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Nurse Perceptions of the Electronic Medical Record and Patient Care: Barrier or Bridge?

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July 22, 2009

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Do nurses perceive a point-of-care electronic health record as a bridge or barrier to safe, personalized care? Electronic Health Records (EHR) frequently cost organizations several million dollars (Poissant, Pereira, Tamblyn, & Kawasumi, 2005) to implement and requires careful management of many organizational and behavioral aspects (Moody, Slocumb, Berg, & Jackson, 2004). Systematic reviews of nurses, electronic health record definitions and clinical information systems describe wide, statistically significant variability in their characteristics.

Purpose

The purpose of our study was to assess the bedside nurse or nurse assistant's perception of EHR functionality and efficiency (Kajermo, et al., 2008) once implementation was complete. Nurse perceptions of the EHR's impact on bedside time, quality and safety, medication administration, care-plan development and reading physician orders are important components of its usefulness. Ongoing education and training, "super user" availability and management support are essential resources the manager can adjust based on nurse perceptions to maintain nurse morale while pursuing unit productivity goals. This field research project electronically surveys four inpatient settings to answer the question, "Does the nurse perceive the EHR as functional and efficient today?" It examines current nurse perceptions of the EHR and facilitates the nurse manager's ability to manage the unit environment and staff morale while meeting essential requirements of nursing care documentation (Daft, 2007).

Justification

It is interesting to find that even though there is much support for the use of the Electronic Medical Record (EMR) and the key benefits associated with the adoption, the prevalence of adoption is dismal. According to Jha et al (2009), only 1.5% of U.S. hospitals have

a comprehensive electronic record system and an additional 7.6% have a basic system. They also discovered that computerized provider order entry for medications had been implemented in only 17% of hospital. The group had surveyed 3049 hospitals, which included 63.1% of all acute care general hospitals. The vast majority of healthcare transactions in the United States continue to take place on paper. If all medical payment transactions in the U.S. were handled electronically, America could save \$11 billion annually. The past practices of using a paper trail can lead to disastrous results in coding and financial reimbursement. Incomplete bills are being sent and therefore no payment of services rendered (Amatayacul, 2005).

Another reason for the push to increase a comprehensive electronic record system is due to the 2009 economic stimulus package (HITECH). This act provides “incentive payments to those who adopt and use certified EMRs” (Raymond, 2001). Hospitals and private physician groups that adopt the EMR are provided a financial incentive and actual reimbursement of expenses. The reimbursement rate decreases each year, thus the incentive to adopt an EMR in the near future can be a financially sound decision.

Key benefits for adoption of computerized system have shown to reduce preventable, potential adverse events (Cutler, 2005). Studies have shown that when physicians enter orders electronically, error prevention ranges as high as 80 percent (Bates, 1998). If a patient has a health care problem, the system has access to the latest clinical protocols, treatment plans and medications needed to assist the patient to improve their health status (Amatayacul, 2005). DeWar (2006) proposes that the electronic health record can provide “seamlessly integrating information with images from a variety of medical modalities in one location and thereby allowing the hospital to be able to provide improved care delivery and also can lead to increased staff satisfaction”.

Nurses who work in hospitals that use the electronic medical record will find that it can enhance patient safety and patient outcomes (Robles, 2009). However, many nurses often perceive that the change from paper charting to the EMR requires documentation that is more complex. Robles (2007), suggests that if the formats used in electronic documentation is based on those used in manual/paper process it may not seem like an improvement. Nurses must value the EMR's potential benefits such as patient safety, improved legibility; interfaced data validation with monitoring equipment, automatic alerts for allergies, drug interactions, medication doses and suggestions for proper care planning based on specific diagnoses or specific database criteria (Robles, 2007).

Nurses are instrumental for adoption of the EMR and according to DeWar (2006), it is important to include nurses in the planning stages of implementation as well as providing a nursing specialist in informatics. The key to success in one hospital setting was attributed to "solid internal processes and intensive training of the nurses" (DeWar, 2006 p. 32). Another key component that was identified in the success of the adoption of the EMR was core trainers or "super-users" from each department who were available throughout the implementation process (DeWar, 2006). Nurses who are satisfied with the EMR will find that this can be an excellent recruitment tool for the hospital (DeWar, 2006).

Management support is crucial for the success of the EMR. According to Korst (2003), she observed that the management made increased staffing requirements in an already labor-intensive and demanding environment. It was interesting to note that in the study even though there was an adjustment made in staffing, the actual documentation time spent by nursing was 15.8%; 10.6% on paper and 5.2% on the computer.

Definition of Terms

Perception

A perception as described in Merriam-Webster Online Dictionary (2009) is using all your senses to allow you to know everything that is in your surroundings: sight, smell, sound, touch and taste. It comes from the Latin words perception, and means “receiving, collecting, and action of taking possession, apprehension with the mind or senses. McBride (2007) relates that perceptions can drive actions though they can be far from reality. It is very important to understand the nurse’s perception of the EMR because even though there are great benefits for patients and nurses, the reality may not be the same as the perception.

Electronic Medical Record

Electronic Medical Record, also known as Electronic Health Record, is a document that stores clinical data and is owned, accessed, and contributed to, solely by the provider (e.g. physician, clinic, and hospital), according to Thielst (2007). The electronic medical record can pull information from a variety of resources such as billing, clinical documentation, radiology, pharmacy, and laboratory systems.

Nursing care plans

Nursing care plans are the implementation and evaluation of the Nursing-sensitive Outcomes Classification (NOC), which is accessed and used, in the electronic medical record (Timm 1998). Nurses will have access to care plans on the EMR to utilize for patient care.

Medication administration

Medication administration is used within the electronic medical record. Medication management is involved in scanning a patient’s identification band with a scanner and administering the medication to the right patient. This action reduces medication errors (wrong

patient, wrong medication). It has been reported in one hospital that scanning is approaching 100%, up from around 70%, in the acute and intensive care areas (Melendez, 2009). Functional and efficient is usually a direct response to the type of system the hospital is using. Basic systems may not be efficient and functional, however more advanced systems, having advanced use of documentation templates can lead to greater opportunities for improving quality of care (Miller 2004). Problem-specific templates embedded into the electronic medical record may provide prompts to remind clinician to ask about particular symptoms, order particular tests and prescriptions, or perform preventive or disease management activities (Miller 2004)

Quality and safety

Quality and safety remain a major issue for health care delivery systems and the American public (Silver, 2002). Most hospitals are recognizing that patient safety goes beyond medication errors and needs to include the environment in which patient care is delivered (Silver, 2002). Parente (2009) conducted a study in which he looked at patient outcomes and the health information technology as indicators for patient safety. He found the use of the electronic medical record was associated with reduced infections attributable to medical care. There were two averted infections per year at an average hospital (Parente, 2009). Parente (2009) did not find evidence that the use of the electronic record improved quality.

Reading physician orders

Reading physician orders was a challenge for nurses in the past. Many nurses had difficulty reading physician handwriting, which led to medical errors to include medication errors. Computerized Physician Order Entry (CPOE) has been shown to reduce preventable, potential adverse events. Depending on what type of system, the physician also has access to medical guidelines and cost information, process in-hospital orders to pharmacies, and create

legible prescriptions (Cutler, 2005). According to Cutler (2005), error prevention range is cited as high as 80 percent due to computerized physician order entry.

Education and training

Education and training for the electronic health record plays an important role in the implementation of the electronic medical records success (McCain, 2008). Computer skills and attitudes must be considered in developing a training program. Many nurses may have a mix of computer skills, from beginner through advanced. Some of the nurses may even be fearful of computers (McCain 2008). The use of “super-users” can also help nurses at the bedside after the nurse has attended training sessions. The “super-user” is often a nurse who has received additional training to help the bedside nurse with computer documentation. The nurses need support and help in finding the correct method of documentation of clinical findings and the super-user is available to answer these questions rapidly.

Methodology

Following a thorough literature review of the use of EMR, the group made a decision to survey nurses at four hospitals in the Texas area. Election was made to survey Memorial Herman Hospital Southwest in Houston, Children’s Memorial Hospital in Houston, Presbyterian Hospital in Dallas, and Scott and White Hospital in Temple. We then focused on nurses that have used EMR for less than ten years and over 11 years. The group deliberated and developed a questionnaire survey tool (Appendix A) that suited our study. The survey tool consisted of 17 questions. The questions focused on the impact of EMR on nurse’s time at the bedside, quality of care, safety, medication administration, reading physician handwriting and ease of use. Education, computer skills and prior use of EMR were assessed. The survey was then placed online for completion using the Lime survey tool. A paper copy was also made available to those

nurses who preferred a paper survey. In the interest of time and due to some difficulties encountered with the internet, nurses were encouraged to do a paper survey. Some of the nurses had limited access to the internet while at work.

Upon completion of the survey, it was retrieved from the nurses and entered electronically into the Lime survey tool. An identification number was assigned to each survey entered. The results were analyzed using Lime Survey and SPSS software.

Review of Literature

Health Services Management Literature

Christina Thielst (2007) describes the trans-formative power of the EHR in healthcare delivery as exceeding the utility of an Electronic Medical Record by leveraging the clinical input of nurses and patients to make clinical data more actionable. The EHR conceptually supports the Joint Commission's 2007 patient safety goal of a care continuum and includes nursing documentation as well as a personal health record component. Therefore, the EHR has become an important part of the cost of doing business in healthcare (Hillestad, et al., 2005), a cost that must be managed by health service managers. While purchasing an EHR system with the right functionalities is important, according to Simon, et al. (2006) a stratified random sample, which included urban and rural hospitals, indicated once the system is implemented staff technical knowledge, technical support and integration with existing workflows are important modifiable environmental aspects to its ongoing utility. The importance of managing the nursing environment around the EHR is reinforced by the fact that looming ahead of many nurse managers is the eventual need to transition from legacy EHR's to newer systems (Zandieh, Yoon-Flannery, Kuperman, Langsam, Hyman, & Kaushal, 2007).

Nursing Literature

Nurses are the “lynchpin” of hospital care delivery with increasing evidence that more nursing time with the patient yields better patient outcomes (Hendrich, Chow, Skierczynski, & Lu, 2008). Nurses and nurse assistants are often sensitive to degrees of management support, manager participation, unrealistic workloads and limited technical training (Kajermo, et al., 2008). Nurse and health services managers need to create strategies and processes that include clear and realistic goals around the demands imposed by the EHR (Daft, 2007). Since documentation, medication administration and care coordination are essential to nursing practice and the EHR; periodic gathering of nurse feedback empowers nurses and nurse managers (Matter, 2006) to contribute to a more productive work environment. A 36-hospital time and motion study by Hendrich, Chow, Skierczynski & Lu (2008) highlights the importance of measuring technology effects on documentation, medication delivery and care coordination for nurses. Nursing documentation typically requires 35.3% of the nurse’s time, medication administration 17.2%, and care coordination requires 20.6% (Hendrich, Chow, Skierczynski, & Lu, 2008). A systematic review by Poissant, Pereira, Tamblyn, & Kawasumi (2005) estimated that the use of bedside terminals saved nurses 24.5% over their overall documentation time during a shift. Skilled internal process management is required to capture the efficiencies promised by most EHRs (DeWar, 2006). It is critical the nurse manager inventory the EHR needs and perceptions of nurses (Appendix A) to proactively manage change, identify various staff perspectives, facilitate the elimination of inefficient processes, increase communication and reinforce the organizational benefits of electronic reporting (Culver, 2005).

Field Research

A survey of 80 bedside nurses, in four different inpatient hospital settings in Texas, was conducted anonymously. 95% of the respondents were registered nurses and 5% were licensed vocational nurses. 82.5% rated their computer skills as good to excellent, with 17.5% rating their skills fair. 88.75% said their openness to the Electronic Medical Record (EMR) was good to excellent. 76.25% had ten or less year’s experience with EMR, while 23.75% had used EMR for 11 or more years. 67.5% agreed that use of EMR allowed them to spend 25-50% more time with their patients, and 32.5% said EMR allowed them 75-100% more time with their patients. 86.25% said the EMR could potentially improve the quality and safety of health care. 53.75% of the participants agreed that the EMR allowed them to administer medication in a timely manner

75-100% of the time. 78.75% agreed that the EMR enhanced care plan development. 75% of the surveyed agreed that the EMR improved legibility of physician writing. 91.25% stated that management has supported the use of EMR. 35% of the respondents did not feel that training on the use of EMR was adequate. 82.5 % felt that the use of staff personnel “super-users” provided helpful support.

In summary, the results of this survey showed that the respondents agreed that the EMR improved patient care in the areas of increased bedside time, health care quality and safety, medication administration, care plan development, legibility of physician handwriting and overall patient care. Over 91% felt that the management supported the use of the EMR. Almost 90% acknowledged openness to the use of the EMR. Approximately one-third of those surveyed did not feel they received adequate training on the use of the EMR; however, one-fourth of the respondents did not have “super-users” available to them.

Conclusion

The success of the Electronic Medical Record has multiple implications for management. Financially, America would save billions of dollars annually if medical transactions were handled electronically. In addition to this, there are economic stimulus incentives to those who adopt and use EMR (HITECH). Other key benefits for adoption of a computerized system are prevention of potential adverse events, increased physician order accuracy and interfaced data. Improved access to patient records and protocols means improved care and increased staff satisfaction. The EMR has been shown to enhance patient safety and outcomes by providing automatic alerts, drug interactions and dosages.

The common thread throughout the reviewed literature and the completed survey was that the use of the Electronic Medical (Health) Record improved patient care. The nurse perceptions of the use of the EMR, according to the survey, proved to be positive and thus not create a barrier to the transition of paper records to electronic records. Based on the statistics from the survey, the perceptions of the respondents were that patient care was improved with the use of the EMR in the areas of time at the bedside, quality and safety of healthcare, medication administration, care plan development, legibility of physician writing and overall patient care. Since nurses are the “lynchpin” of hospital care delivery with increasing evidence that more nursing time with the patient yields better patient outcomes (Hendrich, Chow, Skierczynski, & Lu, 2008), it behooves management to create strategies and processes that include clear and

realistic goals around the demands imposed by the EHR (Daft, 2007). Adequate training and time allowed for such training, as well as the presence of “super-users” have proven to enhance the success of the EMR. Periodic gathering of nurse feedback empowers nurses and nurse managers (Matter, 2006) to contribute to a more productive work environment. It is critical that the clinical input of nurses and patients is leveraged to improve the functionality and efficiency of the use of the EMR. The perceptions and acceptance of the EMR by nurses is indeed paramount to its success and the ultimate success of the unit.

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Appendix A

Nurse Perceptions of the Electronic Medical Record and Patient Care

This questionnaire is designed to gather data for use in a health science management class. This instrument has been designed to identify the impact of the electronic medical record on patient care. The data will be used only to help the students to analyze data. Thank you for your help.

Survey for HSM5003*** Gender: What sex are you?**

Please choose *only one* of the following:

- Female
 Male

*** Location:**

Please indicate the institution in which you practice.

Please choose *only one* of the following:

- Scott & White Hospital
 Memorial Herman Southwest Hospital
 Memorial Herman Children's Hospital
 Presbyterian Hospital Dallas

*** Position:**

What is your position in nursing?

Please choose *only one* of the following:

- RN
 LVN
 Nursing Aide

*** Setting: In what clinical setting do you work?**

Please choose *only one* of the following:

- Hospital
 Rehabilitation facility
 Long-term care facility

*** Computer_skills: How would you rate your computer skills and knowledge?**

Please choose *only one* of the following:

- Poor
- Fair
- Good
- Very good
- Excellent

*** Experience: Do you have prior experience with the electronic medical record (EMR)?**

Please choose *only one* of the following:

- Yes
- No

*** Openness: In general, would you say your openness to the electronic medical record is:**

Please choose *only one* of the following:

- Poor
- Fair
- Good
- Very good
- Excellent

*** Years_experience: How many years of experience do you have with the electronic medical record (EMR)?**

Please choose *only one* of the following:

- 0-5 years
- 6-10 years
- 11-15 years
- 16 or more years

*** Time_pts: To what degree do you agree that the use of electronic medical record (EMR) allows you to spend more time with your patients?**

Please choose *only one* of the following:

- 25%
- 50%
- 75%
- 100%

*** Quality: To what extent do you agree that the electronic medical record can potentially improve the quality and safety of health care?**

Please choose *only one* of the following:

- Agree
- Strongly agree
- Disagree
- Strongly disagree

*** Meds: To what degree do you agree that the use of the electronic medical record allows you to administer medications to your patients in a timely manner?**

Please choose *only one* of the following:

- 25%
- 50%
- 75%
- 100%

*** Plan: To what extent do you agree that the use of the electronic medical record has made it easy for you to develop a plan of care for patients, due to easy access of online resources?**

Please choose *only one* of the following:

- Agree
- Strongly agree
- Disagree
- Strongly disagree

*** Handwriting: To what extent do you agree that the use of the electronic medical record (EMR) has made it easy for you to read physician writing?**

Please choose *only one* of the following:

- Agree
- Strongly agree
- Disagree
- Strongly disagree

*** Mgmt: To what extent do you agree that management has supported the use of the electronic medical record?**

Please choose *only one* of the following:

- Agree
- Strongly agree
- Disagree
- Strongly disagree

*** Education: To what extent do you agree that the education and training on the use of the**

electronic medical record has been adequate?

Please choose *only one* of the following:

- Agree
- Strongly agree
- Disagree
- Strongly disagree

*** Improved: To what extent do you agree that the use of the electronic medical record has improved patient care?**

Please choose *only one* of the following:

- Agree
- Strongly agree
- Disagree
- Strongly disagree

*** Superusers: To what extent do you agree that the use of staff personnel "super users" provided helpful support on the use of the electronic medical record?**

"Super-user" is someone who is well trained in the use of the EMR that is available to technically support those who need it.

Please choose *only one* of the following:

- Agree
- Strongly agree
- Disagree
- Strongly disagree