Patient Safety Act Update

Based on the New Jersey Patient Safety Act (P.L. 2004, C.9), general acute care hospitals began reporting serious preventable adverse events in February 2005. Other licensed health care facilities will begin reporting after the regulations are approved. Rules to implement the law are expected to be proposed within the next several months.

A summary of the reporting specifications are available at *www.NJ.gov/health/hcqo/ps.* That web site also provides links to national resources useful for ensuring patient safety.

Event Reporting

Review of events and root cause analyses (RCAs) during the initial 11 months of system operation has shown that:

- The majority of reported events were classified as either falls (33%) or hospital-acquired pressure ulcers (20%). The relative frequencies of reported event types can be seen in Figure 1. Total surgery-related (18%) and "other care management" events (15%) comprise most of the remainder of the submitted event reports.

Figure 1: Frequency of Reported Events
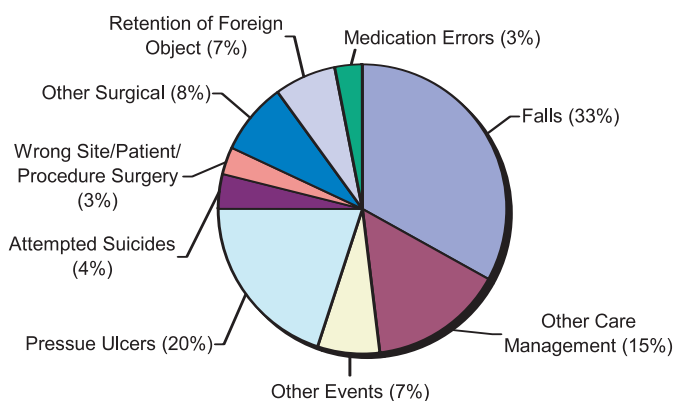
- The top five root causes identified by hospitals as factors in precipitating an event were poor or inadequate staff communication, staff orientation and training, physical assessment of the patient, the care planning process and patient observation. Studies of preventable adverse events conducted by the Veterans Administration and the Agency for Healthcare Research and Quality have reported similar results.[1,2]

- In general, patients experienced longer hospital stays (39%), major surgery (30%), and additional monitoring and diagnostic testing (25%) as a result of a preventable adverse event. A moderate percentage (19%) also experienced temporary to permanent physical or mental impairment. Since hospitals report multiple effects for each event, the percentage totals more than 100%.

Current Activities: Falls Collaborative

In response to the high percentage of falls reported, the Department of Health and Senior Services (DHSS) developed a collaborative workshop on fall prevention. The primary faculty for the workshop are Lisa Mazzia, MD, Senior Physician Specialist with the Patient Safety Reporting Initiative, and Deanna Gray-Miceli, DNSc, a specialist in falls with the Department's Long-Term Care Division. Based on strong hospital interest, the workshop is being offered three times. We anticipate that 40 hospital teams representing 51 hospitals will participate in the collaborative.

The two-session workshop builds on the New Jersey experience with falls and the national perspective on fall reduction. At the introductory session, each hospital team develops a falls reduction project. Through biweekly conference calls, the hospital teams are given the opportunity to ask questions and to exchange information on prevention plan resources, successes, and failures. Participating hospitals have been able to develop and rapidly implement their projects. The initial results are encouraging. At the second session, hospital teams present and review their projects.

Highlighting Falls in New Jersey Hospitals

A fall is the inadvertent landing to the lowest level or ground surface. According to several studies, falls among hospitalized adults have an incidence of 2.3 to 7 falls per 1,000 patient-days.[3] Since an injury is sustained in about 30% of falls, and a serious injury in approximately 4%-6% of cases, preventing falls is an increasingly important component of inpatient care.[4]

Fall with injury is the most frequent serious preventable adverse event reported to the Patient Safety Reporting Initiative, constituting 33% of all reported events. The majority of reported falls took place within the patient's room (82%). The emergency department (7%), a corridor/hallway (6%), or "other" area (6%) captured the remainder of the reported falls.

Hospitals report that increased length of stay, major surgery, temporary or permanent disability, and additional testing/monitoring were the most likely outcomes associated with injury sustained in a preventable fall episode (Figure 2). Hospitals may code multiple impacts; therefore, percentages total more than 100%.

Figure 2: Impact of Falls

% of events
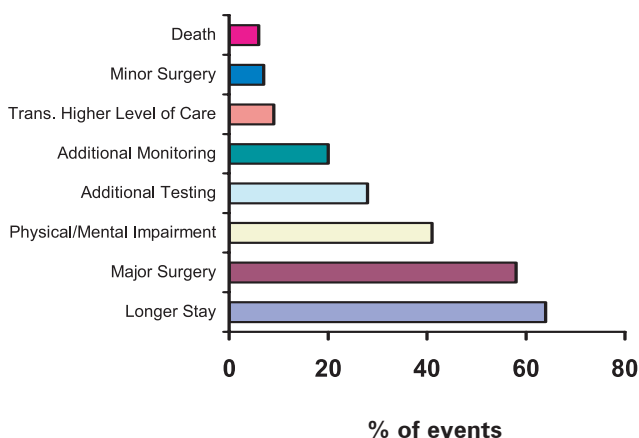
The most frequently cited root causes of falls reported to DHSS are staff communication, staff training/orientation, patient observation and the care planning process. Together these causes highlight the importance of improving staff awareness, training, and response to the common risk factors preceding patient falls.

Patient Risk Factors for Falling

Patient risk factors for falling include weakness, poor cognitive status, elimination-related activities, gait disturbances, and being on medications that contribute to somnolence or confusion.[5] Hospital falls occur in roughly equal numbers when the patient is transitioning (e.g., bed to chair) or the patient is ambulating without assistance. This is especially true for younger patients, who may believe that they do not need assistance. Several studies have shown that patients under the age of 65 are just as likely to suffer a fall-related injury as patients 65 years of age or older.[6]

It is important to discover the underlying cause of a fall, such as muscle weakness, dehydration or multiple medications, and it is also important to ask the patient why he or she attempted to get up or move. Studies have shown that at least 50% of the actions are motivated by bowel or bladder urgency.[7] Other reasons given by patients are reaching for water or reading glasses, and changing position due to pain.

What Hospitals Are Doing to Prevent Falls

Many of the acute care general hospitals in New Jersey have recognized the importance of initiating a fall prevention program. An informal survey of New Jersey hospitals revealed that several different fall prevention programs are currently in use; however, due to the multi-factorial etiology of a fall, a patient may fall even if the hospital has such a program.

• Targeted Rounding

Several facilities have initiated regular targeted rounding on high-risk patients. During the rounds, the patient is specifically asked a series of questions: Do you need anything? Are you in pain? Is your position comfortable? The patient then is proactively toileted: "We are going to the bathroom now…." Although these plans have been in effect for only a few months, hospitals report that the preliminary results in decreasing falls are encouraging.

• Medication Timing

In addition to the well-documented problem of polypharmacy, several facilities found that the timing of medication administration was a factor in increasing the risk for a fall. This was especially true for diuretic administration. After performing the RCA, one hospital found that diuretics scheduled every 12 hours were administered at 9 AM and 9 PM thereby increasing the likelihood that the patient would need to void and get up and go to the bath room or use the commode during night hours. Its action plan was to change the administration times to earlier in the day.

• Pre- & Post-Fall Risk Assessment

Proper assessment of the patient upon admission, at regular intervals, and especially following a fall has been shown to be most effective in identifying the risk factors for future falls. Several risk assessment tools are available for identifying fall-prone patients (see Oliver et al. in **Fall Prevention Resources**). Clinical trials that used screening assessments on which to base the choice of interventions showed a successful reduction in falls when multi-factorial interventions were tailored to patients' changing needs.[8]

Many facilities found that even if patients were initially identified as at high risk, and interventions were initiated, as patients moved through the hospital's levels of care they were never reassessed and the initial assessment may have been lost. A patient may be admitted through the Emergency Department, assessed as a high fall risk on a Med-Surg floor, then go to the operating room, ICU, step-down unit and back to a different Med-Surg floor in the course of a few days. Each one of these transfers is an opportunity for critical patient information to be lost.

Successful action plans include educating all staff, including those in the critical care and step-down units, about the importance of an initial fall assessment, reassessing the patient each shift to incorpo-

rate the relatively rapid changes in physical and mental status that often accompany an inpatient admission, and repositioning the assessment and risk on either the paper medical record or the on-line charting. The key action here is effectively communicating the patient's risk status.

• Specific Interventions

After the patient has been identified as a fall risk, specific interventions, such as bed alarms, hip protectors and ambulating aids, are often employed. Some facilities found that the interventions were not consistently being used, because staff was not aware of the prevention program. In other cases, the bed alarms did not work or there were many different types with which staff was unfamiliar. These causes were addressed through staff education, the addition of a checklist to the assessment tool to match the risk with the intervention, and regular environmental rounds to check equipment availability and functioning.

Fall Prevention Resources

Perell, K.L., Nelson, A., Goldman, R.L., et al. (2001). Fall Risk Assessment Measures: An Analytic Review. J Geron Med Sci, 56A(12): M761-766.

Oliver, D., Daly, F., Martin, F.C., & McMurdo, M.E. (2004). Risk Factors and Risk Assessment Tools for Falls in Hospital In-Patients: A Systematic Review. Age and Ageing, 33(2):122-130.

National Center for Patient Safety: 2004 Falls Toolkit available at **www.patientsafety.gov/safetytopics/fallstoolkit/index.html**

Centers for Disease Control (2003). Various materials available at **www.cdc.gov/doc.do/id/0900f 3ec80277b9c**

Second Looks: Review of Medication Errors

This issue of the **Patient Safety Reporting Initiative Updates** examines medication errors and RCAs that have been reported to us. We invite you to take a "second look" at your facility with these events and potential solutions in mind.

Those who are involved in direct patient care should always be aware that errors can and do occur. When the system, through our co-workers, check-lists and alerts, asks us to re-think our actions, we should take a deep breath and review our actions before continuing with what we were doing.

DOSAGE

1. A post-operative order for pain control was written as ".4 mg of Dilaudid IV" and was read as "4 mg of Dilaudid IV." The patient was given this dosage, suffered a respiratory arrest and was successfully resuscitated with assisted ventilation and Narcan administration.

Comment: Legibility of handwritten medication orders and correct interpretation of the amount ordered has long been a concern, and several procedures have been developed to decrease misreadings. Use of a trailing "0" is banned and a leading "0" for dosages less than "1" is required to prevent errors such as this one. This facility, which does not currently have Computerized Physician Order Entry (CPOE), re-educated the medical and nursing staff, and also implemented random chart monitoring to ensure compliance with procedures.

2. The neurologist ordered "Phenobarbital 20 mg IV" for a pediatric patient with seizure activity. The nurse drew up and administered 1000 mg IV. The patient became apneic and was successfully resuscitated.

Comment: Information from the RCA revealed that this was not the nurse's usual work station, she was an adult critical care nurse, and that the medication was stored in multi-dose vials on the floor. The combination of the nurse's unfamiliarity with a pediatric patient, the sense of urgency to control the seizure activity and the presence of multi-dose vials increased the probability that an incorrect dose would be given. The hospital has developed a list of high-risk medications that require a "double check" by two RNs, removed

multi-dose vials from the floor and hired additional RNs to cover that ICU. The use of multi-dose vials has been a factor in several medication error reports.

3. An order was written as "magnesium today" in the recovery room by the physician for a 39 year-old female post-operative trauma patient. The order was acted upon by staff in the step-down unit approximately 9 hours later. Utilizing the CPOE system, the practitioner entered an order for "IV Magnesium Sulfate…Drip: D5LR 1000ml, Mag Sulfate 40 gm, 5g/h, cont until dc'd." Three hours after the first dose was hung, the patient was found unresponsive and resuscitation was unsuccessful.

Comment: Utilizing CPOE is no guarantee that medication errors will not occur. After performing the RCA, the hospital found that both the pharmacist and the nurse questioned the dosage, but the practitioner was insistent. Furthermore, the CPOE system allowed this dosage, appropriate for a preeclamptic patient on Labor and Delivery, to be ordered without checking other admitting diagnoses or generating an alert. The hospital also found that in the push to implement CPOE, some staff members with prescription privileges were provided with sign-on codes but not with training and credentialing in the system.

While CPOE can indeed reduce medication errors, it is important to remember that it will create different ones. This case also illustrates the importance of medication reconciliation as the patient moves through different levels of care within the hospital. Had the original order been clarified when the patient was transferred, this event might not have occurred.

ROUTE OF ADMINISTRATION

4. A post-operative patient who had been transferred to the floor complained of pain. The RN paged the surgeon who was already scrubbed in another case. The call was patched through to the OR and the surgeon gave a verbal order for "IM Demerol 75 mg + Vistaril 25 mg." The nurse called back and said that the patient didn't want an IM injection; the surgeon changed the verbal order to 50 mg Demerol IV. The nurse heard Demerol 75 mg + Vistaril 25 mg IV, entered the order on the CPOE system and gave the medications IV push. The patient was found unresponsive and expired.

Comment: After performing the RCA, the hospital found that communication, staff education and loopholes with the CPOE system were factors in this event. The OR did not have speaker phones, so the circulating nurse held the phone to the surgeon's ear for the first order. When the floor RN called the second time, the message was relayed to the surgeon, who gave his order to the circulator who gave it to the floor nurse. The level of noise in the OR also increased the likelihood that the order would not be correctly heard.

The RCA also revealed that some staff had become so accustomed to administering certain medications, that they had become desensitized and no longer noticed the warning labels on the bottles about the danger of IV versus IM administration.

The hospital found that the CPOE system allowed staff to work around programmed safeguards and order medication for a non-approved administration route, and that CPOE safety factor education was not part of orientation or staff continuing education.

As a result of this information, the hospital changed its verbal order procedures, added safety factor education to orientation, changed the CPOE screen to only allow Vistaril to be ordered PO or IM and assembled a multi-disciplinary team to review high risk medications and suggest changes to the CPOE screen.

References:

[1] Mills, P.D., Neily, J., Luan, D., Stalhandske, E., & Weeks, W.B. (2005). Using Aggregate Root Cause Analysis to Reduce Falls and Related Injuries. Jt Comm J Qual Patient Saf, 31(1):21-31.

[2] See **www.ahrq.gov/qual/pscongrpt/psini2.htm**

[3] Hitcho, E.B., Krauss, M.J., Birge, S., W.C., et al. (2004). Characteristics and Circumstances of Falls in a Hospital Setting. J Gen Int Med, 19:732-739.

[4] Ash, K.L., MacLeod, P., & Clark, L.A. (1998). Case Control Study of Falls in the Hospital Setting. J Gerontol Nurs, 24(12):7-15.

[5] Hitcho et al. (2004), op. cit.

[6] Hitcho et al. (2004), op. cit.

[7] Hendrich, A.L., Bender, P.S., & Nyhuis, A. (2003). Validation of the Hendrich II Fall Risk Model: A Large Concurrent Case/Control Study of Hospitalized Patients. Appl Nurs Res, 16(1):9-21.

[8] Becker, C., Kron, M., Lindemann, U., et al. (2003). Effectiveness of a Multifaceted Intervention on Falls in Nursing Home Residents. J Am Geriatr Soc, 51(3):306-313.

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