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Effects of Provider Education on Documentation Compliance in the O.R.

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EFFECTS OF PROVIDER EDUCATION ON DOCUMENTATION
COMPLIANCE IN THE O.R.

by

Brenda Kingdon

A project submitted to the School of Nursing in
partial fulfillment of the requirements for the degree of

Doctor of Nursing Practice

University of North Florida

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ABSTRACT

Knowledge of The Joint Commission's National Patient Safety Goals and an effective provider cooperative practice involving communication and teamwork are essential for the delivery of safe and compliant patient care in the surgical setting. The purpose of this study was to assess the impact of an educational intervention for physicians and nurses designed to increase documentation of compliance with national patient safety standards. As events of noncompliance have impacted patient safety at the hospital where this project was conducted, measures were needed to assess barriers to compliance with standards of practice and to focus educational session plans on identified knowledge-base needs.

The goal of this project involved bringing all surgical team members together for educational sessions on safety standards. Pre-intervention and post-intervention assessments of knowledge were administered to study participants. Additionally, random chart documentation audits were conducted before and after the intervention to assess the effectiveness of the education sessions on documentation compliance with the targeted standards.

Outcomes of this study included improved knowledge of, and compliance with, national patient safety goals. Results may improve safe patient care at this hospital, reduce costs, and create mutual respect and teamwork, all contributing to the successful achievement of the organization's quality improvement goals.

CHAPTER 1

Introduction

A landmark report from the Institute of Medicine (IOM) Committee on Quality of Healthcare in America (the Committee) has identified issues impacting patient safety and the need to identify ways to avoid preventable adverse events in the patient care arena (Kohn, Corrigan, & Donaldson, 2000). The Committee estimated that healthcare providers make mistakes resulting in as many as 98,000 preventable deaths annually, with its report changing the healthcare views on patient safety from placing blame on individuals to processes and systems that influence patient safety (Kohn et al., 2000).

The IOM report on statistics particularly relevant to the surgical arena included the prevalence of wrong site surgeries. To address this concern, The Joint Commission (formerly the Joint Commission on Accreditation of Healthcare Organizations) established site marking requirements in 2003. At a Wrong Site Surgery Summit that same year, more than twenty professional organizations collectively proposed The Universal Protocol for Preventing Wrong Site, Wrong Procedure, and Wrong Person Surgery ("the Universal Protocol"), adopted by The Joint Commission in 2004 (Dunn, 2006). The Commission's 2005 National Patient Safety Goals (NPSGs) included Goal 1 (Improve patient identification accuracy) and Goal 4 (Eliminate wrong site, wrong patient, and wrong procedure surgery), calling for compliance with more stringent national standards by all Commission-accredited hospitals, and recommending

implementation of patient safety goals on “time outs” before surgery to identify the patient, procedure, and side or site in order to prevent such errors. Despite the increasing efforts to reduce and prevent wrong site errors, The Joint Commission findings (2008) revealed that 13.2% of all patient safety errors involved wrong site surgeries as the second most common sentinel event reported.

Both The Joint Commission and IOM call for change to make healthcare systems safer for patients. Each encouraged all stakeholders to become motivated through the adaptation and diffusion of high levels of safe patient care practices, acknowledging that a heightened culture of care and communication changes need to occur to enhance patient safety. The Commission recommended that healthcare organizations conduct team training to teach healthcare professionals to work together and communicate more effectively in an effort to reduce and eliminate wrong site injuries and/or deaths. Enhancing a cooperative interactive practice between nurses and physicians (providers) is an essential element for safe quality patient care in today’s healthcare organizations.

The Pennsylvania Patient Safety Advisory (2008) reported 427 wrong-site surgeries, or one report every 2 days, between June 2004 and December 2006. The report identified 40% of wrong site surgeries actually reached the patient, and nearly 20% involved completion of a wrong-site procedure. One of the Advisory’s recommendations for improving patient safety compliance with site verification and for preventing wrong site surgeries was changing behaviors and the education cultures through training and competencies of the caregiver team, including medical staff who participate in operative procedures.

Beyer (2008) believes healthcare professionals need to learn more about the patient safety process, recommending that learning needs assessments be conducted to identify knowledge gaps regarding patient safety. Improving and facilitating educational needs through assessments for providers within perioperative areas not only provides for safe patient care, but reduces errors such as wrong site surgeries and medication errors (The Joint Commission, 2008).

The adaptation and introduction of an educational needs assessment practice model was seen as a mechanism to prioritize professional staff learning objectives and facilitate the development of an educational plan to improve compliant and safe patient care practices in a surgical services setting. Such a model would facilitate the ongoing development of learning objectives and minimize costs of patient care. Its introduction would integrate the needed educational skill sets for the surgical team providers. This educational intervention effort is seen as a way to promote a balance of power among participants who share mutual respect and value each other as team members to improve patient care outcomes (Keenan, Cooke, & Hillis, 1998).

The relationship between nurses and physicians as providers does have a profound effect on patient care safety outcomes and the quality of patient care. To improve transformational change in the organization's culture, organizations must change and commit themselves to becoming a "higher reliability" organization. To change cultures, healthcare organizations must commit to patient safety, continuous learning, education, and increased knowledge among team members in safety measures (Beyer, 2007).

IOM recommends that the healthcare organizations and their healthcare teams adapt what the aviation industry has successfully adapted: the “Crew Resource Management” (CRM) approach (Kohn et al., 2000). Corporations such as healthcare organizations have adopted CRM training and report great improvements in patient safety and reduced error rates, as well as major changes in behaviors and increased nurse-physician interactions and relationship perceptions (Kohn et al.). However, there still remained a gap between current practice and the outcomes of CRM programs and long-term outcomes sustained over time after program completion. The long-term effects of behavioral and cultural changes as a result of CRM programs have not yet been measured nor quantified with regards to patient care safety improvements.

One not-for-profit hospital has taken the IOM approach and partnered with an aviation-based safety CRM mentor. The adaptation of a CRM program to this healthcare organization’s culture partially has met the IOM call for a national and local effort to make healthcare improvements. The establishment of a CRM model at this hospital facilitates a focus on human factors, respect, teamwork, collaboration, leadership, and team situational awareness. CRM empowers and focuses the healthcare team to promote patient safety and cooperative interactive teamwork. The mission set by the hospital for the CRM project was to penetrate culture, change patient safety processes, and sustain improvement through the embedding of patient safety performance tools (see Figure 1).

The CRM concept started two decades ago when U. S. airlines were directed by the federal government to totally eliminate the human errors in flights leading to airline crashes and loss of lives. More than 72% of crashes were caused by “human factors” error according to Denucci (2007). With the support of the National Aeronautical Space

Administration (NASA), the Federal Aviation Administration (FAA) mandated zero accidents. The central focus of CRM in commercial aviation is to achieve safety with zero errors by the pilot and crew. According to Denucci (2007), NASA initially selected twenty pilots from the airlines for the training. They in turn trained thousands of their airline staff in commercial aviation. CRM training is used today and still works as described in original literature. It has been strongly endorsed by many leaders in healthcare organizations (Denucci, 2007).

Crew Resource Management and Health Facility Model

Crew Resource Management (CRM) and Healthcare Facility Definitions address safety through interactions between people and their environment

- | | |
|---|---|
| <ul style="list-style-type: none"> • Human factors • Respect • Communications <ul style="list-style-type: none"> ○ Inquiry ○ Assertion • Team work • Leadership • Situational Awareness • Red Flags: <ul style="list-style-type: none"> ○ Fixation ○ Ambiguity ○ Complacency ○ Distraction ○ Overload | <p>Inter- and Intra-</p> <p>Building on what others can share through education and interactive learning</p> <p>Having the Big Picture at all times</p> <p>Warning of impending loss of situational awareness</p> |
|---|---|
-

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Figure 1. Crew resource management and health facility model.

The question at hand is, how do we further enhance the knowledge base and interactions between providers through educational interventions to improve patient safety? Desired outcomes are to achieve zero medical errors, such as those involving near misses or wrong site surgeries, to minimize health care costs, and to achieve excellence in patient-centered care. These outcomes could be accomplished through implementing a

patient safety learning program of continuing education among healthcare teams. The desired outcomes are similar to those of aviation (see Table 1).

Table 1

Desired Outcomes Model Comparison

Desired Outcomes	
Aviation	Hospital
Pilot and Crew	Physician and Team
Flight Attendant and Team	Chief Nursing Officer and Team
Travelers' Safety	Patients' Safety
Preventing Human Error	Preventing Human Error

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Applying the CRM model, sustaining, achieving and maintaining the desired outcomes of safety for a hospital requires strategies to reduce errors while sustaining the created environment. In order to realize further improvements, provider learning objectives and development of educational intervention strategies must be incorporated into the surgical services behavioral culture to achieve and maintain desired outcomes of patient care safety and create an improved educational intervention practice model. Continuing education for the healthcare professions is seen as virtual in influencing provider professional practices and effective in improving patient safety compliance.

Purpose

The purpose of this project is to improve compliance regarding documentation in a surgical setting by using an educational intervention for both the nurse and physician providers. The educational intervention was to involve team interactions between providers. By identifying knowledge needs, and using this information as a base for refining the planned educational intervention, compliance with safety standards can be

improved through a consistent level of understanding. Anticipated outcomes include improved patient safety through increased compliance with “site marking,” “verification of correct procedures and operative site(s),” and “time-out,” practice standards in the operating room, and the development of an educational intervention practice model for surgical services.

Definition of Terms

Correct Procedures and site marking. The health care team, including the patient, identifies unambiguously the intended site of incision or insertion. All cases involving laterality, multiple structures (fingers, toes, lesions), or multiple levels (spine) are marked.

According to the American Operating Room Nurses (AORN) standards of practice (2006) and position statement (2008), site marking involves the following:

- Use the organization’s defined method and type of marking.
- The person performing the procedure should mark the site.
- Mark the site with the patient awake and aware, if possible.
- Mark at or near the incision site.
- Use marks that are unambiguous or cannot be misinterpreted. (Consider that “X” may be ambiguous)
- Non-operative site(s) must not be marked, unless necessary for some other aspect of care.
- Adhesive site markers should not be used as the only means of marking the site.
- Use a permanent marker that remains visible after skin preparation.
- Make sure the mark is visible after the patient is prepped and draped.

- Knowledge of the organization's procedures for patients who refuse site marking.

Verification of Correct Procedure and Operative Site(s). The health care team in this process ensures that all of the relevant documents and studies are available prior to the start of the procedure. The documentation and studies have been reviewed and are consistent with each other, with the patient's expectations and with the surgical team's understanding of the intended patient, procedure, site and, as applicable, any implants. The surgical team must address missing information or discrepancies before starting the procedure.

AORN standards (2006, 2008) require that the correct person, procedure, and site be verified and documented at each step of the surgical procedure process, as follows:

- When the surgery or procedure is scheduled.
- When the patient is admitted to the facility.
- Any time the patient is transferred to another caregiver.
- Before sedation, with the patient awake and aware, if possible.
- Before the patient enters the surgery or procedure room.

Time out. The operative team conducts a final verification of the correct patient, procedure, site and, as applicable, implants.

According to AORN (2006, 2008), conducting the time out in the surgery/procedure room just before starting the procedure involves the following:

- The entire operative team in the time out using active communication.
- Knowing your organization's procedure for reconciling differences in staff responses during the "time out."

Consider using a checklist to briefly document the time out, including:

- Correct patient identity.
- Correct side and site.
- Agreement on the procedure to be done.
- Correct patient position.
- Availability of correct implants and any special equipment or special requirements.

Summary

This chapter discussed the need for an educational intervention involving surgical team professionals to improve patient safety compliance processes through enhanced knowledge and interactions. The formulation of a practice model introduced in this chapter can be accomplished through development of an educational intervention targeting improved compliance with National Patient Safety Goals in the areas of site marking, verification of correct procedure and operative site, and time-out. The concept of the CRM program and the hospital's desired outcomes were exposed as important components which support this study's anticipated outcome of increased patient safety compliance.

CHAPTER 2

Review of Literature

This chapter contains an overview of the search methods used for identification and retrieval of relevant evidence-based research related to provider cooperative interactions and patient safety. This will be followed by a brief overview of educational intervention strategies and a review of the evidence of the effects of those strategies on patient care outcomes and common goals, such as improving site marking, verification of correct procedure and operative site(s), and time-out.

The hospital's expectations and vision of high performance in caring for patients have always been an ideal, but not always achieved to the fullest. With increasing need for new technology, equipment, and procedures, and new employees joining the hospital, the critical need for a new vision has become clear.

As part of one hospital's journey towards patient-centered care, there is an increasing need to commit provisional strategies to support the continuously changing culture, education, and improvements for patient and staff safety. The concept of high reliability came from the landmark IOM report, *To Err is Human: Building a Safer Health System* (Kohn et al., 2000). In this report, the IOM Committee on the Quality of Healthcare in America proposes a theoretical framework to assist healthcare

organizations to prevent patient safety errors, reduce costly errors, and provide a safe culture through teamwork and leadership, focused on patient-centered care.

Search Strategies

A search of multiple databases included: CINAHL, PubMed, Medline, and the Cochrane Effective Practice and Organization of Care Group, and Cochrane databases, using the English language. The search was conducted using the following key words: patient safety, nurse-physician learning, nurse-physician education strategies, nurse-physician education/training for improving patient safety outcomes, continuing medical education, preceptorships and physician knowledge performance meta-analysis. The total results from manual and website searches yielded over 40,000 studies and abstracts on the term patient safety alone, after duplicates were eliminated, that pertained to nurse-physician educational intervention strategies and patient safety outcomes. All studies were reviewed and 36 studies were relevant to improving patient care outcomes and nurse-physician education for this study.

Valuable information about the generalizability of findings on provider perceptions and the effects of educational interventions on patient care outcomes were found for this study. These articles dealt with benefits of nurse-physician continuing education, facilitator or make-easier provider interactions, barriers to nurse-physician providers learning, and levels of adapting and benefits of implementing educational strategies that enhanced or improved providers knowledge relevant to maintaining standards for patient safety.

A meta-analysis and synthesis of the literature was completed with respect to provider educational intervention strategies, and effective interventions which could further improve patient safety outcomes. A summary list of all relevant literature with comments on outcomes relative to provider educational interactions and education is contained in Appendix A.

Results of Literature Review

Benefits of Provider Educational Interventions

In healthcare organizations, continuing education among the healthcare professionals is an imperative and vital tool in influencing professional practice and is effective in improving patient care outcomes. An exploratory review of literature by Pavlovich-Davis, Forman, and Simek (1998) emphasized that cooperative teamwork and interactive education enhances job satisfaction, improves patient care, and increases productivity among healthcare providers. This review further identifies that, for cooperative teamwork to take place, all parties must be receptive and work together.

The meta-analysis, Cochrane review, and systematic review of studies for this project revealed positive effects of provider educational interventions to improve patient safety. Published results of a Cochrane review acknowledged that healthcare professionals and organizations benefit by providers using learned interventions that will result in minimizing health care costs and improving patient safety (Zwarenstein & Bryant, 2004). This Cochrane review evaluated the outcomes of participation of 1,945 healthcare professionals in planned educational interventions that were beneficial in improving safety compliance by patients and healthcare workers. The education activities included meetings, conferences, lectures, workshops and seminars. In this analysis, only

the studies that reported objectively measured practice behaviors and patient outcomes were included. Bolton, Georges, Hunter, Long, and Wray (1998) state that now, and in the future, an educational partnership that builds cooperative and interactive relationships leads to a successful and positive healthcare approach that will improve healthcare outcomes for the public at large.

Several studies found that successful provider educational interactions, team building, and joint education and planning sessions all fostered and benefited improved quality patient care and nurse, patient, and physician satisfaction. Unfortunately, they do not discuss how the interventions were chosen and did not include a detailed description of the interventions (Korabek, Rosenau, Slavenwhite, & Ross, 2004; Warren, Houston, & Luguire, 1998). Rosenstein (2002) found that healthcare professionals need to place more emphasis on joint decision making, process sharing and teamwork in healthcare organizations for improved safe patient care. This author does not discuss which provider interventional designs are successful for improving their relationships and communication interactions.

McFadden, Stock, Gowan, and Cook (2006) examined perceptions about the importance of patient safety strategies, factors that act as barriers, levels of adaptation of strategies, and benefits of implementing strategies. Their results from 525 hospitals indicated gaps between current practices and approaches to improve patient safety associated with better error outcomes such as reduced frequency and severity of errors. The findings in the study provided specific direction for enhancing patient safety educational programs in healthcare organizations. Strategies in this study include:

partnerships, reporting free of blame, education and training, culture shift, and system redesigns.

Tian, Atkinson, Portnoy, and Gold (2007) conducted a systematic review of literature to analyze formal Center for Medicare and Medicaid Services (CMS) studies that evaluated changes, the efforts of using randomization strategies to measure outcomes, and the follow up period that demonstrates effectiveness of educational interventions. These authors described the “golden standard” for evaluation of educational strategies, such as the use of an assessment tool to measure outcomes of the effectiveness of a strategy at four levels: participant knowledge; attitude and skills; change in participant performance in the practice setting; and patient care improvements. They concluded that no tool for evaluating the effectiveness of the education intervention exists that is reliable, valid and adaptable. These authors concluded that further research is needed for ways for randomization to be evaluated in continuing medical education (CME) interventions.

Marshall and Manus (2007) state that educational interactive interventional efforts toward improved patient safety can be achieved through team based assessment of knowledge activities, workshops, videos and role playing. Zwarenstein and Reeves (2002) base their beliefs on current organization theory from other industries and state that “the quality of the product and the effects of production are dependent on successful teamwork” (p.4). Hence, they believe that improved interdisciplinary relationships, joint decision making, and team building all improve the quality of patient care. However, there was no discussion nor recommendations on the implementation of those strategies.

There is evidence that improving provider interactions and knowledge of patient care standard compliance will result in favorable patient care outcomes. The results of surveys by Zwarenstein and Reeves (2002) found that educational interventions are important to patients and to healthcare professionals and would result in increasing and improving provider cooperative relationships and improved patient care outcomes. Interactive cooperative relationships are an essential element of quality healthcare and patient safety compliance, and healthcare has not yet achieved this goal (Barrere & Ellis, 2002; Coeling & Cukr, 2000). Given the fact that the lack of cooperative knowledge and interactive relationships affects the healthcare arena, Coeling and Cukr (2000) believe that healthcare organizations need to do more to facilitate interactive education among healthcare professionals to be successful in patient care outcomes related to patient safety. The authors suggest that process sharing, joint educational sessions, and team building enhance provider practices. However, they are not clear regarding what methods are best suited for facilitation of learning in the adult professional.

Storch and Kenny (2007) emphasized that the “patient safety movement, with its focus on teamwork for safe patient care, can be an important tool to improve information sharing and collegiality between nurses and physicians and the strengthening of relationships between these health care professionals” (p.487). A study by Iancono (2003) concluded that, “an improved understanding of physician and nurse perceptions of each other and importance of patient safety compliance may lead to the adaptation of strategies such as joint interactive decision making that will improve patient care outcomes, achieve desirable communication and behaviors” (p.44).

Previous evidence-based syntheses of literature indicate that nurse-physician provider knowledge on patient safety issues affect not only the quality of patient care, but the cost of health care (Baggs & Ryan, 1997; Coeling & Cukr, 2000; Lassen, Fosbinder, Minton & Robins, 1997; Warren, Houston & Luguire, 1998). These authors suggest interactive educational interventions such as team building, joint education, and decision making enhance provider teamwork and patient care. AORN (2006) and Carlton (2004) synthesized literature that suggested a cooperative and interactive environment for the surgical team that focuses on patient safety goals can be achieved through an educational intervention that includes the application of case scenarios.

Facilitators of Provider Educational Interventions

While results of the meta-analysis, Cochrane review, and systematic reviews encourage the use of teamwork and joint educational interventions, very few studies have followed through with published recommended strategies that improve the provider knowledge base on patient safety issues within healthcare through evidence-based practice (Boyle & Kochinda, 2004; Corser, 2000; Lassen, et al., 1997; O'Brien-Pallas, Hiroz, Cook, & Mildon, 2005; Zwarenstein & Bryant, 2004).

Rather than complain about the problem, Sirota (2007) stated that, for things to change, nurses have to approach the problem directly and initiate strategies that facilitate provider relationships and interactions to improve patient care practices. The author is supported by findings in AORN (2006) that educational intervention efforts are facilitated through conducting presentations and discussion groups with nurses and medical staff on patient safety issues.

Marshall and Manus (2007) found that provider learning activity sessions re-create a “real world” work situation which fosters the transfer of learning. Learning simulation such as case scenarios simplified real situations and allowed learners to explore different approaches and outcomes.

The Zwarenstein and Reeves (2002) study showed team skill building interventions must be in place in order to improve safety and the quality of patient care. Warren et al. (1998) concluded that healthcare organizations are significantly impacted by how healthcare professionals practice. The authors believe that facilitating an educational interactive multidisciplinary team approach leads to improved and efficient sharing of patient care information jointly, enabling development of an improved and appropriate patient care plan.

The development of mutual trust and respect among healthcare professionals is essential in ensuring effective relationships and communication among nurses and physicians (Pavlovich-Davis, et al., 1998). Further, Hinshaw (2002) found that whatever strategies are used require providers working together in learning how to trust, respect, and value each other’s knowledge and roles to facilitate improved interactive team cooperation. Aiken (2001) believes that the magnet hospital philosophy of shared governance has a positive effect toward improving provider interactions and knowledge of patient safety activities. However, the author fails to identify what these educational intervention strategies are.

O’Brien, et al. (2005) agreed with Hinshaw (2002) in recognizing that very little attention has been given to utilization of evidence-based strategies that facilitate improving provider educational strategies and relationships. However, literature has not

been clear regarding recommendations as to specifically how they achieved success in provision of provider educational interventions to improve the standards of patient care. Both O'Brien et al. (2005) and Hinshaw (2002) concluded that there were insufficient tools on how to measure provider educational interactive intervention strategies.

Winniford (2008) researched health and healthcare improvements studying a 722-bed hospital on improving staff compliance with CMS performance measures through education. A weekly intervention involving chart reviews by providers revealed that changes and improvements in care practices improved.

Barriers to Provider Educational Interventions

The meta-analysis, Cochrane reviews and systematic reviews revealed many barriers but few recommendations on how to overcome barriers in order to achieve improved provider relationships and interactions in relation to patient care standards and patient safety goals.

Zwarenstein and Bryant (2004) found that current studies evaluate only a few possible interventions concluding that more qualitative research is needed to further identify barriers to provider relationships and combined education interventions. A wider range of interventions is needed to address the main barriers.

Sterchi (2007) states that there has been little research on team interactive and cooperative practices in the surgical services setting, a very complex and tense atmosphere. The author identifies barrier factors such as patient scheduling, turnover times, high acuity patient levels, conflicting surgical schedules, and sustaining compliance with The Joint Commission standards and goals. In addition, the higher level of technology has created increased pressure and tension.

Rosenstein (2002) conducted a survey that targeted providers and healthcare executives in a hospital network. Both nurses and physicians from the institutions agreed that there were major behaviors and barriers that influence nurses as well as attitudes of other healthcare members toward patient care inhibiting teamwork and affecting outcomes of patient care. The author recommends strategic interventions such as joint education, joint process sharing and planning to improve patient care processes.

A survey completed by Corser (2000) concluded that negative patient care outcomes are often associated with lack of knowledge among healthcare professionals on patient safety issues. The author suggests that there is an increasing need for improving interdisciplinary relationships and interactions between nurses and physicians due to the increasing patient acuity and complexity of care, thus requiring the need for more frequent interactions between providers. Corser, (2000) states that “sicker and quicker” conditions give rise to how healthcare providers practice, intensely increasing the need for improved effective communication and improved knowledge of standards of practices among providers.

The Zwarenstein and Bryant (2004) study established that the barrier of poor provider knowledge of patient care safety standards and interactions contributes to poor patient care quality, poor patient care processes, and lack of efficiency in the delivery of quality patient care, and that patient care would improve immensely with improved provider education interventions. According to Espin and Lingard (2001), due to lack of team work, patient safety goals, and interactive communication between providers, the barrier of noncompliance with patient safety issues can affect patient care outcomes.

The Institute of Safe Medication Practices conducted a survey in 2004 which showed patient safety to be at risk in an antagonistic work environment. Such a work environment barrier between providers can be created unwittingly by the nurse questioning a physician about a wrong side consent. This often results in intimidating behavior on the part of the physician.

The AORN Workplace Safety Task Force conducted a survey in 2004, finding that barriers such as “lack of respect, trust and verbal abuse” by physicians along with lack of enforcement of a code of conduct were concerns expressed by surgery nurses.

Several studies have shown that barriers to provider cooperative interactions still exist. According to Castledine (2004) and Rosenstein (2002), barriers include role misunderstandings, real and perceived differences between nurse and physician providers, and decision-making input perceptions. The Castledine study found that the barriers were ultimately due to lack of team interactions, communication and shared knowledge between providers. The non-random convenience sample survey by Rosenstein on nurse-physician provider relationships identified a concern with the atmosphere created between these professions and the effect it has on patient care. In exploratory and descriptive studies conducted by numerous authors, shared knowledge and active communication interactions were seen as vital in making safe patient care decisions (Baggs & Ryan, 1997; Baldwin, Welches, Walker & Eliastam, 1987; Corser, 2000; Knaus, Draper, Wagner, & Zimmerman, 1986; Larsen, Hamilton, Mitchell, & Eisenberg, 1998). The studies all revealed differences in perceived interactions, knowledge of patient safety goals, and communication between providers in caring for their patients. In these same studies, providers were found to share similar perceptions

regarding their roles in the communication process and a team approach to safe patient care decision making.

McFadden, et al. (2006) examined providers perceptions of patient safety among 525 hospitals. The authors identified factors that acted as barriers to reducing frequency and severity of patient care errors. These barriers were lack of partnerships with stakeholders, a blaming culture, lack of education and training, and a cultural gap among professionals. Stein, Watts, and Howell (1990) observed that there is a special relationship between the doctor and the nurse which is based on mutual respect and interdependence and steeped in historical culture. Stein (1967) compared the provider relationship to a “game model,” whereby nurses made recommendations for patient care in a specific way so as not to appear that they were giving direction. The author concluded this practice has an inhibitory effect on communication and on patient safety. However, Stein (1967) reported that both sides would benefit if they played the game correctly, but, unfortunately, any deviation of the interaction could result in severe repercussions.

The provider cooperative and interactive relationship is constantly evolving. Porter (1991) found that problems and barriers still exist between nurses and physicians, and the informal covert or hidden decision-making types of interactions that appeared superficially are used frequently. Corser (2000) and Larsen et al. (1998) suggest that providers of care have differing perceptions towards team cooperation and communication. This is further suggested by an exploratory study carried out by Lassen et al. (1997) on provider interactions in the healthcare setting. From a review of questionnaires and interviews, authors concluded that providers have differing

perceptions of team interaction, and of interactions and the communication process for patient care activities, yet share similar opinions. Nurses perceived that they were communicating effectively more often to physicians than did physicians. Both professionals believe that they equally provided information regarding care provided to patients. Corser (2000) states that, due to the lack of team interactive practices between nurses and physicians, barriers have affected progressive research into nurse-physician relationships and educational interventions. The author suggests that because of this barrier, the advancement of the nursing profession has been held back.

Effective Provider Educational Intervention Strategies

In order to enhance provider current interactive practices and knowledge aimed at improving patient outcomes and standards, a synthesis of similar studies was completed on effective strategies. The synthesis chart (see Table 2) of characteristics recommended in the literature to improve practice provides support for the evidence-based strategic intervention decided upon for this project. These interventions involved interactive teamwork and an environment that values and facilitates educational interventions among the professionals.

Table 2 identifies characteristics of interventions mechanisms to improve interactive practice and cooperation among providers. Joint educational sessions, interactive team sharing of planning processes, and leadership support were recommended by a majority of the authors.

Table 2

Characteristics Recommended in the Literature to Improve Practice

Recommended Characteristics from the Literature that Improve Provider Interactive Practice								
Author(s),Date (First authors listed)	Decentralized Decision -making	Self -governance	Education and Support	Autonomy	Strategic Planning/ Collaborative Decision -making	Involve Staff	Joint Education/ Team Building	Joint Patient Care Planning and Sharing of Processes
Aiken (2001)	X	X	X	X	X	X	X	X
Baggs (1997)			X	X	X		X	X
Baldwin (1987)			X	X	X			
Barrere (2002)				X	X			
Bolton (1998)					X		X	
Boyle (2004)							X	X
Carlton (2004)			X		X	X	X	X
Coeling (2000)			X				X	X
Iancono (2003)					X	X		X
Knaus (1986)			X		X		X	X
Kolb 1984)	X		X		X	X	X	X
Korabek (2004)					X		X	X
Kramer (2003)			X		X			
Liedtka (1998)					X	X	X	X
Mansouri (2007)			X		X		X	X
Marshall (2007)			X				X	X
O'Brien (2001)			X		X		X	X
Porter (1991)					X	X		
Rosenstein (2002)			X		X	X	X	X
Sirota (2007)			X		X	X	X	X
Storch (2007)			X		X	X	X	X
Warren (1998)			X		X	X	X	X
Zwarenstein (2002)				X	X		X	X

Applicable educational strategies. Narrowing evidence to that focusing on the best educational interventions, Table 3 lists research supporting professional educational interventions that will be used in this study to improve patient safety. Mansouri and Lockyer (2007) completed a meta-analysis on (CME) effects on physician practices and how they relate to patient care outcomes. The study variables included types of interventions, number of participants, time, and the number of education interventions held. They reviewed 31 studies, which generated 61 interventions. The study found positive correlations with interventions that are interactive educational sessions, have

multiple methods of teaching, are single groups of medical staff (e.g., surgeons only), and are multiple sessions. The authors concluded that interactive education sessions appeared to be the best method of changing physician behaviors and practices.

Table 3

Applicable Evidence-Based Educational Strategies for Provider Intervention

Author/Dates	Title	Recommended Strategic Evidence	Results
Mansouri & Lockyer (2007)	A meta-analysis of continuing education effectiveness	Small interactive groups, case presentation discussions	Large positive effect. 1 group/discipline method
Marshall & Manus (2007)	A team training program using human factors to enhance patient safety	Workshops through combined information, demonstrations e.g. videos, practice based methods (role playing to present team skills, knowledge and behavioral attitudes)	Positive outcomes and feedback
O'Brien, Freemantle, Oxman et al.(2001)	Continuing education meetings and workshops: effects on professional practice and healthcare outcomes reviewed	Educational interactive workshops, didactic presentations	Significant changes in professional practices

O'Brien, et al. (2001) stated that educational meetings and printed educational materials are the most common and effective educational interventions. The authors study concluded that, of the combined workshop and didactic presentations, 11 out of 12 comparative studies resulted in statistically significant behavior changes among healthcare professionals. Their evidence suggests that educational activities that provide for participant interaction were the most effective in facilitating behavioral changes (see Table 2, 3).

O'Brien et al. (2001) found that a combination of educational intervention sessions increased knowledge that contributed to improved patient care. This randomized controlled trial compared educational meetings versus no intervention, and interactive educational meetings versus lectures. The study overall showed statistical significance in

favor of educational meetings as effective learning strategies. No difference in learning by professionals was found in comparing interactive educational meetings versus lectures. The authors concluded that lectures alone are not enough to change professional practices and behaviors.

Marshall and Manus (2007) found that using human factors team training, such as case scenario workshops and interactions, supported positive outcomes and behavioral attitudes toward patient safety outcomes. A majority of the authors in the synthesis of interventions (see Table 2) supported collaborative team building and cooperative interactive decision making among providers as essential to success in improving patient care practices.

Learning Styles. When considering the design of the educational intervention learning styles should be examined in order to link Kolb's (1984) affective and behavioral learning environments to intended goals of enhancing and promoting the perceptual learning environment. The author identified four different learning styles: accommodator, assimilator, converger, and diverger. McDonough and Osterbrink (2005) found that educational processes require different skill sets for teaching and enhancing learning due to different learning styles. They identified Kolb's learning styles of cognitive, affective, and psychological behaviors. They discussed preferred learning activities associated with specific learning styles described by Kolb and Smith (1986) that need to be considered when enhancing educational interventions to maximize the learner's potential.

Kolb (1984) found that learning styles between provider were different, with nurses using diverger and accommodator learning styles. The diverger is classified with

reflective learning observation, and concrete experiences are preferred. The nurses' accommodator learning style uses concrete experiences and activity participation to enhance their educational learning. Kolb (1984) identified physicians as accommodating learners, also using divergent learning styles which consist of reflection, observation, and concrete experiences that facilitate enhancements of learning in educational interventions.

Adult Learning Perspectives. Grupe and Connelly (1995) found that learning adults bring considerable knowledge to the learning experience and value their time in learning sessions. Therefore, the learning adult providers in this project need learning activities that have purpose and are intended to improve their skills on time out, site marking, and verification of correct procedure and operative site(s).

Avillion (2004) stated that competency-based education (CBE) could be based on learners who are self-directing. CBE facilitates promoting learners to achieve goals and is compatible with adults' developmental needs.

Brunt (2007) found that common characteristics of CBE include a learner-centered philosophy, real-life orientation, flexibility, clearly articulated standards, and a focus on outcomes, and that "criterion-referenced" evaluation methods are needed for adult learners. The author stressed that CBE should focus on outcomes rather than processes, with outcomes in terms of what the healthcare team must know and be able to do, allowing for flexible pathways for achieving those outcomes.

Competence is defined by Brunt (2007) as a statement that describes an aspect of practice that must be developed and demonstrated. The author describes competency in the context of achieving and integrating a competency into practice, and as the ability to

perform that activity. Competency is seen by the author as all about what people can do, with the integration of cognitive, affective, and psychomotor domains of practice.

Avillion, Brunt, and Ferrell (2007) state that all adult education programs must include an overview of the principles of adult learning. The authors recommend the provision of an initial assessment about the team's ability to perform the identification of the learning needs required. They suggest that clinical skills can be assessed through a series of patient care case scenarios, in which the team must identify the problems and what steps should be taken to solve them.

Avillion et al. (2007) emphasize that adult learners need to understand the purpose and importance of an improved competency compliance program. They believed the presenter needs to demonstrate how improved performance enhances and improves patient care by adhering to the competency criteria benchmarks. [For this study, the use of quality improvement retrospective and concurrent documentation data would identify the importance of patient safety compliance.]

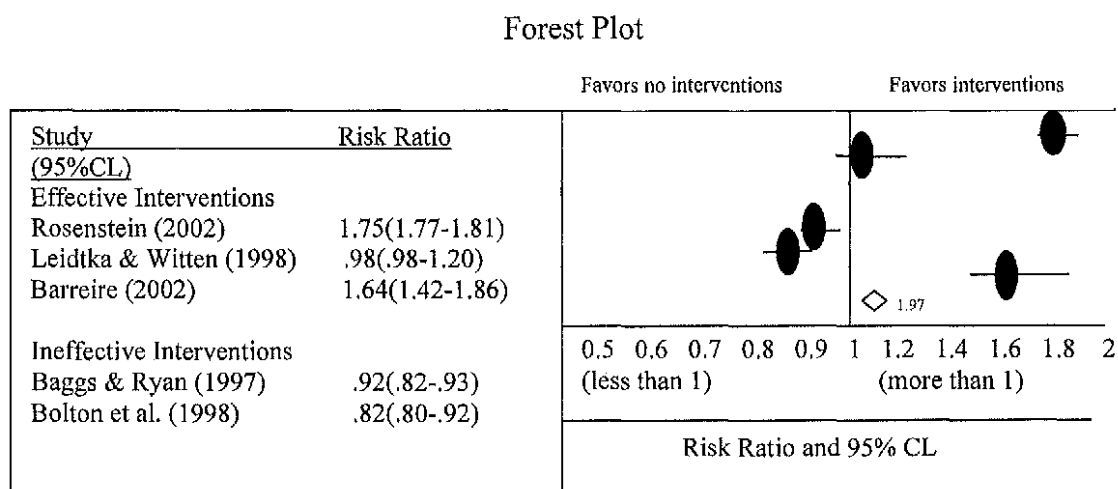
Early work by Knowles (1970) established that focusing on informal education for adult learners provides flexibility in the learning process, with adults using their experience in order to increase their commitment to learning. The author suggested that the learner's experience is the best opportunity for practicing their knowledge, and that learner experience might be expressed during lectures and forums.

Another principle of professional adult learning is that professional learners are self-directing, and thus should be made to feel that they have some control over what they learn and the manner with which they learn. Believing that the professional adult learner responds more favorably to verbal instructions, Avillion (2004) discusses that, in order to

assist in improving skills, auditory learning is beneficial by allowing learners to assimilate knowledge by hearing in the form of lectures, discussions, and audio tapes. Avillion also identified visual learning as one of the most predominant learning styles, and kinesthetic learning which the author believes is the best method. Kinesthetic learning could involve role playing scenario activities as part of the learning experience to improve patient care processes.

Meta-analysis of Intervention Effects

A meta-analysis was completed to obtain a single effect measurement that summarizes the evidence of literature reviewed. The meta-analysis gives a precise validated estimate of the likely effect of providing educational learning sessions to improve and enhance patient safety outcomes and standards. A forest plot (see Figure 2) illustrates the results, along with confidence intervals.



. Figure 2. Forest plot illustrating effective and ineffective interventions

The five circles in Figure 2 represent evidence-based literature measures of effective and ineffective interventions trials on improving cooperative and interactive practice. The horizontal line passing through is the confidence interval; each circle is the result of, and illustrates the effect of, applied interventions. The box represents the cumulative educational intervention effect of all studies that explored and studied interactions and relations between providers.

The outcome of the forest plot shows that the results of the odds ratio (OR) at 1.0 for the intervention indicate no difference. For searched studies, the confidence interval for three of the studies crossed the line to the right at one indicating there was an effect ($OR > 1.0$), meaning the study intervention had statistically significant impact on improving provider relationships and interactions regarding patient safety outcomes. The results of two studies to the left of $OR=1.0$ line indicate that the intervention was not desirable. However, the studies to the right of the line which had desirable outcomes through interventions do not address a relationship to patient safety outcomes.

Summary

This chapter discussed the empirical findings from the literature related to the need for improving provider knowledge on patient safety through knowledge assessments and interactive educational interventions. Studies on educational interventions were identified and compared in relation to benefits, facilitators, and barriers, along with intervention strategies that impact the team interactions between professionals. Specific studies on knowledge assessments and educational strategies were found and reviewed which placed positive emphasis on the professional's knowledge and practice that improve patient care practices. The systematic review of evidence and critical evaluation

of material (Appendix A, Table 2, 3) found that the theoretical framework of integrating educational interventions is an essential link to effective healthcare provider communication, cooperation, and enhanced knowledge toward promoting safe patient care outcomes. The best evidence on educational interventions reveals that case presentations and provider interactive activities are the most effective education strategies.

The review of the literature has led to a project focused on assessing and improving the knowledge base of providers regarding safety practices in the surgical setting. Additionally, prior to and after the implementation of education intervention strategies that have been reported in the literature as effective in the target population, assessment was conducted to determine if there was a change in the level of proper documentation of adherence to accepted standards of patient safety.

CHAPTER 3

Methodology

This chapter describes the educational intervention plan for providers to improve patient care practices. The study design, sample, and methods are discussed, in addition to feasibility, data analysis plan, protection of human subjects, and how results will be used.

Study Design

This project involved the implementation of an education intervention to effect evidence-based practice change to improve knowledge and practice of the surgical team toward increased compliance with patient safety standards (see Figure 3).

Problem Statement

The proposed problem statement was as follows: Based on chart review and quality assurance reports at a community hospital in a surgical setting, healthcare providers have demonstrated incomplete compliance with patient safety standards for the surgical site markings, verification of correct procedure, and time-outs in the operating room.

This study included a pre- and post-questionnaire to assess knowledge of The Joint Commission National Patient Safety Goals (NPSGs) and Universal Protocol (2009 a, b). A pre-intervention chart audit at baseline prior to the practice change and after the educational intervention was completed to assess quality improvement performance

compliance. An evidence-based educational intervention involving interactive activities and workshops consisting of case scenarios and role playing for adult learners was used to improve knowledge regarding the Commission's NPSGs (2009a).

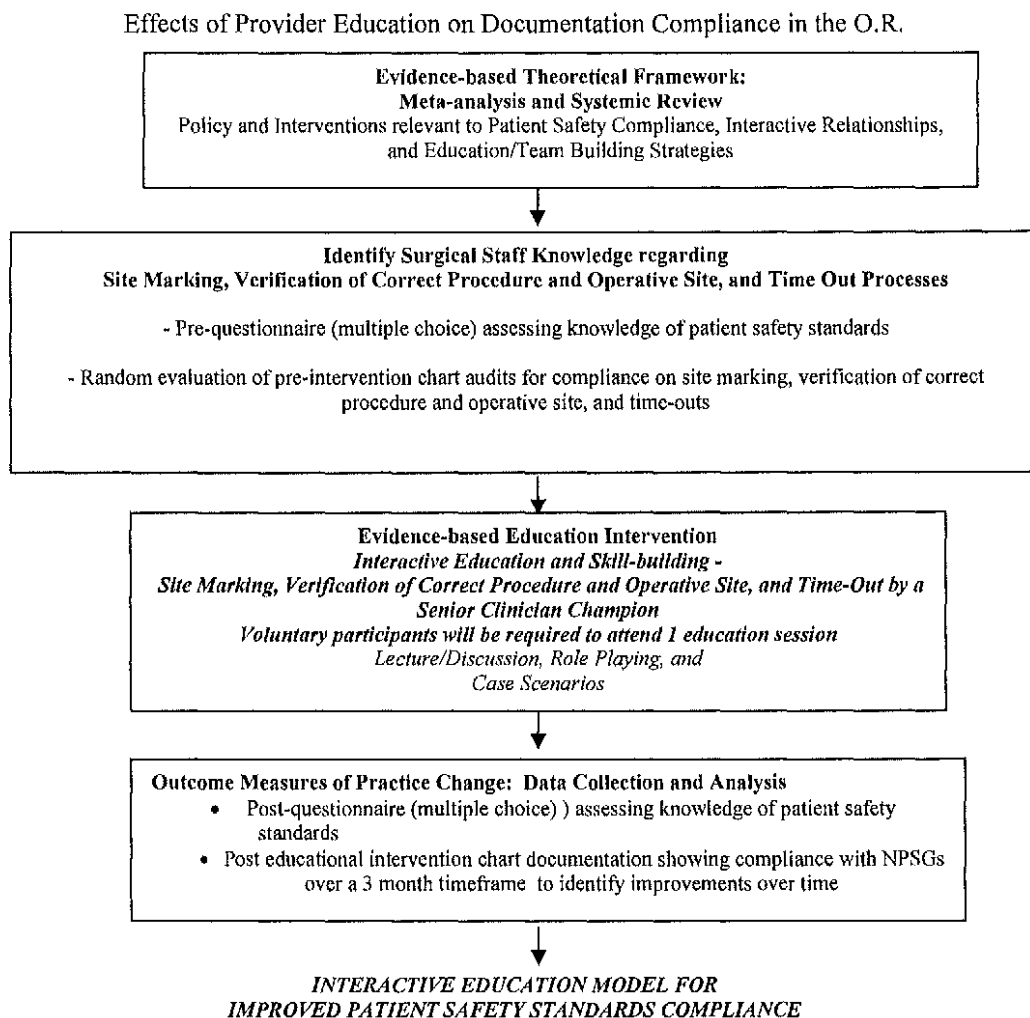


Figure 3. Study design: Effects of provider education on documentation compliance in the O.R.

Sample

This study was conducted in a surgical setting of a 326-bed not-for-profit hospital. The setting consisted of 16 operating rooms with 42 staff members, a 26-bed outpatient surgery area with 23 staff members, an 18-bay recovery room with 10 staff members, 9 anesthesiologists, and 20 physicians. The criterion for inclusion in the study was nurses, surgeons, and anesthesiologists providers working in surgical services who used site markings, verifications of correct procedure and operative site(s), and time outs. Exclusion criteria included non-surgical services nurses, and physicians, and surgical services clerical secretaries, nursing assistants, and anesthesia technicians who were not involved in the Commission's NPSG process.

Methods

Evidence-Based Interventional Plan

This study followed the effects of a provider education intervention on compliance with patient safety standards as shown in the interactive education model (Figure 3) and study timetable plan (Table 4) that drove the progression of the project.

The intervention plan involved education knowledge assessments and educational intervention components designed to test for and reinforce understanding of The Joint Commission NPSGs #1 ("Improve patient identification accuracy") and #4 ("Eliminate wrong site, wrong patient, and wrong procedure surgery") and the associated Universal Protocol providing recommendations for safe patient care (The Joint Commission, 2009a, b). Pre- and post-assessments of providers' knowledge of the standards were undertaken. Chart data on documentation compliance were collected before the education intervention. Post-educational intervention chart audits were completed to respectively

assess compliance with and knowledge and understanding of the Commission patient safety goals and associated protocol progressively before the intervention and at 1 month, 2 months, and 3 months after the intervention.

Knowledge Assessment

The pre-test provided a baseline knowledge of nurse and physician understanding of The Joint Commission (2009a) NPSGs. The pre- and post-questions were designed to provide information on participants' degrees of understanding Goals 1 and 4 and the associated Universal Protocol. The knowledge assessment instrument adapted for use in this study was initially developed and certified as a valid test for use by AORN (2006) as part of its *SafetyNet: Lessons Learned from Close Calls in the OR* continuing education program, and entitled, "Surgical Site Verification: A Through Z" (Dunn, 2006). [Note: The American Society of PeriAnesthesia Nursing (ASPAN), sponsoring the Journal of PeriAnesthesia Nursing in which the education piece and associated instrument were published, is accredited as a provider of continuing nursing education by the American Nursing Credentialing Center's Commission on Accreditation.]

Education Intervention

The overall purpose of the education intervention plan (Figure 4) was to improve the participants' knowledge and understanding of the targeted Joint Commission National Patient Safety Goals and Universal Protocol, as follows:

Site Marking Process. The purpose of the site marking process was covered to teach the participants how to identify unambiguously the intended surgical incision site and documentation process. The skill-building education session covered procedures that involved right/left distinction, multiple structures, and how to mark sites as to not obscure

the intended site such that the mark was still visible after the patient was prepped and draped.

Verification of Correct Procedure and Operative Site(s) Process. The purpose of the preoperative verification of correct procedure and operative site process was covered, including required and all relevant information that pertained to the patient and procedure. The importance of information was reviewed and deemed as correct by all the surgical team members, including consistency of required documentation in the chart review process, with any missing information or discrepancies addressed before the procedure started. The intent was to have a confirmed team verification of the correct patient, correct procedure, and correct operative site before starting the surgical procedure and documentation.

Time-Out Process. The purpose of the time out process was covered, involving how participants should conduct the final verification of the correct patient, procedure, site, and any implants involved for procedures. The importance of active communication and documentation by all members of the surgical team was stressed, along with who should initiate the time out process. It was also stressed that, as a fail-safe measure, the procedure was not started until all questions and/or concerns were resolved by the entire surgical team.

The educational intervention process was built on the principles of the adult learning theory. Avillion, Brunt, and Ferrell (2007) found that adults must have a valid reason for learning, or proof there is a need for learning. The authors identified that adult learners are self-directed learners, bring a variety of life experiences to learning situations, and concentrate on acquiring knowledge and skills that help to improve their

professional and/or personal lives. The adult measures the importance of education by focusing on how new knowledge and skills will help to improve their professional performance.

Educational Intervention Teaching Plan

- I. **Overall Purpose Education Intervention:** To improve participants knowledge and understanding of Joint Commission (2009a,b) patient safety goals.
 - II. **Goals:**

The participants will be able to:

 - Explain the three sections of Universal Protocol.
 - Describe the requirements of National Patient Safety Goals 1 and 4.
 - Discuss pre-survey verification process, marking the operative site, time-out needs.
 - Discuss the main areas that need to be addressed in case studies to improve the surgical site verification process among the team collaboratively.
 - Discuss how the time-out process in case studies affects patients in the department.
 - III. **Content:**
 - a. Review of evidence-based and assessment background on patient safety goals (lecture).
 - b. Overview of purpose and plan for improving patient safety compliance (lecture/discussion).
 - c. Identification of Universal Protocol for patient safety interventions (lecture/discussion).

Goal 1: Improved patient identification accuracy.
Goal 4: Eliminate wrong site, wrong patient, and wrong procedure surgeries.
 - IV. **Implementation of interactive communication on sections of Universal Protocol for Patient Safety.**
 - V. **Presentation of Case Studies: (case study interactive discussion)**

Case 1: Wrong site scenario discussion/interactions on analysis and recommendations in accordance with standards.
Case 2: Wrong site scenario discussion/interactions on analysis and recommendations in accordance with standards.
Case 3: Wrong person scenario discussion/interactions on analysis and recommendations in accordance with standards.
Case 4: Wrong procedure scenario discussion/interactions on analysis and recommendations in accordance with standards.
 - VI. **Review of "Essential Items of the Time-out Brief." (poster/demonstration)**
 - VII. **Evaluation**
 - VIII. **Discussion and review of:** Universal Protocols presented, and the patient safety compliance processes for site marking, verification of correct procedures and operative site(s), and time-out. (pre- post-test)
-

Figure 4. *Education teaching plan to improve patient safety*

Teaching Strategies and Activities

In accord with the goals of the education intervention plan, education sessions began with an overview of the evidence-based background assessments on patient safety goals including IOM reviews on patient safety and ways to avoid preventable adverse events in the patient safety arena (Kohn, et al., 2000). A review of The Joint Commission efforts to reduce and prevent wrong site errors, and their call for change to make healthcare systems safer for patients through a higher level of safe patient care practices, was also included.

An overview of the purpose and plan for improving patient safety goal compliance was provided using lecture and discussion. The purpose of this study was outlined, which is to improve knowledge and understanding of patient safety goals.

The Universal Protocol for patient safety intervention was covered in the teaching plan, associated with NPSG #1 (to improve patient identification accuracy), and #4 (to eliminate wrong site, wrong patient, and wrong procedure surgery). Interactive communication and discussion on each of these patient safety goals and associated protocol standards followed.

The educational intervention plan outline and case study scenario PowerPoint slides were prepared by the researcher based upon the AORN SafetyNet continuing education program, "Lessons Learned from Close Calls in the OR" (AORN, 2006). These slides served as a script to guide the presenter in conducting the education sessions. As an AORN-certified O.R. nurse with past teaching experience, the presenter was a peer and colleague to all participants, and was not an authoritative figure (see Appendix C and D). The presenter reviewed and rehearsed the prepared PowerPoint and did return demonstration back to check his own knowledge and understanding of the overall teaching plan as well as to ensure that case studies and scenarios were clear and concise.

The four case studies presented (AORN, 2006) pertained to near-miss and wrong site surgery stories, and were designed to prevent similar events from occurring. Avillion, Brunt, and Ferrell (2007) recommended case studies as providing a means of validity compiling. Through this learning style, individuals could describe how they would provide care for a particular patient or how they would deal with a particular scenario

presented to them. In this study, providers described the step-by-step progression of an incident, as well as feelings, thoughts, and conclusions from their reflection of the situation presented.

Each element and purpose of the Commission NPSGs were discussed with case scenarios and role playing as identified in the meta-analysis of evidence with respect to the pre-intervention knowledge assessment. Participants attended one of six identical education sessions, each including: two wrong site case studies, one wrong person case study, and one wrong procedure case study. Each scenario allowed time for discussion and analysis, followed by AORN (2004) recommended best practices to prevent wrong site, wrong person, and wrong procedure errors (Appendix D). Following the multiple case study presentations and interactive discussions, there was an overarching review and discussion of The Joint Commission (2008) “Essential Items of the Time-out Briefs” (see Appendix K). The introduction of this briefing process was to facilitate the interactive communication on sections of the Universal Protocol for patient safety. In the final stage of the education intervention, further discussion and review of the Universal Protocol with practice implications took place along with discussion on the Commission's patient safety goals.

Each participant of the study population had six opportunities to attend one intervention session in which they could interact and recommend improvements to facilitate team cooperative interactions and communication in the patient safety goal process. However, the knowledge base of providers was unknown until knowledge assessments on evidence-based patient-safety practices were completed. When each

participant attended an education session, a pre-test of knowledge was completed prior to the education intervention.

Exposure to this educational intervention involving role playing and case scenario activities in areas of identified need was to facilitate understanding of the need for compliance and improved practice and documentation involving NPSGs.

Evaluation Plan

The study called for use of quantitative methods to analyze results of participants pre- and post-intervention assessments of knowledge , and to compare chart audit documentation before and after the intervention to determine the degree of compliance with the Commission's patient safety goals (see Appendix E and F).

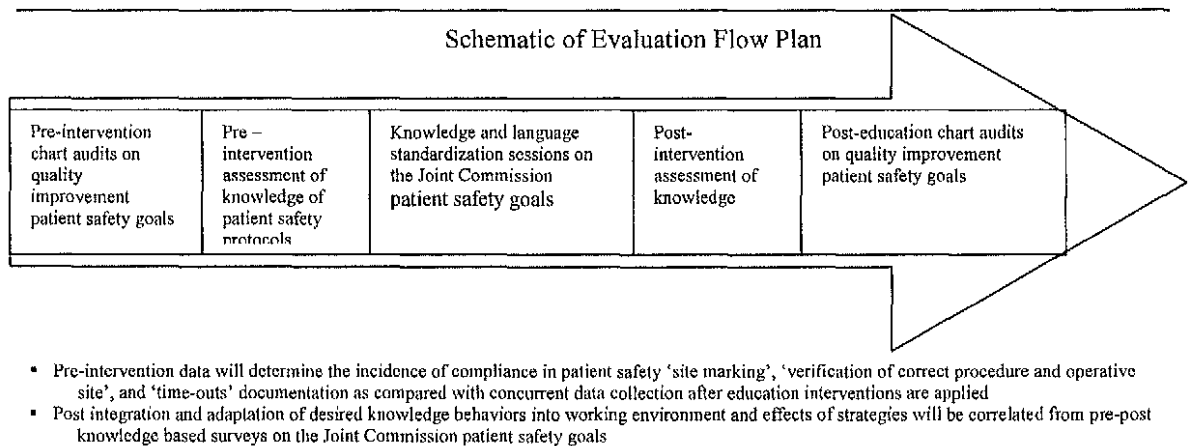


Figure 5. Evaluation flow plan

Knowledge Assessments. The evaluation of this project involved a flow plan (see Figure 5) whereby pre- and post-assessments of knowledge were compared. This allowed for an analysis of knowledge gains associated with the intervention.

Data Analysis

The magnitude of the effects of education intervention measures through the planned use of pre- and post-intervention knowledge assessments would determine any changes in knowledge with regard to patient safety goals by provider group (nurses, physicians, and anesthesiologists). Measurement of the degree of knowledge change in outcomes pre- and post-intervention was to be accomplished using paired sample t-tests assessing for change in knowledge before and after the education sessions. Analysis of variance (ANOVA) was to be used to determine variation between and among participants of each group, and any variations for the entire group of provider participants (nurses, physicians, and anesthesiologists). Data from a review of the pre-intervention versus post-intervention chart audits for compliance were to be analyzed using the Chi-square (X^2) test for comparing documentation practices on the quality improvement patient safety goals.

Feasibility

The setting for this study was a northeastern Florida hospital, with a surgical team consisting of 104 providers, and with 16 operating rooms of surgical area.

A culture of respect is being built at this hospital. A code of conduct and ethics already incorporated appears to be increasing trust and reducing stress, with surgical team members believed to be in a stage of readiness for team communication and improve provider interactions.

To improve patient care safety through an educational intervention effort for the providers, the study project was to be dependent on interactive teamwork. Patient safety

outcomes and quality of care are dependent on this teamwork and can be jeopardized by lack of cooperation and communication barriers among the healthcare team. The barriers can result from the “gap” between nurses’ and physicians’ perceptions of the site marking, verification of correct procedure and operative site(s), and time-outs processes.

Through a joint education intervention session, with the support of several nurse and physician champions, participants were expected to benefit from the effects of practice in setting outcomes as they pertain to The Joint Commission (2009a, b) patient safety goals. The champions were to be seen as the skilled and qualified lead supporters of teamwork needed to improve the processes for safe patient care outcomes. A certified senior O.R. nurse with an education/facilitator background was to present the education intervention and collect all post-intervention surveys to reduce any bias and “halo effects” the researcher may have caused due to association and position.

Site resources needed to ensure project completion included budget and technological considerations (see Table 5).

Table 5

Budgeting Considerations

Marketing of skill building session	\$20.00
Printer Paper	\$40.00
Professional posters for sustainability	\$120.00
Statistician expenses (estimated)	\$400.00
Professional binding	\$60.00
Educational session refreshments	\$60.00
Total	\$700.00

There were no anticipated costs to sustain this change of practice once the project was completed. Continuous quarterly quality improvement chart auditing is to be maintained by the researcher for this project as part of the researcher's role requirement.

Protection of Human Rights

The project study was reviewed for protection of the rights of human participants in research, and declared exempt from further IRB oversight by University of North Florida Institutional Review Board (IRB) (see Appendix N) and by the study location IRB (see Appendix O).

The benefits of this project were seen as a move toward an improved interaction practice between providers in improving The Joint Commission (2008) patient safety goal compliance. There were no unforeseen and/or potential risks involved in this project to subjects. Potential benefits to subjects included acknowledgement of improved compliance in documentation of the quality improvement measures on the patient safety goals as a result of the education intervention as well as the benefit of enhanced provider interactions and compliance in this safety goal process. No monetary compensation was provided to study participants beyond customary salary compensation associated with their normal work hours. Light refreshments were provided at the skill building education session. Participants also received in-service credit. No other compensation or inducement occurred in this study.

The procedures and practices to be measured were already part of the medical record documentation and standards of care in the surgical setting.

Measures to Protect Human Subjects. This evidence-based practice project did not involve an experimental or investigative device. Procedures for protecting against or minimizing any potential risks, such as violations of confidentiality, were in place.

Participants were guaranteed anonymity; pre-/post questionnaires did not identify the population sample names, or work location. Pre-intervention and post-intervention chart data were collected so as to eliminate identification of patient names, procedure, or dates, so that all proprietary health information was protected (refer to Appendix B), thereby putting no one at risk for legal action. A procedure was in place for the protection of data collected.

The post-knowledge questionnaires were to be collected by the experienced educator and AORN certified O.R. nurse and stored in a locked filing cabinet at the researcher's house, with only one key access. A statistician also was to have access to data for analysis, but only under the direct oversight of the researcher. No hard data was to leave the premises. Any data sets stored on the researcher's computer would be password-protected, and those provided to the statistician for review were to be encrypted (via coding of input). All data will be shredded and discarded after 3 years.

No unforeseen risks were seen for subjects. The anticipated benefits of the development of effective educational intervention between providers facilitated an enhanced practice environment towards patient safety compliance.

The benefits of this project were seen as a move toward an improved interactive teamwork practice between providers in improving patient safety compliance. There were no unforeseen and/or potential risks involved in this project to subjects. Any adverse

events would have been reported immediately to the researcher's project committee chair and the University of North Florida IRB committee.

Informed Consent. Informed consent for this study involved advisement to all participants of their voluntary participation. The completion and return of the pre- and post-questionnaires on knowledge constituted agreement for the data to be used for analysis (see Appendix B). The voluntary nature of participation in the intervention was also included in posters advertising the education intervention opportunity. Course participants were to be advised of the nature of the research study and advised of their voluntary, autonomous participation, their right to withdraw, the confidentiality of information collected, and the desire to use research data in association within a doctoral paper by drawing participant attention to the below language at the top of the survey forms as the intervention is introduced. A separate "Informed Consent" form was not requested for this study. Rather, the following voluntary consent statement was included with pre- and post-survey data collection forms as well as on the course description form for the education intervention (see Appendix B).

No children were included/involved in this study. No deception during the study was foreseen. The study was a convenience, voluntary, and autonomous study. Therefore, the study allowed subjects to participate at their own discretion and/or withdraw from participation.

Summary

The methodology to identify adult learning needs and education strategies for a provider educational intervention focused on patient safety goal compliance has been described. Pre- and post-assessments of knowledge of providers were to be used to

identify knowledge deficits associated with patient safety goals compliance and compared. Intervention strategies recommended through evidence-based literature provide the underlying and supporting theory for adult learning structures. Professional adult learning strategies such as role playing, discussions, and case scenarios support this education intervention study. Chart documentation audits were to be reviewed for comparisons of patient safety compliance on site marking, verification of correct procedure and operative site(s), and time-outs before and after the educational intervention.

CHAPTER 4

Results

The purpose of this study was to assess the impact of an educational intervention in effecting evidence-based change in the knowledge and practice of surgical healthcare providers to increase compliance with national patient safety standards.

Study Participants

Participants in this study consisted of nurses, surgeons, and anesthesiologists. Of the 104 professional staff eligible to participate, 102 participated in the pre-intervention knowledge survey and 97 participated in the post-intervention survey (see Figure 6).

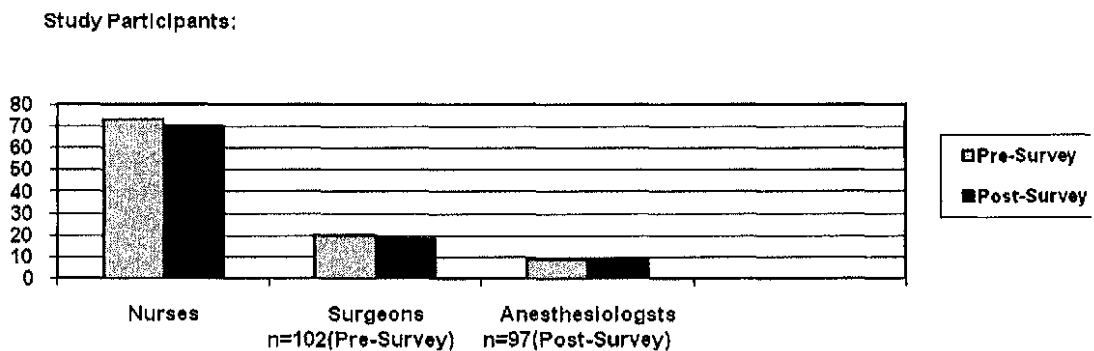


Figure 6. Number of completed knowledge surveys by study group

Of the 25 surgeons who received questionnaires, 20 returned pre-intervention completed surveys, and 18 returned completed post-intervention surveys. Of the 76

nurses who received questionnaires, 73 returned pre-survey questionnaires and 70 returned post-intervention surveys. Of the 12 participating anesthesiologists, 9 returned survey questionnaires both pre- and post-intervention. The drop rate difference for participants in the study was associated with members leaving employment, being on annual or sick leave, and/or declining to participate further in the study.

Data Analysis

Knowledge Assessment

The pre-test assessment provided baseline knowledge of nurses', surgeons', and anesthesiologists' understanding of standards of practice pertaining to site marking, verification of correct procedure and operative site(s), and time-outs (see Appendix B). The ten multiple choice pre- and post intervention questions were designed to provide information about degrees of understanding in each of the assessed categories.

The quantitative knowledge assessment data were analyzed to determine differences between scores before and after the education intervention process essentially for the same group of participants.

Overall Change. A descriptive analysis of the data was performed to look at the frequencies, means, and standard deviation values.

The paired sample t-test was performed between overall pre- and post-test scores. The pre-test mean score was 6.75, SD=1.426. The post-test mean score was 9.06, SD=2.211. There was a statistically significant difference between pre- and post-scores $t(101) = -10.3, p = .000$ (see Table 6).

Table 6

Knowledge Assessment - Pre-Intervention and Post-Intervention

	<i>n</i>	Mean	SD	<i>df</i>	<i>t</i>	<i>p</i>
<i>Overall</i>						
Pre-test	102	6.75	1.426			
Post-test	102	9.06	2.211			
Pre- and Post-test		-2.314	2.225	101	-10.3	.000
<i>Nurses</i>						
Pre-test	73	6.89	1.420			
Post-test	73	9.30	2.025			
Pre- and Post-test		-2.411	2.006	72	-10.270	.000
<i>Surgeons</i>						
Pre-test	21	6.43	1.502			
Post-test	21	8.33	2.904			
Pre- and Post-test		-1.095	3.161	20	-2.762	.012
<i>Anesthesiologists</i>						
Pre-test	8	6.25	1.165			
Post-test	8	8.75	1.389			
Pre- and Post-test		-2.500	1.604	7	-4.410	.003

Overall Changes Based on Subgroups. The paired sample t-test was performed between pre- and post-test scores for each of the nurse, surgeon, and anesthesiologist providers. There was a statistically significant difference between the pre-post test scores (see Table 6). The mean scores on the post-test were higher than the pre-test. The knowledge on the patient safety standards improved significantly after the educational intervention involving nurse, surgeon, and anesthesiologist providers.

Analysis of the Knowledge Survey Based on Individual Questions. The paired sample t-test was used to compare pre- and post-test scores based on individual questions and participant subgroups (see Appendix H).

The surgical nurses showed significant knowledge improvement on the patient safety standards after the educational intervention in response to all but question #5 on the pre- and post-knowledge assessment. Surgeons showed improvements on incorrect surgeries; patient identifiers; time-out; and, sites not requiring marking. Anesthesiologists showed improvements in knowledge on responsibility for site marking; when site markings are not required; incorrect surgeries; common wrong sites; patient identifiers; and, components of time-outs. No changes in scores were reflected in responses to the found on the wrong body part or wrong patient question.

Analysis of Variance. The analysis of variance (ANOVA) was performed and determined that there were statistically significant differences in the mean scores between and within groups - $F(1,200)=118.24, p=.000$ (see Table 7).

Table 7

ANOVA – Comparing Group Scores

	Sum of Squares	<i>df</i>	Mean Square	<i>F</i>	<i>p</i>
Between Groups	314.308	1	314.308		
Within Groups	531.613	200	2.658		
Total	845.921	201		118.247	.000

Changes in pre- and post-intervention scores were not uniform for all study participants. Significant improvements were noted on patient safety standards knowledge

after the educational intervention in 16 nurses, 6 surgeons, and 3 anesthesiologists who accounted for the overall statistical change (see Appendix G).

Practice Differences in Documentation Compliance

Analyses of the patient charts before and after the educational intervention were performed. The site markings, verification of correct procedure and operative site(s), and time-out compliance at 1 month, 2 months, and 3 months post-intervention were measured and compared to the baseline data obtained from pre-intervention chart audits (see Appendix I and J).

Documentation Compliance Results - Site Marking and Time-Out. A review of 240 chart audits before the intervention revealed a 76.8% rate of charting compliance for site marking and time-outs. An audit of 240 charts after the intervention found a compliance rate of 98.4% at month 1, 98.6% at month 2, and 100% at month 3 (see Table 8).

Table 8

Overall Documentation- Percentile Compliance of Nurses on Verification of Site Marking and Time-outs

Pre-intervention (<i>n</i> =240)	Post-intervention (<i>n</i> =240)		
	1 st month	2 nd month	3 rd month
76.8%	98.4%	98.6%	100%

The results of the Chi-square (X^2) test on 240 documentation charts pre- and post-education intervention show a X^2 value of 45.733, $p=0.001$; therefore, there is a significant improvement in documentation compliance after the educational intervention for site marking and time-outs (see Appendix K).

Documentation Compliance Results - Verifying Correct Procedure and Operative Site(s). Audits of 240 charts before and after the intervention were completed to determine compliance with standards for verifying correct procedure and operative site (see Appendix J). A pre-intervention retrospective review of 240 charts showed a compliance rate of 85.7%. A review of 240 charts after the intervention showed that 95% were compliant in verifying and documenting correct procedure and operative site marking (see Table 9).

Table 9

Overall Documentation- Percentile Compliance of Nurses on Verification of Correct Procedure and Operative Site(s).

Pre-intervention ($n=240$)	Post-intervention ($n=240$)		
	1 st month	2 nd month	3 rd month
85.7%	93%	96%	96%

The results of the Chi-square test compared compliant and noncompliant documentation pre- and post-education intervention. Given the X^2 value of 11.416, $p=0.001$ level, there were significant improvements in compliance with patient safety standards after the education intervention (see Appendix K).

Summary

This chapter presents the pre- and post-educational intervention results associated with the knowledge assessments and documentation chart audits relative to compliance with patient safety standards on site marking, verification of correct procedure and operative site, and time-outs. Statistical analyses included descriptives, t-tests, ANOVA, and Chi-squares. The results showed that there was an overall improvement in knowledge of patient safety standards and in chart documentation compliance reflecting changes in practice after the educational intervention.

Chapter 5

Discussion

The development of an effective educational intervention involving providers was designed to facilitate an enhanced practice environment with a goal of increasing compliance with nationally-accepted patient safety standards. In addition, other disciplines in the hospital could model the educational intervention strategies. The improved interactions between providers were accomplished through the use of skill-building strategic interventions to correct, facilitate, and support evidence-based practice.

Educational interventions played a significant role in making improvements in provider knowledge of patient safety documentation requirements. Interactive continuing education programs promoted communication and provided an opportunity for problem-solving and improving patient safety compliance.

Open forum presentations were set up at the facility to illustrate pre- and post-knowledge assessment data regarding providers. The assessment data identified knowledge deficits on patient safety goal compliance and comparisons between provider groups.

Replication of this educational intervention model to a broader range of the health care facilities (e.g., emergency procedure rooms) in the future could improve patient

safety documentation with respect to site marking, verification of correct procedure and operative site(s), and time-out.

The results of this study indicate that a patient safety education intervention for surgical providers was associated with a significant improvement in compliance with practice standards governing site markings, verification of correct procedure and operative site(s), and time-outs, with positive outcomes in practice. The exposure to role playing and case scenario activities in areas of identified knowledge deficiencies as suggested by the literature facilitated understanding and significantly improved practice documentation based on post-intervention chart audits. Findings regarding the education intervention sessions were consistent with those of Marshall and Manus (2007) in that learning activities recreating real-world work situations fostered better transfer of learning. The case scenarios reflected simplified versions of real workplace situations that the participants encountered on a daily basis, allowing them to explore and experience different approaches and outcomes.

Teamwork, Empowerment, and Practice Change

Nurses, surgeons, and anesthesiologists who participated in an educational intervention demonstrated its effectiveness in changing and improving their knowledge of patient safety standards and their compliance with chart documentation requirements. The transforming of behaviors for improved compliance required strong and supportive leadership from the team and management. Providers worked together, and were empowered as a team to make changes for enhanced patient safety compliance. Their participation not only fostered compliance in patient safety, but improved morale and a sense of partnership between team members. The efforts of nurse, surgeon, and

anesthesiologist providers through the participation in the education intervention were essential for successful patient safety documentation, contributing to achieving the organization's goals of patient-centered care.

Education Sessions Positively Impacted Compliance

Overall knowledge differences were found between the pre- and post-intervention test scores and demonstrated a significant change in familiarity with national patient safety standards. A significant finding associated with practice change involving documentation compliance was the scores showing improvement in overall compliance with site marking, verification of correct procedure and operative site(s), and time-out processes after the intervention. The results indicated a significant progressive improvement over a 3-month time frame, culminating in 100% compliance at month 3 for all variables measured. A statistically significant improvement was also seen in the overall documentation compliance on the verification of site marking and time-outs (see Table 8 and Appendix I).

The education sessions presented by a senior clinician involved six interactive activities and workshops designed to highlight patient safety issues in the surgical setting. The use of case scenarios and role playing were found to be suitable education strategies for these adult learners in improving their knowledge skills and understanding of the site markings, verification of correct procedure, operative site, and time-out processes.

One outcome accepted by the team (and the Department of Surgery) was the suggestion that a listing of verifying processes be mounted visibly in each area of the operating room to enhance patient safety compliance on site marking, site verification, and time-outs. Use of an itemized check-list gave each surgical team member the chance

to ask questions, and to procure any further necessary supplies and equipment to ensure optimum patient safety (see Figure 7 and Appendix L).

Essential Items of The Time Out Brief
<ul style="list-style-type: none"> • Patient • Procedure • Site, side or level • Patient position • Special equipment • Implants available • DVT, H&P, Antibiotics • Solicit concerns • Log time
To be completed by the person in charge (i.e., surgeon) immediately before procedure

Figure 7. Essential items of the time-out brief

Barriers in the Study

One of the most important identified barriers to overcome is the attitude of many physicians toward participation. This may be due to fear of losing autonomy and authority. Therefore, these professionals were not as quick to become involved. This potential cause was also identified by Powell and Hill (2006) as a possible barrier.

The greatest challenge in successfully implementing the intervention was the scheduling to enable physicians to attend the education sessions which authors Lenard, Graham, and Bonacum (2004) had also identified as a potential barrier. To overcome the barriers of attendance, six identical sessions were held to accommodate and facilitate surgeon participation.

Limitations

This study was a convenience sample, with data collected only from one surgical services setting. Therefore, results cannot be generalized to the whole organization or to

all surgical settings. It is recommended that others consider replicating this intervention in different surgical settings to improve patient safety documentation compliance and quality of care.

Another limitation may have been related to the degree of participation of all targeted potential subjects in the professional surgical staff as this may have impacted the review of random chart audits. A random review that included chart audits for members of the target population who did not participate in the education intervention may have reduced the validity of indicators for behavioral and knowledge change after the intervention. In addition, the principle investigator is a known colleague of all participants in the study, which may have led to respondent bias.

Recommendations

The study promoted not only patient safety documentation compliance regarding national standards for site marking, verification of correct procedure and operative site(s), and time-outs, but also provided secondary benefits as a team building effort. The study process will be shared with all participants and non-participants to help improve broad compliance with patient safety standards at the organizational level.

The expansion of this study as a program beyond surgical services is critical to the success of the organization's strategic plan of continuous quality assurance, excellence in patient care, best practices, and the patient-centered care philosophy. This study should be replicated in other surgical services settings.

The continuation of this education intervention and the continuous quality improvement tools may sustain increased documentation compliance with the standards for site marking, verification of correct procedure and operative site, and time-out

processes. Additionally, continuously evaluating compliance to identify a measurable reduction in preventable adverse events (such as wrong patient, wrong site, and wrong procedure close calls) may continue to promote improved patient safety outcomes.

The creation and use of the “Essential Items of the Time-Out Brief” poster in support of perioperative verification processes (see Figure 7 and Appendix L), may have a positive effect in the surgical setting. Check-lists in each operating room confirm that appropriate documents are available, call for verification of correct patient, correct procedure, and correct site, and remind professionals to implement processes to mark surgical sites and to involve the patient in the marking process (The Joint Commission, 2009a, b).

The plan is for a senior clinician, and the quality assurance department, to continue to use the performance tools on a quarterly basis and report to all surgical staff team members. The quality assurance department plans to expand the program to other settings within the organization that require site marking, site verification, and time-out compliance processes. Replication of this educational intervention model study to a broader range of the health care facilities (e.g., emergency procedure rooms) in the future could improve patient safety outcomes with respect to site marking, verification of correct procedure and operative site(s), and time-out.

Conclusions

The results of this study show statistically significant improvements in patient safety documentation compliance with national standards for healthcare professionals in the surgical setting. Increased documentation compliance enhanced and supported the project facility’s strategic goal of enhancing patient-centered care through continuous

quality improvement strategies. The organization intends to include in their strategic plan measurable objectives regarding standards of compliance in accordance with The Joint Commission (2009a, b) patient safety goals concerning site marking, verification of correct procedure and operative site, and time-out processes.

The obstacle of gaining physician buy-in and participation was encountered, but was overcome with a more flexible scheduling approach. In addition to increasing patient safety knowledge and documentation compliance, provider teamwork and communication within surgical services were greatly enhanced.

Until the incidents of wrong site surgery are eliminated, health care organizations should continue to pursue educational intervention strategies for avoiding wrong site surgeries. Implementation of similar education programs can expand the behavioral collaboration processes into other areas, potentially reducing and preventing adverse events impacting patient safety.

Appendix A
Critical Appraisal Table
Review of Evidence of Meta-Analyses and Systemic Reviews

Author/Dates	Title	N	Comments	Level ¹
Aiken(2001)	Evidence-based management key to hospital workforce stability.	43,00 subjects 5 countries	Evidence suggests hospitals need to reengineer programs to redesign programs linking organizational processes to better nurse and patient outcomes to rebalance and give greater attention to clinical priorities and stabilize the work force.	Level I Meta-analysis and systemic review of staff dissatisfaction.
Castledine (2004)	Nurses must learn methods to deal with difficult doctors.	N/A	Review identifies that barriers still exist in healthcare settings due to lack of interactions and communication between nurses and doctors. Knowing techniques that work reduces stress and anxiety and increases enthusiasm for nurses.	Level I Literature review.
Coeling & Cukr(2000)	Conflict, Communication, and Collaboration: Improving interactions between nurses and physicians.	135 subjects	Evidence showed that communication and collaboration is essential for nurse-physician relationships and quality healthcare. Recommend teaching collaborative and communication skills to achieve quality patient care.	Level I Systemic review of knowledge outcome studies on collaboration and cooperation associated with quality healthcare.
Corser(2000)	The Contemporary Nurse-Physician Relationship: Insights from Scholars Outside the Two Professions.	5 categories of published work between 1980 to 1990	Five categories of published works from non-clinician scholars identifying that collaborative nurse-physician outcomes barriers were seen in real and perceived differences empower, respect, misunderstanding, and decision making.	Level I Meta-analysis and systemic review of nurse-physician work relationships through the perspectives of non-clinical scholars.
Liedtka & Witten(1998)	Enhancing Care Delivery Through Cross-disciplinary: A case study.	12 service centers	The evidence identified the importance of shared values, trust, and personal engagement, which empirically demonstrate linkage of perceptions of successful nurse-physician relationships.	Level I Exploratory research investigates factors that contribute to and detract from communication and cooperative interactions across professional groups that work within twelve service centers.
Mansouri & Lockyer(2007)	A meta-analysis of continuing education effectiveness.	31 studies 61 interviews	Effective size of CME on physician knowledge is medium and small for physician performance and patient outcomes. Variables showed large effect when interventions are interactive. The use of multiple methods is recommended with one discipline.	Level I Meta-analysis
O'Brien, Freemantle, Oxman, et al.(2007)	Continuing education meetings and workshops: effects on professional practice and healthcare outcomes.	31 studies 36 comparisons n=2995	Statistical significance seen in combined education intervention of workshops, didactic presentation (11 of 12 comparisons) didactic alone does not change professional practices.	Level I Meta-Analysis.

Author/Dates	Title	N	Comments	Level ¹
Pavlovich-Davis, Forman, & Simek(1998)	The nurse-physician relationship can't be saved?	Exploratory review of literature	Cooperative team interactions improve patient care, enhances job satisfaction, boosts productivity and facilitates cost containment. For improved relationships to take place, all parties must be receptive and work together. Respect and trust of each other is essential.	Level I Meta-analysis
Sirota(2007)	Nurse-physician relationships: improving or not?	N/A	Examines the present relationship between nurses and physician. Suggest strategies such as: empowering of nurses through education, research and conferences on communication; improving communications with physicians; zero tolerance for disruptive behavior; standardize communication tools (SBAR); increase interactive relationships and cooperation through joint nurse-physician meetings.	Level I Literature review.
Storch & Kenny(2007)	Shared moral work of nurses and physicians.	N/A	Evidence recommends: <ul style="list-style-type: none"> • Sustaining interaction and team functioning • Staying engaged with patients through interactive team work • Working together with mutual respect for contribution and accountability of each profession • Sharing goals of quality patient care and shared moral work of caring 	Level I Literature review on ways each professional needs to work as a team with shared moral work.
Tian et al.(2001)	A systematic review of evaluation in formal continuing medical education.	N/A	Review of studies that evaluated changes in physician knowledge and attitudes, practice and patient care outcomes. The use of evaluation tools are needed to compare the effectiveness of CME interventions.	Level I Systematic review/meta-analysis that evaluate the effectiveness of CME programs. Post intervention follow-ups for sustainability of intervention is crucial.
Zwarenstein & Reeves(2004)	Intervention to promote collaboration between nurses and physicians.	1945 subjects 2 clinical trials	Concluded that increasing collaboration improved outcomes of importance to patient care. Gains to increasing cooperative interactions affected healthcare processes more than outcomes.	Level I Meta-analysis of the effects of interventions designed to improve nurse-doctor interactive relationships.
Bolton, George, Hunter, et al.(1998)	Community health collaboration models for the 21 st century.	N/A	Primary goal to present models for working with physicians and other healthcare providers to improve the health of communities.	Level II Practice Guidelines
Kramer & Schmalenberg (2003)	Securing "good" nurse-physician relationships.	425 subjects 14 magnet hospitals	Power emerged as the dominant theme regarding nurse-physician relationships. Recommended the creation of a culture of values, reward, equal power relationships and autonomy for patient care decision making.	Level II Small randomized sample explores link between the quality of nurse-physician relationships and the quality of patient care.

Author/Dates	Title	N	Comments	Level ¹
Knaus, Draper, Wagner, et al.(1986)	An evaluation of outcomes from intensive care in a major medical center.	5030 subjects 13 hospitals in intensive care units	Differences are shown in relation to interactions, communication, and collaboration between nurses and physicians in caring for patients. Improved communication and cooperative interactive relationships are seen in patient care outcomes.	Level III Prospective study on treatment and outcomes of intensive care units. Differences are measured between.
Baggs & Ryan(1997)	ICU nurse physician collaboration and nursing satisfaction.	68 subjects	Results suggest collaboration alone does not increase general satisfaction. Cooperation and communication was seen as vital to nurse satisfaction when making patient decision. Recommend joint nurse physician seminars, patient care planning and ground rounds.	Level IV Descriptive study of relationship between nurses-physicians collaboration and nursing satisfaction over 6 month period.
Baldwin, Welches, Walker et al.(1987)	Nurse Self-Esteem and Collaboration with Physician.	747 subjects	The evidence showed that nurses with high esteem expressed positive views on collaboration and interactive teamwork with physicians. Barriers were seen with role misunderstanding, lack of respect and autonomy for decision making.	Level IV Exploratory investigative relationship between nurses' self-esteem and their views of and willingness and improved relationships with physicians.
Barrere & Ellis(2002)	Changing attitudes among nurses and physicians: a step toward collaboration.	65 subjects	Outcomes showed that nurse-physician collaboration, communication and shared decision making is a major contributing factor in positive patient care outcomes.	Level IV Qualitative quality improvement research project to examine nurse-physician interaction.
Boyle & Kochinda(2004)	Enhancing collaborative communication of nurse-physician leadership in two intensive care units.	95 subjects	Results showed that nurses and physicians need to achieve shared problem solving, conflict resolution, decision making, communication and to coordinate patient care together as a team.	Level IV To identify interventions that enhances team interactions communication between nurses and physicians in two intensive care units for improved patient care outcomes.
Carleton(2004)	Time out- the surgical pause that counts.	N/A	Active and share communication and collaborative education interventions are conducive in a fail-safe mode for the surgical team.	Level IV Descriptive Design
Espin & Lingard(2001)	Time as a catalyst for Tension in Nurse-Surgeon Communication.	Observed 128 hours of nurse-surgeon interactions	Patterns of communication showed the importance of improved patient care processes in the surgical setting. Ways to improve were not identified.	Level IV The Qualitative study examines communication patterns between surgeons and nurses in order to understand factors that motivate team communication and interactive relationships.
Larson, Hamilton, Mitchell, et al.(1998)	Hospitalk: An exploratory study to assess what is said and what is heard between physicians and nurses.	37 subjects	Nurses and physicians shared similar perceptions regarding their role in the communication process. Recommend the provision of improved communication thereby enhancing cooperative interactions and improve patient care decision making.	Level IV Exploratory study to examine physician and nurse communication and perceptions.

Author/Dates	Title	N	Comments	Level ¹
Marshall & Manus(2007)	A team training using human factors to enhance patient safety.	N/A	Workshops through combined information, demonstrations suggested role playing to present team skills, knowledge and behavioral attitudes. Positive outcomes and feedback.	Level IV Descriptive Design
McFadden, Stock, Gowan & Cook(2006)	Exploring strategies for reducing hospital errors.	525 bed hospital N/A	Examined perceptions on improving patient safety strategies: gaps were identified between current practice and recommended approaches to improve patient safety and reduce error frequency and severity.	Level IV Strategies include: partnership, blame free culture open discussions, education and training, system redesigns.
Rosenstein(2002)	Original research: Nurse-physician relationships.	1200 subjects	Results indicated physicians rated more positively than nurses, and all responses had concerns of nurse-physicians relationships and the atmosphere they create and affect patient care. Recommend to seek creative opportunities for interactive communication, hold open forums and interactive workshops for nurses and physicians.	Level IV Non-random convenience sample survey on differences between nurses, and physicians' relationships, descriptive physician behavior and how such behaviors affect nurse satisfaction.
Sterchi(2007)	Perceptions that affect physician-nurse collaboration in the perioperative setting.	137 subjects	Results showed that nurses had a higher mean score than physician in attitudes toward communication and relationships. Nurses with higher years of experience demonstrated less positive attitudes towards the nurse-physician relationship.	Level IV Descriptive quantitative study to examine differences in perceptions between physician and nurses toward an interactive relationship.
Warren, Houston, & Luguire(1998)	Collaborative practice teams: From multidisciplinary to interdisciplinary.	N/A	Evidence reveals that assembling successful teamwork fosters quality patient care, satisfaction and enhances productivity for those who provide care as a multidiscipline team who share information, pool knowledge and jointly evaluate and develop appropriate patient care plans.	Level IV Literature review of descriptive and qualitative studies on shared practice teams.
Beyer(2008)	Learning more about the science of patient safety.	N/A	Increasing nurse-physician knowledge and understanding of patient safety needs active participation in the learning process that is continuous and focused on specific patient safety topics.	Level V Self assessments are important in determining learning objectives and developing of an educational plan.
Davis, Evans, Jadad et al.(2003)	The case for knowledge translation; shortening the journey from evidence to practice.	N/A	Knowledge translation offers a construct and holistic foundation to build CME and CPD that fills the gap between evidence and practice for healthcare professionals e.g.) lectures, printed materials for CMEs.	Level V Case reports and knowledge.
Hain(2008)	Better M.D.-R.N. collaboration through unit meetings.	952 bed tertiary care hospital N/A	Identifies ways to better coordinate patient care, renews interest of professionals to engage in educational activities and improve patient care.	Level V Results of shared activities between nurses and physicians improves quality of patient care.

Author/Dates	Title	N	Comments	Level ¹
Iocona(2003)	Conflict, Communication, and Collaboration: Improving interactions between nurses and physicians.	135 subjects	Emphasis is placed in the need for nurses to provide more factorial data in more organized manner: Professionals need to seek growth through open forums, group discussions on communication and conflict management, education on stress and time management, joint ventures are needed to improve team work between nurses and physicians.	Level V Systematic review of knowledge importance of professional communication, conflict resolutions and collaboration between nurses and physicians.
Lassen, Fosbinder, Minton et al.(1997)	Nurse/physician collaborative practice: Improving Health Care Quality While Decreasing Costs. Exploratory Study.	N/A	Study found that collaborative practice: enhance nurse-physician relationships, resulting in significant cost savings.	Level V Exploratory Study on knowledge/case reports.
Stein(1967)	The doctor nurse game.	5 subjects	Observational outcome identified that nurses relationship with doctors is based on a "game-playing" model. Nurses go out of their way to avoid open conflict or disagreement.	Level V Observational study that observed doctor-nurse interactions.
Winniford(2008)	Improving staff compliance with CMS performance measures through chart reviews.	722 bed hospital N/A	Compliance resulted through chart reviews and learnings openly discussed weekly by a multidisciplinary team.	Level V Improvements seen in care and practices.
Zwarenstein & Bryant(2002)	Working together but apart, barriers and routes to nurse-physician collaboration.	N/A	Evidence to improve healthcare safety and quality patient care is dependent on teamwork. Recommend nurses and physicians need to share definitions of wellness, jointly share information, and work collaboratively to stabilize the work environment and reduce turnover of the team.	Level V Literature review to identify efforts that could improve healthcare safety and quality that are dependent on teamwork and are jeopardized by the communication and collaborative barriers between nurses and physicians.
<p>Level I: Meta-analysis (combination of data from many studies) Level II: Experimental Designs (randomized control trials) Level III: Well designed Quasi Experimental Design (not randomized or control group) Level IV: Well designed Non-Experimental Design (descriptive) Level V: Case reports/clinical expertise Source: Melnyk, B. & Fineout-Overholt, E. (2004). Using models and strategies for evidence-based practice. In B. Melnyk, & E. Fineout-Overholt, Evidence-based practice in nursing and healthcare: A guide to best practice. Philadelphia: Lippincott Williams and Wilkins, pp10.</p>				

Appendix B

Pre- Post-Assessment of Knowledge

You are being asked to take part in a research study by Brenda Kingdon. This study is designed to measure what effect this course has on patient safety in surgical settings. Data collected through these surveys and questionnaires will be confidential, and no identifying information will be collected. You do not have to participate, and if you choose to participate, you may withdraw your consent at any time for any reason without losing any benefits to which you are otherwise entitled. The data collected in this study will be included in a dissertation by Brenda Kingdon. Only aggregate data will be reported and there will be no way for individual responses to be identified. If you have any questions about this study, you may contact Brenda Kingdon at 904-806-0915 or beeper 904-499-7453. If you have any questions about your rights as a research participant, you may contact Dr. A. David Kline, Chair of the UNF Institutional Review Board, at (904) 620-2498. **By completing and submitting this survey, you are consenting to have your data used for this research project.**

Directions: The multiple choice pre and post test below is designed to test your understanding of site marking, surgical site verification and time out.

Pre-test/Post-test Questions

1. The person(s) responsible for marking the surgical site is/are:
 - a. Patient
 - b. Physician and nurse
 - c. Physician
 - d. Nurse

2. Choose one example listed below that does not require the patient to be marked:
 - a. The physician inserting a chest tube at the bedside who leaves the room for 5 seconds
 - b. The physician who is going to perform a right thoracentesis but will be back in about 20 minutes
 - c. The physician who greets the patient in the emergency department and asks the nurse to bring him microbicide, gauze, and a 4-0 nylon suture to close the wound while he continues to converse with the patient
 - d. The patient in the holding area with an external fixator on his right wrist that is scheduled for surgery to have it removed

3. The majority of incorrect surgeries are the result of:
 - a. Operating on the wrong side
 - b. Surgeons not marking sites
 - c. Operating on the wrong patient/doing the wrong procedure on the patient
 - d. OR personnel not performing the “time out”

4. Name the three specialty areas in the OR where wrong-site and wrong-side surgeries are more common:
 - a. General, vascular, and ophthalmic
 - b. Ophthalmic, neurosurgical, and general
 - c. Neurosurgical, Orthopedic and general
 - d. Orthopedic, ophthalmic and neurosurgical

5. A broad term that encompasses all surgical procedures performed on the wrong body part or the wrong patient is:
 - a. Wrong-site surgery
 - b. Wrong-side surgery
 - c. Wrong-level surgery
 - d. Wrong-part surgery

6. Two appropriate patient “identifiers” are:
 - a. Patient’s name and medical record number
 - b. Patient’s name and room number/bed
 - c. Patient’s date of birth and room number/bed
 - d. Patient’s date of birth and patient’s affirmative response when asked if his name is X

7. The final “time out” includes the following components:
 - a. Circulating nurse confirms that the correct patient is present and the physician performs the correct procedure
 - b. Using the OR schedule to confirm procedure along with checking the patient’s identification band
 - c. Anesthesiologist, circulating nurse, scrub nurse, and patient reiterate the procedure when they are in the OR suite
 - d. OR team checks the patient’s identification band, reviews the consent, and makes sure implants and special equipment are present

8. The surgeon does not have to mark the site when:
 - a. The nurse has already marked it on his/her behalf
 - b. The resident has already marked it on his/her behalf
 - c. The family member accompanies the patient to the OR for a thoracoscopy and the patient is unconscious
 - d. The patient is having a laparoscopic cholecystectomy

9. The following sites do not have to be marked:
 - a. Laparoscopic right ovarian cystectomy
 - b. Cyst and lipoma on right shoulder
 - c. L4-5 discectomy
 - d. Appendix

10. The mark made may be:
 - a. An X on the nonoperative site
 - b. Physician’s initials on the nonoperative site
 - c. Physician’s initials on the operative site
 - d. An adhesive site marker on the operative site

Note. “Adapted and reprinted from Journal of PeriAnesthesia Nursing, Volume 21, No 5, Dunn, D., Surgical Site Verification: A through Z, p.329-330, (2006), with permission from Elsevier”.

Appendix C
Education Intervention Objectives Outline
University of North Florida

Course Title: Improving Site Marking, Site Verification Processes, and Time-out for Patient Care Safety

Presenters: Senior Clinical Nurse

Facilitator: Brenda Kingdon

Course Description: This skill building education session will present The Joint Commission's patient safety goal of "Site Marking", "Site Verification" and "Time-Out" practices and safe patient care compliancy. Participants will have the opportunity to reinforce and demonstrate the collaborative role of team on "Site Marking", "Site Verification" and "Time-Out", process practices and implication. The process will involve case scenario discussions and interactive role playing and discussion.

Theory Outcome Plan Outline	Teaching and Learning Strategy
Following successful completion of the presentation, the participants will be able to: Outcome Teaching Plan: <ol style="list-style-type: none"> 1. Explain the three sections of Universal Protocol. 2. Describe the requirements of national Patient safety Goals 1 and 4 3. Discussion on pre-survey pre-operative verification process, marking the operative site, time out needs. 4. Discuss the main areas that need to be addressed in case studies to improve the surgical site verification process among the team collaboratively. 5. Discuss how the time-out process in case studies affects patients in the department. 	<ol style="list-style-type: none"> 1. Power Point – case study scenarios 2. Discussion 3. Handout on Joint Commission goals
	Evaluation Pre- and Post-Knowledge Assessment Survey

You are being asked to take part in a research study by Brenda Kingdon. This study is designed to measure what effect this course has on patient safety in surgical settings. Data collected through these surveys and questionnaires will be confidential, and no identifying information will be collected. You do not have to participate, and if you choose to participate, you may withdraw your consent at any time for any reason without losing any benefits to which you are otherwise entitled. The data collected in this study will be included in a dissertation by Brenda Kingdon. Only aggregate data will be reported and there will be no way for individual responses to be identified. If you have any questions about this study, you may contact Brenda Kingdon at 904-806-0915 or beeper 904-499-7453. If you have any questions about your rights as a research participant, you may contact Dr. A. David Kline, Chair of the UNF Institutional Review Board, at (904) 620-2498. **By completing and submitting this survey, you are consenting to have your data used for this research project.**

Appendix D

Education Intervention- Case Study Scenarios, Analysis, and Teaching Strategies

Case Study ¹	Analysis	Strategies/Comment ²
<p>Case 1: Wrong Site Scenario</p> <p>As the circulating nurse, she did not go to see the patient immediately after a previous case. The anesthesiologist insisted that the patient must be seen immediately and brought into the OR. The charge nurse informed her that she must see the patient and bring the patient to the room immediately. She was now feeling upset and rushed. She verified the procedure, site, and side verbally with the OR team. The surgeon left the OR to scrub, and she started prepping the patient's left limb. When the surgeon came back into the OR for gowning, he reiterated that the procedure was on the right limb. She stopped the prep, reconfirmed the site, and prepped the correct limb.</p>	<p>Questions that could be explored to help understand the contributing factors for this near miss include the following:</p> <ul style="list-style-type: none"> - What measures could the circulating nurse have implemented to prevent this near miss? - What factors contributed to the incorrect limb being prepped? - What coaching could be provided to perioperative registered nurses to assist them in preventing an outcome as described in this case study? 	<p>Case study was reviewed and interactive discussion followed. Participants reflected on contributing factors and compared with their own encountered experiences. The participants acknowledged the need for appropriate and effective verification processes as a team in communication.</p>
<p>Case 2: Wrong Site Scenario</p> <p>The nurse was preparing the OR for the next patient and had several pieces of equipment to set up, which was taking some time. In the meantime, the patient was brought into the OR. Before I could acknowledge the patient's presence or review the patient's chart, check the consent, and confirm the surgical site, the surgeon proceeded to prepare the patient for surgery by positioning and doing the skin prep. As the surgeon completed the prep, he removed the drapes that had been used to cover the nonoperative site. It was at this stage that she noticed the wrong area had been prepared. She pointed this out to the surgeon, and they confirmed the surgical site. The correct are was prepped, and the operation went ahead as planned.</p>	<p>Questions that could be explored to help understand the contributing factors for this near miss include the following:</p> <ul style="list-style-type: none"> - What steps in the Universal Protocol were omitted in this situation? - How could the perioperative registered nurse have intervened to ensure that the best practices for correct site surgery were executed? 	<p>Interactive discussion and relating of past experiences took place. Participants identified scenarios they had experienced which resulted in errors which may have led to near misses. Acknowledgement of the need for appropriate time-out processes was heard. Discussion took place in all sessions on contributing factors which could cause errors in the process. Past experiences were shared and discussed. All agreed that a need for commitment to perform processes the right way the first time was in order.</p>
<p>Case 3: Wrong Person Scenario</p> <p>The schedule was especially busy. Two operating rooms in the same are of the OR suite had different orthopedic teams in each room. The RN circulator in OR One sent for the next patient for Surgeon One but made a mistake in the patient's name because she looked at the list of patients for OR Two. The patient scheduled for OR One was to have a total hip arthroplasty; however, the RN selected the name of a patient who was having the same procedure by Surgeon Two in OR Two. When the patient arrived in the OR, another nurse met the patient and proceeded to assist the anesthesia team with the spinal anesthetic procedure. As the patient was about to be draped for the surgery by the team for Surgeon One, the anesthesiologist spoke to the patient and called him by the name of the patient on Surgeon One's list. When the patient did not respond to his name, the nurse explained, "This is Mr. Y," using the actual name of the patient. The anesthesiologist became suspicious because Surgeon One had only one patient left on his list, and his name was Mr. Z. When the mistake was realized, Surgeon One informed Surgeon Two, and Surgeon Two carried out the surgery on his patient in OR One.</p>	<p>Questions that could be explored to help understand the contributing factors for this near miss include the following:</p> <ul style="list-style-type: none"> - What steps in the Universal Protocol and the best practices for hand-off communication were not implemented in this case study? - What environmental controls could be implemented to improve performance in this facility with regard to preventing wrong procedure, wrong patient, and wrong site errors? - How did barriers in communication contribute to this near miss? 	<p>Interactive discussion and sharing of past scenario encounters similar to the case scenario was identified. Participants shared strategies on each step of the case scenario and acknowledged barriers in communication that impact processes. Clarification on the verification process was requested and completed by presenter.</p>

Appendix D (continued)

Education Intervention- Case Study Scenarios, Analysis, and Teaching Strategies

Case Study ¹	Analysis	Strategies/Comment ²
<p>Case 4: Wrong Procedure Scenario</p> <p>A patient from a local long-term care facility was admitted to the hospital. The patient was not competent to give personal consent. A week earlier, the preadmission staff had obtained a consent form for a left arm thrombectomy, but the procedure for this patient had been cancelled. On the patient's second visit to the hospital, the vascular surgeon came to visit the patient and confirm the correct site and procedure with the RN in the OR holding area. The RN asked the surgeon why there was a discrepancy between the consent and the procedure listed on the surgical schedule. Upon investigation, the RN found that the surgeon's office had not faxed the surgeon's new orders for the appropriate procedure to the preadmission area. Because they had not received any new information, the preadmissions staff had assumed the patient was coming back for the same surgery that had been cancelled during the previous week, which was not the case. The RN in the holding area contacted the person who was authorized holder of the patient's health care power of attorney to obtain consent for the correct site and correct procedure.</p>	<p>Questions that could be explored to help understand the contributing factors for this near miss include the following:</p> <ul style="list-style-type: none"> - How could hand-off communication be improved between the physician's office, preadmission staff, and perioperative team? - How could the preadmission staff have intervened to prevent this near miss? 	<p>Hand off communication and verification processes were reviewed and stressed. The forums were acknowledged as being helpful, and the interactive discussions were beneficial to the verification process.</p>

¹ Case scenarios were taken from: American Operating Room Nurses (2006). Safety net: Lessons learned from close calls in the O.R. *AORN Journal*, 84(1), s1-s29.

² As report by the experienced certified O.R. nurse presenter

Appendix E

QUALITY PERFORMANCE IMPROVEMENT ANALYSIS DATA COLLECTION TOOL

Department: Surgical Services Other Departments Involved: Pre-Op/OPS/Holding/ORHospital Wide Function: Patient Safety Goals Key Process: Clinical Quality Technical Quality Service QualityImportant Aspect of Performance: (indicator): % compliance appropriate procedure is followed in verifying correct procedure and operative site.Timeframe of Study: Original Study Followup StudyTotal Number of Cases in Study: 240 (denominator)

Criteria:	Y/N/NA	% Post-Intervention Compliance	% Pre-Intervention Study	Threshold (% or #)
1. Name of surgical procedure recorded (per consent/order)				100%
2. Site side (right vs. left) listed if indicated.				100%
Pre-op Nurse		Pre-op RN=	Pre-op RN=	
1. Name verbalized by pt/compared w/chart.				100%
2. Bday, verbalized by pt/compared w/chart				100%
3. ID band compared with chart.				100%
4. Pt, parent, or designee (verified proc, site & laterality)				100%
5. Surgical consent (verified w/pt as to proc, site & laterality)				100%
6. Planned proc on H&P or surgical consult or surgical prog note.				100%
7. Surgeon's order (when present).				100%
Outpatient RN		Outpatient RN=	Outpatient RN=	
1. Name verbalized by pt/compared w/chart				100%
2. Bday, verbalized by pt/compared w/chart				100%
3. ID band compared with chart.				100%
4. Pt. Parent, Or "designee" (verified proc, site & laterality)				100%
5. Surgical consent (verified as to proc, site & laterality)				100%
6. Planned proc on H&P or surgical consult or surgical prog note.				100%
7. Surgeon's order (when present).				100%
8. Surgical consent form signed by surgeon				100%
9. H&P for OPS is completed w/in 30 days of procedure.				100%
10. Pre-op progress note written or H&P updated on day of proc				100%
11. Laterality site marked "YES"; spinal surgery marked w/level (if app)				100%
Holding RN		Holding RN=	Holding RN=	
1. Name verbalized by pt/compared w/chart.				100%
2. Bday, verbalized by pt/compared w/chart				100%
3. ID band compared with chart				100%
4. Pt, Parent, or designee (verified proc, site & laterality)				100%
5. Surgical consent (verified w/pt as to proc, site & laterality)				100%
6. Planned proc on H&P or surgical consult or surgical prog note.				100%
7. Surgeon's order (when present)				100%
8. Surgical consent form signed by surgeon				100%
9. H&P for OPS is completed w/in 30 days of procedure.				100%
10. Pre-op progress note written or H&P updated on day of proc.				100%
11. Chart documents pre-op abx given & time given.				100%
12. Laterality site marked "YES", spinal surgery marked w/level (if app)				100%
Circulator RN		Circular RN=	Circulator RN=	
1. Name verbalized by pt/compared w/chart.				100%
2. Bday, verbalized by pt/compared w/chart.				100%
3. ID band compared with chart.				100%
4. Pt, parent, or designee (verified proc, site & laterality)				100%
5. Surgical consent (verified w/pt as to proc, site & laterality)				100%
6. Planned proc on H&P or surgical consult or surgical prog note.				100%
7. Surgeon's order (when present).				100%
8. Surgical consent form signed by surgeon.				100%
9. Chart documents pre-op abx given & time given.				100%

Appendix E (continued)

10. Availability of app docs (imaging studies, PACs, other x-ray film)				100%
11. Laterality site marked "YES", spinal surgery marked w/level (if app)				100%
12. Surgeon initialed site - for applicable procedures				100%
13. Correct patient.				100%
14. Correct procedure.				100%
15. Correct site, side, or level (NA - not applicable)				100%
16. Correct patient position				100%
17. Special equipment available, if applicable.				100%
18. Required implants available, if applicable				100%
19. Time-out occurred at (military time)				100%
Signatures		Sign=	Sign=	
1. Pre-op interview RN signature present.				100%
2. Outpt Surgery RN signature present.				100%
3. Holding RN signature present.				100%
4. Circulator RN signature present.				100%
5 signature present.				100%
Total Overall Compliance: Post-Intervention _____% Pre-Intervention: _____% Expected Compliance: 100%				

Adapted with permission from Flagler Hospital Inc.

Quality Assurance Matrix

Department:	Operating Room																		Retrospective/Post Education Chart Audit Tool		
Indicator to Monitor:	Monitoring of Active, Formal Surgical Markings & Time-Outs																				
Time Frame:																					
Date of Review:																					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	U	Yes	No	N/A		
1. All cases involving rt/lt distinction, multiple structures, lesions, or levels as in spinal procedures were marked.																					
2. Surgical site was marked correctly, i.e. with a "yes" or if for spinal cases the level and number (e.g. L-4)																					
3. Surgeon initialed operative site if laterally involved, or multiple structures, lesions, or spinal levels.																					
4. The Circulator Nurse called a Time-Out.																					
a) Circulator asked: doctor what procedure are we doing today and whom are we operating on?																					
b) Circulator did not ask question.																					
5. All surgical team members stopped what they were doing to give their undivided attention during the time-out.																					
6. All surgical team members were present during time-out.																					
7. The Surgeon verbalized the following:																					
a) patient's name																					
b) procedure(s)																					
c) surgical side(s)/site(s) (as applicable)																					
d) availability of correct implants																					
e) availability of spec equipment or spec requirements																					
f) availability of appropriate documents/x-ray films.																					
g) the correct patient position																					
8. Surgical team members actively agree before proceeding.																					

Appendix F (continued)
Quality Assurance Matrix

Department:	Operating Room																			
Indicator to Monitor:	% compliance appropriate procedure is followed in verifying correct procedure & operative site																			
Time Frame:																				
Date of Review:																				
Criteria:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Yes	No	N/A	%	
1. Name of surgical proc recorded (per consent/order)																				
2. Site side (right vs left) listed if indicated																				
Pre-op RN completed/addressed all entries																				
1. Name verbalized by pt/compared w/chart																				
2. Bday, verbalized by pt/compared w/chart																				
3. ID band compared with chart																				
4. Pt, parent, or designee (verified proc, site & lat)																				
5. Surgical consent (verified w/pt as to proc,site & lat)																				
6. Planned proc on H&P or Surgical Consult or Surgical Progress Note																				
7. Surgeon's order (when present)																				
Outpt RN completed/addressed all entries																				
1. Name verbalized by pt/compared w/chart																				
2. Bday, verbalized by pt/compared w/chart																				
3. ID band compared with chart																				
4. Pt, parent, or designee (verified proc, site & lat)																				
5. Surgical consent (verified w/pt as to proc, site & lat)																				
6. Planned proc on H&P or Surgical Consult or Surgical Progress Note																				
7. Surgeon's order (when present)																				
8. Surgical consent form signed by surgeon																				
9. H&P for OPS is competed w/in 30days of proc																				
10. Pre-op progress note written or H&P updated on day of procedure																				
11. Laterality site marked "Yes", spinal surgery marked w/level (if applicable)																				

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Circulator RN completed/addressed all entries (continued)																			
15. Correct site, side, or level (NA=non applicable)																			
16. Correct patient position																			
17. Special equip avail, if appl (NA=non appl)																			
18. Required implants avail, if appl (NA=non appl)																			
19. Time-out occurred at (Military Time)																			
Signatures																			
1. Pre-op Interview RN signature present																			
2. Outpt Surgery RN signature present																			
3. Holding RN signature present																			
4. Circulator RN signature present																			

Appendix G

Independent Sample Test on Participant Knowledge

		Levene's Test for Equality of Variances		t-Test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
Subj.									Lower	Upper
A1	Equal variances assumed	.750	.398	-.447	18	.660	-.100	.224	-.570	.370
	Equal variances not assumed			-.447	17.920	.660	-.100	.224	-.570	.370
A2	Equal variances assumed	16.000	.001	1.500	18	.151	.200	.133	-.080	.480
	Equal variances not assumed			1.500	9.000	.168	.200	.133	-.102	.502
A3	Equal variances assumed	5.063	.037	1.406	18	.177	.300	.213	-.148	.748
	Equal variances not assumed			1.406	17.173	.178	.300	.213	-.150	.750
A4	Equal variances assumed	5.063	.037	1.406	18	.177	.300	.213	-.148	.748
	Equal variances not assumed			1.406	17.173	.178	.300	.213	-.150	.750
A5	Equal variances assumed	5.684	.028	1.095	18	.288	.200	.183	-.184	.584
	Equal variances not assumed			1.095	15.517	.290	.200	.183	-.188	.588
A6	Equal variances assumed	16.000	.001	2.058	18	.054	.400	.194	-.008	.808
	Equal variances not assumed			2.058	14.737	.058	.400	.194	-.015	.815
A7	Equal variances assumed	216.000	.000	2.449	18	.025	.400	.163	.057	.743
	Equal variances not assumed			2.449	9.000	.037	.400	.163	.031	.769
A8	Equal variances assumed	47.250	.000	1.964	18	.065	.300	.153	-.021	.621
	Equal variances not assumed			1.964	9.000	.081	.300	.153	-.046	.646
A9	Equal variances assumed	5.684	.028	3.286	18	.004	.600	.183	.216	.984
	Equal variances not assumed			3.286	15.517	.005	.600	.183	.212	.988

Appendix G (continued)

Independent Sample Test on Participant Knowledge

		Levene's Test for Equality of Variances		t-Test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
Subj.									Lower	Upper
N1	Equal variances assumed	216.000	.000	3.674	18	.002	.600	.163	.257	.943
	Equal variances not assumed			3.674	9.000	.005	.600	.163	.231	.969
N2	Equal variances assumed	3.429	.081	1.897	18	.074	.400	.211	-.043	.843
	Equal variances not assumed			1.897	17.308	.075	.400	.211	-.044	.844
N3	Equal variances assumed	216.000	.000	2.449	18	.025	.400	.163	.057	.743
	Equal variances not assumed			2.449	9.000	.037	.400	.163	.031	.769
N4	Equal variances assumed	16.000	.001	1.500	18	.151	.200	.133	-.080	.480
	Equal variances not assumed			1.500	9.000	.168	.200	.133	-.102	.502
N5	Equal variances assumed	16.000	.001	1.500	18	.151	.200	.133	-.080	.480
	Equal variances not assumed			1.500	9.000	.168	.200	.133	-.102	.502
N6	Equal variances assumed	47.250	.000	1.964	18	.065	.300	.153	-.021	.621
	Equal variances not assumed			1.964	9.000	.081	.300	.153	-.046	.646
N7	Equal variances assumed	216.000	.000	3.674	18	.002	.600	.163	.257	.943
	Equal variances not assumed			3.674	9.000	.005	.600	.163	.231	.969
N8	Equal variances assumed	216.000	.000	3.674	18	.002	.600	.163	.257	.943
	Equal variances not assumed			3.674	9.000	.005	.600	.163	.231	.969
N9	Equal variances assumed	216.000	.000	3.674	18	.002	.600	.163	.257	.943
	Equal variances not assumed			3.674	9.000	.005	.600	.163	.231	.969

Appendix G (continued)

Independent Sample Test on Participant Knowledge

Subj.		Levene's Test for Equality of Variances		t-Test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
N10	Equal variances assumed			3.000	18	.008	.500	.167	.150	.850
	Equal variances not assumed			3.000	9.000	.015	.500	.167	.123	.877
N11	Equal variances assumed	5.063	.037	1.000	18	.331	.100	.100	-.110	.310
	Equal variances not assumed			1.000	9.000	.343	.100	.100	-.126	.326
N12	Equal variances assumed	47.250	.000	1.964	18	.065	.300	.153	-.021	.621
	Equal variances not assumed			1.964	9.000	.081	.300	.153	-.046	.646
N13	Equal variances assumed	216.000	.000	2.449	18	.025	.400	.163	.057	.743
	Equal variances not assumed			2.449	9.000	.037	.400	.163	.031	.769
N14	Equal variances assumed	5.684	.028	1.095	18	.288	.200	.183	-.184	.584
	Equal variances not assumed			1.05	15.517	.290	.200	.183	-.188	.588
N15	Equal variances assumed	47.250	.000	1.964	18	.065	.300	.153	-.021	.621
	Equal variances not assumed			1.964	9.000	.081	.300	.153	-.046	.646
N16	Equal variances assumed	47.250	.000	1.964	18	.065	.300	.153	-.021	.621
	Equal variances not assumed			1.964	9.000	.081	.300	.153	-.046	.646
N17	Equal variances assumed	5.684	.028	1.095	18	.288	.200	.183	-.184	.584
	Equal variances not assumed			1.095	15.517	.290	.200	.183	-.188	.588
N18	Equal variances assumed	47.250	.000	1.964	18	.065	.300	.153	-.021	.621
	Equal variances not assumed			1.964	9.000	.081	.300	.153	-.046	.646

Appendix G (continued)

Independent Sample Test on Participant Knowledge

Subj.		Levene's Test for Equality of Variances		t-Test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
N19	Equal variances assumed									
	Equal variances not assumed									
N20	Equal variances assumed	5.063	.037	1.000	18	.331	.100	.100	-.110	.310
	Equal variances not assumed			1.000	9.000	.343	.100	.100	-.126	.326
N21	Equal variances assumed	16.000	.001	1.500	18	.151	.200	.133	-.080	.480
	Equal variances not assumed			1.500	9.000	.168	.200	.133	-.102	.502
N22	Equal variances assumed	47.250	.000	1.964	18	.065	.300	.153	-.021	.621
	Equal variances not assumed			1.964	9.000	.081	.300	.153	-.046	.646
N23	Equal variances assumed	5.684	.028	1.095	18	.288	.200	.183	-.184	.584
	Equal variances not assumed			1.095	15.517	.290	.200	.183	-.188	.588
N24	Equal variances assumed	5.684	.028	1.095	18	.288	.200	.183	-.184	.584
	Equal variances not assumed			1.095	15.517	.290	.200	.183	-.188	.588
N25	Equal variances assumed	16.000	.001	1.500	18	.151	.200	.133	-.080	.480
	Equal variances not assumed			1.500	9.000	.168	.200	.133	-.102	.502
N26	Equal variances assumed	47.250	.000	1.964	18	.065	.300	.153	-.021	.621
	Equal variances not assumed			1.964	9.000	.081	.300	.153	-.046	.646
N27	Equal variances assumed	.000	1.000	.000	18	1.000	.000	.189	-.396	.396
	Equal variances not assumed			.000	18.000	1.000	.000	.189	-.396	.396

Appendix G (continued)

Independent Sample Test on Participant Knowledge

Subj.		Levene's Test for Equality of Variances		t-Test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
N28	Equal variances assumed	5.063	.037	1.000	18	.331	.100	.100	-.110	.310
	Equal variances not assumed			1.000	9.000	.343	.100	.100	-.126	.326
N29	Equal variances assumed	47.250	.000	1.964	18	.065	.300	.153	-.021	.621
	Equal variances not assumed			1.964	.000	.081	.300	.153	-.046	.646
N30	Equal variances assumed	47.250	.000	1.964	18	.065	.300	.153	-.021	.621
	Equal variances not assumed			1.964	9.000	.081	.300	.153	-.046	.646
N31	Equal variances assumed	47.250	.000	1.964	18	.065	.300	.153	-.021	.621
	Equal variances not assumed			1.964	9.000	.081	.300	.153	-.046	.646
N32	Equal variances assumed	16.000	.001	1.500	18	.151	.200	.133	-.080	.480
	Equal variances not assumed			1.500	9.000	.168	.200	.133	-.102	.502
N33	Equal variances assumed	16.000	.001	1.500	18	.151	.200	.133	-.080	.480
	Equal variances not assumed			1.500	9.000	.168	.200	.133	-.102	.502
N34	Equal variances assumed	16.000	.001	1.500	18	.151	.200	.133	-.080	.480
	Equal variances not assumed			1.500	9.000	.168	.200	.133	-.102	.502
N35	Equal variances assumed	.987	.334	-.493	18	.628	-.100	.203	-.526	.326
	Equal variances not assumed			-.493	17.677	.628	-.100	.203	-.527	.327
N36	Equal variances assumed	1.531	.232	.600	18	.556	.100	.167	-.250	.450
	Equal variances not assumed			.600	16.691	.557	.100	.167	-.252	.452

Appendix G (continued)

Independent Sample Test on Participant Knowledge

Subj.		Levene's Test for Equality of Variances		t-Test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
N37	Equal variances assumed	1.531	.232	.600	18	.556	.100	.167	-.250	.450
	Equal variances not assumed			.600	16.691	.557	.100	.167	-.252	.452
N38	Equal variances assumed	1.31	.232	.600	18	.556	.100	.167	-.250	.450
	Equal variances not assumed			.600	16.691	.557	.100	.167	-.252	.452
N39	Equal variances assumed	5.684	.028	1.095	18	.288	.200	.183	-.184	.584
	Equal variances not assumed			1.095	15.517	.290	.200	.183	-.188	.588
N40	Equal variances assumed	16.000	.001	1.500	18	.151	.200	.133	-.080	.480
	Equal variances not assumed			1.500	9.00	.168	.200	.133	-.102	.502
N41	Equal variances assumed	5.684	.028	1.095	18	.288	.200	.183	-.184	.584
	Equal variances not assumed			1.095	15.517	.290	.200	.183	-.188	.588
N42	Equal variances assumed	16.000	.001	1.500	18	.151	.200	.133	-.080	.480
	Equal variances not assumed			1.500	9.000	.168	.200	.133	-.102	.502
N43	Equal variances assumed	16.000	.001	1.500	18	.151	.200	.133	-.080	.480
	Equal variances not assumed			1.500	9.000	.168	.200	.133	-.102	.502
N44	Equal variances assumed	1.531	.232	.600	18	.556	.100	.167	-.250	.450
	Equal variances not assumed			.600	16.691	.557	.100	.167	-.252	.452
N45	Equal variances assumed	16.000	.001	1.500	18	.151	.200	.133	-.080	.480
	Equal variances not assumed			1.500	9.000	.168	.200	.133	-.102	.502

Appendix G (continued)

Independent Sample Test on Participant Knowledge

Subj.		Levene's Test for Equality of Variances		t-Test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
N46	Equal variances assumed	47.250	.000	1.964	18	.065	.300	.153	-.021	.621
	Equal variances not assumed			1.964	9.000	.081	.300	.153	-.046	.646
N47	Equal variances assumed	47.250	.000	1.964	18	.065	.300	.153	-.021	.621
	Equal variances not assumed			1.964	9.000	.081	.300	.153	-.046	.646
N48	Equal variances assumed	16.000	.001	1.500	18	.151	.200	.133	-.080	.480
	Equal variances not assumed			1.500	9.000	.168	.200	.133	-.102	.502
N49	Equal variances assumed	16.000	.001	1.500	18	.151	.200	.133	-.080	.480
	Equal variances not assumed			1.500	9.000	.168	.200	.133	-.102	.502
N50	Equal variances assumed	12.054	.003	1.567	18	.135	.300	.191	-.102	.702
	Equal variances not assumed			1.567	14.918	.138	.300	.191	-.108	.708
N51	Equal variances assumed	47.250	.000	1.964	18	.065	.300	.153	-.021	.621
	Equal variances not assumed			1.964	9.000	.081	.300	.153	-.046	.646
N52	Equal variances assumed	216.000	.000	2.449	18	.025	.400	.163	.057	.743
	Equal variances not assumed			2.449	9.000	.037	.400	.163	.031	.769
N53	Equal variances assumed	216.000	.000	2.449	18	.025	.400	.163	.057	.743
	Equal variances not assumed			2.449	9.000	.037	.400	.163	.031	.769
N54	Equal variances assumed	216.000	.000	2.449	18	.025	.400	.163	.057	.743
	Equal variances not assumed			2.449	9.000	.037	.400	.163	.031	.769

Appendix G (continued)

Independent Sample Test on Participant Knowledge

Subj.		Levene's Test for Equality of Variances		t-Test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
N55	Equal variances assumed	216.000	.000	2.449	18	.025	.400	.163	.057	.743
	Equal variances not assumed			2.449	9.000	.037	.400	.163	.031	.769
N56	Equal variances assumed	47.250	.000	1.964	18	.065	.300	.153	-.021	.621
	Equal variances not assumed			1.964	.000	.081	.300	.153	-.046	.646
N57	Equal variances assumed	216.000	.000	2.449	18	.025	.400	.163	.057	.743
	Equal variances not assumed			2.449	9.000	.037	.400	.163	.031	.769
N58	Equal variances assumed	216.000	.000	2.449	18	.025	.400	.163	.057	.743
	Equal variances not assumed			2.449	9.000	.037	.400	.163	.031	.769
N59	Equal variances assumed	5.684	.028	1.095	18	.288	.200	.183	-.184	.584
	Equal variances not assumed			1.095	15.517	.290	.200	.183	-.188	.588
N60	Equal variances assumed	1.531	.232	.600	18	.556	.100	.167	-.250	.450
	Equal variances not assumed			.600	16.691	.557	.100	.167	-.252	.452
N61	Equal variances assumed	16.000	.001	1.500	18	.151	.200	.133	-.080	.480
	Equal variances not assumed			1.500	9.000	.168	.200	.133	-.102	.502
N62	Equal variances assumed	16.000	.001	1.500	18	.151	.200	.133	-.080	.480
	Equal variances not assumed			1.500	.000	.168	.200	.133	-.102	.502
N63	Equal variances assumed	216.000	.000	2.449	18	.025	.00	.163	.057	.743
	Equal variances not assumed			.449	9.000	.037	.400	.163	.031	.769

Appendix G (continued)

Independent Sample Test on Participant Knowledge

Subj.		Levene's Test for Equality of Variances		t-Test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
N64	Equal variances assumed	16.000	.001	1.500	18	.151	.200	.133	-.080	.480
	Equal variances not assumed			1.500	9.000	.168	.200	.133	-.102	.502
N65	Equal variances assumed	16.000	.001	1.500	18	.151	.200	.133	-.080	.480
	Equal variances not assumed			1.500	9.000	.168	.200	.133	-.102	.502
N66	Equal variances assumed	47.250	.000	1.964	18	.065	.300	.153	-.021	.621
	Equal variances not assumed			1.964	9.000	.081	.300	.153	-.046	.646
N67	Equal variances assumed	47.250	.000	1.964	18	.065	.300	.153	-.021	.621
	Equal variances not assumed			1.964	9.000	.081	.300	.153	-.046	.646
N68	Equal variances assumed	216.000	.000	2.449	18	.025	.400	.163	.057	.743
	Equal variances not assumed			2.449	9.000	.037	.400	.163	.031	.769
N69	Equal variances assumed	216.000	.000	2.449	18	.025	.400	.163	.057	.743
	Equal variances not assumed			2.449	9.000	.037	.400	.163	.031	.769
S1	Equal variances assumed	216.000	.000	2.449	18	.025	.400	.163	.057	.743
	Equal variances not assumed			1.449	9.000	.037	.400	.163	.031	.769
S2	Equal variances assumed	12.054	.003	2.611	18	.018	.500	.191	.098	.902
	Equal variances not assumed			2.611	14.918	.020	.500	.191	.092	.908
S3	Equal variances assumed	1.531	.232	.600	18	.556	.100	.167	-.250	.450
	Equal variances not assumed			.600	16.691	.557	.100	.167	-.252	.452

Appendix G (continued)

Independent Sample Test on Participant Knowledge

Subj.		Levene's Test for Equality of Variances		t-Test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
S4	Equal variances assumed	47.250	.000	1.964	18	.065	.300	.153	-.021	.621
	Equal variances not assumed			1.964	9.000	.081	.300	.153	-.046	.646
S5	Equal variances assumed	12.054	.003	1.567	18	.135	.300	.191	-.102	.702
	Equal variances not assumed			1.567	14.918	.13	.300	.191	-.108	.708
S6	Equal variances assumed	16.000	.001	1.500	18	.151	.200	.133	-.080	.480
	Equal variances not assumed			1.500	9.000	.168	.200	.133	-.102	.502
S7	Equal variances assumed	.987	.334	.493	18	.628	.100	.203	-.326	.526
	Equal variances not assumed			.493	17.677	.628	.100	.203	-.327	.527
S8	Equal variances assumed	216.000	.000	2.449	18	.025	.400	.163	.057	.743
	Equal variances not assumed			2.449	9.000	.037	.400	.163	.031	.769
S9	Equal variances assumed	16.000	.001	1.500	18	.151	.200	.133	-.080	.480
	Equal variances not assumed			1.500	9.000	.168	.200	.133	-.102	.502
S10	Equal variances assumed	16.000	.001	1.500	18	.151	.200	.133	-.080	.480
	Equal variances not assumed			1.500	9.000	.168	.200	.133	-.102	.502
S11	Equal variances assumed	12.054	.003	1.567	18	.135	.300	.191	-.102	.702
	Equal variances not assumed			1.567	14.918	.138	.300	.191	-.108	.708
S12	Equal variances assumed	216.000	.000	2.449	18	.025	.400	.163	.057	.743
	Equal variances not assumed			2.449	9.000	.037	.400	.163	.031	.769

Appendix G (continued)

Independent Sample Test on Participant Knowledge

Subj.		Levene's Test for Equality of Variances		t-Test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
S13	Equal variances assumed	5.063	.037	-1.000	18	.331	-.100	.100	-.310	.110
	Equal variances not assumed			-1.000	9.000	.343	-.100	.100	-.326	.126
S14	Equal variances assumed	5.063	.037	1.406	18	.177	.300	.23	-.148	.748
	Equal variances not assumed			1.406	17.173	.17	.300	.213	-.150	.750
S15	Equal variances assumed	.750	.38	.447	18	.660	.100	.224	-.370	.570
	Equal variances not assumed			.447	17.920	.660	.100	.224	-.370	.570
S16	Equal variances assumed	47.250	.000	1.964	18	.065	.300	.153	-.021	.621
	Equal variances not assumed			1.964	9.000	.081	.300	.153	-.046	.646
S17	Equal variances assumed	12.054	.003	2.611	18	.018	.500	.191	.098	.902
	Equal variances not assumed			2.611	14.918	.020	.500	.191	.092	.908
S18	Equal variances assumed	3.29	.081	1.897	18	.074	.400	.211	-.043	.843
	Equal variances not assumed			1.897	17.308	.075	.400	.211	-.044	.844
S19	Equal variances assumed	216.000	.000	2.449	18	.025	.400	.163	.057	.743
	Equal variances not assumed			2.449	9.000	.037	.400	.163	.031	.769

Appendix H

Paired Knowledge Sample Tests

Paired Knowledge Samples Test for Nurses

Paired Knowledge Samples Test for Nurses					95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
Pre-Post-	Mean	Std. Deviation	Std. Error Mean	Lower	Upper				
Pair 1	q1-q11	.443	.500	.060	.324	.562	7.406	69	.000
Pair 2	q2-q12	.057	.234	.028	.001	.113	2.045	69	.045
Pair 3	q3-q13	.700	.462	.055	.590	.810	12.689	69	.000
Pair 4	q4-q14	.257	.472	.056	.145	.370	4.558	69	.000
Pair 5	q5-q15	.043	.204	.024	-.006	.091	1.758	69	.083
Pair 6	q6-q16	.543	.530	.063	.417	.669	8.572	69	.000
Pair 7	q7-q17	.371	.487	.058	.255	.487	6.385	69	.000
Pair 8	q8-q18	.100	.302	.036	.028	.172	2.769	69	.007
Pair 9	q9-q19	.114	.320	.038	.038	.191	2.984	69	.004
Pair 10	q10-q20	.071	.259	.031	.010	.133	2.304	69	.024

Paired Knowledge Sample Test for Anesthesiologists

Paired Knowledge Samples Test for Anesthesiologists					95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
Pre- Post-	Mean	Std. Deviation	Std. Error Mean	Lower	Upper				
Pair 1	q1-q11	.250	.707	.250	-.341	.841	1.000	7	.351
Pair 2	q2-q12	.250	.707	.250	-.41	.841	1.000	7	.351
Pair 3	q3-q13	.625	.518	.183	.192	1.058	3.416	7	.011
Pair 4	q4-q14	.125	.354	.125	-.171	.421	1.000	7	.351
Pair 5	q5-q15	.000	.535	.189	-.447	.447	.000	7	1.000
Pair 6	q6-q16	.500	.535	.189	.053	.947	2.646	7	.033
Pair 7	q7-q17	.375	.744	.263	-.247	.997	1.426	7	.197
Pair 10	q10-q20	.375	.518	.183	-.058	.808	2.049	7	.080

Paired Knowledge Sample Test for Physicians

Paired Knowledge Samples Test for Physicians					95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
Pre-Post-	Mean	Std. Deviation	Std. Error Mean	Lower	Upper				
Pair 1	q1-q11	.158	.602	.138	-.132	.448	1.143	18	.268
Pair 2	q2-q12	.263	.653	.150	-.052	.578	1.756	18	.096
Pair 3	q3-q13	.421	.607	.139	.128	.714	3.024	18	.007
Pair 4	q4-q14	.105	.315	.072	-.047	.257	1.455	18	.163
Pair 5	q5-q15	.053	.229	.053	-.058	.163	1.000	18	.331
Pair 6	q6-q16	.579	.507	.116	.334	.823	4.975	18	.000
Pair 7	q7-q17	.579	.507	.116	.334	.823	4.975	18	.000
Pair 8	q8-q18	.263	.452	.104	.045	.481	2.535	18	.021
Pair 9	q9-q19	.316	.478	.110	.086	.546	2.882	18	.010
Pair 10	q10-q20	.053	.229	.053	-.058	.163	1.000	18	.331

Appendix H (continued)

Overall Paired Differences on Knowledge

Overall Paired Differences on Knowledge									
	Pre-Post-	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
					Lower	Upper			
Pair 1	q1-q11	.371	.546	.055	.261	.481	6.692	96	.000
Pair 2	q2-q12	.113	.405	.041	.032	.195	2.757	96	.007
Pair 3	q3-q13	.639	.504	.051	.53	.741	12.494	96	.000
Pair 4	q4-q14	.216	.438	.045	.128	.305	4.863	96	.000
Pair 5	q5-q15	.041	.247	.025	-.008	.091	1.647	96	.103
Pair 6	q6-q16	.546	.521	.053	.441	.651	10.332	96	.000
Pair 7	q7-q17	.412	.515	.052	.308	.516	7.879	96	.000
Pair 8	q8-q18	.124	.331	.034	.057	.190	3.681	96	.000
Pair 9	q9-q19	.144	.353	.036	.073	.216	4.024	96	.000
Pair 10	q10-q20	.093	.292	.030	.034	.152	3.133	96	.002

Appendix I

QUALITY PERFORMANCE IMPROVEMENT ANALYSIS**Site Marking, Formal Time-Outs – Pre- and Post-Intervention**Department: OPERATING ROOM

Other Departments Involved:

SURGEONSHospital Wide Function: Continuum of CareKey Process: Continuum of Care Clinical Quality Technical Quality Service QualityImportant Aspect of Performance (Indicator): % compliance that during pre- and post-intervention monitoring, active, surgical sites are being marked and formal time-outs are being conducted.Timeframe of Study: Post-intervention 3 month Retro July-Sept 08 Original Study Followup Study

Total Number of Cases in Study: 240 (denominator)

Criteria:	Y/N/NA	%Post-Intervention			%Pre-Intervention Study		Threshold (% or #)
		1 st month	2 nd month	3 rd month	Y/N/NA		
1. All cases involving rt/lr distinction, multiple structures, lesions, or levels as in spinal procedures were marked.	156/0/84	100	100	100	240/0/0	100%	100%
2. Surgical site was marked correctly, i.e. with a "yes" or if for spinal cases the level and number (e.g. L-4).	146/2/92	98	98	100	1/239/0	.50%	100%
3. Surgeon initialed operative site if laterality involved, or multiple structures, lesions, or spinal levels.	153/2/85	96.6	100	100	134/90/10	59.8%	100%
4. The Circulator nurse called a Time-out.	215/0/25	100	100	100	200/20/20	90.9%	100%
a) Circulator asked: doctor what procedure are we doing today and whom are we operating on?	236/4/0	100	95	100	200/20/20	90.9%	100%
b) Circulator did not ask question	223/5/0	98	96	100	192/48/0	80%	100%
5. All surgical team members stopped what they were doing to give their undivided attention during the time-out.	236/4/0	98.8	97.5	100	216/24/0	90%	100%
6. All surgical team members were present during time-out.	237/3/0	98.8	97.5	100	216/24/0	90%	100%
7. The surgeon verbalized the following:							
a) patient name	240/0/0	100	100	100	200/20/20	90.4%	100%
b) procedure(s)	240/0/0	100	100	100	200/20/20	98%	100%
c) surgical side(s)/site(s) (as applicable)	240/0/0	100	100	100	240/0/0	94%	100%
d) availability of correct implants	228/ 2/10	97.1	100	100	240/0/0	93%	100%
e) availability of spec equipment or spec requirements	237/4/0	95	100	100	30/116/94	93%	100%
f) availability of appropriate documents/x-ray films	236/4/0	95	100	100	60/130/50	394%	100%
g) the correct patient position	236/4/0	100	95	100	150/90/0	93%	100%
8. Surgical team members actively agree before proceeding.	239/1/0	98	100	100	170/70/0	70.8%	100%
Total Overall Compliance: Post-Intervention: 1st 98.4% 2nd 98.6% 3rd 100% Pre-Intervention: 76.8%							
Expected Compliance: 100%							

Evaluation of Findings of Study: (Pre-intervention Conclusions)

#2-24 cases surgical consent was not signed by surgeon prior to the procedure – 3 different MDs.

#4-26 discrepancies – ORIF vs closed reduction; umbilical hernia with mesh vs umbilical hernia.

#6-1 spinal case not correctly marked – although cervical neck was marked as "yes" and initialed by the surgeon, it was not marked correctly as per policy as to Level C-5-6-7. Surgical consent also was ambiguous as it read "cervical5/6/7/1" – was the "1" the cervix or the first part of the thorax.

#7-90 laterality procedures were not initialed by the surgeon – this was an orthopedic case where the surgeon was very inappropriate to the QA reviewer.

#8-20 cases were deemed N/A because the surgeon called a time-out – not the circulator. However, another 2 cases: 1) the circulator did not actively call a time-out for an EGD. GI MD had his back to the room and with the circulator mumbled pt name. This is not a time-out! 2) 2nd case surgeon entered a room and loudly announced patient name and procedure without giving the circulator an opportunity to call a time-out. The scrub tech was not in the room at the time of this "announcement"; also the surgeon never went through all the other elements of a formal time out.

#9d-e-f-g-surgeons are not routinely verbalizing ALL elements of the time-out other than name-procedure-side/site. Example- Even if a case does not have an implant, the surgeon should verbalize that no implants are necessary or that no special equipment is necessary.

#10-70 cases were noted where the team was not actively involved in the time-out – team members were distracted doing other tasks, inattentive. Frequently it was noted that anesthesia was not paying attention.

Appendix J

QUALITY PERFORMANCE IMPROVEMENT ANALYSIS DATA COLLECTION TOOL
Percentile Documentation - Verification of Correct Procedure and Operative Site

Department: Surgical Services Other Departments Involved: Pre-Op/OPS/Holding/OR

Hospital Wide Function: Patient Safety Goals Key Process:

Clinical Quality Technical Quality Service Quality

Important Aspect of Performance: (indicator): _____ % compliance appropriate procedure is followed in verifying correct procedure and operative site.

Timeframe of Study: Post-intervention 3 months Retro July-Sept 08 Original Study Followup Study

Total Number of Cases in Study: 240 (denominator)

Criteria:	Y/N/NA	% Post-intervention Compliance			% Pre-intervention Study		Threshold (% or #)
		1st	2nd	3rd	Y/N/NA		
1. Name of surgical procedure recorded (per consent/order)	227/8/5	91%	97%	96.5%	184/56/0	77%	100%
2. Site side (right vs. left) listed if indicated.	134/5/101	92%	98%	96.4%	173/67/0	72%	100%
Pre-op Nurse		91.5%	97.5%	96.5%	Pre-op RN=75%		
1. Name verbalized by pt/compared w/chart.	207/13/30	91%	94%	94%	204/31/5	87%	100%
2. Bday, verbalized by pt/compared w/chart	197/13/30	91%	94%	94%	204/31/5	85%	100%
3. ID band compared with chart.	187/23/30	91%	94%	89%	204/31/5	85%	100%
4. Pt. parent, or designee (verified proc, site & laterality)	197/13/30	91%	94%	94%	196/6/38	82%	100%
5. Surgical consent (verified w/pt as to proc, site & laterality)	197/13/30	91%	94%	94%	189/45/6	79%	100%
6. Planned proc on H&P or surgical consult or surgical prog note.	195/15/30	88%	94%	93%	189/45/6	79%	100%
7. Surgeon's order (when present).	196/14/30	90%	94%	93%	189/45/6	79%	100%
Outpatient RN		90.4%	94%	93%	Outpatient RN=82.3%		
1. Name verbalized by pt/compared w/chart	214/6/20	95%	95%	97.3%	230/2/8	96%	100%
2. Bday, verbalized by pt/compared w/chart	214/6/20	95%	95%	97.3%	230/2/8	96%	100%
3. ID band compared with chart.	214/6/20	95%	95%	97.3%	230/12/8	96%	100%
4. Pt. Parent, Or "designee" (verified proc, site & laterality)	214/6/20	95%	95%	97.3%	230/12/8	96%	100%
5. Surgical consent (verified as to proc, site & laterality)	274/6/20	95%	95%	97.3%	230/12/8	96%	100%
6. Planned proc on H&P or surgical consult or surgical prog note.	214/6/20	95%	95%	97.3%	226/6/8	94%	100%
7. Surgeon's order (when present).	214/6/20	95%	95%	97.3%	220/12/8	92%	100%
8. Surgical consent form signed by surgeon	214/6/20	95%	95%	97.3%	220/12/8	92%	100%
9. H&P for OPS is completed w/in 30 days of procedure.	214/6/20	95%	95%	97.3%	226/6/8	94%	100%
10. Pre-op progress note written or H&P updated on day of proc	214/8/18	94%	95%	96.4%	220/12/8	92%	100%
11. Laterality site marked "YES"; spinal surgery marked w/level (if app)	213/7/20	94%	95%	96.8%	230/12/8	96%	100%
Holding RN		95%	95%	97.2%	Holding RN=94.5%		
1. Name verbalized by pt/compared w/chart.	218/10/12	92%	95%	95.6%	218/20/2	91%	100%
2. Bday, verbalized by pt/compared w/chart	218/10/12	92%	95%	95.6%	218/20/2	91%	100%
3. ID band compared with chart	218/10/12	92%	95%	95.6%	218/20/2	91%	100%
4. Pt, Parent, or designee (verified proc, site & laterality)	218/10/12	92%	95%	95.6%	221/17/2	92%	100%
5. Surgical consent (verified w/pt as to proc, site & laterality)	218/10/12	92%	95%	95.6%	221/17/2	92%	100%
6. Planned proc on H&P or surgical consult or surgical prog note.	218/10/12	92%	95%	95.6%	209/29/2	87%	100%
7. Surgeon's order (when present)	218/10/12	92%	95%	95.6%	218/20/2	91%	100%
8. Surgical consent form signed by surgeon	218/10/12	91%	95%	95.6%	221/17/2	87%	100%
9. H&P for OPS is completed w/in 30 days of procedure.	218/10/12	91%	95%	95.6%	221/17/2	87%	100%
10. Pre-op progress note written or H&P updated on day of proc.	213/15/12	90%	90%	93.4%	221/17/2	87%	100%
11. Chart documents pre-op abx given & time given.	211/17/12	87%	95%	93.4%	216/22/2	90%	100%
12. Laterality site marked "YES", spinal surgery marked w/level (if app)	211/17/12	87%	95%	93.4%	218/20/2	91%	100%
Circulator RN		90.8%	94%	95.1%	Circulator RN=89.8%		
1. Name verbalized by pt/compared w/chart.	237/3/0	98%	99%	98.7%	226/14/0	94%	100%
2. Bday, verbalized by pt/compared w/chart.	237/3/0	98%	99%	98.7%	226/14/0	94%	100%
3. ID band compared with chart.	237/3/0	98%	99%	98.7%	226/14/0	94%	100%
4. Pt, parent, or designee (verified proc, site & laterality)	237/3/0	98%	99%	98.7%	226/14/0	94%	100%

Appendix J (continued)

Criteria:	Y/N/NA	% Post-intervention Compliance			% Pre-intervention Study		Threshold (% or #)
		1st	2nd	3rd	Y/N/NA		
5. Surgical consent (verified w/pt as to proc, site & laterality)	237/3/0	98%	99%	98.7%	223/17/0	93%	100%
6. Planned proc on H&P or surgical consult or surgical prog note.	237/3/0	98%	99%	98.7%	226/14/0	94%	100%
7. Surgeon's order (when present).	236/4/0	98%	98%	98.3%	226/14/0	94%	100%
8. Surgical consent form signed by surgeon.	236/4/0	97%	99%	98.3%	223/17/0	93%	100%
9. Chart documents pre-op abx given & time given.	237/3/0	98%	00%	98.3%	226/14/0	94%	100%
10. Availability of app docs (imaging studies, PACs, other x-ray film)	235/5/0	97%	98%	97.9%	226/14/0	94%	100%
11. Laterality site marked "YES", spinal surgery marked w/level (if app)	237/3/0	98%	99%	98.8%	226/14/0	94%	100%
12. Surgeon initialed site - for applicable procedures	236/4/0	97%	99%	98.3%	226/14/0	94%	100%
13. Correct patient.	232/7/1	95%	98%	97.1%	240/0/0	100%	100%
14. Correct procedure.	232/7/1	95%	98%	97.1%	235/5/0	98%	100%
15. Correct site, side, or level (NA - not applicable)	232/7/1	95%	98%	97.1%	226/14/0	94%	100%
16. Correct patient position	232/7/1	95%	98%	97.1%	223/17/0	93%	100%
17. Special equipment available, if applicable.	232/7/1	95%	98%	97.1%	223/17/0	93%	100%
18. Required implants available, if applicable	232/7/1	95%	98%	97.1%	223/17/0	93%	100%
19. Time-out occurred at (military time)	230/9/1	95%	96%	96.2%	223/17/0	93%	100%
Documented in chart		96.7%	98%	97.9%	Sign=94.2%		
1. Pre-op interview RN signature present.	200/10/30	95%	94%	95.2%	204/36/0	85%	100%
2. Outpt Surgery RN signature present.	214/6/20	94%	99%	97.3%	216/24/0	90%	100%
3. Holding RN signature present.	213/15/12	90%	95%	93.4%	204/13/0	85%	100%
4. Circulator RN signature present.	235/5/0	98%	97%	99.6%	221/19/0	92%	100%
5 Signatures	215/9/16	94.3%	96.3%	96%	101/139/0	88%	100%
Total Overall Compliance: Post-Intervention: 1st 93%; 2nd 96%; 3rd 96% Pre-Intervention: 85.7%							
Expected Compliance: 100%							

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Appendix K

Overall Site Marking, Verification, and Time-Out Results

Overall Site Marking and Time-out Documentation: Summary of Pre- and Post-Intervention Effectiveness

	Pre	Post	X ²	Total
Compliance (yes)	185	235		420
Non-compliance (no)	55	5		60
Total Charts	240	240	45.733	480

Note: X² needs to be ≥ 3.84 to be significant at the $p < 0.05$ level. Therefore, this value is significant.

Overall Verification of Correct Procedure and Operative Site

	Pre	Post	X ²	Total
Compliance (yes)	205	228		433
Non-compliance (no)	35	12		47
Total Charts	240	240	11.416	480

Note: X² needs to be ≥ 3.84 to be significant at the $p < 0.05$ level. Therefore, this value is significant.

Appendix L

Essential Items of the Time-Out Brief



Essential Items of the Time-out Brief

- Patient
- Procedure
- Site, side or level
- Patient position
- Special equipment
- Implants available
- DVT, H&P, Antibiotics
- Solicit concerns
- Log Time

*To be completed by the person in charge
(i.e. surgeon) immediately before procedure.*

Appendix M-1

Permission to Use Copyrighted Questionnaire Tool

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Page 1 of 5

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Appendix M-2

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Appendix M-3

February 6, 2008

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President
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Columbia, MD 21045

Ms. Brenda Kingdon
Flagler Hospital
400 Health Park Blvd.
St. Augustine, FL 32086

Ms. Kingdon,

As per your request in the usage of Apollo's material for your doctoral program, I am responding in the affirmative with some background information. Please utilize the material, as you deem appropriate, while simultaneously keeping Apollo in the loop with your papers. The program is founded in NASA Human Factor principles and represents curricula used in the airline industry and military aviation. It was mandated by the Federal Aviation Administration (FAA) as required training for all flight crews and is still taught today.

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Peter DeNucci

Appendix M-4

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Title: Effects of nurse-physician collaboration on patient safety

Edition: N/A

Publisher: N/A

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Appendix N

University of North Florida IRB



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MEMORANDUM

DATE: September 30, 2008

TO: Brenda Kingdon

VIA: Dr. John McDonough
Nursing

FROM: Dominique Scalia, Research Integrity Coordinator
On Behalf of the UNF Institutional Review Board

RE: Review by the UNF Institutional Review Board IRB#08-132:
"Effects of Nurse-Physician Educational Intervention to Improve Patient
Safety"

This is to advise you that your study, "Effects of Nurse-Physician Educational Intervention to Improve Patient Safety," has been reviewed on behalf of the UNF Institutional Review Board and has been declared exempt from further IRB oversight.

This approval applies to your project in the form and content as submitted to the IRB for review. Any variations or modifications to the approved protocol and/or informed consent forms as they relate to dealing with human subjects must be cleared with the IRB prior to implementing such changes.

Should you have any questions regarding your approval or any other IRB issues, please contact Nicole Sayers, Asst. Director of Research Integrity, at 620-2498 or nsayers@unf.edu.

Thank you.

Appendix O

Local Site IRB

OMB No. 0990-0263
Approved for use through 11/30/2008

Protection of Human Subjects
Assurance Identification/IRB Certification/Declaration of Exemption
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Policy: Research activities involving human subjects may not be conducted or supported by the Departments and Agencies adopting the Common Rule (56FR28003, June 18, 1991) unless the activities are exempt from or approved in accordance with the Common Rule. See section 101(b) of the Common Rule for exemptions. Institutions submitting applications or proposals for support must submit certification of appropriate Institutional Review Board (IRB) review and approval to the Department or Agency in accordance with the Common Rule.

Institutions must have an assurance of compliance that applies to the research to be conducted and should submit certification of IRB review and approval with each application or proposal unless otherwise advised by the Department or Agency.

1. Request Type <input type="checkbox"/> ORIGINAL <input type="checkbox"/> CONTINUATION <input type="checkbox"/> EXEMPTION	2. Type of Mechanism <input type="checkbox"/> GRANT <input type="checkbox"/> CONTRACT <input type="checkbox"/> FELLOWSHIP <input type="checkbox"/> COOPERATIVE AGREEMENT <input type="checkbox"/> OTHER: _____	3. Name of Federal Department or Agency and, if known, Application or Proposal Identification No.
4. Title of Application or Activity Effects of Nurse-Physician Educational Interventions on Patient Safety		5. Name of Principal Investigator, Program Director, Fellow, or Other

6. Assurance Status of this Project (Respond to one of the following)

- This Assurance, on file with Department of Health and Human Services, covers this activity:
Assurance Identification No. FWA 00003766, the expiration date 9-03-09 IRB Registration No. IRB00000781
- This Assurance, on file with (agency/dapt) _____, covers this activity.
Assurance No. _____, the expiration date _____ IRB Registration/Identification No. _____ (if applicable)
- No assurance has been filed for this Institution. This Institution declares that it will provide an Assurance and Certification of IRB review and approval upon request.
- Exemption Status: Human subjects are involved, but this activity qualifies for exemption under Section 101(b), paragraph _____.

7. Certification of IRB Review (Respond to one of the following IF you have an Assurance on file)

- This activity has been reviewed and approved by the IRB in accordance with the Common Rule and any other governing regulations.
by: Full IRB Review on (date of IRB meeting) _____ or Expedited Review on (date) 9/3/08
 If less than one year approval, provide expiration date _____
- This activity contains multiple projects, some of which have not been reviewed. The IRB has granted approval on condition that all projects covered by the Common Rule will be reviewed and approved before they are initiated and that appropriate further certification will be submitted.

8. Comments

9. The official signing below certifies that the information provided above is correct and that, as required, future reviews will be performed until study closure and certification will be provided.		10. Name and Address of Institution Flagler Hospital, Inc. 400 Health Park Boulevard St. Augustine, Florida 32086	
11. Phone No. (with area code)	12. Fax No. (with area code)	13. Email:	
14. Name of Official Joseph Gordy		15. Title Chairman	
16. Signature Signature Deleted		17. Date 9-03-08	

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Appendix P-1

Brenda Kingdon (ID 77730)

Saturday, January 12, 2008

CITI Collaborative Institutional Training Initiative

Course Completion History

Institution: University of North Florida

Basic/Refresher Course - Human Subjects Research Curriculum (IC 8126)

IRE Reference Resource

Stage	Ref #	Start Date	Required Modules	Elective Modules	Completion Date	Expiration Date	Modules Completed	Print Completion Report
1. Basic Course	1508493	01/12/08	Completed	Completed	01/12/08	01/11/10	Modules Completed	Print Completion Report

Appendix P-2

Completion Report

Vulnerable Subjects - Research Involving Pregnant Women and Fetuses in Utero	01/12/08
International Research - SBR	01/12/08
Internet Research - SBR	01/12/08
Group Harms: Research With Culturally or Medically Vulnerable Groups	01/12/08
FDA-Regulated Research	01/12/08
Human Subjects Research at the VA	01/12/08
HIPAA and Human Subjects Research	01/12/08
Workers as Research Subjects-A Vulnerable Population	01/12/08
Hot Topics	01/12/08
Conflicts of Interest in Research Involving Human Subjects	01/12/08

For this Completion Report to be valid, the learner listed above must be affiliated with a CITI participating institution. Falsified information and unauthorized use of the CITI course site is unethical, and may be considered scientific misconduct by your institution.

Paul Braunschweiger Ph.D.
 Professor, University of Miami
 Director Office of Research Education
 CITI Course Coordinator

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Curriculum Vitae

Brenda Kingdon

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Profile **Solid background in healthcare administration and marketing, with strong emphasis in communications and human resource management. Consistently exceed goals and customer service expectations. Experienced in handling human resource accounts and in presenting results of consortium operations. Skilled in developing and implementing standardized policies and procedures and motivating staff to achieve the highest levels of competence. assume the responsibility for planning, implementing, coordinating, and evaluating all Perioperative and Hospital support functions including but not limited to payroll & benefit preparation, monitoring budget expenses, staff scheduling, information systems development, training & education, inventory control, sterilization and performance improvement. Evaluate the performance of assigned personnel, and responsible for providing opportunities for maintenance and continued development of staff knowledge and skills. Coordinate efforts supporting, developing and motivating staff towards achievement of quality cost effective work performance and patient care.**

Education	Doctorate of Nursing Practice, University of North Florida, Jacksonville, Florida	2009
	Masters of Science in Business and Health Care Administration, Central Michigan University, Mt. Pleasant, Michigan	1997
	BSN, Bachelor of Science in Nursing, Brandon University, Brandon, Manitoba, Canada	1993
	Nursing Unit Administration Program, Brandon General Hospital, Brandon Manitoba, Canada	1984
	Nursing Anesthesia Certificate, Barnett General Hospital, London, England	1979
	Diploma in Nursing, Misericordia General Hospital, Winnipeg, Manitoba, Canada	1975
	Certification: CNOR, CCST/MM, CAPA, Canadian Nursing Administration, CAN-BC	

**Career
History**

Flagler Hospital Inc. St. Augustine, Florida	<i>2004-current</i>
<i>Director, Surgical Services</i>	
Responsible/accountable for clinical and management leadership of 16 Operating Suites, Post Anesthesia Care Unit, Outpatient Surgery, Sterile Processing, GI Lab, Pain Management, Open Heart and Bariatric Programs	
<ul style="list-style-type: none"> • Facilitate leadership of Staff • Peer review for AORN Journal • Published 2 AORN Articles • Coordinated and responded to complex customer telecommunications requests, resulting in increased customer satisfaction • Assessed Planned and Implemented digital operating rooms • Implemented Pyxis Inventory System, reduced operating costs by \$1 million 	

Bay Medical Center, Panama City Florida***Director, Surgical Services***

1999-2004

Responsible/accountable for the facilities clinical and managerial leadership for 16 operating suites, 2 open heart suites, 14 outpatient surgery rooms, Post anesthesia care unit, Interim Director of Emergency Services, and separate surgery center

- Expansion of O.R. suites
- Addition of endoscopy unit
- Addition of Open heart Team and construction of suites transactions, resulting in standardized reports
- Inventory control resulting in multimillion dollar savings
- Chairman of multi disciplinary teams including but not limited to patient education, emergency services, product evaluation, department of medicine and surgery
- Implemented a self governance team approach to nursing , emergency services and Perioperative services

Brandon General Hospital, Brandon Manitoba, Canada***Nurse Program Manager***

1982- 1998

- Manage and facilitate Operating room suites, Post Anesthesia Care unit, Central Service Suites,
- Planned, budgeted, and supervised 115 Full Time Employees
- Developed and implemented client service program, which expanded small-to-medium client base 35%

Barnett General Hospital, London, England***Sister Of Operating Theatres***

1978-1982

Supervised and directed all nursing care for surgical services

- Key Player in facilitating renovations for Operating suites
- Finance and budgeting for department
- Responsible for 68 Full time employees
- Formulate policy and procedures

Misericordia General Hospital, Winnipeg, Manitoba. Canada***Staff Nurse***

1977-1978

Highly skilled multi faceted nurse, cross trained in all areas of the Perioperative services division

- Recruitment and retention team
- Improved policy and procedures
- Improved patient outcomes
- Role model for new nurses

Misericordia General Hospital, Winnipeg, Manitoba, Canada***Staff Nurse***

1975-1977

- Lead scrub/Circulator Vascular Program
- Preceptor New hires
- Recruitment and retention Chairman

Awards

- Florida Nurse Executive of the Year Nomination
- Great 100 Nurses of Northeast Florida Award *2005-2008*
- Nominated Nurse Executive of the Year *2005*
- Magnet Champion

Professional Memberships

- AORN
- American Kidney Foundation
- Habitat for Humanity
- AORN editorial peer reviewer
- Northeast Florida Nurse Executives
- Florida Council for Operating Room Nurses

Publications

- Perioperative Nurses Perception of Stress in the Workplace *3/2005*
- Determining Patient Discharge Criteria in an Outpatient Setting *4/2006*