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Electronic Bedside Documentation and Nurse-Patient Communication: A Dissertation

Cynthia Gaudet

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Electronic Bedside Documentation and Nurse-Patient Communication

A Dissertation Presented by

Cynthia A. Gaudet

Submitted to the Graduate School of Nursing

University of Massachusetts Worcester

In partial fulfillment of the requirements for the degree of

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Graduate School of Nursing

Electronic Bedside Documentation and Nurse-Patient Communication

A Dissertation Presented

By

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April 25, 2014

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Dedication

To my husband, Tim, and my children, Jenny, Lizzy, and Timmy. I am grateful for your patience as I pursued my personal and professional growth. It is your love that is the essential ingredient to my success.

Acknowledgement

I gratefully acknowledge the support and encouragement that I received along the way from many people.

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My friends and my colleagues, both past and present, who were always ready to listen to some laughs and some tears. My students frequently reminded me that I could do this. The members of the health care team, including patients, were willing to allow me that glimpse into their care.

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ABSTRACT

Nurses are often the first members of the health care team with whom patients interact. The initial impression of the nurses' receptiveness to the patients' needs influences the patients' views of their overall care. Researchers have suggested that understanding communication between individuals can provide the human link, or social element, to the successful implementation and use of electronic health records, including documentation (Lanham, Leykum, & McDaniel, 2012). Zadvinskis, Chipps, and Yen (2014) identified that the helpful features of bedside documentation systems were offset by the mismatch between the system and nurse's workflow. The purpose of this micro-ethnography study was to explore the culture of nurse-patient interaction associated with electronic documentation at the bedside. Data were collected through passive participant observation, audio-taping of the nurse-patient interactions, and informal and semi-structured interviews with the nurses. A total of twenty-six observations were conducted on three nursing units at an urban healthcare facility in New England. These three units were occupied by similar patient populations and all patients required cardiac monitoring. Three themes consistently emerged from qualitative data analysis: the nurses paused during verbal communication, the nurses played a game of tag between the patient and the computer, and the nurses performed automatic or machine-like actions. The participants described these themes in the informal and semi-structured interviews. The nurses' actions were observed during passive participant observation, and the audio-taped interactions supported these themes. Understanding the adaptation of caregiving necessitated by bedside electronic documentation will have a positive impact on developing systems that interface seamlessly with the nurses' workflow and encourage patients' active participation in their care.

CHAPTER 1

State of the Science

Introduction

The American Recovery and Reinvestment Act (ARRA) of 2009 has allocated twenty-five billion dollars to facilitate the adoption of health information technology, including electronic documentation (Department of Health and Human Services, 2010). Over a span of ten years, the ARRA will be investing 147 billion dollars in health care related services (Department of Health and Human Services, 2010). The health care system has been mandated by Congress to move toward this technology, including electronic documentation. Financial incentives for qualified adopters of electronic health information management have been put in place, while incremental reductions in Medicare reimbursement will begin in 2015 for failure to utilize this technology (Committee on Ways and Means, 2009).

The Institute of Medicine (2011a) has estimated that over three million nurses will be providing care in varying capacities using some form of electronic medical record, including documentation. The average hospital stay for a patient was estimated at 4.9 days (Centers for Disease Control, 2012). The hospitalized patients receive nursing care in a busy, technologically based environment that includes intravenous pumps, monitors for oxygen levels, heart rate, and blood pressure, as well as computers for documentation. This environment amplifies patients' concerns and anxiety, challenging nurse-patient communication (Rosenberg & Gallo-Silver, 2011). As electronic documentation replaces the paper chart, nurses are on the front line of implementing and utilizing this health information technology.

Electronic documentation provides the nurse with a central repository to track patient progress, decreases the amount of time spent on administrative tasks, and increases the amount

of time that the nurse can be at the bedside (Institute of Medicine, 2011b). Researchers have suggested that nurses are receptive to the change from paper to electronic documentation, and that nurses believe the electronic documentation will be a valuable tool in the provision of nursing care (Dahm & Wadnesten, 2008; Kossman & Scheidenhelm, 2008; Lee, 2006; Moody, Slocumb, Berg, & Jackson, 2004). In these studies, the participants (registered nurses) indicated that they did not wish to return to paper documentation and that the quality of documentation was improved by the use of an electronic system.

Researchers have demonstrated that the use of an electronic intensive care information system, which interfaces with bedside devices such as medication pumps, can add to the amount of patient information without adversely affecting the time it takes the nurse to obtain the data (Bosman et al., 2003). In a randomized controlled trial with a crossover design, Bosman et al. (2003) suggested that the time saved by nurses per eight hour shift using an electronic health information system for ongoing documentation was 29 minutes as compared with the existing paper system, and more extensive patient data were recorded with the electronic system. The study was conducted in a medical-surgical intensive unit with cardiothoracic surgery patients (N = 145). The researchers suggested that the time saved could be devoted to patient care (Bosman et al., 2003).

Dahm and Wadnesten (2008) suggested that nurses believe developing a standardized care plan using electronic records could be helpful in providing consistently high quality nursing care. Lee (2006) arrived at a similar conclusion, and suggested that the nurses might use computerized plans of patient care as reference for care and as teaching tools that aid them in providing quality care. Moody et al. (2004) suggested that nurses perceived use of electronic records as resulting in overall improvement in documentation. As a result of improved

documentation, the nurses in these studies believed that overall patient care and safety would also improve. In 2008, Kossman and Scheidenhelm suggested that nurses prefer to use an electronic documentation system over paper. The participants (N = 46) reported that access to patient information and organization of patient information was expedited by electronic documentation. These participants also suggested that this leads to improved efficiency in providing patient care (Kossman & Scheidenhelm, 2008).

The Institute of Medicine (2011b) stated that health information technology will change the fundamental way that nurses document patient care. Nurses should become less task orientated and have more opportunities to communicate with and support their patients and their patients' families (Institute of Medicine, 2011b). However, as indicated by the investigators in the study (2011b) and Spencer and Lunsford (2010), little is known about nurse-patient communication that takes place during electronic documentation at the bedside.

Findings from the studies by Timmons (2003), Kossman and Scheidenhelm (2008), and Duffy, Kharasch, and Du (2010) suggested that when nurses use electronic documentation, the communication between the nurses and the patients is not dynamic. There is no give and take between the nurse and the patient. The nurse carries out an action automatically, without any discussion or input from the patient. Patients' acknowledgment that their needs are either still present, not improved, or resolution is limited. Moreover, Kossman and Scheidenhelm (2008) suggested that electronic documentation creates task driven give and take communication between the nurse and the patient, and that communication is based on marking off an electronic checkbox. The participants (N = 46) reported that their attention was diverted away from the patient and toward the computer (Kossman & Scheidenhelm, 2008).

The purpose of this study was to explore the culture of nurse-patient interaction associated with electronic documentation at the bedside. The specific aims of this study were: 1) to describe nurse-patient interaction as demonstrated in verbal and non-verbal reciprocal communication; 2) to identify the emerging overt and unspoken patterns of nurse-patient communication while using electronic documentation; and 3) to identify nurses' actions, either automatic (without discussing with the patient) or deliberative (involving reciprocal communication with the patient), that occur while integrating electronic bedside documentation into patient care. The study design was micro-ethnography. The primary modes of data collection were passive participant observation, audio recording of the nurse-patient interactions, and interviews, both informal and semi-structured. This study added to knowledge about nursing practice and electronic documentation at the bedside, the environment of that bedside practice, and nurse-patient communication as it is occurred in real time.

The following text provides context of health information technology. The concepts of nurse-patient interaction without electronic documentation are examined. Also, nurse-patient interactions and nurses' perception of the care provided with respect to bedside electronic documentation are examined.

Health Information Technology Background

The move from paper to computerized documentation is projected to improve hospitalized patient outcomes while decreasing the cost of care. The impetus for this major change originated from a national interest in improving health care safety. Brennan, et al. (1991) suggested that patient safety was compromised as the direct result of failures of medical management and substandard care. Examples of suboptimal care were illustrated in the Institute of Medicine Report (IOM), *Too Err is Human: Building a Safer Health System* (2000). The

IOM report revealed that medical errors are one of the leading causes of death, contributing to a loss of life that is greater than that from motor vehicle accidents, breast cancer, or acquired immune deficiency syndrome. Conservative estimates indicated that over 44,000 Americans die each year from medical errors, with other investigators suggesting that the number may be as high as 98,000. Fragmentation and breakdowns in communication within the health care delivery system were identified as components of this multifaceted issue (Institute of Medicine, 2000).

Communication

The American Association of Critical-Care Nurses (ACCN) (2005) stated that communication is one of the six essential standards for professional nursing practice. This standard is stated as: “Nurses must be as proficient in communication skills as they are in clinical skills” (ACCN, 2005, p 2). Communication is defined as transmitting a message and exchanging information. It can be verbal, nonverbal, or written (Webster, 1994).

Verbal and nonverbal communications occur concurrently. Verbal communication is the exchange of words (Cypress, 2011). Nonverbal communication can have a stronger influence in the message than the actual spoken words (Caris-Verhallen, Kerkstra, & Bensing, 1999; Heintzman, Leather, Parrott, & Cairns, 1993). According to Caris-Verhallne et al. (1999), non-verbal communication, which can be as much as ninety-seven percent of total communication expresses attitudes and emotions, supports verbal communication, and can be used in place of language. Examples of nonverbal behaviors are smiling, eye contact, affirmative head nods, touch, and juxtaposition of the body that reflects listening, such as leaning forward (Caris-Verhallen et al., 1999; Heintzman et al., 1993).

Interpersonal communication is communication between two individuals that is dynamic, and builds context or meaning to a situation that helps both parties to understand the gist of the exchange (Cypress, 2011). Interpersonal communication occurs when a need arises in a given situation (Step & Finucane, 2002). Examples of these needs are the need to be included or appreciated, gain agreement, or relieve stress. Garvin and Kennedy (1986) suggested that interpersonal communication is observable. Beneficial interpersonal communication requires (a) the exchange to have recognition of the other person, not a one-sided conversation; (b) an applicable response, not a change in topic; and (c) acceptance of the other person or a willingness to be included (Garvin & Kennedy, 1986).

Drew and Heritage (1993) described communication that lacks these interpersonal characteristics as institutional talk. The communication is unidirectional and asymmetrical. One person, the one with authority, controls the topics. Patterns of speech evident in normal conversation, such as an insertion sequence or a repair of understanding, are not present. The prevalence of institutional talk in healthcare settings is clearly documented, particularly that associated with physician-patient relationships (Drew & Heritage, 1993). Communication that is not dynamic opens the possibility that no knowledge or understanding is gained about the patient, and the expression of need by the patient is unnoticed.

The value of interpersonal communication and the communication skills of the nurse cannot be underestimated. According to Wysong and Driver (2009), interviews (N = 32) with patients in a progressive care unit of a community hospital were used to identify the verbal and nonverbal communication capabilities of the nurses. The participants indicated that the most critical attributes of a skilled nurse included being a good listener, following through, having a sense of humor, displaying confidence, caring, compassion, smiling, and touch. In contrast,

rudeness, abrupt responses, and displaying frustration were identified as negative attributes, and detracted from the patient's willingness to work toward outcomes (Wysong & Driver, 2009).

According to Tejero (2011), nursing interventions do not solely influence patient outcomes. Nurse-patient interactions have a direct effect on patient satisfaction and learning. Trained observers examined interactions between registered nurses and patients (N =210) using the Nurse-Patient Bonding instrument, in conjunction with interviews and chart reviews. Tejero (2011) suggested that the patients whose nurse communicated more information experienced an improved response to learning ($P < 0.001$), and these patients expressed satisfaction with their care ($P < 0.001$). The tone of the message between the nurse and patient, the openness of the communication, and the level of nurse-patient engagement also impact patient outcomes. Palese et al. (2011) reported from a study that involved six European countries and 1,565 patients, that satisfaction was achieved when the nurse demonstrated knowledge, skill, confidence, respect toward the patient, and understanding. A correlation design was used that demonstrated a positive correlation between the nurses' behavior and patient satisfaction ($r = 0.66$, $p < .01$). Satisfaction had a positive influence on patients' adherence to recommendations and treatment (Palese, et al., 2011).

Nurse-Patient Interpersonal Communication

In the pilot study by Duffy, et al. (2010), registered nurses (N =24) participated in performing an admission interview under a simulated environment. The nurses were divided into two groups, one using paper documentation and the other using point-of-care (POC) documentation. The interviewees were hired to participate, and therefore the setting was not a typical hospital location. The admission interviews were video and audio recorded. The increased time spent on an admission interview using POC documentation as compared to paper

was statistically significant ($P = 0.001$). Although the nurses who used POC documentation ($N = 15$) spent more time with the interviewee, 60% of the overall time was spent looking at the computer screen (Duffy, et al., 2010). In spite of the more thoroughly completed medical record with POC documentation, the users of the POC documentation missed some information reported by their patients. Interpersonal communication broke down, as nurses lost part of the transmitted message when using electronic documentation. Comparing nurses who used paper ($N = 9$) with nurses who used an electronic admission assessment, the researchers discovered that nurses who used the latter lost the informational prompts from the patient to the nurse (Duffy et al., 2010).

Nurses' use of technology varies based on the setting. Examining communication during end-of-life care of patients in the intensive care unit, Bloomer, Lee, and O'Connor (2010-2011) suggested that communication with patients and families is not reflected in documentation. A retrospective review of the medical records of twenty-four patients who died in the intensive care unit suggested that technology does not capture communication beyond task driven activities. Kongsuwan and Locsin (2011) described the experience of patient care from the perspective of eight nurses in an adult intensive care unit. Technology was viewed as a tool to improve the nurses' knowledge about the patients. Several themes emerged from this hermeneutic phenomenological study. One theme was that technology decreased the nurse's involvement with the patient. Another theme was reduction of the physical space as a result of the technology (machines) in the patient's room. The respondents indicated that "using technology fosters less patient contact", "primacy of technology leads to less caring", and "sometimes the patient is waiting for our eyes but our eyes don't look at the patient" (Kongsuwan & Locsin, 2011, p. 106,).

In 2012, Pillemer, et al. examined the electronic health information system in the long-term care setting. The aim of the prospective, quasi-experimental study was to address quality of care outcome indicators and resident satisfaction with electronic health information technology. No changes occurred in mortality, mobility, the number of falls, or the activities of daily living. Residents overall were satisfied and did not feel that care was compromised by the electronic technology, except when they were asked about the amount of time that staff members spent with them. Almost a quarter of the 278 residents stated that the handheld electronic health information system diminished the amount of time that the staff spent on interpersonal communication. Margalit et al. (2006) illustrated this breakdown in interpersonal communication. From their findings, these researchers suggested that the computer acted as a third party during physician-patient exchanges, diverting the physician's attention from the patient.

Nurses' Perceptions and Electronic Documentation

In a 2008 descriptive qualitative study, Kossman and Scheidenhelm suggested that nurses (N = 46) perceived the electronic medical record as an important tool in the provision of safe care. The major improvements associated with the electronic medical record included increased access to patient information, increased efficiency of information retrieval, and improved organization through task lists and systematic charting. However, 34 of 46 respondents indicated that at least half of their time was spent with the electronic medical record. Additional impediments to nursing care included the stifling of critical thinking due to mundane check-in-the-box forms, and the failure of both doctors and nurses to read electronic notes (Kossman & Scheidenhelm, 2008).

The nurses in the Kossman and Scheidenhelm (2008) study conducted electronic documentation on either a mobile computer located on a cart or at a computer on a desk. Although the nurses could take the mobile computers into the patients' rooms, the nurses stated that they felt that the electronic documentation “. . . distanced them from patients” (Kossman & Scheidenhelm, 2008, p. 74).

Patients reported direct questioning, such as completing a checklist with yes or no responses, as insensitive (Rosenberg & Gallo-Silver, 2011). As soon as the response to one question is checked off, the next question is posed. This type of direct questioning is closed-ended and affords the responder no opportunity to participate in the plan of care.

Timmons (2003) explored the opposition of nurses to the use of an electronic documentation system. The thirty-one participants were currently practicing nurses, who were full-time employees in a hospital and had greater than three years of experience. Interviews were used to elicit the information. Timmons (2003) suggested that nurses found using an electronic system for documentation of nursing interventions resulted in compartmentalized care, which detracted from the individuality of each patient. Further findings suggested nurses were concerned that their autonomy was stifled by a task driven electronic system (Timmons, 2003). Therefore, Timmons (2003) and Kossman and Scheidenhelm (2008) suggested that electronic documentation resulted in task driven, compartmentalized nursing care.

Nurses agreed that electronic medical records provide the potential to improve patient safety and care (Moody, Slocumb, Berg, & Jackson, 2004). In this descriptive study of nurses (N=100), a majority, 64%, preferred electronic bedside documentation. The documentation consisted of vital signs, medications, assessments, and notes on patient progress. However, the nurses reported that the bedside environment for the hospitalized patient was not conducive to

this activity. Interruptions and the physical space within the room were major deterrents to bedside electronic documentation. Although nurses preferred the electronic method of documentation, further exploration of the environment in which it is conducted, the patient's bedside in the actual clinical setting, is needed in order to identify how bedside electronic documentation can be improved.

Nurse-Patient Interpersonal Communication - Cues

There has been a recent increase in the amount of research whose investigators examine nurses' responses to patient cues. Cues have been defined by the European Association of Communication in Health Care as verbal or nonverbal expressions or signals that are indicative of a concern that requires further exploration (Uitterhoeve et al., 2007). Through a descriptive observational study, Uitterhoeve et al. (2007) explored nurses' responses to a patient's verbal and nonverbal cues. Ten minute interviews were simulated and videotaped, with an actor playing the role of the patient who has cancer, and five oncology nurses, having an average of fifteen years of experience, conducting the interviews (N = 32). The findings suggested that when patients do not directly express their concerns, but instead communicate that something is wrong through more subtle verbal and or nonverbal cues, nurses responded to only half of the patient's cues. The other cues elicited responses including distancing behaviors such as switching the focus, providing inappropriate reassurance or advice, passing the problem on to the next health care professional, clarifying facts without exploring the actual concern, or obstructing the patients' responses.

In a subsequent explorative study of patient satisfaction and nurses' responses to cues, Uitterhoeve et al. (2009) analyzed one hundred patient-nurse conversations, each twenty minutes long, with patients who had cancer. Nurses picked up on and responded to forty-five percent of

cues by acknowledgment or further exploration. When nurses acknowledged the patients' cues, patient satisfaction was improved. However, the frequency of distancing behaviors by the nurse was a prominent finding. Distancing behaviors were open direct questions that did not reflect the patient's prior turn or reflected only a portion of that turn. This is a dynamic interaction that allows the person in authority to thrust the conversation in a new direction, without acknowledgement or exploration of the patient's concern (Uitterhoeve et al., 2009).

Jansen et al. (2010) studied the role that the nurse's response to patient cues played in chemotherapy education for 105 patients who had cancer and were 65 years old or greater. The patients completed a questionnaire to determine their recall of the education session, and a subsequent analysis comparing the videotaped session to the questionnaire was conducted. Jansen et al. (2010) found that older patients with cancer demonstrated improved recall of information following the nurse's acknowledgement of patients' emotional cues. In contrast, distancing from emotional cues negatively influenced patient recall. Emotional cues were classified as hints, brief mentions, or clearly expressed concerns. Acknowledgment by the nurse included further exploration of the cue, such as clarification or an empathetic statement.

A potential benefit of the electronic medical record is improved point-of-care documentation, but the impact of this routine practice on nurse-patient communication at the bedside remains relatively unexplored. Before the introduction of bedside electronic documentation, Ashworth (1984) and Shattell (2005) addressed nurse-patient communication. Each investigator described dynamic exchanges between the nurse and the patient, in which the nurse did not validate or authenticate perception or subsequent nurse action with the patient. Ashworth (1984) proposed that nurses' communication with patients occurred when the completion of nursing tasks was required. While completing the task, which is described as a

procedure either planned or unplanned by the nurse, the nurse controlled the subject matter and duration of the communication.

Shattell (2005) suggested that patients desire social interaction and need encouragement to describe if nursing action has improved or resolved their need. Short hospital stays, high patient acuity, and rapidly changing clinical presentation have increased the need for effective communication between the nurse and the patient. Patients will not provide information about improved or resolved needs, as they do not wish to be perceived by the nurse as adding extra work (Shattell, 2005).

Impetus for This Study

Nurse leaders and educators from across the world were asked by Sigma Theta Tau International to identify ten of the most important issues that the nursing profession will be facing over the next three years (Sigma Theta Tau International, 2011). The second most important issue identified was the impact of technology on nursing care. Technology must be integrated into patient care, and the successful integration of technology should result in improved patient outcomes. Concerns that were identified regarding the incorporation of technology included the technology's capacity to prevent the nurse from seeing the patient as a whole, the potential loss of compassionate care, and the risk of working for the computer instead of with the patient (Sigma Theta Tau International, 2011). Exploring the culture of nurse-patient interaction with electronic documentation at the bedside added to our knowledge on reciprocal communication, both verbal and non-verbal, and the nurse's action, whether discussed with the patient or carried out without discussion.

Purpose

The purpose of this study was to explore the culture of nurse-patient interaction associated with electronic documentation at the bedside in a hospital environment and in real time. Nurses reported feeling that they were moved away from their patients while using electronic documentation (Kossman & Scheidenhelm, 2008), even when they were attempting to interact with the patient. However, while electronic documentation might be interrupting their interactions, other factors such as time constraints may also have a powerful influence on their communication. This study was intended to add to knowledge about nursing practice at the bedside, the environment of bedside practice, and nurse-patient communication. For this study, I moved the work of prior investigators into a hospital location, used a non-simulated setting, and explored the environment of nursing and bedside electronic documentation as events transpired.

Significance to Nursing

Nurses are often the first members of the health care team with whom patients interact. The initial impression of the nurses' receptiveness to the patients' needs influences the patients' views of their overall care. Hospital executives recognized this, and understand that the nurses' communication skills are linked to best care practices and the overall healthcare experiences (Elliott, Kanouse, Edwards, & Hilborne, 2009). The Centers for Medicare and Medicaid Services surveyed patients about their overall hospital experience, and identified that one of the quality of care indicators is communication with nurses (Centers for Medicare & Medicaid Services, 2008). The knowledge gained from this study informs health care professionals, including bedside nurses, nurse educators, hospital executives, and software developers, of nurse-patient interactions associated with electronic bedside documentation.

Lanham, Leykum, and McDaniel (2012) suggested that understanding communication between individuals can provide the human link, or social element, to the successful implementation and use of electronic health records, including documentation. These investigators used a multi-method qualitative study design to explore communication patterns in ambulatory care. Observations as well as semi-structured interviews were conducted across six practice areas, with observations of physician-nurse teams (N=21). The characteristics that resulted in effective utilization of an electronic health record were face to face interactions, a willingness to be open, being mindful of the impact of ones activity on others, respecting diversity, appreciating the interactions, being social, and being fully engaged. The investigators' data analysis demonstrated that practice areas such as family medicine that possess these characteristics also had better communication and more effective use of electronic medical records than did practice areas deficient in these characteristics. This new knowledge, understanding the communication or social component associated with electronic health records, can also aid in identifying areas where funding and financial incentives provide the most benefit (Lanham, et al., 2012).

Communication is a component within the nine Essentials of Baccalaureate Education in Nursing (American Association of Colleges of Nursing, 2008). Electronic documentation and communication play a dual role in Essential IV: Information Management and Application of Patient Care Technology. Graduates of an accredited baccalaureate nursing program must demonstrate skill in using electronic documentation, as well as in communicating effectively with the patient and the intra-disciplinary health care team.

Electronic documentation has also been integrated into nursing education. Students in nursing develop communication skills in the clinical setting (Rosenberg & Gallo-Silver, 2011).

Electronic portals have been established facilitating learning about electronic documentation and communication. One example is The Student Nurse Portal, which was developed by the Cleveland Clinic in conjunction with educators who are members of the Deans' Roundtable (Bowers, et al., 2011). Students in nursing are required to complete three self-paced courses. The courses are designed to reinforce patient rights, as well as the legal and ethical implications of electronic medical records. The third course demonstrates the clinical application of electronic medical records. This is one example of an educational tool now in use.

The Quality and Safety Education for Nurses (QSEN) competencies provide a framework for nursing curriculum which supports learning while preparing future nurses to improve patient safety. Managing information through technology, referred to as informatics, is one of the six competencies identified as necessary for nursing education. Incorporating the use of technology into the curriculum will provide the skills that the nurse will need when transitioning from the role of a student to that of a practicing nurse (Coronenwett, et. al., 2007). Nurse educators can apply the knowledge gained from exploring the nurse-patient interaction associated with electronic bedside documentation to further develop educational tools.

Summary

Improvements are needed to the current health care system, as adverse drug events and errors of omission or commission contribute to escalating health care costs. Researchers have demonstrated that the use of health information technology results in fewer prescription errors, reduced time on nursing administrative tasks, and less radiological redundancy, and produces a comprehensive patient record (Hillestead et al., 2005; Institute of Medicine, 2007).

Authors of current literature have noted that when electronic documentation is present, nurses focused on the computer and had to physically move between the computer and the

patient (Kossman & Scheidenhelm, 2008; Timmons, 2003). The observation of nurse-patient interactions in a simulated environment suggested that electronic documentation distracts the nurse from interacting with the patient, and nurses overlooked information that the patient provided about their status (Duffy et al., 2010). Nurses have stated that POC documentation creates a feeling of distance from the patient (Kongsuwan & Locsin, 2011; Kossman & Scheidenhelm, 2008). Yet little is known about the interactions between the nurse and the patient during bedside electronic documentation.

Exploring the culture of nurse-patient interaction associated with bedside electronic documentation added knowledge to the understanding of this phenomenon. The knowledge can be applied to improve the use of this technology for the patient, the bedside nurse, the hospital executive, students in nursing, the software developers, and potentially the policy makers.

CHAPTER 2

Conceptual Framework

Introduction

In her Theory of the Dynamic Nurse-Patient Relationship, Orlando focused on the interpersonal process between the nurse and the patient (Orlando, 1961;1990). Orlando's theory provided the guiding framework for this research. This theory was significant in shifting the focus of nursing care away from carrying out a task or function based on the physician's diagnosis. Instead, the emphasis is on guiding nurse-patient communication that validates the nurse's perception of the patient's need, and involves the patient in the care that the nurse provides (Meleis, 2007). In this chapter, I have outlined the theory, related the theory to the nursing metaparadigm, and identified applications of the theory to this study.

Outline of the Theory

Theory should consist of purpose, assumptions, definitions, concepts, and relationships between concepts (Chinn & Kramer, 2008). The Theory of the Dynamic Nurse-Patient Relationship is presented in each of these areas.

Purpose

The purpose of organizing this study through the Theory of the Dynamic Nurse-Patient Relationship is to illustrate the communication that takes place during nurse-patient interactions associated with bedside electronic documentation. Timmons (2003) and Kossman and Scheidenhelm (2008) suggested that electronic documentation is resulting in task driven, compartmentalized nursing care. Timmons (2003) explored the opposition of nurses to the use of an electronic documentation system. The participants (N = 31) were practicing nurses, who were full-time employees in a hospital and had greater than three years of experience. Interviews

were used to elicit the information instead of using an established instrument to measure a response. Timmons (2003) suggested that nurses noted using an electronic system for documentation of nursing interventions resulted in compartmentalized care, detracting from the individuality of each patient. Further findings suggested nurses were concerned that their autonomy was stifled by a task driven electronic system (Timmons, 2003). An electronic documentation system directs the nurse's action by identifying the patient's needs from a standardized plan. This in turn creates automatic care directed at completing a task as identified by the electronic system. Nurses have expressed concern that use of this system is contrary to the concept of individualization of care based on a patient's needs, and may possibly smother nursing autonomy (Timmons, 2003).

Nurses have identified the potential benefits of electronic documentation to include providing easy access to patient information, improving the speed of documentation through the use of checklists, and providing the capability to organize and store related information such as vital signs in a single location (Kossman & Scheidenhelm, 2008). Easy access to and retrieval of information allows the nurse to locate patient data, such as vital signs over the past 48 hours, in just a few seconds. The nurse no longer has to look through pages of documentation to locate information.

However, nurses have also identified that using the check box component of electronic documentation is not without consequences. Kossman and Scheidenhelm (2008) suggested that nurses (N = 46) indicated they were following through with the documentation system requirements and spending less time considering their assessment findings related to patient care.

Duffy, Kharasch, and Du (2010) proposed that the focus of the nurse-patient communication associated with electric documentation is driven primarily by the completion of

the electronic flow sheet. Nurses were distracted by the computer and not communicating with the patients as effectively as were the nurses who used paper documentation. In a simulated admission assessment, the nurses who used an electronic documentation system (N = 15) spent more overall time with their patients, but less time verbally interacting (Duffy et al., 2010). Pauses in communication, lasting between twenty and forty-five seconds, were frequent. When nurses who used paper (N = 9) were compared with nurses who used an electronic admission assessment, the researchers discovered that nurses who used electronic documentation lost the informational prompts from the patient to the nurse (Duffy et al., 2010).

The Institute of Medicine (2011b) posited that health information technology, which includes bedside documentation, provides nurses with the tools to shift the focus away from the completion of a task list. Thus, nurses will have more time to communicate with patients and provide support and guidance.

Findings from the studies by Timmons (2003), Kossman and Scheidenhelm (2008), and Duffy et al. (2010) suggested that when nurses use electronic documentation, the communication between the nurse and the patient is not dynamic. There is no give and take between the nurse and the patient. The nurse carries out an action automatically, without any discussion or input from the patient. Patients' acknowledgements that their needs are either still present, not improved, or resolved are limited.

Orlando, in her theory, separated nurse-patient communication into an interpersonal process. This interpersonal process was explained by Orlando (1961;1990) as one in which the nurse reacts or responds to a patient either automatically or deliberately. The nurse then carries out an automatic response with limited or no further communication. In contrast, a deliberative response requires validation through further communication with the patient.

Assumptions

There are three categories of assumptions associated with the Theory of the Dynamic Nurse-Patient Relationship. Orlando (1961;1990) identified assumptions associated with the patient, the profession of nursing, and the nurse. Her assumptions about the patient were that:

- the patients cannot manage their need(s) without assistance, and this in turn creates a feeling of helplessness;
- each patient is a unique individual, and therefore responses are unique;
- the patient's distress stems from a lack of understanding of the events that are occurring;
- the patients' communication abilities are hampered when they are unable to independently manage their needs;
- expressing what is thought or felt by the patient may occur freely or not at all;
- the flow of interaction is based on the responses by each party (nurse and patient);
- the meaning of what is taking place is unique to each individual;
- patients encounter the nurse through a need for medical care; and
- patients can state the meaning of their distress if the interaction with the nurse is helpful.

Orlando's (1961;1990) assumptions about the profession of nursing are that:

- the profession of nursing does not add to the patient's problems;
- the profession of nursing nurtures, not unlike a mother and child situation; and
- the profession of nursing works with health, environment, and people.

Orlando's (1961;1990) assumptions about the nurse are that:

- expressing what is thought or felt by the nurse may occur freely or not at all;
- the flow of interaction is based on the responses by each party (nurse and patient);
- the meaning of what is taking place is unique to that individual;

- the nurse must explore meeting the patient's need at the time it occurs and with the patient;
- nurses are concerned that assistance is required to facilitate the patients in meeting their (the patients') needs;
- nurses are concerned that the patient has unmet needs; and
- nurses should not add to the patients' problems.

Concepts and Relationships

There are three major concepts associated with the theory that are part of the nurse-patient interaction. The concepts that drive the resolution and/or improvement of the patient's need are: (a) the patient's behavior; (b) the nurse's reaction; and (c) the nurse's action. Figure 1 illustrates the Theory of the Dynamic Nurse-Patient Relationship (Orlando, 1961;1990).

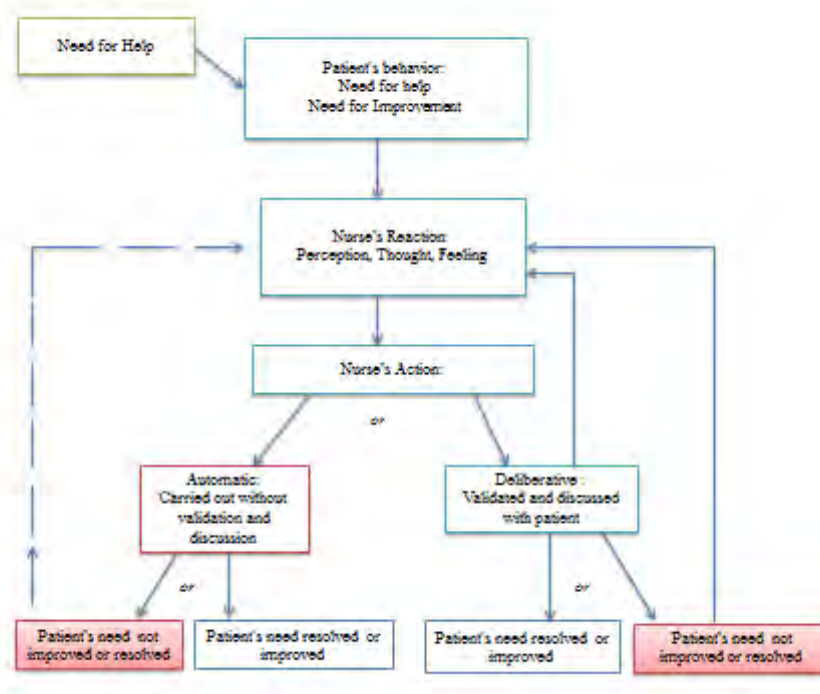


Figure 1. Theory of the Dynamic Nurse-Patient Relationship (Orlando, 1961; 1990).

Patients' Behavior

The patients' need for help refers to a need for "physical and mental comfort to be assured as far as possible while they are undergoing some form of medical treatment or supervision" (Orlando, 1961;1990, p. 5). A need for improvement is explained by Orlando (1961;1990) as a need that, once met, improves the patient's physical, mental, and/or emotional needs. Any need may be clearly identified by the patient's behavior, such as vocalizing a need for pain management. Patients who are cognitively or physically impaired are not able to express their needs. The nurse determines the need for help through observation of the patient's behavior, such as observing restlessness or an adverse change in vital signs. Determining need through observations supports the concept that communication of information between the nurse and the patient is taking place (Potter & Bockenbauer, 2000). Consequently, this theory supports both verbal and non-verbal communication of the patient's need for help or improvement, and is applicable in a clinical situation.

Nurse-patient communication is not based solely on a patient's need for help (Orlando, 1961;1990). Nurses, while performing a functional task such as a physical assessment, will initiate communication with the patient. The concepts of the patient's behavior, the nurse's reaction, and subsequent nurse action remain unchanged. In this instance, no resolution or improvement is required, as no need for help has been identified. An automatic action may be appropriate.

Nurse's Reaction

The nurse's reaction occurs internally, within the nurse. The nurse's reaction consists of three components that occur in the sequence of perception, thought, and feeling. The reaction is generated through the nurse's perception of the patient's behavior. Perception is achieved by the

nurse through one or more of the five senses: hear, see, smell, taste, and touch. For example, the nurse may hear the patient complain of chest pain, the nurse may feel cool clammy skin, and observe the patient clutching his or her chest. Using the information resulting from perception, the nurse's thoughts result. Perceptions and thoughts are intrinsic to the person experiencing them (Fawcett, 2005). Feelings result as nurses becomes aware of their own perceptions and thoughts. Feelings are also intrinsic to the person experiencing them, but the outward expression of feeling is present in the nurse's verbal and non-verbal behaviors. For example, a nurse may express feelings by providing a one word response and exiting the room.

Nurse's Action

The nurse's action is the activity that a nurse carries out or what is said by the nurse to benefit the patient (Orlando, 1961;1990). The nurse's action may either be automatic, without the patient's participation, or deliberative, including patient participation (Orlando, 1961;1990).

An automatic reaction may be appropriate, such as a nurse initiating communication with the patient. One example of this occurs at a change of shift. When one nurse goes off duty, the nurse who takes over the care of the patient will conduct a physical assessment. If no patient need is present, no nursing action is required.

It is possible that a previously unidentified patient need may surface during an automatic action. An automatic action may improve or resolve the patient's need. The process of an automatic action lacks verification with the patient, and thereby provides the patient with less overall benefit than a deliberative action (Orlando, 1961;1990). In addition, Orlando (1961;1990) suggested that the nurse's failure to validate the action will erode the nurse-patient relationship, and risk the development of a sense of helplessness in the patient. A dotted line is used in Figure 1 to represent uncertainty of whether the nurses will revisit their reactions if the

patients' needs are not improved. The nurse perceives that the automatic action is correct and therefore, does not validate his/her perception.

The nurse determines or discovers patients' needs based on verbal and/or nonverbal behaviors. Subsequently, through perception, thought, and feeling, the nurse reacts. According to Orlando (1961;1990), nurses must not assume that these are correct, but must validate their reactions with their patients. This is a deliberative action. Validation includes communication between the nurses and patients to determine whether the nurses have appropriately reacted to the patients. This may require the nurses to revisit their reactions and present a new or revised action for discussion with their patients. Orlando (1961;1990) suggested that if the nurse uses a deliberative approach to respond to the patient's behavior, either improvement or resolution of the patient's need will take place.

If an action for which the nurse used a deliberative process of validation and discussion fails to improve or resolve a patient's need, the nurse will react again. This is represented in the model by a solid line back to the "Nurse's Reaction" box. The patient verifies that the action has failed to correct or improve the need. Therefore, it becomes clear whether the nurse's action has or has not met the needs of patient, and there is no uncertainty.

Nursing Paradigm

The four concepts of the nursing paradigm can be found in the Theory of the Dynamic Nurse-Patient Relationship. Fawcett (1984) stated that the four concepts present in the nursing paradigm are person, environment, health, and nursing. According to Meleis (2007), environment in this theory refers to that which immediately surrounds each patient and constitutes what is in contact with the patient. This includes spatial room dimensions, room temperature, objects within the room, sounds, and lighting. The environment is also the

immediate circumstance, and provides context for the nurse-patient exchange (Orlando, 1961;1990). Persons are not specifically defined in this theory, but they are described as individuals whose behaviors are exhibited both verbally and nonverbally (Olsen & Hanchett, 1997).

The concept of health is described as fulfilling a patient's needs and providing a sense of comfort (Orlando, 1961;1990). Orlando (1961;1990) defined the concept of nursing as an immediate experience in which the nurse provides care that in turn improves or resolves the patient's need. The goal of nursing is to achieve health by assisting the patients to care for themselves and improve or resolve their needs (Orlando, 1961;1990). This is accomplished by determining each patient's need for help. In responding to the patient's need, the nurse reacts through perception and feeling, and validates the reaction and action with the patient. In turn, the resulting action improves or resolves the patient's need.

The concept of nursing is predicated on the nurse understanding the patients' needs and helping the patients to communicate their needs (Orlando, 1961; 1990). Through a descriptive observational study, Uitterhoeve et al. (2007) provided an example of the failure of a nurse to find the meaning of patient's verbal and nonverbal behavior. Simulated interviews (N = 31) were videotaped, with five nurses interacting with an actor who portrayed a patient with cancer. Uitterhoeve et al. (2007) found that the nurse responded to half of the patient's cues, both verbal and nonverbal, with distancing behaviors. The distancing behaviors by the nurse left patients' concerns and needs unmet. Distancing behaviors by the nurse were described as switching the focus, providing inappropriate reassurance or advice, passing the problem on to the next health care professional, clarifying facts without exploring the actual concern, and obstructing the patient's response. The subcomponent of distancing behaviors, switching the focus, occurred in

171 instances out of the 321 distancing responses, or 53% of the time. In addition, Uitterhoeve et al. (2007) suggested that direct questions do not adequately allow patients to express their needs.

Subsequently, Uitterhoeve et al. (2009) videotaped 100 nurse-patient conversations investigating the relationship of the nurse's response to the patient's presenting behavior and patient satisfaction. Thirty-four nurses and 100 patients participated.

The researchers' findings continued to suggest that patients do not directly express their concerns, but instead communicate that something is wrong through more subtle cues, both verbally and nonverbally. Distancing behaviors by the nurses continued, with 55% of nurses responding with this behavior. When nurses responded to the patients' behaviors by further exploration, these patients reported satisfaction with their care, including patients in the palliative stage of cancer treatment.

Jansen et al. (2010) reported similar findings. In their study, they investigated information recall by patients with cancer (N = 105) and found that the level of recall corresponded to the nurses' verbal responses. The patients' presenting need was either informational or emotionally based. Patients who interacted with nurses whose actions were based on shifting the topic (distancing response) were less able to recall information than patients cared for by nurses who were encouraging. The nurses who discussed the patients' needs with the patients contributed to the resolution or improvement of those needs.

Theory Application

The purpose of this study was to explore the culture of nurse-patient interaction associated with electronic documentation at the bedside. The concepts of nursing, person, health, and environment, as defined within the Theory of the Dynamic Nurse-Patient

Relationship (Orlando, 1961;1990), provided a clear framework for this study. The application of this framework provided structure for the data points for observation, which discouraged incorrect interpretation of the data. The data points consisted of verbal and non-verbal communication, as well as deliberative and automatic response patterns of the nurse. This study added to knowledge about nursing practice at the bedside, the environment of bedside practice, and nurse-patient communication as it occurs in real time.

The framework-derived supporting data were gathered by observing and audiotaping the interactions between the nurse and the patient during electronic documentation. Observations supplied the non-verbal characteristics of communication, such as patient-directed eye contact, smiling, affirmative head nodding, touch that was not associated with an intervention, and leaning toward the patient. These non-verbal behaviors by the nurse support verbal behavior and illustrate listening (Caris-Verhallen, Kerkstra, & Bensing, 1999; Heintzman, Leathers, Parrott, & Cairns, 1993). Audiotaping the interactions documented the verbal communication that occurred during the nurse-patient interactions. Patterns that emerged from the analysis of the nurse-patient interactions, including repetitive words and phrases used by the nurses, were captured. Subject matter control and the nurse's validation of an action with the patient was identified. Both informal and semi-structured interviews provided the nurses an opportunity to describe their reactions and actions, as well as to describe overall communication with their patients.

The specific aims of this study were: 1) to describe nurse-patient interaction as demonstrated in verbal and non-verbal reciprocal communication; 2) to identify the emerging overt and unspoken patterns of nurse-patient communication while using electronic documentation; and 3) to identify nurses' actions, automatic or deliberative, that occur while integrating electronic bedside documentation into patient care. The specific aims of this study

were addressed by observing, describing, and audio recording the nurses' interactions with their patients during the performance of patient care.

Summary

The Theory of the Dynamic Nurse-Patient Relationship (Orlando, 1961;1990) was a useful theoretical framework for this study. The theory is expressed in simple language that breaks down the communication between the nurse and the patient into two primary categories, automatic and deliberative. According to Meleis (2007), the theory is well suited for analyzing nurse-patient interactions, including those in which patient needs are determined in a deliberative process, while nursing care is provided in a short-term situation with a hospitalized patient.

CHAPTER 3

Methods

Introduction

The Institute of Medicine (2011a) estimated that over three million nurses will be providing care in a wide variety of settings using some form of electronic medical record including documentation of nursing activities. The purpose of this study was to explore the culture of nurse-patient interaction associated with electronic documentation at the bedside. The specific aims of this study were: 1) to describe nurse-patient interaction as demonstrated in verbal and non-verbal reciprocal communication; 2) to identify the emerging overt and unspoken patterns of nurse-patient communication while using electronic documentation; and 3) to identify nurses' actions, either automatic (without discussing with the patient) or deliberative (involving reciprocal communication with the patient), that occurred while integrating electronic bedside documentation into patient care. The study design was micro-ethnography, with the primary modes of data collection being passive participant observation, audio recording of the nurse-patient interactions, and interviews, both informal and semi-structured. This study adds to knowledge about nursing practice and electronic documentation at the bedside, the environment of that bedside practice, and nurse-patient communication as it is occurring in real time.

Design

Observations were used in an active clinical setting to explore the culture of nurse-patient interaction associated with electronic documentation as it occurs at the bedside. Micro-ethnography, the study of an activity within a single event (Fetterman, 2010), was applied to analyze the interactions. The decision of whether to employ micro-ethnography is generally determined based on the aims of the research, the supporting framework, the situation or event

that is being studied, and the preferred approach of the researcher (Fetterman, 2010). For this study, I focused directly on the nurse-patient interactions through observations, audio recordings, and informal and semi-structured interviews with the nurse. Therefore, this is a micro-ethnographic study, as I designed it to explore the culture of the nurse's interactions with the patient during bedside electronic documentation.

The methodological strategy of micro-ethnography supports examining the culture of a behavior on a microanalysis level (Fetterman, 2010). Participant observation is a method that allows the researcher to take part in the activity in order to learn about the overt and unspoken characteristics of the culture (DeWalt & DeWalt, 2011). Explicit characteristics can be communicated by the participants, and unspoken characteristics occur without recognition by the participants, such as the space between two people during an interaction. Both of these characteristics can be observed. In contrast, macro-ethnography focuses on the larger picture, such as the nurse's activities throughout a twelve-hour shift. The time spent in the field and the degree of description remains consistent with either method. The strength of micro-ethnography, as opposed to macro-ethnography, is that the researcher can focus on a specific aspect of an event, in this the case nurse-patient interaction during bedside electronic documentation.

Fetterman (2010) explained culture as having dual accepted definitions. One definition of culture is limited to observable behaviors. The other definition of culture involves knowledge and beliefs, but not behavior. Integrating observations with interviews provided a stronger and more comprehensive description of the culture of nurse-patient interactions at the bedside during electronic documentation. The observations provided an etic, or outsider, view. In contrast, the interviews provided emic, or insider, understanding of the culture. An emic perspective is at the

core of ethnography, and helps the researcher to understand the group's actions or behaviors (Fetterman, 2010).

Moreover, addressing both behavior and knowledge lent strength to identifying a pattern out of a myriad of observations and interview data. Therefore, in order to observe nurse-patient interaction at the bedside during electronic documentation, I selected the study approach of micro-ethnography using passive participant observation, audio recordings of the interactions, informal interviews, semi-structured interviews, and artifacts in order to collect data.

Setting

This study was conducted at an urban academic, research, and teaching healthcare facility in New England. The three nursing units selected for this study were occupied by similar patient populations, and all patients required cardiac monitoring. The units have identical structural layouts. The electronic documentation system is located adjacent to the head of each patient's bed, and is a fixed object in the room. I met with the Director of Nursing Practice Research and the managers for the three nursing units. They indicated that electronic documentation is carried out at the bedside in every patient room. All patient rooms are private, meaning that only one patient is assigned per room. The staff was transferred as a group from pre-existing units to this newly constructed part of the facility. These new nursing units have been open for more than one year. The number of patients assigned to the nurse, years of experience with electronic documentation, and time working in this unit (pre and post transfer to the newly constructed area) were noted with each observation.

Sample

Attributes of the sample, including strategy, inclusion and exclusion criteria, and size, are addressed in this section. The preferred strategy for sampling in micro-ethnography is to use as

big of a net as possible, in order to include everyone (Fetterman, 2010). This is useful when first gaining access to the population, for example at staff meetings. To aid in the selection of informants, I relied on my judgment based on the research questions and on natural opportunities, such as who was available, to aid in the selection of informants. These two techniques, judgment and natural selection, are typical sampling strategies in ethnography (Fetterman, 2010). I subsequently applied purposeful sampling to select informants (nurses). The informants were selected based on their level of engagement in bedside electronic documentation, whether they were assigned to the specific nursing units where the study was being conducted, and their willingness to be observed and/or interviewed.

The nurses who volunteered to be observed are referred to in this document as informants. Spradley (1979) suggested that informants are actually filling three different roles. As subjects of a participant observation study, the informant tells the researcher what is important. As a respondent, the language of the response is part of the information gathered by the researcher. As an actor, the informants are observed in their natural setting. The informants for this study fulfilled all three roles.

The informants consisted of registered nurses from three separate units and included full time and part time staff. The policy of the health care facility required that all registered nurses complete and maintain training in the use of the electronic documentation system. An example of a computer screen display of a task list is provided in Chapter 4.

In order to capture a broad range of nurse-patient interactions during electronic bedside documentation, informants who described their experience atypically or differently from their peers were considered favorably. Including a range of informants from usual to unusual or atypical adds to the scope and depth of understanding of the experience (Creswell, 2007). All

informants, both those who agreed to participant observation and semi-structured interviews were volunteers.

Nurses who worked for nursing agencies or who were employed per diem were excluded from participating. Nurses who were not usually working on these units would have been less likely to be acclimated to the environment or engaged in the language and culture of the nursing units. Therefore, nurses who worked for agencies and those who worked per diem would be less suitable informants. This supposition is supported by Spradley (1979), who described good informants as those who are so engaged in the culture that they no longer think about their activities.

Informants who were my personal friends were not allowed to participate. Their ability to inform me, as well as my ability to remain objective, might have been compromised by the relationship from outside the setting. In addition, no observations occurred on the unit if student nurses from the nursing program where I am employed were present. However, there were former students of mine working on these units. The Massachusetts Board of Registration in Nursing (BORN) regulations for clinical instructing were used as a guide to establish eligibility criteria for former students to participate. BORN identified five years of full time nursing work as part of the qualifications for a clinical instructor position (Massachusetts Board of Registration in Nursing, 2008). Therefore, five years of full time nursing practice without contact with a college instructor was deemed to be an appropriate degree of separation, such that influence from the instructor would no longer be a factor in the nurse's performance. Thus, former students who graduated five or more years ago were eligible to be informants. A summary of the inclusion and exclusion criteria is provided in Table 1.

Inclusion	Exclusion
Registered Nurses, full time or part-time	Non-nursing personnel
Volunteered to participate	Personal friends and/or family members
Currently engaged in electronic bedside documentation	Not actively engaged in electronic documentation
Assigned to specific units where the study was taking place	Not usually assigned to units where the study was taking place
Willing to be observed and/or participate in a semi-structured interview	Any current student nurses
Willing to be audio-taped	Any former student nurses from the place of employment of the researcher with fewer than five years of nursing practice since licensure

Table 1. Inclusion and Exclusion Criteria for Participation

Volunteers stepped forward during the staff meetings. Additional volunteers were recruited by speaking to the nurses in smaller groups and one-on-one. Once I identified a volunteer, I explained the general purpose of the study, role of the volunteer, measures to ensure confidentiality, and the overall scope of activities. I supplied a copy of the informed consent document and asked the volunteer to review it. I addressed any questions before the volunteer signed the document.

The patients with whom the informants (nurses) were interacting represented a convenience sample. An introduction about the background and role of the researcher, as well as a brief synopsis of the study, was presented to the patients. To be included in the study, patients must have had the ability to communicate in English, be assigned to the participating nurse, and be 18 years of age or older. Patients who required a translator or lacked the ability to give informed consent, such as those who were cognitively impaired, were excluded. The participating staff nurse had the responsibility for identifying those patients.

The sample size is typically determined by the type of research questions, the number of available participants who meet the criteria, and the ethnographer's judgment (Creswell, 2007). For this study, I set a goal of twenty observations. It was possible for the same nurse to be observed and informally interviewed on more than one occasion.

Data from semi-structured interviews, both with and without observations, and from informal interviews conducted with observation, were reviewed separately to identify common and unique themes. I anticipated that a total of thirty interviews, twenty informal and ten semi-structured, in addition to twenty observations, would be possible. Adequate sample size is achieved when saturation and redundancy occur (Lincoln & Guba, 1985). Specifically, data saturation was achieved in this study when repeated patterns of behaviors emerged from the observations and repeated themes from the nurses' beliefs or knowledge surfaced from the interviews.

Access

A meeting with the Director of Nursing Practice Research resulted in an agreement to facilitate access to the site. I also attended a nurse manager meeting and was given an initial tour of the units. According to DeWalt and DeWalt (2011), rapport is established when the researcher allows the informants to tell their story, and when all individuals come together on the goals of the research. In order to establish rapport, the researcher must be honest, show respect, be a good listener, and be ready to reciprocate for the cooperation provided by the informants. In this study, initial rapport was established through meetings with the Director of Nursing Practice Research, and by transparently presenting the research aims during nurse manager meetings. The findings of this study provided insight into how nurse-patient communication associated with bedside electronic documentation can be improved. I provided a gesture of reciprocity by

offering to present my findings to the nursing community for this institution. The approvals by all parties signified that rapport had been established.

As the start date approached, I introduced this study at staff meetings. I provided a general explanation of the study, and included how the semi-structured interviews would be conducted. Copies of the informed consent form were provided at each staff meeting for review. This afforded the staff an opportunity to discuss any concerns. The staff members were informed of my intent to submit articles detailing the findings for publication, and to share the findings with the community of nurses at this facility. By explaining my role as the researcher and listening to the concerns of the potential participants, I established rapport. Becoming acclimated to the hospital environment, attending staff meetings, and causally exchanging information facilitates the establishment of common ground between the informants and the researcher (DeWalt & DeWalt, 2011). Being humble also fosters rapport.

Data Collection

Data were gathered by using passive participant observation, audio taping the interactions, informal interviews, semi-structured interviews, and documentation artifacts.

Passive Participant Observation

Engaging in participant observation as a research method allows the informants to provide data from their perspectives, and it allows the informants to clarify the meaning of the observations and the informants' language (DeWalt & DeWalt, 2011). The research strategy of passive participant observation was used to explore the culture of nurse-patient interactions associated with electronic documentation at the bedside. Spradley (1980) described a passive participant as an observer who does not participate or interact with the informants to a great extent. This type of observer shadows an informant and does not participate in the activity.

Passive participant observation is one of the methods used in ethnography.

Passive participant observation was selected in order to preserve the researcher's status as an outsider. The rationale behind framing an event from an outsider's perspective is that it helps to avoid taking the event for granted and possibly missing important data. Fetterman (2010) explained that working in one's own culture increases the risk of taking an occurrence for granted and overlooking data. I have experience with using electronic documentation at the bedside while interacting with a patient. Taking a more active role in participant observation increased the risk of contaminating observations with personal opinion, perceptions, and experiences. Therefore, the application of passive participant observation as a method of data collection limited my involvement as the researcher in the actual documentation event.

I did not engage in direct patient care activities, such as bathing or any invasive procedure. I have never been employed by this facility, and I had no authority over anyone at this study site. In order to avoid potential stereotyping of the researcher's role based on attire, such as uniform that is similar to the nurses, I dressed in professional attire, with a photo identification stating my name and title (graduate student). Morse (1994) recommended that the researcher not wear the same attire as the staff. This avoids the potential for confusion of roles by other staff members and by patients.

The maximum time per observation was one hour, and was limited to once a day per unit. This allowed me up to three observations total per day on the three different units. The observation period spanned over several weeks, and the observations did not take place every day during this period. The actual times and dates were established based on the availability of the informants. Fetterman (2010) suggested that participant observation does not require continuous observations, and may be conducted over multiple weeks. Additionally, no

observations were conducted during normal hours of sleep, between 2200 hours and 0600 hours, as this could have been too disruptive for patients and to the routine of the unit.

The nursing staff became more familiar with me with each observation. According to Fetterman (2010), as the observer becomes more familiar to the population, the observer becomes less noticed. The informants will fall into their routine as though no additional person were present. This is especially true when the observation takes place in a culture that is familiar to the researcher. The Hawthorne effect, in which participants change their behavior by virtue of being in the study, was explained by Fetterman (1982) as more pronounced when the effects of an intervention or treatment, such as offering lunch for participants, is introduced. The group that receives the intervention (lunch) for participating may alter their behavior in order to continue to participate. No treatment or intervention was provided in this study.

Spradley (1980) recommended one hour of observation time, followed by immediate documentation of the observations. The descriptive data were recorded in chronological order and included as much detail as possible. For each observation I created a separate file. When recalling further information about a specific observation later, those data were added to the field notes. Data recall, days or weeks later, is not an unusual event (Taylor & Bogdan, 1998).

The observer's ability to recall events and record descriptive data can be saturated very rapidly. Therefore, discreet note-taking took place out of sight of the informant. This was accomplished by stepping away into an unoccupied patient room or unoccupied break room, while the nurse was preparing to administer medications or was speaking with a member of the health care team or with the patient's family. Discreet note taking is preferred over indiscreet, as overt note taking reminds the informants that they are under observation and may disrupt the natural flow of events (Taylor & Bogdan, 1998).

The risk of resentment occurring as a result of having an observer present was taken into account. My role as a passive participant observer was explained to everyone as often as I deemed necessary. Taylor and Bogdan (1998) suggested that resentment may occur and that researchers should emphasize confidentiality and their purpose and role. Resentment emerges in the form of negative behavior toward the researcher. I emphasized that my role was not to report shortcomings in performance. Confidentiality was maintained in all observations and written materials, particularly field notes, and in the subsequent dissemination of findings, both to the facility's community as well as in publication.

Observations

Three types of observations take place during each observation period: descriptive, focused, and selective. This is illustrated in Figure 2. All three types of observations occur simultaneously (Spradley, 1980). Consequently, while conducting one observation, the others are not disregarded.

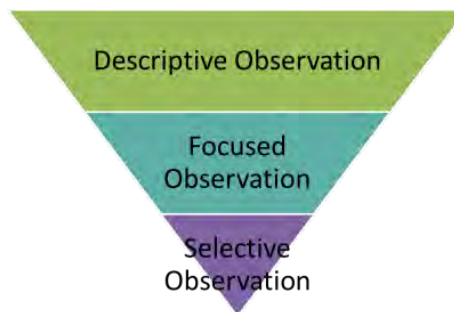


Figure 2. Types of Observations

Descriptive observation included the description of place and people. Details within a descriptive observation included an identification of the setting, such as where the patient's bed was located, any equipment in the room, and so forth. In addition to the spatial layout, an overview of the events that occurred in the setting was incorporated in the description.

According to Taylor and Bogdan (1998), the individuals should also be carefully described, including how they are dressed. For example, the nurse might be wearing scrubs, a lab coat over professional dress, carrying equipment (stethoscope), etc. Dress is often used to denote status in organizations. Descriptive observation led to a focused observation, which in turn was used to explore the selective observation of nurse-patient communication with electronic documentation. An example of a focused observation is one that included the location of the electronic documentation area and the patient. Selective observation was taking place when the observation was limited to the nurse-patient interaction with bedside documentation, such looking at the patient and nodding affirmatively. The funneling of observations, descriptive to focus to selective, leads to discovering information specific to that experience (Spradley, 1980).

Consistency between observations was addressed by using field notes (Appendix A). Each note identified whether verbal communication was accompanied by patient-directed eye contact, smiling, affirmative head nodding, touch that was not associated with an intervention, or the nurse leaning toward the patient. These physical behaviors reflect listening and support the verbal communication (Caris-Verhallen, Kerkstra, & Bensing, 1999; Heintzman, Leathers, Parrott, & Cairns, 1993). Maintaining consistency avoided superficial observations and aided in the identification of data saturation (Spradley, 1980).

Audio Recording

Audio recording the nurse-patient interactions avoided the introduction of bias from the researcher's personal experience in the collection and interpretation of the data. Supplementing observation with audio-taping provides in-depth data that mere observation cannot capture (DeWalt & DeWalt, 2011). In addition, with a tape recording of the interactions, the researcher focuses on observing the event rather than trying to recall the key words and behaviors. The

taped interactions were transcribed, coded, and analyzed for themes, providing documentation that could be verified by an outside reader, such as the committee chairperson. Patients who met the inclusion criteria were asked for their written consent. A small recorder was used and placed in the upper pocket of the researcher's lab coat, with a back-up device available. The recording activation light was noticeable, and the researcher stated "begin recording" at the start of each interaction, and "end recording" when the interaction had been completed. These recordings took place between the times that the nurse entered and left the room.

Informal Interview

Unlike a semi-structured interview, in which the informant provides the information and a majority of the talk originates from the informant, an informal interview is the casual conversation that occurs during the observation period (Fetterman, 2010). Once the researcher establishes rapport, the naturally occurring conversation can be directed to reflect the aims of the research. The subject matter within informal conversation can be driven to encompass a variety of topics using a flexible format. As the conversation flowed during the informal interviews, the topic was guided to elicit the nurse's perception of the interaction with the patient during electronic documentation. Informal interviews also provide the researcher with an opportunity to clarify a phrase or conversation (Spradley, 1980). The conversations during the informal interviews were not audio-taped. The informal interviews were documented in the field notes.

Semi-structured Interview

The schedule for the semi-structured interviews was established as each observation was arranged, and only one semi-structured interview per nurse was scheduled. Semi-structured interviews were also offered to any eligible nurses who opted out of observation, but still wanted to be interviewed. These interviews were arranged as each participant volunteered.

Private locations to conduct interviews were available on each unit, including small work areas at the end of each corridor and conference rooms in areas adjacent to each unit. Each work area had a small table that seated between four and six people, and a door to close off the sounds of the nursing unit and provide privacy for the interview. Each interview lasted no more than sixty minutes. Two recording devices were used, in case one should fail.

Each semi-structured interview was conducted using a list of questions, with the same questions used during each interview. Additional prompts were used as the situation dictated. This distinguishes a semi-structured interview from a formal interview, where the questions are fully scripted and only the responses from the informant are open-ended (DeWalt & DeWalt, 2011).

A semi-structured interview guide is a list of questions that are aligned with the research goals, and provides a framework for the interview (Fetterman, 2010). Each interview began with a general or survey question, which was either focused on a specific aspect or was broad in nature. The informant's initial response creates an overview. In turn, the researcher can subsequently ask more specific questions (Fetterman, 2010). Specific questions drill down on an aspect of the survey question. Two types of specific questions, structural and attribute help the researcher to learn more about the culture. In this study, the researcher moved between the survey questions and the specific questions.

Initial interview questions were open-ended and allowed participants to express their viewpoints. These questions were posed at the beginning of the interview. Closed-ended questions were also used, but were only toward the end of the interview. Closed-ended questions quantify the behavior (Fetterman, 2010). The semi-structured interview guide questions are provided in Appendix B.

Demographic Data

All informants, both those being observed and those who elected to be interviewed without observation, were asked about their educational preparation (associate's degree, bachelor's degree, etc.) and their experience working with electronic documentation. Experience with electronic documentation included both current and previous positions. This information was requested at the end of each observation. For those informants who chose only to be interviewed, this information was requested at the end of the interview.

Artifacts

Artifacts are defined by Spradley (1980) as objects used by people. The artifacts of interest for this study included the forms that are displayed on the monitors used for electronic documentation. A blank computer form display, devoid of patient information, was captured. This display was compared to the themes that emerged from the nurse-patient interactions.

Data Management

Data management was organized by creating separate files for each observation, which included an audio recording of the interaction and semi-structured interview, informal interview data, and demographic data. A number was assigned to each file, and the time, unit, and date documented. Field notes, journal entries, and artifacts were stored in a separate file. All identifiable data were stored at the research site.

The audio recordings at the bedside and from the semi-structured interviews were transcribed. Fetterman (2010) identified this activity as very time-consuming, and provided several options to execute the transcription. Those options for transcription included using commercially available transcription software, editing each recording and transcribing the most important sections, or hiring a professional transcriptionist to transcribe all audio recordings in

their entirety (Fetterman, 2010). I used commercially available voice recognition software Nuance Dragon Naturally Speaking 12 for transcription. Zick and Olsen (2001) studied the reliability of using a transcription service as opposed to a voice recognition program, specifically Dragon NaturallySpeaking Medical Suite version 4.0 available at <http://www.voicerecognition.com/products/dragon/medicalsuite.html>. These researchers suggested that the transcription services required 1.3 fewer corrections per patient chart (N = 47) than the voice recognition software. However, voice recognition software was recommended for use in the emergency department, as it saves time, is economical, and the accuracy of the user improves with continued use (Zick & Olsen, 2001). All methods of transcription require checking the recorded data against the document for accuracy, and the language, including slang, must not be altered or else meaning can be lost (Fetterman, 2010).

The voice recognition software, Dragon Naturally Speaking, was loaded onto a specific computer and was isolated from the Internet. A password was required to access the device. The multiple levels of security were designed to support compliance with the Health Insurance Portability and Accountability Act (HIPAA) Security Rule (Scarfone, Souppaya, & Sexton, 2007).

A laptop computer is an effective tool to manage all of the various data sources and can be brought to the study site (Fetterman, 2010). A laptop computer was used for data management in this study. Software applications, for example EthnographV6, are considered well suited for data management and analysis in a micro-ethnography study (Fetterman, 2010).

Data Analysis

Data analysis begins in the field as soon as data items have been collected, and requires attention to detail, as well as the ability to step back and see the entire picture (Fetterman, 2010).

Initial codes were identified by re-reading the notes from the various information sources, including observation field notes, informal and semi-structured interviews, artifacts, and demographic data, and identifying major categories. Creswell (2007) suggested beginning with a short list of codes. The rationale behind each code was documented. Creswell (2007) suggested that the number of codes not exceed thirty, as this may challenge theme development and result in inadvertent redundancy.

An alternative to the open coding method described above is computerized coding. However, Creswell (2007) suggested that computerized coding forces the data to fit into existing codes and limits the analysis. An example of this is the Roter Interaction Analysis System instrument for analyzing communication in primary care. This instrument has been applied to several areas of nurse-patient interactions, including care of patients with cancer and patients who are elderly (Carsi-Verhallen, Timmermans, & Dulmen, 2004). A factor that does not support the use of this instrument is the use of prefixed codes that analyze utterances separately from the flow of the interactions. The big picture can be obscured by details (Caris-Verhallen, et al., 2004; Ong et al., 1998). Therefore, I used open coding, in which codes evolve based on blocks of data and in vivo codes, which are derived from the words of the participants. The sources of information for coding consisted of field notes that included descriptive, focused, and selective observations, audio recordings of interactions, informal interview notes, and transcriptions of each semi-structured interview audio recording. Open coding allows contrary concepts to hold the same value as frequently used ones (Creswell, 2007). This maintained the value of contrary concepts during data analysis. Open coding promotes reflection on the data, and builds in complexity as more points converge. As the various sources of information come

together, repeated themes and patterns emerge. Figure 3 provides a visual display for data coding.

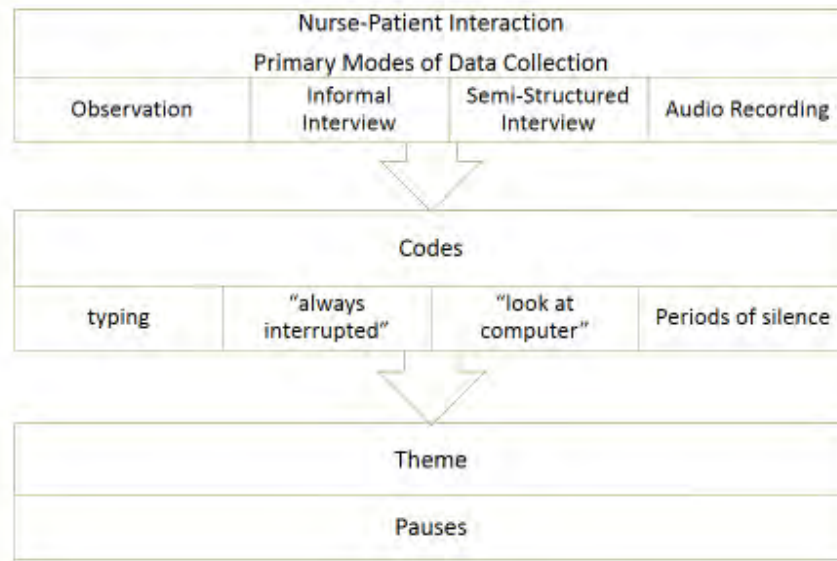


Figure 3. Coding Schematic

Each source of data, which included observation field notes, informal interviews, semi-structured interviews, artifacts, and demographic data, was described and categorized in order to develop data driven concepts. DeWalt and DeWalt (2011) suggested that themes emerge from the codes and the re-reading of data sources. Themes allow the data to be reduced and combined without losing meaning. As themes develop, patterns also emerge (Fetterman, 2010). In this study, each pattern was compared to the conceptual framework and the ongoing observations. As patterns were examined, an understanding of the culture was intensified, building understanding of the behaviors and knowledge of the nurse-patient interaction during bedside electronic documentation.

Data display provided another mechanism for data analysis. Data display includes quotes and pictures (DeWalt & DeWalt, 2011). I placed the field notes in chronological order, used quotes with emphasis on words that were repeated, and sketched the room layout including

where the nurse moved while in the room. The screen display form was incorporated into the data exhibition. This yielded a pictorial representation that incorporated themes, the room layout, and computer displays, all of which depicted the environment where the interaction was occurring.

The audio-taped interactions and semi-structured interviews were transcribed verbatim using the Dragon Naturally Speaking software package. Each transcript was reviewed for accuracy. The transcript was formatted to provide a visual display of the interaction for data analysis. For example, questions or responses were placed in separate paragraphs to denote who (patient or nurse) originated each.

Nonparametric statistical methods were used to analyze the demographic data. Ordinal scales were used to depict the range of years in current position, years of experience with current documentation system, and years of experience with prior electronic documentation systems.

Analysis was conducted by interpretation and verification. This was executed by putting the pieces of data together to form the connections between events and individuals. Methodological notes were used to identify the concept and where it originated in the data, explain the analysis procedure, and explain the culture. A methodological note reflects what one is thinking while analyzing the data. According to DeWalt and DeWalt (2011), this promotes thinking about the data from different perspectives and supports an emic view of the event. DeWalt and DeWalt (2011) suggested that the data be continually broken down and re-assembled, with attention given to other plausible explanations. Once no further explanations emerge, no new information fits, and no challenges to the conclusions exist, the next concept can then be addressed. Table 2 illustrates the data management and analysis plan for this study.

Aims	Method	Data	Analysis
To describe nurse-patient interaction as demonstrated in verbal and non-verbal reciprocal communication	Passive participant observation	Observations <ul style="list-style-type: none"> ▪ Descriptive, focused, and selective 	Open coding <ul style="list-style-type: none"> ▪ Observations ▪ Field notes
	Audio recordings of the actual nurse-patient interaction	Field notes <ul style="list-style-type: none"> ▪ Eye Contact, smiling, affirmative head nod, touch, leaning toward patient 	Codes → Themes → Patterns Themes emerged from the codes, patterns emerged from the themes
To identify the emerging overt and unspoken patterns of nurse-patient communication while using electronic documentation	Passive participant observation	Field notes	Open coding <ul style="list-style-type: none"> ▪ Field notes ▪ Audio recording (transcribed verbatim)
	Audio recordings	Audio recording of the nurse-patient interaction	
	Artifacts	Blank documentation forms	Pictorial representation of what the nurse uses
To identify nurses' actions, either automatic or deliberative that occur while integrating electronic bedside documentation into patient care	Informal interviews	Topics were guided to elicit the nurse's perceptions of the interaction	Open coding <ul style="list-style-type: none"> ▪ Informal interviews ▪ Semi-structured interviews (transcribed verbatim)
	Semi-structured interviews	Survey question, followed by structural or attribute questions	Comparison of informal and formal analyses

Table 2. Data Management and Analysis Plan

Trustworthiness

Trustworthiness has been defined as confidence that the findings of the study are applicable to other similar situations, that the research can be replicated, and that no bias or self-interest of the researcher is present (Lincoln & Guba, 1985). For this micro-ethnographic study, I achieved trustworthiness by providing credibility, transferability, dependability, and confirmability. These attributes are necessary to assure trustworthiness (Lincoln & Guba, 1985).

Credibility

Prolonged engagement, persistent observation, member-checking, and triangulation are activities that Lincoln and Guba (1985) identified as creating credibility, or accuracy, in the research and subsequent findings. Credibility was created through repeated observations at various times of both day and evening shifts. Conducting a total of twenty-six observations at various times allowed the researcher to be orientated to the environment and detect (and discard) data that might be the researcher's own view, instead of actual data. The use of passive participant observation limited the involvement that the researcher had in the actual documentation event. This improved the trustworthiness of the work by removing, to the fullest extent possible, personal views and experiences from the actual environmental data. Observations encompassed overarching descriptions of the environment and people, focused observations of the nurse-patient interaction during bedside electronic documentation, and selective observation of the communication. Consistency was maintained by using a note outline for every observation.

Post-observation analysis included informal verification of the interpretation of previous findings with prior participants. This is a form of member checking (Lincoln & Guba, 1985). The informant was asked to clarify the information, whenever any ambiguity was present in the

interpretations, and the clarification was added to the description. Sandelowski (1993) suggested that the addition of clarifying information is effective in managing conflicting interpretations. In this study, member checking was ongoing. Member checking for the informal interviews was immediate. For the semi-structured interviews, member checking was recorded.

Several de-identified transcriptions of the nurse-patient interactions, as well as field notes and observational journals, were reviewed by the dissertation chairperson. The chairperson also acted as a peer reviewer, which facilitated maintaining the quality of the work, and supported the credibility of the findings.

Triangulation is central to ethnography (Fetterman, 2010). Data items were constantly being compared during formal and informal analysis, as suggested by Fetterman (2010). The sources of data included field note observations, informal interviews, semi-structured interviews, audio recordings of the interactions, demographic data, and artifacts. Informants with a diverse set of experiences aid in establishing credibility by describing different perspectives (Creswell, 2007). EthnographV6, the data management system, was used to triangulate data. This lent strength to identifying patterns of behavior out of the myriad of observations and interview data. The trustworthiness of this study was supported through triangulation of data.

Transferability

Lincoln and Guba (1985) suggested that transferability is realized when the conclusions arrived at from the thick description are transferable to similar situations. This was facilitated by adding details to the field notes immediately after each observation. The field notes were expanded upon to add detail after each observation while on-site in a private room located at the end of the corridor, or in the sleep room that is also used for spiritual services. Access to this area of the facility was generously provided by the Manager of Spiritual Services. The informal

interviews occurred immediately after the observation. The data were subsequently entered into the data management system and systemically stored for easy retrieval. Integrating observations and audio taped interactions with informal interviews and/or semi-structured interviews provided a stronger and more exhaustive description of nurse-patient interactions at the bedside during electronic documentation.

Dependability

Dependability, as indicated by Lincoln and Guba (1985), is contingent on credibility. Therefore, if credibility is in place, dependability will ensue. The audit trail maintains a description of the research path (Lincoln & Guba, 1985). In this study, the method of data collection, the collected data, and the subsequent interpretations were made available to the dissertation chairperson to evaluate. The data consisted of field notes, informal interviews, semi-structured interviews, demographic data, and artifacts. Data reduction analysis entities, such as codes and themes, as well as methodological notes that include the rationale supporting each decision, were maintained. The reflexive journal is also part of the audit trail. This information may be requested at any time by the dissertation committee chair.

Confirmability

Maintaining objectivity and keeping an open mind in micro-ethnography is essential to preserving the trustworthiness of the study. Researcher bias or interest should not be evident in the findings. Lincoln and Guba (1985) described this as confirmability. In order to create confirmability, Lincoln and Guba (1985) recommended that the researcher maintain a reflexive journal. In this study, the journal provided the researcher with a place outside of the data where personal reflections, interests, and feelings, as well as reactions to the observations, informal interviews, and semi-structured interviews, all could be recorded.

The risk of adopting the culture of the informants is ever present. This is termed as “going native” (Creswell, 2007, p. 72). If this should occur, the integrity of the study is compromised. In this study, maintaining a reflexive journal assisted the researcher in identifying whether this phenomenon was starting to occur. More importantly, the dissertation chairperson also had the ability to audit the journal to further identify any occurrence in which the integrity of the study might have been compromised. There was no evidence that the researcher was influenced by the culture of the informants. The reflexive journal was used to maintain the schedule for the study, and to document decisions and the supporting rationale. The schedule was documented in a timeline within the journal.

Limitations

The setting was limited to telemetry units in one hospital with one electronic documentation system. The use of only one configuration of a single electronic documentation system in a single setting was also a limitation. Videotaping was not conducted. Nurses who elected to participate may represent the population with extremely positive attitudes toward nurse-patient interactions during electronic bedside documentation. Some nurses did not wish to be audio recorded, thereby diminishing the variety of the sample. The nurses who did not want to be audio recorded stated that they were intimidated by the thought of being recorded. Several patients were not willing to allow audio taping of the interaction.

The observations took place in a culture that is familiar to the researcher. Fetterman (2010) suggested that the informants will fall into their routines when the researcher is less obtrusive and familiar with the culture. In spite of this, the routine was disrupted, as patient permissions for observations were sought, an audio recording of the nurse-patient interactions was taking place, and the researcher was shadowing the informant. The researcher’s role in an

event cannot be dismissed or diminished. Therefore, it was openly addressed by describing it in the field notes and the reflexive journal. Fetterman (2010) suggested that this open documentation of the researcher's role in an event and possible influence on the informants will add to the credibility of the research.

Human Subject Considerations

Approval was obtained from the participating facility's Institutional Review Board (IRB). An Interagency Agreement (IAA) was arranged between the facility's IRB and the University of Massachusetts Medical School IRB.

After approval from each IRB, the study was introduced at a staff meeting. The process to obtain written consent from each informant began at this step. I provided a personal introduction and role explanation at staff meetings. In addition, I provided a general description of the study, including eligibility criteria, and explained how observations and interviews, both informal and semi-structured, would be conducted. Copies of the informed consent for each informant were provided at the staff meeting.

After the meeting, all informants who volunteered during the meeting were approached individually for written consent. I discussed the consent with each informant, clarified any points raised, and answered all questions. Each informant demonstrated an understanding of the information by restating each paragraph, and written consent was obtained. I emphasized that the informant could decline to participate at any time, and I would accommodate requests from informants to change a prearranged participation day and/or time. If any informants requested that the information they provide not be recorded and be considered as "off the record", then the information was not recorded.

I made it clear that the event of a patient's status deteriorating, the observation would be stopped and I remove myself from the setting. These actions would respect the privacy of the patient and minimize the potential for any patient harm. The aims of the study were reiterated with each observation, informal interview, and semi-structured interview. Confidentiality of the participants was emphasized at all times, and will be maintained when addressing any future presentations and publication. Appendix C is the nurse consent form.

Permission from each patient for audio recording of the interaction was obtained. I approached each patient who met the eligibility criteria in the patient's room. I have had experience with obtaining written consent while working as a registered nurse since 1979. This experience included hospital settings, where written consent prior to procedure is required, and in public health settings that require verbal consent prior to interviewing individuals for follow-up on public health issues such as salmonella or pertussis outbreaks.

I explained to each patient that the purpose of the study was to explore the culture of nurse-patient interactions associated with electronic documentation at the bedside, and I explained this in ordinary language. I stated that the focus of the study is watching and listening to how the nurse and the patient talk to one another, especially when the nurse is entering information into the computer. Example statements included: "I am requesting your permission to follow your nurse and tape record the conversation that occurs while the nurse is in your room using the computer" and "I will only be present in this area for one hour, so you will not see me for an entire shift." I explained that the patient's name, the reason for hospitalization, and any information about the patient would not be identified to anyone. Also, I stressed that if the patient did not wish to be recorded or observed, her/his care would not be impacted in any way.

The patient demonstrated understanding by verbal acknowledgement. Patients were not interviewed for this study. Appendix D is the patient consent form.

The anonymity of the informants and patients was protected by using pseudonyms in all documents, including the final report. All data that are identifiable are stored on the property of the participating facility for seven years. The Principal Investigator for the site maintains the protection of these data for that time period. The Institutional Review Board requires that after seven years from the closure date of the study, all data will be destroyed. I will retain de-identified records, including field notes, and semi-structured interviews, informal interview notes, demographic data, and artifacts for seven years as per the policy of the participating facility. The de-identified data will be stored in an electronic device with encryption. All de-identified written documents will be stored in a locked file located in my home. As the researcher, I (Cynthia Gaudet) and my dissertation chairperson (Dr. Robin Klar) will have full access to the data. Once seven years have elapsed after the closure of the study, all electronic data will be deleted, all audio tapes will be erased and all paper information will be shredded.

Summary

Authors of the current literature have stated that when electronic documentation is present during nurse-patient communication, the exchange is leaning toward task driven give-and-take (McCabe, 2004) that omits a portion of the patient information (Duffy, et al., 2010). Patients value communication with the nurse (Lee, 2007), and nurses have stated that point-of-care documentation creates a feeling of distance from the patient (Kossmann & Scheidenhelm, 2008). This study provided me an opportunity to gain further knowledge about nursing practice at the bedside, the environment of bedside practice, and nurse-patient communication as it is occurring in real time.

CHAPTER 4

Results

Introduction

Micro ethnography was the research method used to study nurse-patient communication with electronic documentation. Informal and semi-structured interviews provided the nurses' descriptions of their interactions at the bedside. Their descriptions delivered an emic perspective of the nurses' knowledge and beliefs regarding electronic documentation. Participant observation of the nurses' actions was conducted. This provided an etic view of the behavior, with a focus on the unspoken and overt characteristics of the interaction. Transcriptions of audio taped nurse-patient interactions provided data about automatic and deliberative nurse actions.

Contextualization

This study was conducted at an urban academic, research, and teaching healthcare facility in New England. The three nursing units selected for this study are occupied by similar patient populations, and all patients require cardiac monitoring. The units have identical structural layouts.

Patient rooms are located on the outer walls of the corridor. All patient rooms are private, meaning that only one patient is assigned per room. Each corridor has a slight bow in it, which breaks the line of sight. The corridors are generally clear of equipment, with the exception of one unit in which stretchers are often lined up outside patient rooms in the morning. Call lights that originate from the patient rooms signal the staff that assistance is required. Sound is associated with the call light system, and that sound is the dominant noise heard when entering the units and during the observations.

There are a number of small nursing stations, referred to as pods, located throughout the unit. One pod is located at the entrance to the unit, another pod is approximately one third of the

way down the corridor, and there is a third pod at the end of the corridor. All of the pods are located on the inside of the corridor, away from the outer walls. There are three more pods along another corridor within the unit. The corridors are parallel to one another, with patient rooms on one end and a break area for the nurses on the other end. There are two chairs and two computers located in each pod. Nurses are assigned to the rooms in this area. The nurses stated that they use the pod to complete electronic documentation.

Each patient room has a computer that is located adjacent to the head of the patient's bed, and is a fixed object in the room. The monitor is flat, clearly visible, and measures 16 x 13.5 inches. The height of the computer is adjustable, but I did not observe any nurses changing the working height of the computer. The taller nurses would lean into the computer work area from a standing position, with the keyboard below the level of their waist and the computer screen not at eye level. No nurses were observed sitting at the computer in the patient's room. Beneath the computer, there is a shelf that is available for placing items such as intravenous solutions or dressing supplies.

Typical Day

The nurses described a typical patient assignment as five to seven patients per nurse, depending on the shift. However, if the nurse was in charge, then that nurse's patient assignment was usually less. The patient population was described as "pretty acute", with "advanced disease processes". The administration and monitoring of various medications is required.

A typical day was described as beginning with a shift transition report. The length of the report varies, depending on the acuity of the patients. Nurses stated that they try to "hit the most acute first", but they are challenged by the complexity of the patients, and have to manage the

medications, patient preparation for tests, assessments, and “all the computer stuff that bogs you down”.

Each nurse uses the electronic documentation system that provides a list of tasks that must be completed. Most nurses use the “forms view” of the system, which shows each task, a description of the task, the scheduled completion time for each task, and a task status. Tasks that have been initiated prior to the scheduled completion time but are incomplete are denoted as “in process” and highlighted in yellow. If a nurse does not begin a task by the scheduled completion time, the task status is indicated as “overdue” and is highlighted in red. The nurse must prioritize the tasks for multiple patients such that each task is completed by the scheduled time. Informally and in semi-structured interviews, nurses noted that “everything is a priority”.

Nurses stated that they might need to access the computer up to four times per patient, per interaction. The first time is at the pod or nursing station to review patient information. The second trip to the computer is to retrieve medication information, usually at the pod. The computer must be accessed a third time at the bedside to document medications, and a fourth time at the pod to enter any uncompleted documentation. In the course of my observations, nurses accessed the computer for initial patient information, including the prioritization schedule of tasks, to retrieve additional information, and to document medications and/or vital signs in the patient’s room.

The majority of nurses used paper and pen to jot down notes about their patients. The notes were then stored in folders and kept at small work areas located at various points throughout the unit. The nurses who used paper documentation claimed that it was easier to access than the electronic information. These nurses stated that they would later transfer the information from paper to the computer after they completed medication administration,

assessments, and patient preparation for any testing or procedures. However, some nurses did enter information directly into the computer, without using paper. One nurse expressed a concern that if they use paper notes and “not look in the computer” in a timely manner, they may miss updated information.

Three major themes emerged from the qualitative analysis of the field notes, audio-tapes, informal interviews, and semi-structured interviews. The three themes are summarized as “pauses”, “a game of tag”, and “machine-like actions”.

The nurses had to continually pause from verbal exchanges and break eye contact with their patients. The verbal exchanges were interrupted by buzzing of the nurse’s hospital provided phone, by sources from outside the patient’s room, and by the nurses’ work at the computer. Non-verbal behaviors that are indicative of listening were interrupted when the nurse entered documentation, with intermittent eye contact and “less touch” taking place during these interactions. The nurse’s eye contact and touch were directed toward the keyboard, entering data into the various electronic forms that are required by the documentation system. Documentation in real time created a back and forth process, similar to a game of tag, whereby the nurse physically moved between the patient and the computer. This included when the nurse entered information obtained during a physical assessment. Nursing actions were automatic, machine-like, and were carried out with limited communication. The computer “bogs down” the nurse, creating more task work and less balanced communication. Nurturing was overshadowed by “doing the tasks on our list”. Deliberative nursing actions that required reciprocal communication and promoted patients’ involvement in their care occurred less often than automatic actions.

In the subsequent paragraphs, demographic information is presented, followed by a discussion of how the data relate to each aim of my study. A rich description that includes quotes and diagrams supports each theme, and each theme is linked to an aim.

Demographic Information

A total of twenty-six observations were conducted from October to December of 2013. Twenty-two observations consisted of medication administration with a varying range of physical assessment, and two observations were exclusively physical assessments. Although a majority of the observations included medication administration, medication administration was not the sole activity. Medication administration included a physical assessment. During the physical assessments, nurses would place their stethoscope on the patient's anterior and posterior chest and abdomen. Nurses also placed their stethoscope on right and left side of the patient's neck, and touched the patient's feet and ankles. Only one observation of the nurse-patient interaction was initiated by the patient. Fourteen nurses and 19 patients participated in the study. Informal interviews were conducted with each observation and two nurses agreed to a semi-structured interview. No nurses requested to participate in a semi-structured interview without being observed. The observations took place between 7:00 AM and 8:30 PM. The average time duration of an interaction was 11 minutes and 14 seconds. The shortest interaction lasted two minutes and 23 seconds, and the longest interaction lasted 23 minutes and 50 seconds. Nine of the nurses in the study had an associate degree, while five had a bachelor's degree or greater. The years of experience of the nurses in their current positions ranged from less than one year to fifteen years, with a mean of 7.8 years.

The data from two observations of discharge teaching were excluded, as the nurse was not engaged in using the computer during these interactions. In these instances, the nurse had

printed the discharge instructions prior to entering the patient's room, and use of the computer did not take place in the patient's room.

Aim One

Aim one: to describe nurse-patient interaction as demonstrated in verbal and non-verbal reciprocal communication.

The nurse-patient interactions took place in each patient's private room. All of the patient rooms have a similar layout. Upon entering the room, the patient's bed is directly in the line of sight. Beyond that there is a two-person couch and a large window. The view out the window depends upon the room location, either on the east, west, or north side of the building. A large recliner is located on the opposite side of the bed, adjacent to the window. A plain hardback chair is present in most rooms. A daily communication board is on the wall, directly in the line of sight of a patient lying in the bed. A television is located above the communication board. Nurses identified the rooms as larger than the ones in other areas of the facility. The computer is mounted on a column adjacent to the head of the patient's bed.

The nurses' initial activities upon entering the room varied. Some nurses went directly to the computer to either place supplies on the shelf or begin the process of logging in. Other nurses greeted their patients with direct eye contact and a smile, and then went over to the computer. This conduct depended upon the situation. For example, some nurses had previously provided care for the same patient from the time of that patient's admission, and had stated to me: "I've cared for (him/her) before." In these instances, the nurse would proceed directly to the computer. Whenever nurses brought supplies into the room, primarily medications, they went to set them down on the shelf underneath the computer. Some nurses indicated that they preferred to log into the computer first, stating that this allowed them to subsequently "focus on the

patient”. The patient was usually not at eye level, but rather was at the level of the bed or recliner. In several instances, the nurses would raise the bed so that eye contact was level. Each nurse approached the bed from the side as opposed to interacting with the patient from the foot of the bed.

The verbal interactions consisted of collecting information, providing information, and regularly administering medication. The information that the nurses collected included patient responses to various questions such as “any dizziness?”, “any pain?”, “any shortness of breath?”, “did you sleep well?”, “any nausea?”, “did you move your bowels?”, and “have you been taking a walk?” Nurses also asked questions about how much assistance the patient has at home.

The nurses also provided information to the patients. This included the plan of care for the day, weight, laboratory findings, vital signs, clarification of discharge planning, interpretation of cardiac rhythms, the implications for care with a given heart rhythm, and instructions related to medications, diet, and pain management. For example, a nurse explained anticoagulant therapy and atrial fibrillation to a patient, including a description of atrial fibrillation and why anticoagulants are necessary. Subsequently, the nurse briefly explained major points about self-care while taking anticoagulants, including the risk for bleeding and the need for blood tests, while also encouraging the patient that this is a manageable situation. Another nurse explained the balance between salt intake, impaired renal function, and daily weight. This information included explaining the meaning of a change in weight, actions that the patient should take, when those actions should be taken, and what blood laboratory values the patient should track. Information about each medication and the major side effects was provided with every medication administration.

Occasionally, an interaction would involve becoming familiar with the patient's status outside of the health care facility. For example, the nurse would ask patients about their employment or education, family members, grandchildren, their personal histories, or if they have interests that are in common with those of the nurse.

The patients typically provided affirmative responses. For example, "okay", "yup", "yes", "yeah", "right", and affirmative head nodding were used repeatedly by the patients. The nurse would then continue an explanation or switch to the next topic. Nurses used these same responses when responding to their patients. For example, the patient would ask a question and the nurse would respond with "yes". Each interaction ended with the nurse encouraging the patient to contact the nurse for any subsequent needs, questions, or concerns that might arise.

The nonverbal reciprocal forms of communication included smiling, affirmative head nods, eye contact, touch, and juxtaposition of the body indicative of listening, such as leaning forward. Both the nurses and the patients often smiled. The nurses smiled upon entering the rooms and routinely during the interactions. The smiling took place as appropriate to the circumstances.

During a nurse-patient interaction in which the nurse was working with a patient on pain management, little smiling took place. The patient described the situation, including an appraisal of the prior intervention. The nurse nodded affirmatively, was at eye level with the patient, and leaned toward the patient during the interaction. No break or interruption in the exchange during pain management discussion was observed or recorded. After the patients described their situation, interruptions did take place. The nurse broke eye contact from the patient to look at the computer screen, and typed on the keyboard. This lasted 90 seconds. The nurse then entered medication administration into the computer and then continued typing some more, informing

the patient that the physician was being paged via the computer. A moment later, the patient's phone rang. Afterwards, the nurse informed me that after listening to the patient's pain description, she needed to retrieve additional information about this patient from the computer.

Nurses used smiling and occasional laughter when a transition between topics occurred or when encouraging the patient. Laughter accompanied smiling and the laughter was neither excessive nor inappropriate. Usually, the laughter emanated from the patient, although in some instances the laughter originated from the nurse and the patient simultaneously. During one exchange, after listening to breath sounds, the nurse declared, "you're hired!", resulting in laughter from the patient. Then the topic would change.

Both the nurses and the patients used affirmative head nodding. This action is indicative of active listening and verification of information. For example, when the nurses were providing information, particularly lengthy instructions such as explaining the times that the patient should take several medications, the patient would nod affirmatively during the explanation. Information was verified through affirmative head nodding by the nurse or the patient, depending on the situation. The patient would nod affirmatively when the nurse confirmed the time of day that a patient would take medication, use oxygen, or rest. The nurse would nod affirmatively when the patient confirmed the name of a medication or reaffirmed part of the discharge plan, such as the schedule for the visiting nurse.

Eye contact was directed toward the patient during specific portions of the interaction. Nurses maintained eye contact during activities such as medication administration, biophysical assessments, or while providing verbal instructions. On several occasions, the nurse would raise the entire bed and sit in the chair at the bedside. This moved the nurse-patient interaction from the patient being lower than the nurse to the patient and nurse maintaining eye contact at the

same level. This behavior was observed when nurses were administering medications intravenously to manage pain or providing information about medications.

Eye contact was directed at the computer during a portion of the time when collecting information from the patient. The nurse would look at the computer, type on the keyboard, and then speak to the patient. The information provided by the patient was predominantly “yes” or “no” responses to questions. Some nurses spoke directly from the computer, and directed their eye contact directly to the computer for a majority of the interactions.

The nurses would lean toward their patients when performing biophysical assessments, discussing findings such as blood pressure values, providing information, or attempting to elicit responses to questions. Leaning toward the patient was noted particularly when the nurse was explaining the effect and preferred timing for each medication. When not leaning toward the patient, the nurse would speak while either at the computer or at the side of the bed. While at the side of the bed, the nurse was physically close, about two to three feet away from the bed, but did not touch the bed.

Touch not associated with an intervention consisted of a light touch of an arm or a hand on the patient’s shoulder. Touch seldom occurred, and was not present in most interactions. The nurse’s touch was directed primarily to the keyboard.

Theme One

The major theme that emerged from the description of the verbal and non-verbal reciprocal communication of the nurse-patient interaction during documentation was the continual pauses from the verbal exchanges and breaking eye contact. This theme, pauses, emerged from the analysis of the observations, and was noted based on the informal and semi-structured interviews.

Nurse-patient verbal interactions were often interrupted by the nurses' hospital-provided Polycom © phone. The phone would often buzz during the nurse-patient interaction. The nurses would stop their current activity, look at the telephone's caller identification display to determine who was calling, and assess whether the call required an immediate response from the nurse or if it could wait until after completing the current actions. Phone call interruptions occurred on average every nine minutes, based on 30 interruptions over 270 minutes of observation. During some observations, the phone interruptions occurred much more often than during others. Sometimes, calls that required the nurse's immediate attention were responded to while the nurse was in the current patient's room. In other instances, the nurse stepped out to take the call. Interruptions came from guest services picking up or delivering meals, physicians, and patient care technicians. Sources of additional interruptions included a newspaper delivery, the patient's phone, an electrocardiogram technician, an intravenous therapy nurse, and a discharge planning nurse.

Verbal exchanges were also interrupted by electronic documentation. Nurses would stop talking and enter information into the computer. Periods of silence from 40 seconds to 90 seconds occurred during documentation. Nurses were required to scan medications and review information about the medications, which contributed to some interruptions. In addition, data collected during the physical assessment was also entered. When a patient engaged the nurse during either during data entry or the medication administration process, nurses would often state "okay" as they typed, or withheld their responses until the typing had been completed.

Participant observations revealed that the nurses' eye contact was interrupted on numerous occasions. The nurses had to break eye contact with the patient to direct their attention to the computer. Nurses often remained at the computer, working with the keyboard

and querying the patient. Some of the querying occurred during the physical assessment, for example, inquires about voiding or appetite. Sometimes, the nurse would look at the patient, and then look back at the keyboard and the computer screen. If the nurse remained at the computer and turned toward the patient while the head of the bed was elevated, the bed obstructed line of sight to the patient's face. Therefore, neither party could see the other's facial expressions or make eye contact. In addition, the patient needed to turn to see the nurse. Informal interviews revealed that the nurses were aware of the need to share their nonverbal behaviors between the patient and the computer. One nurse stated, "you can't look at the computer and look at the patient."

Touch, beyond that required for an intervention, was almost non-existent. The exception was two nurses who used touch on two different observations. The use of touch by these nurses occurred spontaneously during the interactions and was not associated with any intervention. This touch consisted of the nurse briefly placing a hand on the patient's shoulder or lower arm. One nurse, who used touch stated, "we don't sit down, we don't talk to our patients, we are always very busy." The other nurse stated that they were "very busy". These statements implied that the nurses felt that touch was lacking in their interaction related to the demanding pace of the work itself. No other nurses were observed using non-interventional touch.

Semi-structured and informal interviews confirmed the theme of pauses in the continuity of the interactions. Nurses stated that they had to "look at the computer, not the patient" and "stop and check my phone". Pauses were explained as gaps in the interaction. Nurse-patient interactions were paused for nurses to either enter information or search for information in the computer. Nurses stated that they were "always interrupted" while in the patient's room. The interruptions caused the nurses to pause the interactions with their patients, address the source of

the interruption, and then return their attention back to the patients. One nurse had to stop an interaction in order to print a document. While providing patient education, the patient requested a printed document, which caused the nurse to pause the interaction, go to a computer outside of the patient's room, log in, print the associated document, and then return to the patient's room. The computers at the bedside are not linked to a printer.

Aim Two

Aim two: to identify emerging overt and unspoken patterns of nurse-patient communication while using electronic documentation.

Nurses went from the bedside to the computer and back to the bedside again during each interaction. This back and forth behavior occurred more often with the administration of medications. The nurses who interacted while maintaining eye contact would step away from the computer, interact with the patient, then return to the computer keyboard and begin typing. Nurses who engaged the patient while remaining at the computer were less involved in moving back and forth, but were speaking to their patients from a corner of the room. Not every patient was located in the bed; some were sitting on the recliner, while others sat on the couch.

Theme Two

Aim two is presented with a figure (4) depicting nurses' movements at the bedside. The overt and unspoken pattern during communication was a back and forth process of the nurse moving from the computer to the bedside, and then back to the computer. As a result, like a game of tag, the nurse's footsteps moved between the computer and the patient. The nurse carried out a task, then stepped back to either the computer or the patient. This occurred repeatedly throughout the nurse-patient interaction, and during every observation. The nurse

would log into the computer, proceed with medication administration, and then move back to the computer, creating a back and forth pattern of activity between the patient and computer.

The process for medication administration required the nurse to log into the bedside computer, walk over to the patient to verify the patient's name and date of birth, and then scan the patient's wristband. The nurse then walked back to the computer, scanned each medication, and then checked the prompts on the medication administration screen. If a scan resulted in a red highlight on the screen, then a dosage adjustment was required. Once a medication was scanned, the nurse then walked over to the patient to administer it. After administering the medication, the nurse walked back to the bedside computer to document that the medication administration had been completed. While obtaining information from the patient that was not associated with medication administration, the nurse would move to be closer to the patient, then back to the computer to enter the information, then back to the patient.

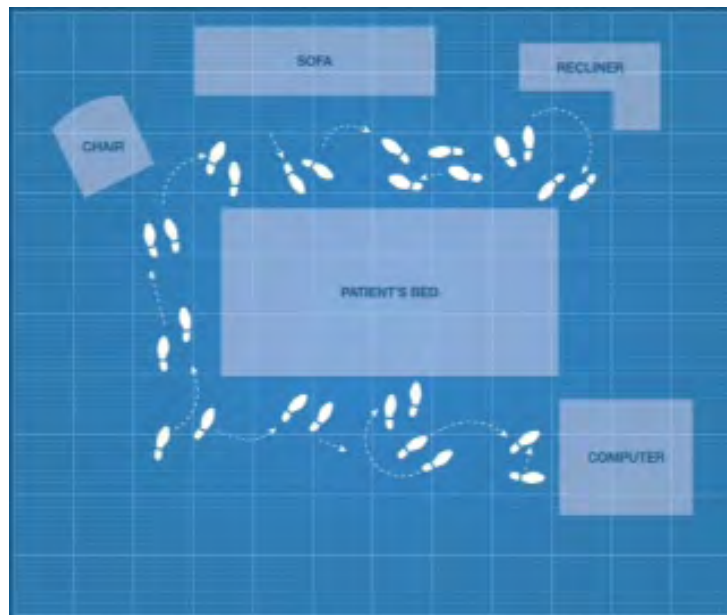


Figure 4. Game of Tag

The nurse's footsteps for medication administration are depicted in Figure Four, Game of Tag. The nurse enters the patient's room and either walks to the computer or proceeds directly to

the bedside. If the nurse walks to the patient first, the nurse must then walk over to the computer to log into the system. If the patient is located on the couch or recliner, the nurse walks back and forth between the computer and the patient until the medication administration process has been completed. This created a situation where the nurse interacted with the patient, walked over to the computer to type on the keyboard, and then returned to the patient.

A recurring observation was that the nurse would speak to the patient from across the room. These nurses elected to address the patient primarily from the computer, minimizing their back and forth movements. One example of this occurred when the patient was seated in the recliner on the opposite side of the bed from the computer. Adjacent to the patient's recliner was the bed, and on the other side of the bed were a piece of medical equipment and the computer. When the nurse was at the computer addressing the patient, the patient repeatedly responded "what?" to the nurse's questions, requiring the nurse to move about the room. On several other occasions, the nurse was observed either sitting on the couch next to the patient or using the chair in the room to sit near the patient, with the patient's bed raised to the level of the seated nurse.

The back and forth stepping required of the nurse was a topic of discussion during the informal and semi-structured interviews. One nurse stated, "I really do not want to yell across the room." Other nurses indicated that they try to get as close as possible to their patients, especially when "teaching them about their medication." Nurses stated that they "like to pull up a chair" and "get down to their level." Although the current computer placement is "better than the portable ones that were brought into the rooms", nurses commented that the computer "places me in one area in the room." At times, nurses were observed sitting next to the patient. For example, this occurred when the patient was on the couch. Sometimes, the nurses would raise the bed to a working height that put the patient at the same height as the nurse. One nurse

stated: "I like them to be at the same height as me." In every instance, the nurse had to move away from the patient and back to the computer, and then move back again to the patient.

Aim Three

Aim three: to identify nurses' actions, either automatic (without discussing with the patient) or deliberative (involving reciprocal communication with the patient), that occur while integrating electronic documentation into patient care.

Nurse-patient communication is an interpersonal process. An interpersonal process is one in which the nurse reacts or responds to a patient, either automatically or deliberately (Orlando, 1961;1990). A deliberative response is characterized by a back and forth discussion resulting from a patient initiated need or a need that surfaces during an interaction. In addition, the response requires validation through further communication with the patient. In contrast, an automatic response occurs when the nurse carries out an action with limited or no communication with the patient.

The audio-tapes were transcribed and analyzed for balance in the exchanges between the nurses and their patients. The exchanges occurred as the nurse was interacting with the patient and documenting in the computer. Deliberative actions were evident when nurses and patients had a dynamic exchange that was not one sided, with a change of topic. The patient was part of the exchange, not spoken to or at. The verbal interaction exchange was an open and flowing discussion, creating a balanced discourse. This was evident on 12 different occasions involving medication administration. For example, one nurse stated, "The medicine that you take are your xxx, and your xxx, which is a beta blocker that helps with your heart rate, and xxx, which helps with your swelling. Am I right?" The patient responded: "Yes". The nurse then asked, "Do you take xxx at home?" The patient stated: "Yes, it depends on my weight. If I gain a few pounds in

day, then I take one.” The patient is part of the conversation and in this example, able to provide information about the medications taken at home.

In another instance, a patient’s refusal to take a medication was addressed by the nurse. First, the nurse explained the purpose of the medication. The patient responded “yeah”, and the nurse then asked if any problems occurred that were associated with the medication. The patient described the effects that the medication had and the distress that resulted. The nurse thus validated the patient’s response instead of making an assumption about the patient’s refusal.

Automatic actions were present during the remaining observations involving medication administration. For example, the nurse would state: “Okay, so I have for you xxx, xxx, xxx, xxx, and xxx, for swelling. Are you peeing fine?” The patient responded: “That started working last night.” The nurse then administered the medication.

Patient teaching, separate from medications, also occurred as a deliberative or automatic action. For example, a patient asked: “The heart is going all right?” The nurse responded, “It is irregular, but not too fast, nothing to be worried about.” The patient then asked, “Will it always be irregular?” The nurse provided a brief explanation. The nurse’s action was deliberative, and supported the patient’s need for information. In contrast, a nurse provided instructions on self-care for two minutes. The patient nodded affirmatively, and stated “yup” once. Then the nurse went on to another topic.

Automatic actions included the process of collecting information. The nurse controlled the topics and would switch from “walking” to “pain” to “help at home”. Automatic nursing actions were identified in the transcripts as limited responses by the patient. There are circumstances where this appropriate, for example, a nurse would ask a question: “How is your breathing and everything today?” The patient would respond “Fine”. In this instance, an

automatic action was not necessarily bad. These types of automatic nursing actions, specifically collecting information, were noted in every observation.

Automatic responses were present when additional communication might have been warranted to ascertain the patient's need. For example, the nurse asked: "I heard you had some bleeding today. Were you trying to get up?" The patient responded: "Yes." The nurse then asked: "How did you eat and drink? Are you doing better today compared to yesterday?" The patient responded: "Yeah". In another example, a patient was referring to the home situation, and stated: "I have to help my xxx, so I make the bed." The information from the patient was not explored, as the nurse immediately moved on to the next topic, responding: "No doctors been in yet, right?"

Each of these examples is from different nurses and occurred at different times. Deliberative actions included the nurse getting to know the patients and discussing with the patients their (the patients') family members, interests, or activities. Field notes describing deliberative actions documented eye contact, affirmative head nodding, smiling, leaning toward the patient, and sometimes a light touch of the nurse's hand on the patient's shoulder were included in the interactions. In contrast, during automatic actions, the nurse would nod affirmatively, but had broken away from eye contact and made no attempts to get to know the patient. The exchanges occurred during the process of documentation. Notes from my journal described the nurses as not appearing hurried inside the patients' rooms, but once outside the rooms, they would state that they had numerous other activities requiring their immediate attention. This was consistent with each observation, including nurses who participated more than once. The call bell buzzers, with an intermittent bed exit alarm, were often sounding in the background.

Nurses who participated in semi-structured interviews repeatedly described the environment as task orientated. The nurse was given a list of tasks for each patient, and expected to prioritize the tasks on each list. Each nurse participant was interviewed informally, and statements similar to the ones provided in the semi-structured interviews were present. Informal interviews are routine in ethnography. Fetterman (2010) suggests that this techniques is beneficial in learning about the knowledge and beliefs of the participants.

Informally, nurses stated that electronic documentation “adds to the required tasks” and is “not what the patient wants.” Nurses described the patients as “complex”, having “advanced disease process”, and requiring “lots of meds”. Nurses stated that the computer “bogs down” their work. Nurses’ reported that electronic documentation, other than that associated with medication administration and vital signs, required approximately one hour of the nurse’s time per patient, and was usually done outside of the patient’s room. However, Westboork, Li, Georgiou, Paoloni, and Cullen (2013) found that after an electronic medical management system was introduced, the amount of the time nurses spent on tasks or interacted with their patient was not significantly impacted. The documentation that was completed by the nurse outside of the patient’s room was not observed, as that was not consistent with purpose of this study.

A nurse described the required fields in electronic documentation forms to include: “educate your patient, medications, fall risk, the Braden scale, IV assessment, and the biophysical assessment. That’s a big one.” Other nurses stated that the patients do not want the nurse in their room for too long. However, the practice of electronic documentation (other than medication administration and vital signs) outside of the patient’s room was not universal. Nurses who worked the second shift stated that, depending on how busy the unit was, it was possible to enter all electronic documentation into the computer at the bedside. Medication

administration and vital signs were always documented in the patient's room at the time these activities occurred. This practice was consistently noted throughout the observations, informal and semi-structured interviews, and audiotapes.

Figure Five reconstructs a task list for one patient. The task list was printed on 12/10/2013, before 9:00 AM. The example patient was admitted on 12/04/2013. The red clock symbol (🕒) signals the nurse that a task has not been initiated prior to the scheduled completion time, and is overdue. The yellow pencil (✍️) denotes tasks that have been started, but have not been completed by the scheduled time. The glasses (👓) indicate that the documentation is divided into further subcategories. The nurse needs to review every subcategory. The task described as "patient care" refers to nursing activities that must be performed throughout the day, such as bathing, measuring fluid intake and output, checking patient identification, documenting if visitors are present, and other aspects of patient care. There are tasks on Figure Five: List of Tasks for 12/10/13 that are scheduled to be completed by 9:00 AM. At 9:01 AM, if a task has not been started, it is identified as overdue and the red clock symbol (🕒) appears. Associated with some of the tasks on this list are additional subtasks that must also be completed.



















		Task Description	Mnemonic	Order Details	Scheduled DT/TM	Task Status
		Narcotic Shift Documentation	Narcotic Shift Documentation	12/10/13 18:00:00 This task is for PCA HYDROmorphine 10m/100ml NaCl 10 mg ordered at 06...	12/10/13 18:00	Pending
		Glucose (Nsg POC)	Glucose (POC)	Scheduled 12/10/13 16:00:00	12/10/13 16:00	Pending
		IV Assessment	IV Site Assessment	12/10/13 14:00:00 Ordered by a Discern Expert Rule	12/10/13 14:00	Pending
		Glucose (Nsg POC)	Glucose (POC)	Scheduled 12/10/13 10:00:00	12/10/13 10:00	Pending
		Response	Gabapentin (Gabapentin Capsule)	300 mg, Capsule, by mouth, 12/10/13 9:00:00	12/10/13 9:00	Pending
		Biophysical Assessment	Biophysical Assessment	12/10/13 9:00:00 Ordered via a Discern Expert rule secondary to admission	12/10/13 9:00	Pending
		Braden Assessment	Braden Assessment	12/10/13 9:00:00 Order generated by Discern Expert based on patient admission or transfer	12/10/13 9:00	Pending
		Falls Risk Assessment	Falls Risk Assessment	12/10/13 9:00:00 Generated by Discern Expert. Patient admitted	12/10/13 9:00	Pending
		Patient Care	Patient Care	12/10/13 9:00:00 Ordered by Discern Expert rule secondary to admission	12/10/13 9:00	Pending
		Patient/Family Education Record	Patient/Family Education Record	12/10/13 9:00:00 Order generated by Discern Expert upon patient admission	12/10/13 9:00	Pending
		Skin Maintenance Protocol	Maintain Skin Protocol	12/10/13 9:00:00 Order generated by Discern Expert based on charted Braden scale	12/10/13 9:00	Pending
		Patient Care	Patient Care	12/09/13 8:00:00 Ordered via a Discern Expert rule secondary to admission	12/09/13 8:00	In Process
		Foley Catheter Indicators	Foley Catheter Evaluation	12/06/13 8:00:00 Ordered by system – xxx-xxx-foley-cath stop rule	12/08/13 8:00	In Process
		 Narcotic Shift Documentation	Narcotic Shift Documentation	12/07/13 18:00:00 This task is for PCA HYDROmorphine 10 mg/100ml NaCl ordered at 06....	12/07/13 18:00	In Process
		Pre-Procedure Checklist	Pre-Procedure Checklist	12/04/13 23:52:23	12/04/13 23:52	In Process
		 IV Assessment	IV Site Assessment	12/10/13 6:00:00 Ordered via a Discern Expert Rule	12/10/2014 6:00	Overdue
		 Narcotic Shift Documentation	Narcotic Shift Documentation	12/10/13 6:00:00 This task is for PCA HYDROmorphine 10 mg/100ml NaCl 10 my ordered at 06...	12/10/13 6:00	Overdue
		Glucose (Nsg POC)	Glucose (POC)	Scheduled, 4:00:00 12/10/13	12/10/13 4:00	Overdue
		IV Assessment	IV Site Assessment	12/9/13 6:00:00 Ordered via a Discern Expert Rule	12/09/13	Overdue
		Narcotic Shift Documentation	Narcotic Shift Documentation	12/09/13 6:00:00 This task is for PCA HYDROmorphine 10 mg/100ml NaCl 10 my ordered at 06...	12/09/13 6:00	Overdue
		Response	Oxycodone/Acetaminophen (Percocet-5 Tablet)	2 tablet, Tablet by mouth, Every 4 hours, prn for Pain, Severe, May give 1 tablet. Not to exceed 4000 mg of Acetaminophen per 24 hours.	12/09/14 5:35	Overdue
		Valuables/Belongings	Complete Valuables and Belongings Form	12/08/13 18:33:02 Ordered via a Discern Expert Rule	12/08/13 20:00	Overdue

Figure 5. List of Tasks

Figure 5, Lists of Tasks, is an example of a patient task list for a typical patient. The list is what the nurse would see on the computer at 8:00 AM, on December 10, 2013. Seven tasks scheduled to have been completed prior to 8:00 AM on 12/10/13 have not been started and are overdue, as indicated by the red clock. Four tasks have been started but were not completed by the scheduled completion time, as indicated by the yellow pencil. For example, Foley catheter indicators were scheduled to be have been completed by 12/08/13 at 8:00 AM. However, the task status is “in process”. The nurse reviewing this list will focus on the seven pending tasks due to be completed by 9:00 AM on 12/10/13.

Figure Six shows a few of the subtasks associated with the task “biophysical assessment.” Information required by the nurse is highlighted in yellow on the subtask form. For each body system assessment, the nurse must identify if the assessment was within normal limits (WNL). If not WNL, then the nurse must itemize exceptions to the normal parameters.

System Assessment		
The following parameters define the assessment standard. "WNL" indicates that the patient's physical assessment findings meet the noted standards. "WNL, except" indicates that all defined parameters have been reviewed and abnormalities described and documented.		
Body System	Assessment	Normal Parameters
Neurological	<input type="radio"/> WNL <input type="radio"/> WNL except	Alert/orientated x 3. Behavior appropriate situation. Short/long term memory intact. PERL, brisk. Speech clear/appropriate. MAE Equal strength. Sensation intact/equal bilaterally. Swallows easily without choking, gagging, coughing. Denies dizziness, lightheadedness, headache, seizure, fainting. Denies change in sense of smell, hearing, sight, taste.
Cardiovascular	<input type="radio"/> WNL <input type="radio"/> WNL except	BP WNL. Regular apical/radial pulse. Peripheral pulses palpable. No extremity/dependent edema. No calf tenderness. Extremities warm, no cyanosis. Capillary refill less than 3 seconds in fingers/toes. Denies chest pain, palpitations, dyspnea, orthopnea.
Respiratory	<input type="radio"/> WNL <input type="radio"/> WNL except	Respirations effortless at rest. Rate/depth regular, symmetrical chest expansion. Breath sounds clear/equal bilaterally. No cough. Expecterated sputum clear. Nail beds/mucus membranes pink. Denies shortness of breath/difficulty breathing.
Gastrointestinal	<input type="radio"/> WNL <input type="radio"/> WNL except	Abdomen soft/non distended. Bowel sounds present. No pain/tenderness on palpation. No nausea/vomiting/discomfort/cramping. No change in regular bowel pattern/characteristics. No diarrhea/blood in stool. No jaundice noted. Adequate appetite for nutritional needs. No ostomy present.
Normal Bowel Pattern	<input type="radio"/> Daily <input type="radio"/> Twice a day <input type="radio"/> Every other day <input type="radio"/> Every third day <input type="radio"/> Other	Last BM Date <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-bottom: 5px;">XX/XX/XXXX</div> If date unknown upon admission, enter admission date. Last BM Info <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-bottom: 5px;">XX/XX/XXXX</div>

Figure 6. Part of Sample Mandatory Subfields in Biophysical Assessment.

Nurses stated that they have a lot of information to “fill out” every day. That part of the day cannot take place until all of the “work” is done. The “work” is described as organizing and prioritizing medication administration, completing physical assessment, and preparing patients for either discharge or procedures. Electronic documentation adds to these required tasks.

Theme Three

The nurse-patient interactions were automatic, machine-like, with nurses completing a list of mandatory tasks. Electronic documentation task lists create an environment that does not put the patient’s concerns at the center of care. Nurses used phrases such as “like a machine” and “widget factory” to describe a bedside setting where the nurse was “very busy doing the

tasks on our list, for example giving the meds and getting to the next patient.” The nurse’s proficiency in utilizing electronic bedside documentation for medication administration is a criterion used to evaluate the nurse, “part of the nurse’s performance”. The machine-like interactions changed from automatic to deliberative whenever the nurse incorporated topics that reflected an interest in the patient.

Informally and in semi-structured interviews, the nurses described their actions as “less nurturing” and performed with “less touch”. Nurses indicated that they wanted to talk with the patients more. One nurse stated: “We don’t use therapeutic touch like we used to.”

Summary

The observations, informal and semi-structured interviews, and audiotapes of nurse-patient interactions during the use of bedside electronic documentation added to knowledge about nursing practice and electronic documentation at the bedside, the environment of that bedside practice, and nurse-patient communication as it is occurring in real time. Three themes consistently emerged: the nurses’ paused verbal communication and broke eye contact, played a game of tag between the patient and the computer, and employed automatic or machine-like actions.

Nurses described electronic bedside documentation as a “new twist” in nursing care. Nursing activity was interrupted by the computer. Nurses’ eye contact moved away from the patient to the computer screen and then back to the patient. In order to enter information electronically, the nurse has to leave the bedside to walk over to the computer. The placement of the computer and the patient within the room is not optimal. The bedside computer is used consistently during medication administration and the documentation of vital signs. Some nurses were also able to complete the biophysical assessment documentation while in the patient’s

room. However, other nurses cited various reasons why this could not be accomplished. These nurses completed documentation using the computers at the pod.

According to the nurses, a minimum of six areas of documentation is required on each patient. Multiply this by a six patient assignment and the end result is a list of thirty-six tasks for the nurse to complete, not including any sub-tasks that are required. The actions of the nurses were automatic, driven by the need to complete a list of mandatory, computer prioritized tasks while providing care for complex patients.

Although electronic documentation itself is an added task, the computer system has improved patient safety. Nurses stated that medication administration is safer. Patients are better informed about their medications, as a direct result of the resources provided by having access to the computer. The history of each patient's care is easily accessible, and the notes are legible. As one nurse stated: "It's not bad, it's just how we use it."

CHAPTER 5

Discussion

Introduction

The purpose of this study was to explore the culture of nurse-patient interaction associated with electronic documentation at the bedside in a hospital environment. For this study, I concentrated on describing the verbal and non-verbal reciprocal communication, the overt and unspoken patterns of communication, and the nurses' actions, automatic or deliberative. Three main findings about nurses' behavior during these interactions emerged from the data. Nurses pause during the interactions, move back and forth between the patient and the computer, and use machine like actions to complete a list of tasks.

My findings contribute to the evidence that the nurse-patient interactions during bedside electronic documentation constitute a complex relationship involving the nurse, the patient, the computer, their locations in the room, and the required documentation. The pauses during the nurse-patient interactions were related to data entry, data retrieval, and data review, as well as to other sources not associated with the computer, such as calls on the nurses' hospital provided phones. Pauses during the nurse-patient interactions were identified in an earlier study that used a simulated clinical environment. Duffy et al. (2010), suggested that 60% of the nurses' overall time was spent looking at the computer screen. Strauss (2013) suggested that patients understood that nurses will spend more time reviewing the electronic documentation and not directly interacting with their patients. This practice was deemed to be acceptable by the participants, as long as the nurses acknowledge and attend to the patients' needs prior to using the computer. The impact of pauses that result from calls on the nurses' hospital provided phones is unknown.

The nurse's back and forth movements associated with the location of the computer have been noted in current literature. This study provides further evidence that stationary computers may interrupt the nurse-patient interaction and overall workflow. The challenges of selecting the optimal location of the computer in the room were discussed in the study by Kohle-Ersher, et al. (2012). A stationary computer was located in each patient room. Nurses (N = 20) reported that the computer in the room may be a source of distraction due to tapping on the keyboard, audible alerts, and the light from the display. In addition, the nurse's back is to the patient while using the keyboard. According to Strauss (2013), the computer screen should be located in the room so that the nurse and the patient can view the screen jointly. Patients (N=11) reported that when they worked with nurse while reviewing the data on the computer screen, they (the patients) experienced a positive connection with the nurse.

Concerns about the risks of nurses working for the computer instead of with the patients were identified by Sigma Theta Tau International (2011). Automatic or machine-like actions of the nurses associated with electronic documentation diminish critical thinking and judgment (Kossmann & Scheidenhelm, 2008; Timmons, 2003). These place the nurses, well-educated professionals, into the position of following lists of tasks. In contrast, deliberative actions require reciprocal communication between the nurses and the patients. The evidence from this study supports the concern that electronic documentation can create an automatic, task-centered bedside environment. Kohle-Ersher, et al. (2012) suggested that nurses will change their workflow in order to incorporate electronic documentation. Recently, Zadvinskis, Chipps, and Yen (2014) identified that the helpful features of bedside documentation systems were offset by the mismatch between the system and nurse's workflow. For example, the computerized list of

items associated with a head-to-toe assessment is in a different order than the sequence in actual practice.

The Theory of the Dynamic Nurse-Patient Relationship (Orlando, 1961:1990) was the conceptual framework used in this study to illustrate the nurse-patient interactions associated with bedside electronic documentation. The study findings will be discussed within the context of this framework. The implications for practice, research, and health policy as well as the study limitations will be discussed.

Conceptual Framework

Three major concepts associated with the Theory of the Dynamic Nurse-Patient Relationship (Orlando, 1961;1990) are present in the nurse-patient interaction. These concepts begin with the drive to resolution of the patient's need and/or improve their condition. The three concepts are (a) the patient's behavior, (b) the nurse's reaction, and (c) the nurse's action. The patient's need may be expressed by the patient or may surface during a routine interaction, for example, as the nurse is performing a physical assessment.

The concepts in this theory supported the specific aims of this study. Specific aim #1 was designed to describe nurse-patient interaction as demonstrated in verbal and non-verbal reciprocal communication. The purpose of specific aim #2 was to identify the emerging overt and unspoken patterns of nurse-patient communication while using electronic documentation. Specific aim #3 was to identify nurses' actions, either automatic (without discussing with the patient) or deliberative (involving reciprocal communication with the patient), that occur while integrating electronic bedside documentation into patient care.

A review of nurse-patient interactions with respect to the framework confirmed that the patient exhibits a need that must be resolved or improved. During all observations, nurse-patient

interactions were initiated by the nurse, except for one instance in which the patient requested medication for pain. Analysis of the audio tapes and observations established that a patient's need for help was discovered either during a physical assessment by the nurse or during medication administration. A physical assessment is an example of an automatic nurse action. Patients' behaviors indicative of a need for help prompted nurses to recognize the need for additional information. The nurse's reactions to this need can be broken down into three components, occurring in the sequence of perception, thought, and feeling. Perception and thought are not evident to an observer, as these components are intrinsic to the person experiencing them. Feelings are also intrinsic, but may be expressed both verbally and non-verbally. The nurses' actions and patients' responses were recorded through observation field notes and audio-tapes. The interview guide was developed from the framework. Although the nurses' perceptions and thoughts are not observable, the extent to which these non-observable reactions influenced the nurses' actions were explored through the informal and semi-structured interviews.

The three main themes that emerged from this study were: "pauses"; "back and forth"; and "machine like actions". Pauses were noted by observations during the nurses' actions. Eye contact and verbal exchanges between the nurses and the patients were interrupted for various reasons. This resulted in the nurses' eye contact switching from the patients to the computer screen, and verbal exchanges either stopping or occurring without eye contact. The nurses' movements, back and forth from the patients to the computer, were carried on both with and without discussion with the patients. Machine like automatic actions were present during all observations. However, it should be noted that in some instances, the automatic actions spawned deliberative actions.

Implications for Practice

The findings from this study support the need to re-examine bedside nursing and the impact of electronic documentation. Informally, nurses stated that the requirements to complete electronic documentation were driving their interactions with the patients toward the completion of a list of required tasks. The complexity of the patients, the computerized prioritization of tasks, and the interruptions, including those for the actual documentation, limited the nurses' ability to nurture and become familiar with their patients. The task lists in the electronic documentation system create an environment that does not put the patients' concerns at the center of care. Current literature suggests that the information collected at the bedside be streamlined so as to more efficiently support the nurses' workflow (Kossmann, Bonney, & Kim, 2013; Page & Schadler, 2014; Staggers, Clark, Blaz, & Kapsandoy, 2011). The information that nurses need to be aware of and the actions that nurses are required to perform should match the electronic system.

Study participants stated that they used paper to communicate on-going concerns about their patients. The use of paper suggests a gap in the documentation system (Russ, et al., 2010). The concurrent use of both paper and electronic data collection is indicative of a system that has increased nurses' workload (McMurray, et al., 2012). According to Kelley, Docherty, and Brandon (2013), nurses (N = 12) described using paper report sheets to communicate information about their patients. The nurses determined that the information on paper was more accessible than that in the electronic record. This finding supports the need to restructure the system to more effectively reflect workflow and capture critical information.

Nurses moved back and forth between the computer and the patient. A finding of this study suggests that the nurses pause during the interactions with their patients in order to

document. The nurse is very mobile, whereas the computer is fixed to a column. Access to an electronic device that is equally mobile and not restricted by space, such as a computer on wheels, may alleviate some of this burden for the nurses and the patients. Bedside electronic documentation with the computer as a fixed point in the room requires nurses to look at the computer screens and touch the keyboards. The documentation is directed toward completing a list of mandatory tasks. This finding is similar to that of Sockolow, Rodgers, Bowles, Hand, and George (2013). In their study, it was suggested that nurses perceived more of their time was spent documenting, which decreased the amount of time that they had to interact with their patients. Sockolow et al. (2013) put forward that nurses' believed point-of-care documentation systems could be improved if nurses provided more feedback to nurse executives who select the systems, and if the goals associated with the adoption of an electronic documentation system were more adequately communicated.

Recent studies suggest that the use of a mobile device, such as a tablet, that contains customized information viewable by the patient, allows patients to more effectively participate in their care. Dykes, et al. (2013) suggested that patients and their families reported satisfaction with a tablet device that incorporated software to allow patients to access their information. This information included medication schedules, test results, meals, and educational material. According to Vawdrey, et al. (2011), patients perceived that a tablet computer was beneficial to their care and promoted self-engagement in their care. Patient activation in their health care has been shown to reduce health care costs (Hibbard, Greene, & Overton, 2013).

Implications for Research

Electronic bedside documentation has been identified as means to involve patients in their care. The Institute of Medicine (2001) defined patient-centered care as "care that is

respectful of and responsive to individual patient preferences, needs, and values” (p 72). Recent literature has suggested that electronic bedside documentation can either promote or interfere with patient-centered care (Snyder, et al., 2011). Completing mandatory check-lists may be dehumanizing care and excluding the patients’ needs, detracting from of patient-centered care. Nurse-patient interaction during electronic documentation should be re-visited to explore the impact of redesigned software and tools, including tablets.

The patients’ perceptions should be incorporated into future research, including patient burden experienced when nurses pause during interactions. In this study, touch not associated with an intervention was rarely observed. Exploring the use of non-interventional touch during nurse-patient interaction with an electronic documentation system would be interesting. According to Caris-Verhallen, Kerkstra, and Bensing (1999), touch is based on the nurses’ personalities. According to this study, nurses felt that the time to interact with patients was limited, as they were “very busy”.

Researchers examining nurse-patient communication during bedside documentation should explore various areas of the health care facility. For example, communication with patients in the intensive care unit may be very different than that with patients on a dialysis unit or with those in labor and delivery unit. Additional work is needed to explore other activities in which electronic documentation takes place, for example, the patient admission and discharge documentation processes. The scope of bedside documentation in this study was narrow and involved collecting limited physical assessments data (vital signs, lung, heart, and abdominal sounds, assessing peripheral edema) and administering medications. Expanding this research into a macro-ethnography design will provide a more holistic view of nurse-patient communication. Observations of the nurse-patient interaction should extend across the course of

an entire shift, and all shifts including the overnight shift, should be included. Further studies should consider interviewing the patient as well as the nurse.

Hand written notes may always be present in the hospital setting. Notes may be used to record information for subsequent recording in the electronic documentation system or to serve as reminders for the nurses. Further exploration into the concurrent use of paper and electronic documentation will provide insights into what information is captured on paper, and will provide solutions that can be incorporated into the computer systems, easing the burden of the nurse's workload.

Implications for Health Policy

The Institute of Medicine (2011a) has estimated that over three million nurses will be providing care in some capacity that requires the use of electronic documentation. The participants in this study were observed managing electronic documentation without any apparent difficulty, but they expressed concern about the impact on workflow. Nurses are the primary users this bedside technology. Policy development for electronic documentation and other aspects of health care informatics should include nurses. Avenues for nurses to provide constructive feedback should be made available (Sockolow, et al., 2013).

Educating nurses to use the systems is important to success. Future policy in the health care setting should include effective communication techniques for nurse-patient interactions (Strauss, 2013). Policy development to educate nurses in communication during bedside documentation must extend to the academic setting (Aktan, Tracy, & Bareford, 2011). According to Cronenwett, et al. (2007), current nursing curriculum includes informatics as an essential competency. Educating pre-licensure nursing students in informatics supports their transition to become active members in the development and implementation of electronic

information systems, which in turn supports patient safety. Examples of informatics competencies include identifying pertinent patient information and developing the skills to manage that information to support patient care. In addition, nurses must value their role in evaluating the technology. A summary of the recommendations for practice, research, and health policy is provided in Table 3.

	Recommendations
Practice	Streamline information at the bedside to focus on content that supports the nurse's workflow. Explore alternatives to computers that are not easily portable, for example tablets.
Research	Additional work is needed to explore other areas of electronic documentation, for example patient admission and discharge documentation processes.
Health Policy	Develop inter-agency collaborations to exchange best practices with regard to informatics. Support curricula revisions to pre-licensure nursing programs to include access to multiple electronic medical record systems in the clinical and classroom setting. Develop nursing practice that recognizes the workflow needs in the design and implementation of electronic tools (American Association of Colleges of Nursing, 2008).

Table 3. Recommendations for Practice, Research, and Health Policy

Limitations

In this study, the nurses were observed performing a limited set of activities. All of the nurse-patient interactions, except in one instance, were initiated by the nurse. The observations (N = 26) predominantly included medication administration (n= 22). Admission assessments were not observed, as the environment for admissions to the units was characterized as being “stressful”. Patients were rapidly prepared for tests or procedures.

The sample size was small and was limited to one type of documentation system and one type of clinical setting. Therefore, the nurse-computer interface was limited to the documentation software available in the participating facility. Various other clinical settings, including medical surgical units, and other patient populations, such as non-English speaking and those who are cognitively impaired were not represented in this study. Patients were not interviewed for this study and did not request to be interviewed.

The participants were volunteers, predominantly Associate Degree nurses, and any differences between nurses in the volunteer group and other nurses at the facility are unknown. The nurses who participated may have a greater interest in electronic documentation and may possess more self-confidence in using the system than their peers.

Conclusions

For this study I explored the culture of nurse-patient interactions at the bedside during electronic documentation. Findings suggest that nurses' pauses from verbal communication and eye contact, play a game of tag between the patient and the computer, and use automatic or machine like actions to complete a list of mandatory tasks. Observations, audio-taped interactions, informal interviews, and semi-structured interviews corroborated these findings. Authors of recent literature have suggested similar findings. The nurse-patient interaction during bedside electronic documentation is a complex relationship involving the nurse, the patient, the computer, their locations in the room, and the required documentation. Stationary computers challenge the logistics of nurse-patient interaction. In order to document their information, nurses had to interrupt their interaction with the patient. Prioritizing patient needs and completing a required mandatory list of tasks was a principal challenge perceived by the nurses.

Electronic documentation is a permanent part of healthcare. An estimated three million nurses are using it. Nurses play a critical role in the development of this tool. The electronic systems provide a number of benefits. Medication administration safety is improved. The computer provides easy access to information that assists the nurses in educating their patients, and eliminates errors due to illegible handwriting by both nurses and physicians. The next step is to develop the electronic documentation systems to improve the efficiency of the nurses' workflow, reflecting the nurses' informational needs, while encouraging patients to actively participate in their own care.

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Appendix A

Field Note

Archival #: _____ Date: _____ Day of the week (Sun, M, T, W, Th, F, Sat) Unit: _____

Informant: _____ - ____ (pseudonym) Start time: _____ End time: _____

Written consent reviewed: _____ Formal Interview time: _____

Education: ADN __ BSN __ Other _____ Years in current position: _____

Years of experience with current documentation systems: _____

Years of experience with other prior electronic document systems: _____

Reminder: *I am observing nurse-patient interaction and electronic bedside documentation*

Begin record – End record

Descriptive observation: (space, people, emotions expressed, activity, goal of the activity)

Focused observations: (Who acted, towards whom, and why?)

Selective observations:

Patient directed eye contact
Smiling
Affirmative head nodding
Leans towards patient
Touch

Informal Interview notes:

Appendix B

Interview Guide

Electronic Bedside Documentation and Nurse-Patient Communication Interview Guide

1. Tell me about your day
(Typical assignment/acuity of patients)

2. Tell me about your experience with electronic documentation and patient care

3. Describe how you interact with the patient
 - a. Does bedside electronic documentation influence your interaction with the patient?

 - b. If so, how? If not, why not?

4. What else would you like to add?

Appendix C

Research Consent Form (Nurse)

RESEARCH CONSENT FORM

Title of Project: Electronic Bedside Documentation and Nurse Patient Communication

Study Sponsor: None

Principal Investigator: Cynthia Gaudet, University of Massachusetts, Worcester

Study Participant: (name)

WHY ARE YOU BEING ASKED TO TAKE PART IN THIS RESEARCH?

I am talking to you about this research study because nurses are at the forefront of point-of-care documentation. Whether or not you take part in this study is up to you. If you choose not to participate in the study it will not affect your employment status or performance reviews.

This form gives you important information. Please read it carefully and ask questions before you make a decision. Please take your time. You should not sign this form until all of your questions have been answered.

WHY IS THIS RESEARCH STUDY BEING CONDUCTED?

The purpose of this research study is to explore the culture of nurse-patient interaction associated with electronic documentation at the bedside.

HOW IS THIS RESEARCH STUDY BEING FUNDED?

This researcher has no funding sources, including companies or grantors. The researcher has no conflict of interests.

HOW MANY PEOPLE WILL TAKE PART IN THIS STUDY?

This research is being conducted only at XXXX XXXX. I expect to enroll 30 people here.

HOW LONG WILL YOU BE IN THIS STUDY?

Your participation in this research study is expected to last for 1 hour. You may participate more than once. Your participation in this study will be stopped if the researcher thinks (1) it is in your best interest to stop; (2) if you do not follow the study requirements; (3) if you conduct yourself in a manner that is illegal or harmful;* or (4) if the study is stopped for any reason.

*Behaviors that are conducted in a manner that is illegal or harmful will be reported to the supervisor.

PARTICIPATION IN THIS STUDY IS VOLUNTARY

Taking part in this study is voluntary. You may choose not to take part or to leave the study at any time. Your decision will not affect your relationship with XXXX XXXX and will not result in any penalty or loss of benefits to which you are otherwise entitled.

You can stop taking part in this study at any time. Tell the researcher, Cynthia Gaudet (xxx-xxx-xxxx, cell phone) if you are thinking about stopping or have decided to stop.

If you decide to stop participating, all data will be destroyed.

WHAT WILL YOU DO IN THIS STUDY?

To make sure that you are eligible for this research study you will need to be: a registered nurse, employed at XXX full time or part time, a volunteer, currently engaged in electronic documentation, assigned to the units where the study is taking place, willing to be observed, audio tape, and/or participate in a semi-structured interview.

WHAT RISKS OR PROBLEMS COULD YOU HAVE BY BEING IN THIS STUDY?

Participant observation may cause some disruption in patient care due to the presence of being shadowed by the researcher. Informal questions will be asked. The nurse-patient interaction at the bedside will be audio taped.

Participation in the semi-structured interview is voluntary. Questions about your experience with electronic documentation will be asked. The semi-structured interview will be audio taped.

You are free to skip any question for any reason.

WILL YOU BENEFIT FROM BEING IN THIS STUDY?

You may or may not benefit from being in this study. What I learn from this research study will be shared with the nursing community at XXX and will be submitted for publication. What is learned from this study may contribute to nursing knowledge of electronic documentation at the bedside.

WILL THERE BE ANY COSTS TO YOU?

As a participant, you will incur no expense for participation.

WILL YOU RECEIVE ANY COMPENSATION?

You will not receive any compensation for participating in this research study.

HOW WILL YOUR PRIVACY BE PROTECTED?

I will protect your privacy as a participant in this research study and the confidentiality of your research information. All identifiable data will be secured that the facility. If I publish information from this research study or use it for teaching, your name will not be used.

I will not make audiotapes of you without your permission.

INFORMATION ABOUT THE PRIVACY OF PROTECTED HEALTH INFORMATION

XXXX XXXX, its employees, and its affiliates are required by law to protect the privacy of information that identifies you. If you enroll in this research study, your protected health information (referred to as **PHI** in the rest of this section) may be used and shared with others as explained below.

Who may use and share your PHI?

- My dissertation chairperson, Dr. Robin Klar, who is helping conduct the research.

In order to check that we are conducting research properly, government agencies may access information that could identify you. For example, the following people/groups may inspect research records:

- The Office of Human Research Protections in the U.S. Department of Health and Human Services.
- State agencies such as the Department of Public Health.
- Other domestic and foreign government agencies if required.

Once your PHI has been released, it may no longer be protected by federal law.

How long will your PHI be used and shared for this research study?

- Since research is an ongoing process, there is no scheduled date at which your PHI will be destroyed. After seven years from the Institutional Review Board closure of this study, all field notes, audio recordings of interactions and semi-structured interviews, informal interviews, demographic data, and artifacts (computer screen images devote of any patient information) will be destroyed.

What if you decide that you no longer want your PHI used or shared for this research study?

- You can withdraw your permission at any time for me to use and share your information by contacting the researcher, Cynthia Gaudet..

WHO DO YOU CONTACT IF YOU HAVE STUDY QUESTIONS OR CONCERNS?

If you have any questions about this study, please contact: Cynthia Gaudet at xxx-xxx-xxxx (cell phone).

If you would like to discuss your rights as a research participant, or wish to speak with someone not directly involved in the study, please contact the XXXX XXXX Institutional Review Board at (XXX) XXX-XXX.

STATEMENT OF VOLUNTARY CONSENT

I have read this form or have had it read to me. I have been told what to expect if I take part in this study, including possible risks and possible benefits. I have had a chance to ask questions and have had them answered to my satisfaction. I have been told that the people listed in this form will answer any questions that I have in the future. By signing below, I am volunteering to be in this research study.

Participant's Name (Print): _____

Signature: _____ Date: _____

STUDY REPRESENTATIVE STATEMENT

I have explained the purpose of the research, the study procedures, the possible risks and discomforts, the possible benefits, and have answered all questions to the best of my ability.

Study Representative's Name (Print): _____

Signature: _____

Date: _____ Time Consent Obtained: _____

You will receive a copy of this form after it has been signed and dated.

Appendix D

Research Consent Form (Patient)

RESEARCH CONSENT FORM

Title of Project: Electronic Bedside Documentation and Nurse Patient Communication

Study Sponsor: None

Principal Investigator: Cynthia Gaudet, University of Massachusetts, Worcester

Study Participant: No information required

WHY ARE YOU BEING ASKED TO TAKE PART IN THIS RESEARCH?

I am talking to you about this research study because electronic documentation is at the bedside and the nurse works with you and the computer to deliver care. Whether or not you take part in this study is up to you. If you choose not to participate in the study it will not affect your care provided at XXX.

This form gives you important information. Please read it carefully and ask questions before you make a decision. Please take your time. You should not sign this form until all of your questions are answered.

WHY IS THIS RESEARCH STUDY BEING DONE?

The purpose of this research study is, to watch and listen to how the nurse and you talk to one another, especially when the nurse is entering information into the computer.

HOW IS THIS RESEARCH STUDY BEING FUNDED?

This researcher is has no funding sources. The researcher has no conflict of interests.

HOW MANY PEOPLE WILL TAKE PART IN THIS STUDY?

This research is being conducted only at XXXX XXXX. I expect to enroll 30 people here.

HOW LONG WILL YOU BE IN THIS STUDY?

Your participation in this research study is expected to last for no more than 1 hour. The exact amount of time, 5 minutes or 15 minutes, up to one hour, will be determined by the amount of time the nurse interacts with you. Over the course of 1 hour, you may participate more than once. Your participation in this study will be stopped if the researcher thinks (1) it is in your best interest to stop, (2) if the study is stopped for any reason, or (3) you decide not to participate any further.

PARTICIPATION IN THIS STUDY IS VOLUNTARY

Taking part in this study is voluntary. You may choose not to take part or to leave the study at any time. Your decision will not affect your relationship with your doctor or with XXXX XXXX and will not result in any penalty or loss of benefits to which you are otherwise entitled.

You can stop taking part in this study at any time. Tell the researcher, Cynthia Gaudet (xxx-xxx-xxxx, cell phone) if you are thinking about stopping or have decided to stop.

If you decide to stop participating, all data will be destroyed.

WHAT WILL YOU DO IN THIS STUDY?

To make sure that you are eligible for this research study you will need to be: 18 years old or old, assigned to a participating nurse, able to communicate in English, willing to be observed, and will to be audio taped.

WHAT RISKS OR PROBLEMS COULD YOU HAVE BY BEING IN THIS STUDY?

Participant observation may cause some disruption in patient care due to the nurse being shadowed by the researcher. The researcher may be asking the nurse informal questions. The nurse-patient interaction at the bedside will be audio taped.

WILL YOU BENEFIT FROM BEING IN THIS STUDY?

You may or may not benefit from being in this study. What I learn from this research study will be shared with the nursing community at XXX and will be submitted for publication. What is learned from this study may contribute to nursing knowledge of electronic documentation at the bedside.

WILL THERE BE ANY COSTS TO YOU?

Participation in this study will not incur any expense.

WILL YOU RECEIVE ANY COMPENSATION?

You will not receive any compensation for participating in this research study.

HOW WILL YOUR PRIVACY BE PROTECTED?

I will protect your privacy as a participant in this research study and the confidentiality of your research information. All identifiable data will be stored by this facility.

If I publish information from this research study or use it for teaching, your name will not be used.

I will not take photographs or make audiotapes or videotapes of you without your permission.

INFORMATION ABOUT THE PRIVACY OF PROTECTED HEALTH INFORMATION

XXXX XXXX, its employees, and its affiliates are required by law to protect the privacy of information that identifies you. If you enroll in this research study, your protected health information (referred to as **PHI** in the rest of this section) may be used and shared with others as explained below.

Who may use and share your PHI?

- My dissertation chairperson, Dr. Robin Klar, who is helping conduct the research.

In order to check that we are conducting research properly, government agencies may access information that could identify you. For example, the following people/groups may inspect research records:

- The Office of Human Research Protections in the U.S. Department of Health and Human Services.
- State agencies such as the Department of Public Health.
- Other domestic and foreign government agencies if required.

Once your PHI has been released, it may no longer be protected by federal law.

How long will your PHI be used and shared for this research study?

- Since research is an ongoing process, there is no scheduled date at which your PHI will be destroyed. After seven years from the Institutional Review Board closure of this study, all field notes, audio recordings of interactions and semi-structured interviews, informal interviews, demographic data, and artifacts (computer screen images devote of any patient information) will be destroyed.

What if you decide that you no longer want your PHI used or shared for this research study?

- You can withdraw your permission at any time for me to use and share your information by contacting the researcher Cynthia Gaudet.

WHO DO YOU CONTACT IF YOU HAVE STUDY QUESTIONS OR CONCERNS?

If you have any questions about this study, please contact: Cynthia Gaudet at xxx-xxx-xxxx (cell phone).

If you would like to discuss your rights as a research participant, or wish to speak with someone not directly involved in the study, please contact the XXXX XXXX Institutional Review Board at (XXX) XXX-XXXX.

STATEMENT OF VOLUNTARY CONSENT

I have read this form or have had it read to me. I have been told what to expect if I take part in this study, including possible risks and possible benefits. I have had a chance to ask questions and have had them answered to my satisfaction. I have been told that the people listed in this form will answer any questions that I have in the future. By signing below, I am volunteering to be in this research study.

Participant's Name (Print): _____

Signature: _____ Date: _____

STUDY REPRESENTATIVE STATEMENT

I have explained the purpose of the research, the study procedures, the possible risks and discomforts, the possible benefits, and have answered all questions to the best of my ability.

Study Representative's Name (Print): _____

Signature: _____

Date: _____ Time Consent Obtained: _____

You will receive a copy of this form after it has been signed and dated.