to observe end-users working in the EHR and seeking nurses to show how to use the system. If nurses asked the observer for any specific information related to the observation, the observer would advise that there was a need to understand the end-user's workflow for the ability to answer any calls that came through the help desk.

The new batch of results was not very much improved from the initial observations. In this observation cycle, 44.26% of the observed nurses were witnessed performing verbal patient identification and 91.8% of the observed nurses were witness not using a workflow workaround. The same number of nurses was observed, sixty, and every department was represented through the observation numbers.

When comparing the results from the initial study to the results of this study, there is some call for alarm and lots of room for safety improvement. There is a major disconnect for patient safety with medication administration. Each department was made aware of the results from the initial study and several steps were made by nursing leadership within the acute care facility to remedy the issues with patient verification and workaround usage. The same will occur again following this review. Departments will be made aware of the nurse's performance specific to their specialty area, as well as, the enterprise wide results.

Conclusion

Technology is key in early diagnosis, treatment, and administration of care for some of the most devastating diseases (Zhang, Liu, Zhu, & Si, 2015). It is used to improve patient experiences, patient knowledge, and overall patient safety (Smith, Yount, &Sorra, 2017). Nurses cannot abandon the fundamentals of patient care. Regardless of the newest technological developments there is still room for error and endangerment. Medication errors can occur at any given time during the medication-use process. The "five rights" of medication administration should always be confirmed prior to administration (Billstein-Leber, Carrillo, Cassano, Moline, & Robertson, 2018).

This study has brought to light the evidence that nurses are beginning to abandon the ideals learned in the basic nursing courses. Effective and safe patient care is the fundamental structure of nursing. The nurses within the acute care facility have slowly begun to diminish the usage of the five rights in favor of the quick scan option the BCMA offers. As a result, the facility's patient safety score through the LeapFrog Survey Reporting group will be negatively affected.

Limitations

This study was only conducted within the confines of one acute care facility. The observed population was not large enough to significantly represent the entire nursing force for the health care system. Although the subjects were selected at random, several nurses were observed more than once and some nursing units were observed more than others. To gather a truly representative population to provide significance, the study will need to last longer and information concerning the size of the nursing workforce will need to be provided and examined to determine the methods for complete and equal representation during observation.

Acknowledgements

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Appendix A

BCMS Audit Tool							
Unit:							
Objective: 2018 Leapfrog Survey Standards require real-time observations of the BCMA system in use. To meet this standard, RNs should be observed for the following actions during medication administration.							
RN Observed	**Date & Shift**	**Did the RN verbally identify the patient using name and DOB? Y/N**	**Did the RN scan the patient's armband? Y/N**	**Did the RN scan the medication or manually enter the medication?**	**Were all of these items completed prior to medication administration? Y/N**	**Did the RN use a workaround or proper protocol avoidance? Y/N**	**What was the workaround witnessed, the reason for using it, and any additional comments as needed?**

Appendix B