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## Nursing compliance with standard fall prevention protocol among acute care hospital nurses

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NURSING COMPLIANCE WITH STANDARD FALL PREVENTION PROTOCOL  
AMONG ACUTE CARE HOSPITAL NURSES

by

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Bachelor of Science  
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1998

A thesis submitted in partial fulfillment  
of the requirements for the

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**May 2010**

## ABSTRACT

### **Nursing Compliance with Standard Fall Prevention Protocol by Acute Care Hospital Nurses**

by

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The purpose of the study was to determine the level of nursing compliance in implementing Fall Prevention Protocol (FPP) in an acute care hospital in a high fall risk patient population and to identify the barriers in complying. This study is important because falls are considered one of the nursing-sensitive quality indicators. The AACN Synergy model for patient care was used as the organizing framework for this study. A total of 24 nurses participated in the study, and a total of 29 high fall risk patients were assessed. The degree of compliance among nursing staff was measured using the modified Scripps Mercy Hospital Rounding Tool (Rounding Tool) for patients identified at high risk for falls. The modified Scripps Mercy Hospital Fall Prevention Intervention Questionnaire (Barriers Tool) was used to determine the nurses perceived barriers (Gutierrez and Smith, 2008). High-to-moderate compliance was noted. High patient turn over and proximity of patient assignments were the frequently cited barriers with hourly rounding cited as the most valued intervention to prevent falls.

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## CHAPTER 1

### INTRODUCTION

#### Background and Significance

The health care industry is the largest employer in the United States and ranks second among eight industries as having the highest percentage of claim costs associated with falls (The Joint Commission, 2009a). According to the Joint Commission statistics, patient falls ranked fifth among the leading causes of sentinel events (death/disability) in hospital inpatients, about 60 sentinel events associated with falls alone in 2008. The Joint Commission's National Patient Safety Goal 9 (NPSG 9) is to reduce the risk of patient harm resulting from falls (The Joint Commission, 2009a).

Once considered an "accident," an unavoidable problem of illness, disability or the frailty of advancing age, patient falls were accepted as a normal consequence of illness or aging, and any injury resulting from the fall was accepted simply as "bad luck" (Morse, 2009). Over the past three decades, research has developed to the point where we are able to predict which patients are likely to fall based on the frailty associated with illness and aging and to implement strategies to prevent the fall or to protect the patient from injury, should a serious fall occur (Morse, 2009).

According to The Joint Commission, falls account for a significant portion of the injuries in hospitalized patients, long-term care residents, and home care recipients. In the context of the population it serves, the services it provides, and its environment of care, a health care organization should evaluate the patient's risk for falls and take action to reduce the risk of falling as well as the risk of injury, should a fall occur. The evaluation could include a patient's fall history, review of medications and alcohol consumption,

gait and balance screening, assessment of walking aids, assistive technologies and protective devices, and environmental assessments (The Joint Commission, 2009a).

The Joint Commission measures patient fall rates as the number of patient falls, with or without injury to the patient, during the calendar month multiplied by 1000 divided by patient days by Type of Unit. Patient days are calculated using various methods but the most accurate method is to sum the actual hours of stay for all patients, whether in-patient or short stay, and divide by 24 (The Joint Commission, 2009b). The national benchmark is 3 falls per 1000 patient days, with zero patients sustaining level III and level IV trauma per 1000 patient days for acute care hospitals (The Joint Commission, 2009b). Level III and level IV trauma indicates the degree of injury caused to the patient due to the fall.

#### Statement of the Problem

Hospital A is an acute care facility in an urban area of the southwest. Falls continue to be one of the main concerns for this acute care hospital, with the most recent fall data provided by the facility (July-August 2009) indicating 3.31 falls per 1000 patient days, although the number of level III and level IV trauma is zero per 1000 patient days, meeting The Joint Commission's standard. Hospital A's problem is meeting The Joint Commission's benchmark of fewer than 3 falls per 1000 patient days. Hospital A's policy is to use the Morse Fall Scale (MFS) for the identification of patients at high risk for falls on admission, and there is an existing fall prevention protocol (FPP) in use. The MFS is a technique for rapid identification of fall risk. It has six variables on which patients are scored: history of falling; presence of secondary diagnosis; use of ambulatory aids such as cane, walker, crutches; administration of intravenous therapy; type of gait; and mental

status (Morse, Black, Oberle, & Donahue, 1989). Reassessment of fall risk is scheduled to occur each shift along with the nursing assessment.

If a patient is at risk for a fall, the fall prevention packet is instituted. The fall prevention packet is a folder consisting of “Kilroy signs” (a cartoon drawing of an elderly man), stickers, a care plan, and patient education material, which assist the process of implementing the FPP. Kilroy is the hospital’s universal sign for fall risk. The FPP involves the following: Kilroy signs and stickers are posted outside the patient’s door, on the patient’s chart, and on the patient name board at the nursing station. A “call/do not fall” sign is placed in each patient’s room. Nurses initiate a care plan and teaching plan, and provide a patient and family teaching guide. If a patient is placed on fall precautions, it is the hospital’s goal that every employee who passes the patient’s room will look in on the patient and make sure that he or she is safe. Nonclinical employees are encouraged to let the nurses know if a patient is trying to get out of bed. All hospital personnel receive education and training on implementation of the FPP upon employment.

Hospital A also has a Fall Prevention Committee in place with one of the nurse managers in charge of committee activities. The committee meets once a month. The members include ancillary personnel from Physical Therapy and Occupational Therapy, Radiology, and Security Services, along with the Registered Nurse (RN) representatives from each unit of the hospital. Hospital A has a system in place to measure indirectly nursing compliance in implementing the FPPs, wherein the committee surveys five randomly selected patients in the unit with specific questions such as whether the patient has had contact with a team member every hour, whether the call light, TV control,

bedside table, trash can, and personal items were within reach, and whether the room was free of clutter.

### Statement of the Purpose

The purpose of the study is to determine the level of nursing compliance in implementing FPPs in an acute care setting. This study is highly relevant to nursing due to the fact that it is aimed at prevention of falls in inpatients and that the major responsibility of preventing inpatient falls rests on the shoulders of the nursing workforce. This study is important because falls are considered one of the nursing-sensitive quality indicators (ANA, 2009). Nurses are responsible for identifying patients who are at risk for falls and for developing a plan of care to minimize that risk (Joint Commission, 2009b). Patient fall rates are perceived as the indicator that could be most improved through nurse-led safety strategies or interventions (Tzeng & Yin, 2008).

### Research Questions

1. What is the level of compliance among the RN/Licensed Practical Nurse (LPN) workforce in acute care setting A in initiating Hospital A's standard FPP?
2. What are the factors affecting nursing compliance with Hospital A's FPP?

### Definition of Variables

For the purpose of the study, the following terms are defined:

Fall. Hospital A defines falls as a sudden, unexpected descent from standing, sitting, or horizontal position. This includes witnessed and unwitnessed events. Falls include incidents in which the person is found lying on the floor. Falls can be operationally defined as the rate at which patients fall during their hospital stays per 1000 patient days (Tzeng & Yin, 2008).

Fall Prevention Protocol (FPP). An established set of rules established by a health care organization to prevent falls in its inpatient population.

Compliance. The degree of constancy and accuracy with which a prescribed protocol is followed as distinguished from adherence or maintenance (American Heritage Dictionary, 2003). Compliance is operationally defined as the degree of constancy with which the nursing workforce follows the rules identified in the FPP. This can be measured through a Rounding Tool.

### Conceptual Framework

The AACN Synergy Model for Patient Care (Figure 1) was used as the organizing framework for this study. The purpose of the Synergy Model is to articulate nurses' contributions, activities, and outcomes with regard to caring for critically ill patients. The model identifies eight patient needs or characteristics and eight competencies of nurses in critical care situations (McEwen & Wills, 2007). The Synergy Model describes three levels of outcomes: those relating to the patient, the nurse, and the system. Patient outcomes include functional and behavioral change, trust, satisfaction, comfort, and quality of life. Nurse outcomes include physiological changes, presence or absence of complications, and extent to which care objectives were attained. System outcomes include recidivism, costs, and resource utilization (McEwen & Wills, 2007). This model fits as a framework for the designed fall prevention study, because falls affect all three: patient, nurse, and system.

The Synergy Model has been modified to fit in the fall prevention study for patients in the acute care setting (Figure 2). The Model's concept of nurse competency in care has been equated to nurse compliance with FPPs, while patient characteristics have

been equated to patients at high risk of falls. Nurse outcome has been equated to prevention of falls and thus the complications occurring from falls. The system processes are equated to proximity of patient assignments, rate of patient turnover, and emergency events like codes, among other system factors that could affect nurse compliance.

## CHAPTER 2

### LITERATURE REVIEW

A literature review was performed through a comprehensive search of research databases using the terms “fall prevention protocol” and “nurses”; “fall prevention” and “inpatients”; “fall prevention” and “hospitals.” The goal was to identify studies on fall prevention programs in acute care settings and their success. A large number of articles were found that included trials of various prevention strategies and studies from other disciplines, including occupational therapy, physical therapy, and clinical engineering studies.

Falls can occur in a home, community, long-term rehabilitation, or acute care setting. Fall risk tends to be related mostly to mobility status, exposure to hazardous environments and risk-taking behaviors such as climbing ladders for seniors living in the community setting (Scott, Votova, Scanlan, & Close, 2007). An unfamiliar environment, acute illness, surgery, bed rest, medications, treatments, and the placement of various tubes and catheters are common factors that place patients at risk for falling in the hospital setting (Dykes, Carroll, Hurley, Benoit, & Middleton, 2009). While the risk factors for a fall in hospitalized adults are greatly influenced by acute illness that often has a marked, albeit temporary, impact on physical and cognitive function compounded by care provided in unfamiliar surroundings (Scott et al., 2007), in the long-term care setting, the risk factors for falls are influenced by impaired cognition, wandering or impulsive behavior, use of psychotropic medications, incontinence and urgency, lack of exercise, unsafe environments, and low staffing levels. Patient falls are serious problems in acute care hospitals and are used as a standard metric of nursing care quality (Dykes et

al., 2009). Although, there is a sense of urgency in hospitals to prevent falls to “do no harm” and also because Medicare will not reimburse hospitalization costs due to fall-related injuries, patient falls remain a serious problem in U.S. hospitals (Dykes et al., 2009).

An analysis of the literature shows that most studies recommend a comprehensive interdisciplinary approach for the prevention of falls, but the nursing workforce is at the center of this approach. No health care professionals are affected more by falls than nurses who work in the hospital on the frontlines of patient care (Rush et al., 2009). Falls violate nurses’ legal and ethical responsibility to do no harm and are contrary to the culture of institutional safety promoted at every level of health care (Rush et al., 2009). Falls may undermine the quality of the relationship between nurse and patient when nurses who are expected to know a patient’s fall risk allow patients to fall (Rush et al., 2009).

The Joint Commission under its NPSG 9 delineates that, to reduce the risk of patient harm resulting from falls, hospitals should implement a fall reduction program that includes an evaluation of the effectiveness of the program (The Joint Commission, 2009b). The fall reduction programs should include an evaluation appropriate to the patient population, settings, and services provided. It should include interventions to reduce the patient’s fall risk factors (The Joint Commission, 2009a). Staff should receive education and training about fall reduction programs. The hospital should educate the patient and, as needed, the family on the fall reduction program and any individualized fall reduction strategies. The hospital should evaluate the fall reduction program to determine the effectiveness of the program (The Joint Commission, 2009a). Within these

guidelines, it is up to the hospital to develop an individually tailored program for the organization. For example, there are multiple fall risk assessment tools available in the literature, such as the Morse Fall Scale (Morse et al., 1989), St. Francis Hospital Safety Assessment Tool (Dacenko-Grawe & Holm, 2008), and others. Each hospital chooses its own assessment tool and develops its own practice guidelines from the evidence-based literature available.

Some fall prevention studies in acute care hospitals focus on the effectiveness of specific interventions, such as hourly rounds by staff, use of a toileting schedule, and increased RN staffing ratio, on reducing falls. For example, one study found that lower fall rates were associated with higher staffing up to a specific point – 15 nursing hours per patient day – on step-down, medical, and combined medical-surgical units (Dunton, Gajewski, Taunton, & Moore, 2004). Nursing hours per patient day is the total number of hours worked by nursing staff who are involved at least 50% of the time in direct patient care/total number of patient days (Dunton, Gajewski, Taunton, & Moore, 2004).

Some studies focused on interdisciplinary approaches where nurses worked in collaboration with other disciplines, such as physical therapy, occupational therapy, and pharmacy, to reduce falls. For example, one study evaluated an interdisciplinary (nursing and physical therapy), multi-interventional fall prevention protocol (Gutierrez & Smith, 2008), while other studies use a comprehensive approach of preventing falls tailored to address the various intrinsic and extrinsic factors that contribute to falls in elderly patients (Labonte, Klock, & Houser, 2008; Murphy et al., 2008). This particular study examined the implementation of a successful multifaceted program wherein a staff-led unit practice council developed an evidence-based intervention plan. Staff-led unit

practice councils consist of staff members of the unit discuss nursing practice issues and make plans for remediation (Murphy et al., 2008). The interventions included a campaign to raise geriatric awareness, creation of “fall tool boxes,” education of staff and family, and implementation of a structured hourly patient rounds schedule (Murphy et al., 2008). According to Morse 1993, patient falls in an institution are not random events. Patient falls are patterned and predictable and, therefore, a preventable occurrence. Around this premise, entrenched in a tradition of empirical knowing, a whole culture of fall prevention has developed, directing nurses in fall risk assessments and targeted interventions based on best evidence as discussed above (Rush et al., 2009). As with other outcome measures (e.g., pressure ulcers, urinary tract infections, pneumonia), nurses are in a position to influence patient outcomes. Through assessment and surveillance activities, nurses have the capacity to analyze, anticipate, and identify fall risks and to institute plan for fall prevention (Murphy et al., 2008).

Three articles were found to be of high relevance to the author’s study. The search was narrowed to articles directly related to the implementation of FPPs in acute care settings. Dacenko-Grawe and Holm (2008) describe a quantitative study on successful implementation of an evidence-based FPP called the Saint Francis Hospital (SFH) FPP. There was approximately a 50% reduction in the number of falls per 1000 patient days over a five year period. All nine units of this 325-bed hospital were studied with comprehensive fall data collected for the whole hospital. The greatest decline in the fall rate was seen in the first year of the protocol’s implementation. Broad communication to all hospital staff beyond bedside caregivers contributed to a continuing decline in the absolute number of falls. Vigilance in observing patients at risk for falls was enhanced by

sharing accountability with all staff members on a nursing unit and not just those involved in direct patient care. This study is limited by the fact that it does not measure nursing compliance or identify barriers experienced by nurses and other staff members in implementing the FPPs.

Tzeng and Yin (2008) describe a qualitative study of nurses' perspectives in comparison to the five dimensions of individual fall risk factors as identified by The Joint Commission: inadequate caregiver communication, inadequate staff orientation and training, inadequate assessment and reassessment, unsafe care environment, and inadequate care planning and provision. Tzeng and Yin's study investigated the nurses' perceived barriers in implementing fall prevention. Out of 40 nurses who worked in a particular acute medical unit, nine nurses volunteered to participate in the study. Data were collected through individual interviews, which were audiotaped. In this study, researchers used inductive and deductive methods to understand the clinically accessible solutions to minimize the extrinsic factors of inpatient falls. The findings from the nurse interviews were compared with the intervention strategies toward the five primary root causes of falls as suggested by The Joint Commission. Twenty-four solutions were identified from the nurse interview transcriptions; five were related to the dimension of inadequate caregiver communication, none was associated with the dimension of inadequate staff orientation and training, three were related to inadequate assessment and reassessment, 15 were associated with unsafe care environment, and one was related to inadequate care planning and provision. This study is of limited relevance in that it did not measure nursing compliance with FPPs.

Gutierrez and Smith (2008) describe a quantitative study that was closely related to the current study, as it was aimed at measuring nursing compliance and identifying barriers. A Specialty Adult Focused Environment (SAFE) unit was created for high fall risk patients, staffed with two RNs and one technical partner (equivalent of a certified nursing assistant (CNA) for six patients. Using an evidence-based framework for evaluating evidence, experience, and values, qualitative and quantitative data points were selected on the basis of a literature review targeted to identify universal barriers to implementing an interdisciplinary, multifactorial FPP. The audit process routinely evaluated what the system process was, whether the nurse had followed the policy, and whether barriers had prevented the implementation of the policy. A Rounding Tool was developed and used to see whether an FPP was initiated and implemented for patients identified at high-risk for falls by the nurses.

The literature suggests that a fall risk assessment followed by FPP initiation in the identified high risk population is effective in the prevention of falls. However, studies related to falls are limited in identifying factors affecting compliance of nursing staff in implementing FPPs and the barriers experienced by nurses in actively implementing FPPs.

## CHAPTER 3

### METHODOLOGY

#### Study Design

The study was directed at measuring nurse compliance with an FPP, so the design for the study was descriptive. No interventions were used to improve staff compliance with the FPP and no changes were made to the existing standardized protocol. The level of compliance and barriers affecting compliance were identified and described.

#### Population and Sample

The population for the study on nursing compliance with FPPs was nurses working in a medical-surgical unit (MSU) of an acute care hospital. The sample population was Registered Nurses/Licensed Practical Nurses (RNs/LPNs) working in an MSU of Hospital A. The accessible population was RNs/LPNs working in the MSU in a given shift on the day of data collection. The nurse manager, charge nurses, and nursing aides were excluded from the study. A convenience sample of 24 nurses was obtained, which included three LPNs. Data collection was done in Hospital A over a 20-day period. The response rate for the questionnaire was 57%. Either nurses did not return the questionnaire or refused participation citing lack of time as a reason. Data collection was stopped after 24 samples were obtained making sure that the same nurse did not answer the questionnaire twice.

First, high fall-risk patients were identified by computerized chart review followed by an environmental audit and paper chart review to determine compliance with the existing FPP. By environmental audit, the researcher examined the patients' rooms for fall signage, and determined whether the room was free of clutter, and whether the

call light and other needed items such as urinal, bed pan, and bedside commode, were placed within reach. Approximately 40-50 charts were reviewed in a single day and 29 high fall-risk patients were identified and examined during the study period. Next, the researcher provided a questionnaire to all the RNs/LPNs in the study unit on days of data collection to determine the barriers, if any, in implementing the FPP. The questionnaire took about 10-15 minutes for completion.

### Study Setting

The setting for data collection was Hospital A, an acute care facility in the urban southwest. Hospital A is a 400-bed acute care facility with four MSUs, two intensive care units, one intermediate care unit, a large emergency department, and labor and delivery units, among other specialties. The study was limited to one of the MSUs of Hospital A. The researcher obtained permission from Hospital A to do chart reviews and an environmental audit in the MSU.

### Ethical Considerations

The identity of the patient population and information about the identity of participating staff were not collected in the study. The identity of the study setting is not revealed in the study findings. Appropriate permission was obtained from the University of Nevada, Las Vegas Institutional Review Board (IRB) and the Chief Nurse Officer of Hospital A. The authorization by the facility to conduct the study with permission to access the charts is in compliance with provisions of the Health Insurance Portability and Accountability Act. An informed consent was given to the nurses after obtaining permission for signature waiver from the IRB. Nurses were given the choice of either

signing or not signing the consent to protect their identity, since the population was small. None of the nurses signed the consent, so consent forms were not collected.

### Measurement Methods

The degree of compliance among nursing staff was measured using the Scripps Mercy Hospital Rounding Tool (Rounding Tool) for patients identified at high risk for falls (Gutierrez and Smith, 2008). The degree of compliance with the FPP was graded according to the scores obtained on the tool as high, moderate, or low compliance. The Scripps Mercy Hospital Fall Prevention Intervention Questionnaire (The Barriers Tool) was used to determine the nurses' perceived barriers. According to the author of these tools, Felipe Gutierrez (personal communication, September 2, 2009), they were developed by a panel of experts with the reliability and validity testing of the tool done by a statistician.

The Rounding Tool and the Barriers Tool were modified to fit the current study. The wording in the original tool was changed to match the term used by Hospital A. For example, a "falling star" sign was used in the original tool, which was changed to a "Kilroy" sign as used by Hospital A in the modified tool. Two items were omitted from the original tool since there was no objective way to gather information on these items. The omitted items are whether fall risk was given in verbal report and if transport personnel were educated by RN regarding patient fall-risk level and fall-risk interventions. The Barriers Tool was modified to focus on the nurses' perceived barriers more broadly. Items that were not applicable to Hospital A's FPP were removed from the questionnaire such as preformatted physician orders for high fall risk patients, which Hospital A does not use.

The modified Rounding Tool and the Barriers Tool are provided in the Appendix. Validity and reliability testing was done on the modified tools. Content validity index (CVI) can be calculated by having experts rate items on a four-point scale (from 1 = not relevant to 4 = very relevant). The CVI for the total instrument is the proportion of items rated as either 3 or 4. A CVI score of .80 or better indicates good content validity (Polit & Beck, 2004). Content validity for the Rounding and the Barrier Tools was established via a panel of experts (Fall Committee of Hospital A) at the study site. The expert panel of five included two nurse managers, one physical therapy manager, one risk manager and one clinical supervisor. The content validity index (CVI) was determined based on the number of items that were given a relevance rating of either 3 or 4 on the Likert-type scale divided by the total number of items. A good CVI of .92 was obtained.

Interrater reliability is estimated by having two or more trained observers watching an event simultaneously and independently recording data according to the instrument's instructions. Then techniques such as Cohen's kappa can be used to assess interrater reliability (Polit & Beck, 2004). Two clinical experts acted as raters and completed the Rounding Tool for the same patient. Their scores were compared to determine interrater reliability utilizing Cohen's Kappa. Reliability coefficients less than .70 are risky to use (Polit & Beck, 2004). For the Rounding Tool, an acceptable kappa of .77 was obtained after it was rated by two nurses on the same patient.

## Data Collection

In November 2009, data collection was performed by electronic chart review of identified high-risk patients over a 20-day period. Identifying high fall-risk patients is done routinely on every patient in the hospital and is a mandatory documentation. After obtaining a list of high-risk patients, the researcher reviewed paper and electronic charts and conducted an environmental audit (for example, to see if a Kilroy sign had been placed on the patient's door) to determine the compliance level using the Rounding Tool. The Barriers Tool was given to the MSU's RNs/LPNs to identify the barriers in implementation.

## Data Analysis

All data analyses were done using SPSS version 17. Frequency distributions and measures of central tendency (mean, standard deviation, median, mode and range) were used to present data answering the two research questions. Information from the Barriers Tool again was analyzed and summarized using the same statistical approach.

## CHAPTER 4

### RESULTS

The purpose of this study was to measure the level of compliance of the RN/LPN nursing staff with an FPP and to obtain information on what respondents identified as significant barriers in complying with an FPP. The findings of the study are described below.

#### Rounding Tool

Data obtained from the Rounding Tool are described below. Compliance with each item as outlined in the Rounding Tool is as follows. A high level of compliance was noted on criteria such as low bed/bed alarm, keeping environment free of clutter, and having call light/bed pan/urinal/bedside commode within reach (96.6%). Of the 29 fall-risk cases examined, none of them had experienced a fall on this admission. The physical therapy/occupational therapy order and evaluation were documented as initiated in 51.7% of the cases. The level of compliance with fall signage was mid to low as evidenced by Kilroy signs on the door (51.7%), signs in the room saying “Call/do not fall” (65.5%), placing fall risk arm bands on patients (24.1%), and placing Kilroy stickers on the chart indicating fall risk to transport personnel (10.3%). An appropriate risk level was documented 100% of the time.

Hospital A requires documentation on patient’s mentation and cognition, which is one of the important aspects of identifying high fall-risk patients. Approximately half of the patients studied were confused and unable to communicate while other patients’ mentation was normal. Though assessing the mentation of patients is an important aspect of identifying high fall-risk patients, this does not directly relate to level of compliance

by nursing staff. Therefore this aspect was omitted when an overall compliance score was computed. A toileting schedule was found to be not applicable in 100% of these cases. Fall risk and patient-specific interventions were identified on care plan in 72.4% of the cases.

The lowest score that could be obtained was 12 and the highest was 26, where lower scores indicate more compliance and higher scores indicate noncompliance. The scores obtained ranged from 13 to 18. The average score obtained was 15.93. Thus the scores fall in the high to moderate compliance category.

#### Barriers Tool

The author expected a 100% response rate, thinking that nurses would willingly participate in the study as it would benefit them by identifying barriers to fall prevention and that by presenting the study findings to the facility, the facility might take steps to remove the barriers. In actuality, out of the 42 nurses available during the study period, only 24 nurses responded — a response rate of 57%. Of the 24 nurses that responded, three of them were LPNs. Response rate is the rate of participation in a study, calculated by dividing the number of persons participating by the number of persons sampled (Polit & Beck, 2004). The nurses either did not return the survey or refused participation citing lack of time as a reason.

Under the Barriers Tool, the number one cause for inability to comply with FPP was identified as rate of patient turnover (25%), followed by lack of proximity of assigned patients (23%), and emergency events like codes (13%). Only one nurse identified that there were no barriers, and another nurse identified fall prevention as a low priority nursing care.

The other responses where individuals chose one or more barriers ranged from 2% to 6%. Among the other barriers that were mentioned by nurses were high patient acuity, inability to answer patient call lights as soon as possible, lack of communication during handoff, floor layout preventing visual access of patients, patients' mental status and ability to cooperate, low RN-to-patient ratio, low CNA-to-patient ratio, and noncompliance of MDs with restraint forms. Restraint forms are restraint orders to be filled out by MDs every 24 hours authorizing the use of restraints on a patient for patient safety.

Among the top five fall prevention interventions that nurses value the most were frequent hourly rounding at 18%, followed by placing call light within patients' reach at 11%, and a toileting program at 9%. All the other fall prevention interventions scored at or below 7%. When nurses were questioned about specific interventions that they have implemented for their patients for fall prevention, use of camera rooms (patient rooms that are equipped with camera and are monitored constantly for patient safety from a centralized location by a CNA) was mentioned as beneficial by four nurses, while more family involvement, a caged bed with soft padding, relaxing music, frequent reminder for patient to not get out of bed, and more use of CNAs were mentioned.

### Summary

Nurses showed a high to moderate level of compliance with Hospital A's FPP. Higher compliance was noted on keeping the environment safe for patients, by having items within reach, while lesser compliance was noted in using signage to communicate patients' fall risk to all other health care personnel. The most important barriers identified by nurses are rate of patient turnover and proximity of assigned patients.

## CHAPTER 5

### DISCUSSION

The purpose of the study was to determine the level of compliance of nurses in an acute care setting with an FPP and the barriers that they face in complying. The results showed a high to moderate level of compliance and identified one factor as the most common barrier. This chapter provides a discussion of the findings, as well as limitations of the study, and recommendation for further research.

#### Interpretation of the Findings

The findings of this study should be interpreted with caution due to the size and nature of the sample, which is a convenience sample available at work on a given day and willingness to participate. For the Barriers Tool, the response rate was only 57%. If the other 43% of nurses had returned the questionnaire, there is a possibility that a different dimension of the barriers to fall prevention would have been identified.

The AACN Synergy Model for Patient Care links practice and outcomes. The premise is that positive patient outcomes will occur when patient characteristics and nurse characteristics work in mutually enhancing ways and that these outcomes will occur if a nurse demonstrates the competencies in relation to patient needs such as clinical judgment, clinical inquiry, facilitator of learning, collaboration, systems thinking, advocacy and moral agency, caring practices, and response to diversity (Kaplow, 2003). Applying this premise to the FPP, when nurses demonstrate competency with an FPP, the desired outcome of patients not experiencing falls will occur, and the opposite might occur with incompetency. Also, when patient and family characteristics work opposite to nurse characteristics, where no cooperation is exhibited by the patient and family towards

fall prevention as advised by the nurse, the outcome will be negative. A high to moderate level of compliance with FPP was found in the study of the 29 high fall-risk patients, and no falls occurred in these patients during the study period.

Comparing the findings with what was seen in the literature, rate of patient turnover and proximity of assigned patients have not been discussed as barriers in the literature. The fall prevention intervention most valued by nurses was hourly rounding, which is consistent with the literature. Statistically significant fall reduction was obtained by hourly rounding (Meade, Bursell & Ketelsen, 2006). A routine presence of a registered nurse in the form of hourly rounding has promoted patient safety by declining fall scores (Woodard, 2009).

#### Implications for Nursing

This study measured the level of compliance of RNs/LPNs in an MSU with an FPP in an acute care hospital and identified the barriers in complying with FPPs. Measures that would minimize the effect of these barriers on compliance can be developed. For example, since rate of patient turnover is identified as the most frequently mentioned barrier by the nursing staff, measures like spacing out discharges and admissions for nurses may help the nurses to comply with the FPPs without feeling overwhelmed. A trial of the specific interventions that were mentioned by the nurses could be implemented and used in FPPs. If found to be effective, the hospital could redesign the FPPs based on the findings of the study and use additional measures to tackle the barriers in compliance with the FPPs. Though a high to moderate compliance is an acceptable compliance level, a revision in FPPs can be made to move towards 100% compliance or a score of 12.

### Limitations of the Study

The major limitation of the study is that for the Rounding Tool, only 29 cases of high fall risk were studied for determining the compliance level. Also, the most valued fall prevention intervention by nurses, hourly rounding, was not incorporated in the Rounding Tool due to the inability to obtain an objective documentation of hourly rounding. Another limitation is that since the new computer system has a fall prevention care plan that incorporates patient education but does not have a checklist for whether the fall prevention education packet was given to patient and family, this question went unanswered.

Another limitation of the study is that fall occurrences in the study unit were not examined. If fall occurrences had been examined with the use of the Barrier Tool and Rounding Tool when they occurred, results could have provided direct data relating compliance levels to falls, illuminating whether a low compliance level correlates with increased falls. Yet another limitation of the study is that the study did not examine the identified high fall-risk patients throughout their hospitalization: Some patients examined were newly admitted, some after a week of admission, and some patients at the point of discharge. There is a possibility that falls could have occurred in these patients after the study was completed.

### Implications for Further Research

The findings from the study could be further investigated by re-designing the FPPs based on the findings and then examining the efficacy of the new FPPs by reviewing the monthly fall data through the Fall Committee. This study found that a high to moderate level of compliance with the FPP in the identified high fall-risk patients was

associated with no falls during the study period. Further studies are recommended to examine individual fall occurrences to assess the association between low compliance and falls.

### Summary

A high to moderate level of compliance with Hospital A's FPPs was noted among RN/LPN nursing staff in one MSU. This level of compliance was effective in preventing falls in the identified high fall-risk patients during the study period, but further research is required to assess whether low compliance with FPPs is associated with falls.

Recommendations would be made for FPP modification based on the findings. For example, as hourly rounding was identified as the most valued fall prevention intervention, an evidence-based hourly rounding program could be incorporated in Hospital A's FPPs. Further research is recommended to study high fall-risk cases throughout their hospitalization rather than at a single point of hospitalization.



## Biomedical IRB – Expedited Review

### Approval Notice

**NOTICE TO ALL RESEARCHERS:**

*Please be aware that a protocol violation (e.g., failure to submit a modification for any change) of an IRB approved protocol may result in mandatory remedial education, additional audits, re-consenting subjects, researcher probation suspension of any research protocol at issue, suspension of additional existing research protocols, invalidation of all research conducted under the research protocol at issue, and further appropriate consequences as determined by the IRB and the Institutional Officer.*

**DATE:** November 3, 2009

**TO:** Dr. Nancy Menzel, Psychosocial Nursing

**FROM:** Office for the Protection of Research Subjects

**RE:** Notification of IRB Action by Dr. John Mercer, Chair

Protocol Title: **Nursing Compliance with a Standard Fall Prevention Protocol**

Protocol #: 0909-3212

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This memorandum is notification that the project referenced above has been reviewed by the UNLV Biomedical Institutional Review Board (IRB) as indicated in regulatory statutes 45 CFR 46. The protocol has been reviewed and approved.

The protocol is approved for a period of one year from the date of IRB approval. The expiration date of this protocol is November 2, 2010. Work on the project may begin as soon as you receive written notification from the Office for the Protection of Research Subjects (OPRS).

**PLEASE NOTE:**

Attached to this approval notice is the **official Informed Consent/Assent (IC/IA) Form** for this study. The IC/IA contains an official approval stamp. Only copies of this official IC/IA form may be used when obtaining consent. Please keep the original for your records.

Should there be *any* change to the protocol, it will be necessary to submit a **Modification Form** through OPRS. No changes may be made to the existing protocol until modifications have been approved by the IRB.

Should the use of human subjects described in this protocol continue beyond November 2, 2010 it would be necessary to submit a **Continuing Review Request Form** *60 days* before the expiration date.

If you have questions or require any assistance, please contact the Office for the Protection of Research Subjects at [OPRSHumanSubjects@unlv.edu](mailto:OPRSHumanSubjects@unlv.edu) or call 895-2794.

Appendix B



**INFORMED CONSENT**

Department of Nursing

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**TITLE OF STUDY: Nursing compliance with Fall Prevention Protocol**

**INVESTIGATOR(S): PI: Dr. Nancy Menzel, SI: Ms. Anuradha Thirumalai**

**CONTACT PHONE NUMBER: 702-895-5970**

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**Purpose of the Study**

You are invited to participate in a research study. The purpose of the study is to determine the level of nursing compliance in implementing Fall Prevention Protocol (FPP) in an acute care hospital setting in an identified high fall risk inpatient population and to identify barriers that exist in nursing compliance with relation to FPPs.

**Participants**

You are being asked to participate in the study because your participation would help determine the compliance level and barriers affecting compliance could be identified which in turn would help us determine actions required to remove the barriers in the future. **As a member of the nursing community, you have the highest responsibility for patient safety. When a fall has to be prevented it is usually considered the responsibility of all the staff in the unit but when a real fall occurs it is the nurse who is at the center of investigation. Liability issues easily stem from patient injury caused by falls.**

**The targeted population is a group of nurses working in the medical-surgical unit of Hospital A. Nurses of all age group would be included in the study. All RNs and LPNs working in the unit will be given an opportunity to participate in the survey. Staff members excluded from the study is charge nurses, nurse aides, and nurse manager. There are no enrollment restrictions based on gender, race, pregnancy or ethnic origins.**

### **Procedures**

If you volunteer to participate in this study, you will be asked to do the following: Fill out a questionnaire. **The questionnaire has questions about the barriers that you face in implementing FPP, about specific interventions unique to you that you implement in your patients that have been successful in preventing falls, and also a checklist of measures that you find most useful in preventing falls.**

### **Benefits of Participation**

There *may not* be direct benefits to you as a participant in this study. However, we hope that the study might increase awareness of falls and the importance of prevention. Also, identifying the barriers to using the FPP might help us take action to remove those barriers in the future.

### **Risks of Participation**

There are risks involved in all research studies. This study may include only minimal risks. Job performance level might be revealed by the study.

### **Cost /Compensation**

There *will not* be financial cost to you to participate in this study. The study will take 10 minutes of your time. You will not be compensated for your time.

### **Contact Information**

If you have any questions or concerns about the study, you may contact Dr. Nancy Menzel at 702-895-5970 or Ms. Anuradha Thirumalai at 702-671-4103. For questions regarding the rights of research subjects, any complaints or comments regarding the manner in which the study is being conducted you may contact **the UNLV Office for the Protection of Research Subjects at 702-895-2794.**

### **Voluntary Participation**

Your participation in this study is voluntary. You may refuse to participate in this study or in any part of this study. You may withdraw at any time without prejudice to your relations with the university. You are encouraged to ask questions about this study at the beginning or any time during the research study.

### **Confidentiality**

All information gathered in this study will be kept completely confidential. No reference will be made in written or oral materials that could link you to this study. All records will be stored in a locked facility at UNLV for three years after completion of the study. After the storage time the information gathered will be shredded.

**Participant Consent:**

I have read the above information and agree to participate in this study. I am at least 18 years of age. A copy of this form has been given to me.

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Signature

***[PARTICIPANT NOTE: THE PRINCIPAL RISK IN THIS RESEARCH WOULD BE POTENTIAL HARM RESULTING FROM A BREACH OF CONFIDENTIALITY. FOR THIS REASON, YOU DO NOT HAVE TO SIGN THE INFORMED CONSENT. IF YOU WISH TO BE IDENTIFIED WITH THIS RESEARCH STUDY, YOU MAY SIGN.]***

## Appendix C

### Rounding tool for patients identified at high-risk for falls.

Instruction: Complete one form on each high-risk patient in the department on the day of audit.

Sign on door/Kilroy sign  1=Yes  2=No	Sign in room/call do not fall  1=Yes  2=No	Armband on  1=Yes  2=No	Toileting schedule posted if applicable  1=Yes  2=No  3=N/A
Call light, urinal, bedpan within reach.  1=Yes  2=No	Patient unable to communicate (confused or medication induced)  1=Yes  2=No	Patient demented or confused Unable to comply.  1=Yes  2=No	Was patient and or family educated? Look for charting.  1=Yes  2=No
Fall on this admission.  1=Yes  2=No	Charted appropriate risk level.  1=Yes  2=No	Low bed/bed alarm for impulsive and forgetful patient.  1=Yes  2=No	Envir-onment free from clutter.  1=Yes  2=No

PT/ OT order. 1=Yes 2=No	PT/OT Gait assessment documented if applicable. 1=Yes 2=No 3=N/A	Fall risk and patient specific interventions identified on care plan. 1=Yes 2=No	Kilroy sticker on chart indicating fall risk to transport personnel 1=Yes 2=No 3=N/A

Additional questions /comments from surveyor:

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Barrier Tool: RN survey. Fall Intervention Prevention Questionnaire.

By completing this survey you are giving consent to participate in this research project related to fall prevention at the bedside. Individual answers will be kept confidential; only group results will be reported.

1. What are the barriers that you have experienced while implementing the fall prevention protocol? Choose one or more from the following options.

a. Rate of patient turnover.

b. Emergency events like codes.

c. Proximity of assigned patients.

d. Consider fall prevention a lower priority than other responsibilities.

e. Others. \_\_\_\_\_

f. No barriers.

2. From the checklist below, check the top 5 interventions that you find effective for preventing a fall.

	Engage/Educate family members		Order PT or OT
	Engage/Educate patient in plan		Use fall signage available.
	Orient patient to environment		Ensure call light within reach
	Apply nonskid slippers/shoes		Ensure urinal/bedpan/commode within reach
	Ensure room free of clutter		Place bed for patient to exit strong side.
	Use bed alarm		Use fall prevention band
	Use low bed		Notify pharmacist of high risk medicines.
	Engage patient in diversion activities (TV)		Communicate with care team
	Implement toilet program		Write and review fall care plan
	Relocate patient near nurse's station		Conduct frequent hourly rounding

3. What specific interventions, in addition to those above, have you used and found effective in preventing patients from falling?

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Thank you for your participation. Please return the survey to the researcher today.

Appendix D

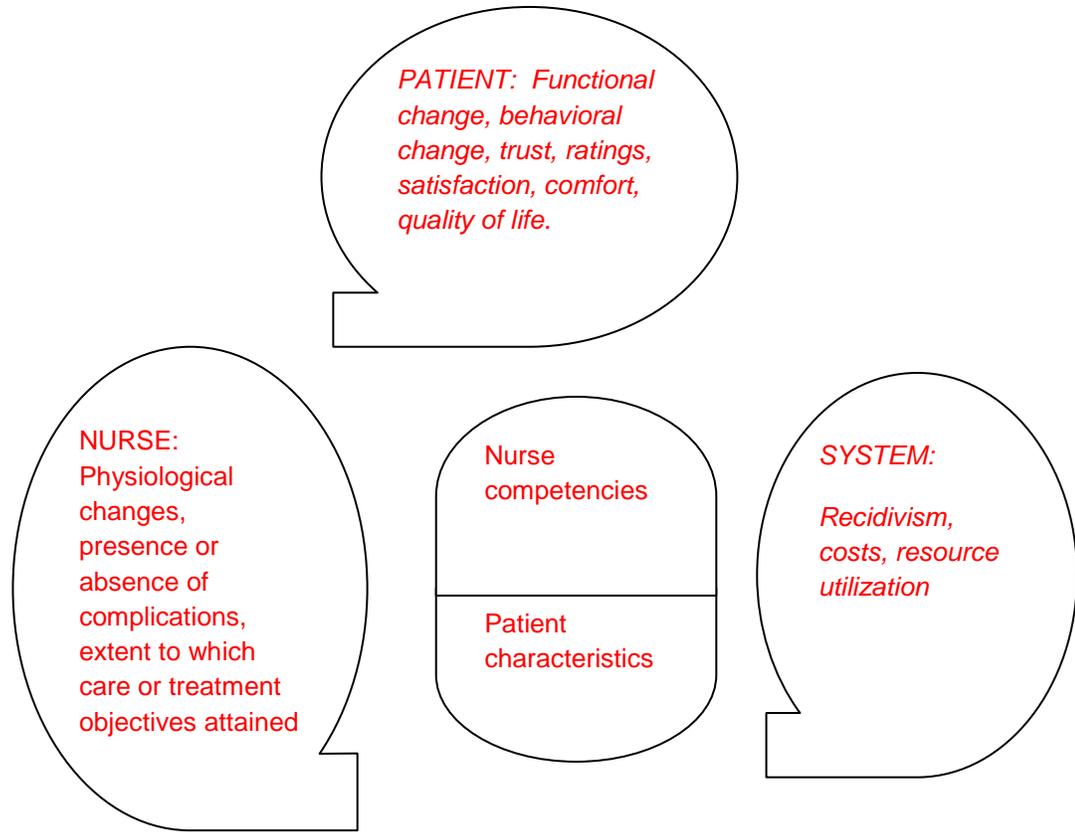
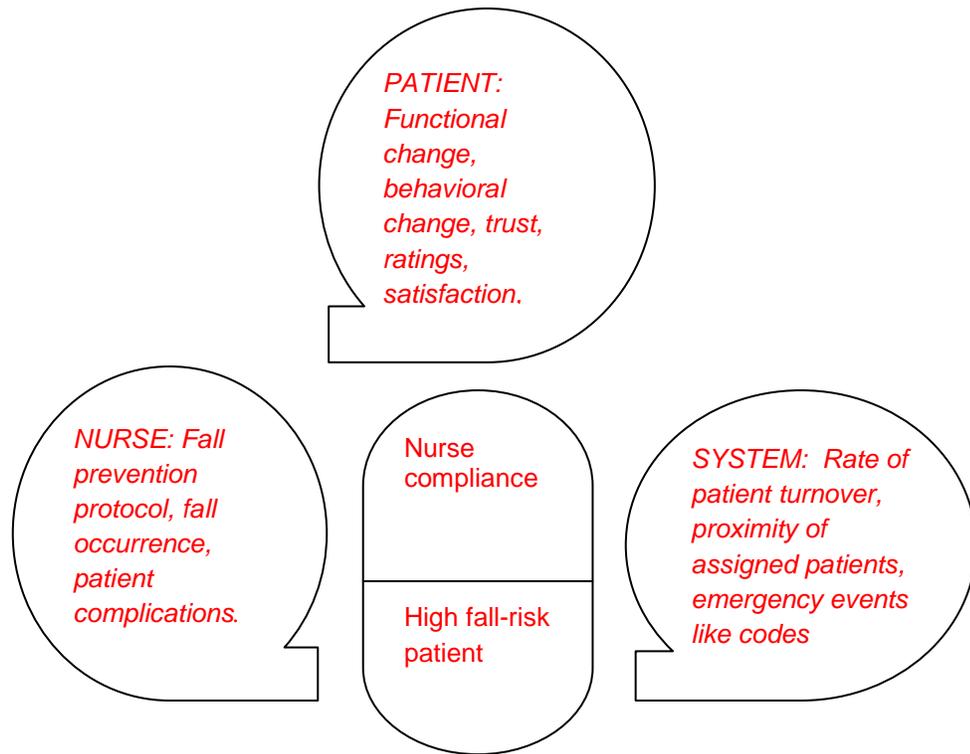


Figure 1. AACN Synergy Model for Patient Care Practice



*Figure 2. Modified AACN Synergy Model for Fall Prevention Study*

## REFERENCES

- American Nurses Association (2009). Nursing-sensitive indicators. Retrieved from [http://www.nursingworld.org/MainMenuCategories/ThePracticeofProfessionalNursing/PatientSafetyQuality/Research-Measurement/The-National-Database/Nursing-Sensitive-Indicators\\_1.aspx](http://www.nursingworld.org/MainMenuCategories/ThePracticeofProfessionalNursing/PatientSafetyQuality/Research-Measurement/The-National-Database/Nursing-Sensitive-Indicators_1.aspx)
- Dunton, N., Gajewski, B., Taunton, R. L., & Moore, J. (2004). Nurse staffing and patient falls on acute care hospital units. *Nursing Outlook*, 52(1), 53-59. doi:DOI: 10.1016/j.outlook.2003.11.006
- Dykes, P. C., Carroll, D. L., Hurley, A. C., Benoit, A., & Middleton, B. (2009). Why do patients in acute care hospitals fall? Can falls be prevented?[article]. *Journal of Nursing Administration*, 39(6), 299-304. doi:10.1097/NNA.0b013e3181a7788a
- Gutierrez, F., & Smith, K. (2008). Reducing falls in a definitive observation unit. *Critical Care Nursing Quarterly*, 31(2), 127-139. Retrieved from SCOPUS database.
- Hendriks, M. R. C., Bleijlevens, M. H. C., van Haastregt, J. C. M., de Bruijn, F. H., Diederiks, J. P. M., Mulder, W. J., et al. (2008). A multidisciplinary fall prevention program for elderly persons: A feasibility study. *Geriatric Nursing*, 29(3), 186-196. doi:DOI: 10.1016/j.gerinurse.2007.10.019
- Huey-Ming Tzeng, & Chang-Yi Yin. (2008). Nurses' solutions to prevent inpatient falls in hospital patient rooms. *Nursing Economics*, 26(3), 179-187. Retrieved from SCOPUS database.

- Kaplow, R. (2003). AACN synergy model for patient care: A framework to optimize outcomes. *Critical Care Nurse*, 23, 27-30. Retrieved from SCOPUS database.
- McEven, M., & Wills, E.M. (2007). *Theoretical basis for nursing* (2<sup>nd</sup> ed.) Philadelphia: Lippincott Williams & Wilkins.
- Meade, C. M., Bursell, A. L., & Ketelsen, L. (2006). Effects of nursing rounds: On patients' call light use, satisfaction, and safety. *American Journal of Nursing*, 106(9), 58-70. Retrieved from SCOPUS database.
- Morse, J. M., Black, C., Oberle, K., & Donahue, P. (1989). A prospective study to identify the fall-prone patient. *Social Science & Medicine*, 28(1), 81-86. doi:DOI: 10.1016/0277-9536(89)90309-2
- Morse, J.M., (1993). Nursing Research on patient falls in health care institutions. *Annual Review of Nursing Research* 11, 299-316.
- Morse, J.M., (2009). *Preventing patient falls: Establishing a fall intervention program* (2<sup>nd</sup> ed.). New York: Springer Publishing
- Murphy, T. H., Labonte, P. B. C., Klock, M., & Houser, L. (2008). Falls prevention for elders in acute care: An evidence-based nursing practice initiative. *Critical Care Nursing Quarterly*, 31(1), 33-39. doi:10.1097/01.CNQ.0000306394.79282.95
- Polit, D.F., & Beck, C.T., 2004. *Nursing research: Principles and methods* (7<sup>th</sup> ed.) Philadelphia, PA: Lippincott Williams & Wilkins.

Rush, K. L., Robey-Williams, C., Patton, L. M., Chamberlain, D., Bendyk, H., & Sparks, T. (2009). Patient falls: Acute care nurses' experiences. *Journal of Clinical Nursing, 18*(3), 357-365. Retrieved from CINAHL database.

Scott, V., Votova, K., Scanlan, A., & Close, J. (2007). Multifactorial and functional mobility assessment tools for fall risk among older adults in community, home-support, long-term and acute care settings. *Age & Ageing, 36*(2), 130-139. Retrieved from CINAHL database.

The American heritage dictionary of the English language, (4<sup>th</sup> ed.). (2003). Houghton Mifflin Company. Retrieved from <http://www.thefreedictionary.com/compliance>

The Joint Commission for Accreditation of Health Care Organizations (2009a). National patient safety goals. Retrieved from <http://www.jointcommission.org/PatientSafety/NationalPatientSafetyGoals>

The Joint Commission for Accreditation of Health Care Organizations (2009b). Performance measurement initiatives. Retrieved from <http://www.jointcommission.org/PerformanceMeasurement/PerformanceMeasurement/NQF+Endorsed+Nursing+Sensitive+Care+Measures.htm>

Woodward, J. L. (2009). Effects of rounding on patient satisfaction and patient safety on a medical-surgical unit. *Clinical Nurse Specialist: The Journal for Advanced Nursing Practice, 23*(4), 200-206. Retrieved from CINAHL database

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