Florida Patient Safety Corporation

Near-Miss Reporting System

Advisory for March 2007

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INTRODUCTION

This is the second issue of the *Florida Patient Safety Corporation Near-Miss Reporting System Advisory*. In this issue, we will provide an update to the project. We will also offer a discussion of several near-miss reports received during the previous three months and offer commentary on their relevance from a patient safety perspective.

As we approach the end of the first quarter of 2007, the Near Miss Reporting System (NMRS) project has sixteen participating facilities forwarding near-miss reports which have been analyzed for:

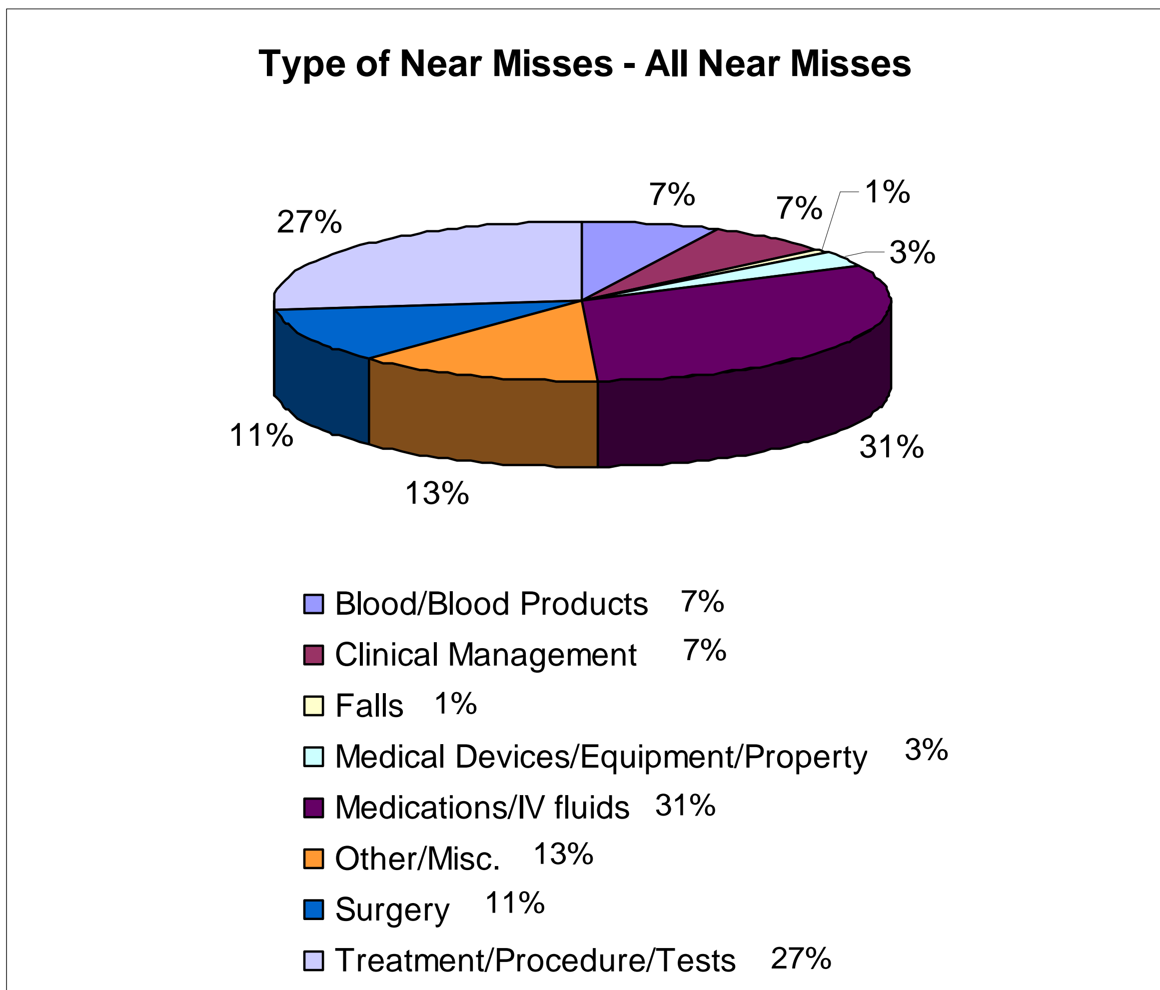
- potential systemic problems that if uncorrected, could lead to harmful incidents or malpractice claims
- factors that either contributed to bringing about the near-miss or the intervention that prevented the near-miss from escalating into an adverse (incident causing harm) event
- "lessons learned" and recommended actions for addressing opportunities for improvement

On pages 3 through 6, we have provided graphs and statistics reflecting trends and patterns of near-miss reports received from the date of project "roll-out" (4/26/06) through first quarter of 2007.

The chart on the next page illustrates the types of near misses remains static. The majority of near-miss types are Medications/IV fluids (31%), Treatment /Procedure /Tests (27%) and Surgery (11%). This continues to track with near-misses received in 2006. The subject of wrong-site surgery, which constitutes a significant portion of Surgery related near-misses was comprehensively addressed in the December 2006 Advisory. An article titled "Follow-up on Wrong Site Surgery" appears in this Advisory. Treatment/Procedure/Test near-misses which are often reflective of specimen mislabeling issues were also addressed in the previous Advisory. The December 2006 Advisory is on the FPSC website at: http://www.floridapatientsafetycorp.com/patient_safety_advisories.asp

With regards to medication errors, we have received several near-misses that involve Automated Drug Dispensing Cabinets. The article examines how these near-misses occur and the manner in which staff complacency is a contributing factor.

Other types of near-misses will be discussed in future issues of the Advisory.



The chart on the next page isolates the factors that are the major contributors to near-misses received. Communication among staff members and patient identification process remain at the top or the list. Again, an article titled "Communication Failures in Healthcare" addresses many of the factors that contribute to this problem and can be found in the December 2006 Advisory. "Follow-up on Wrong Site Surgery "in the current Advisory provides an innovative approach to confirming the identity of the surgical patient

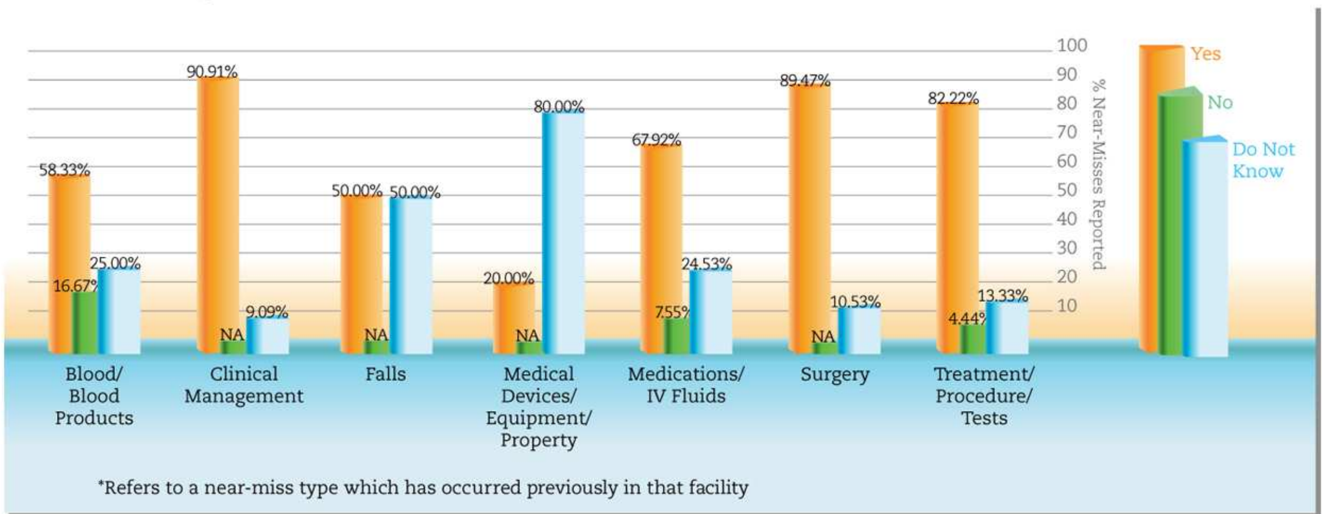
Contributing Factors - All Near Misses

Contributing Factors	Percentages
Patient identification process	36.69%
Other	20.71%
Communication among staff members	11.83%
Labeling of medications	5.92%
Orientation and training of staff	3.55%
Control of medications: storage or access	3.55%
Equipment maintenance or management	2.96%
Communication with patient or family	2.37%
Availability of information	2.37%
Physical environment	1.78%
Patient observation procedures	1.78%
Supervision of staff	1.18%
Physical assessment process	1.18%
Competency assessment/credentialing	1.18%
Care planning process	1.18%
Adequacy of technological support	1.18%
Behavioral assessment process	0.59%

Finally, the graphic on the next page illustrates that the overwhelming majority of near-misses are recurring and thus, reflect mistakes that are repeated. As noted in the December Advisory:

"In far too many situations the NMRS reviewers are concluding that the most troubling aspect of the near-miss lessons learned is ***that no lesson was learned****. Root Cause Analysis was not performed on the majority of these events. Providers are viewing near-misses as non-events and are not exerting the level of analysis warranted to avert another near-miss or "hit". This must truly be viewed as a lost opportunity!"*

A number of near-miss reports have cited the reason for recurrence as being that their incident reporting system has no loop closure. What this strongly implies is that identified problems are not being worked toward achievement of successful and sustaining resolution. Healthcare providers are not effectively resolving the problems that are identified within their facilities. In the absence of this resolution effort, or stated another way, incident report "loop closure", facilities will continue to experience recurring near-misses and "hits"! Loop closure is a vital aspect of patient safety and will be addressed in a future Advisory.



Current Advisory Content

In this Advisory, we will address near-misses which relate to the following areas:

- Non-adherence to hand hygiene
- Automatic drug dispensing cabinets
- Wrong site surgery

An article providing an innovative strategy for increasing the reporting of near-misses is also included. We urge the reader to take note that in every case, these types of events have occurred previously.

NON-ADHERENCE TO HAND HYGIENE

Events described in most near-misses received reflect system failures that involve communication, hygiene, patient identification and clinical management. *Ironically, well established solutions have been developed for each one*. This is most certainly the case with the first near-miss report type that we have chosen for discussion.

We have received several near-miss reports that reference circumstances where a staff member was noted ***not to*** adhere to recommended hand-hygiene practice. Hand hygiene non-compliance was noted to occur at the point of both pre and post - intervention with patients. At first glance, the reader might question why we have characterized non-adherence to hand hygiene as a near-miss. An authoritative definition of near-miss has been published by The Agency for Healthcare research and Quality (AHRQ). They define "near-miss" as follows (1):

"An event or situation that did not produce patient injury, but only because of chance. This good fortune might reflect robustness of the patient (e.g., a patient with penicillin allergy receives penicillin, but has no reaction) or a fortuitous, timely intervention (e.g., a nurse happens to realize that a physician wrote an order in the wrong chart).
This definition is identical to that for close call."

We reasoned that lack of hand washing has been clearly and convincingly shown to increase the risk of hospital acquired infection. Thus, witnessing a staff member not wash their hands before examining a patient, even where a patient doesn't get infected, is indeed a bona fide near-miss. Therefore, we have included this near-miss type in the Advisory.

Another problem for which the solution is well known

This near-miss chronicles an issue for which the solution is well known. In fact, it has been for decades. Organizations such as The Center for Disease Control have long promulgated the message that "Clean hands are the single most important factor in preventing the spread of dangerous germs and antibiotic resistance in health care settings," and "More widespread use of products that improve adherence to recommended hand hygiene practices will promote patient safety and prevent infections."(2)

Moreover, hospital-acquired infections continue to pose a significant threat to patient safety. The CDC estimates that each year nearly 2 million patients in the United States get an infection in hospitals, and approximately 100,000 of these patients die as a result of their infection. This is as many as AIDS, breast cancer and auto accidents combined. Infections are also a complication of care in other settings including long-term care facilities, clinics and dialysis centers. The message could not be clearer; Improving hand hygiene will help prevent the spread of germs from one patient to another. (3)

Medical scientific literature abounds with authoritative guidelines addressing hand – hygiene in the health care setting. The CDC's Healthcare Infection Control Practices Advisory Committee has published a comprehensive document titled Guidelines for Hand-Hygiene in the Health-Care Setting (3) incorporates authoritative models for improvement and provides numerous strategies for addressing these issues.

As comprehensive as these documents are, studies which measure compliance suggest that hand hygiene compliance with accepted guidelines may actually be 35% or even lower. One study has even reported compliance to be less than 5% (4-5)

Addressing the problem

A number of strategies have been employed for promotion of hand hygiene in hospitals. These include but are not limited to:

- Education
- Engineering and controls
- Change in hand hygiene agent
- Reminders in the workplace
- Improve institution safety climate
- Combination of strategies

Each of these approaches is utilized, but the problem still persists.

Barriers to compliance

Barriers contributing to poor adherence with accepted hand-hygiene guidelines still persist, however. Some of the more prominent barriers include:

- Reluctance to change, tolerance of the status quo
- Lack of leadership commitment and follow-through
- Failure to educate and communicate
- Failure of staff self-efficacy and empowerment
- Failure to make compliance a social norm and establish a culture of safety
- Failure to provide a real time feedback and performance data
- Lack of a cohesive approach to behavioral change

According to McCaughey, in an article in the New York Times, many hospital administrators say they can't afford to take the necessary precautions. The bottom line is, however, that they can't afford not to. Infections erode hospital profits, as they are

rarely fully reimbursed for weeks or months added to the patient stay when they contract an infection. Studies show that when hospitals invest in proven precautions, they are rewarded with as much as tenfold financial return. These infections add about $30 billion annually to the nation's health costs. This amount could rapidly increase as more infections become drug-resistant. (6)

An increasing public awareness of the linkage between hand washing and healthcare-associated infections appears to be occurring rapidly. Hand washing awareness campaigns have become a common occurrence. Patients are being presented with survey questions such as, "Did the staff/physician wash or sanitize their hands during your hospitalization?" Patients are even reminding staff to wash their hands! This increase in public awareness is leading to calls for public disclosure of healthcare infection rates in the United States. Since 2002, several states including Florida have enacted legislation mandating hospitals and other healthcare organizations to report healthcare-associated infection rates.

Success Stories

We would like to bring two interesting success stories to the readers' attention. Both employed the use of behavioral performance management in modifying behavior. In this instance, the behavior is the practicing of proper hand hygiene. In each instance, most if not all of the barriers to compliance e noted above were neutralized. In both of these examples, staff received positive reinforcement when observed practicing proper hand hygiene. As a result, staff actually looked forward to properly washing their hands as it would spur an enjoyable result. "Real time" positive feedback was provided. Additionally, the program has a competitive component in that the department that collected the greatest number of positive observations would be formally recognized and rewarded. Most importantly, behavioral changes tool place.

Two examples of the behavioral performance management approach for hand hygiene follow: (7):

Success Story #1

A reverse "tattletale" campaign was used and it increased MD compliance from 3%, yes, 3% to 70%. A program was established whereby employees were requested to "tattle" on MDs when they were observed performing proper hand hygiene. In other words, they were "caught" practicing proper hand hygiene. Once reported, The Infection Control Practitioner would approach the MD sternly & tell them they were tattled on - then present them with a reward…a candy bar. They were then thanked for their compliance. Tattles were tracked and tallied for several months. The winner was presented with a certificate. Amazingly, the competition inspired behavioral change in hand hygiene habits. Physicians were reminding staff to tattle on them. It was fun for all involved.

Success Story #2

"One idea we tried here was to have a hand hygiene contest. Each staff member in the facility who works in patient care and support was issued a small card with 30 square openings on it. Staff was requested to carry these cards on their person at all times. Cards were also left in the doctor's lounge with a poster explaining the rules of the contest.

When a co-worker observes a colleague performing proper hand hygiene, they ask for that colleague's card and it's initialed and dated in one of the squares. When the co-worker's card is full, or at the end of the contest, the cards are put into baskets on the units and the Infection Control Practitioner retrieves them during rounds.

The department with the most cards completed gets a pizza party or some similar type of recognition for all three shifts. The physician receives recognition (a plaque) at the monthly award ceremony."

A simulation module addressing hand hygiene and the consequences of the lack of hand hygiene is available on line @ http://www.patientsafety.med.miami.edu/.

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IDENTIFYING AND REPORTING NEAR-MISS EVENTS

In our December Advisory, we explored the importance of near-miss events and the rationale for their being the focus of this study. We know that unexpected deaths, very serious illnesses or injuries in hospitals are often preceded by one or more near misses. We have learned that near-misses are often the precursors to an adverse event. When viewed with foresight, these mishaps offer potentially significant improvement opportunities for health care providers. As the airline industry has demonstrated, analysis of near-miss data provides an opportunity to design systems that can prevent adverse events.

Although near-miss events are much more common than adverse events, reporting of such events are much less common. Indeed, well developed systems for the reporting of near-miss events is relatively rare in US hospitals. Hospital staff may be aware of a near-miss event but, for a variety of reasons, do not report them. The result is that the near –miss event is a vastly underutilized resource for identifying patient safety issues. Hospital staff awareness of the importance of near-misses will result in a safer environment for patients. As such, staff should be strongly encouraged and even prompted to report incidents, especially those in which potentially harmful consequences were averted.

Near-Miss Report "Prompting"

One of the hospital participants in the Near-Miss Reporting System has developed a simple process whereby staff members are "prompted" to formally acknowledge and document near-miss events. Quite simply, a question is posed on the change of shift report as to whether a near-miss occurred. The staff member will check the box indicating that a near-miss has occurred and provide a short description of circumstances. The hospital reports measurable improvements in the volume of near-miss events reported. The form used to record this process is displayed on the next page.

Trauma 4 Neuro/Rehab
Patient Data Report Sheet

Rm #: Patient's Name: Date of Admission
Diagnosis: Admitted from:
Age:
Medical & Surgical History: Allergies:
MD:
Contact Person & #: Projected Discharge
Date:

Precautions:

- ☐ Fall Risk: Level _____
  - Dates patient fell:
  - ☐ 1:1 attendant
- ☐ Aspiration Precautions
- ☐ DNR
- ☐ Contact:
- ☐ Strict Handwashing (MRSA)

Restraints

- ☐ Bed Enclosure
- ☐ 4 Side Rails Up
- ☐ Limb Restraints: _____
  - ☐BUE ☐RA ☐LA
- ☐ Seat belt

Positioning Device: Seat Belt

Near Miss: ________________________________

Date:	V/S & FS	Neuro	RESP	CV/Meds	GI	GU	Mobility/ADL	Skin	Labs/ Diagnostics/ Misc.
	☐ Restraint Order checked ☐ Restraint flowsheet complete			IV Access	Diet	☐ Incontinent			
	☐ Restraint Order checked ☐ Restraint flowsheet complete			IV Access	Diet Bowel & Bladder Last BM:	☐ Incontinent	☐Shower Given		
	☐ Restraint Order checked ☐ Restraint flowsheet complete			IV Access		☐ Incontinent			

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FOLLOW-UP ON WRONG SITE SURGERY

In the December 2006 Advisory, we discussed wrong site/patient /procedure events that were averted. This type of event comprised roughly 10% of near-miss reports received. Also noted was that the JCAHO indicates that wrong-site surgery accounts for 13% of sentinel events and is the second most frequently reported category. We cite the fact that this is a perennial problem despite the solutions that have been developed to address this issue.

A New Strategy for Addressing the Problem

We noted an innovative approach currently being utilized by a participant hospital in the Florida Patient Safety Corporation Near Miss Reporting System. The facility is utilizing a device called the Preoperative Checklist first utilized and developed by operating room physician and nursing staff at Strong Memorial Hospital in Rochester, New York. The "checklist" is a plexi-glass board with a panel of sliders and protective vinyl coating on the back. The slider panel corresponds to a customized process list. Each slider must be physically moved from red to green to complete the checklist and must be verified by two team members. The board is mounted on the wall of each operating room in a spot that is easily visible to the surgical team (see Perioperative Checklist photo on the following page) (8)

The board is customizable to address individual user requirements. This device, as configured by our participant facility, prominently displays categories of the preoperative patient verification process. Thirteen steps must be confirmed by two members of the surgical team before the official Time-Out (immediately before surgery, after the patient is positioned, prepped and draped) is to occur. Members confirming the steps must be the circulating RN and another licensed member of the surgical team.

Preoperative patient verification process categories that are displayed on the board are as follows:

1. Patient identification – TWO identifiers
2. Allergies
3. Consent signed
4. History & Physical

5. Site verification
6. Implants/Special Equipment*
7. Radiological exams*
8. Antibiotics given*
9. DVT prophylaxis*
10. Beta Blockers*
11. ABO Compatibility*
12. Surgical Pause/ Final Time Out
13. Other

The circulating RN and licensed surgical team member will confirm concurrently the 13 categories (if applicable) by sliding the 13 windows on the Preoperative checklist from red (not confirmed) to green (confirmed). Surgery will not commence until all categories are green. If any of the 13 categories are not applicable they will be moved to green. If any discrepancies between team members exist, surgery will not commence until resolved. The circulator RN is responsible to assure the Preoperative Checklist. Board is cleared (categories should be moved from green back to red after the patient has left the OR). All written information must be erased after the completion of the case.

The University of Rochester Strong Memorial Hospital staff report that the board has enabled identification of near-misses. Examples of items caught through perioperative use include: wrong pre-op meds, wrong consent, outdated H&P, missing EKG, allergies not noted, no beta blocker when indicated and no prophylaxis.

Information about the Perioperative board usage can be obtained through indeltalearning.com or call 866-738-7893.

PERIOPERATIVE CHECKLIST

DATE ____________

Patient's name ________________ Weight ______Kg.

Date of Birth ________ Med. Rec. # ____________

ALL ITEMS MUST BE CONFIRMED BY 2 TEAM MEMBERS

Red Not Confirmed / Green Confirmed

PROCEDURE ____________

Patient Position ________

SURGEONS ________

ANESTHESIA ________

CIRCULATOR ________

SCRUB ________

OTHER ________

1 Patient Identification TWO identifiers
2 Allergies
3 Consent signed
4 History & Physical
5 Site verification
6 Implants/Special Equipment*
7 Radiological exams*
8 Antibiotics given*
9 Time given recorded
10 DVT prophylaxis*
11 Beta Blockers*
12 ABO Compatability*
13 Surgical Pause

*If applicable

Indelta Learning Systems 866-738-7893

5

AUTOMATED DRUG DISPENSING CABINET NEAR-MISS

How These Near-Miss Events Occur

The NMRS has received several reports citing averted medication errors that involved automatic drug dispensing cabinets (ADC). The most recent reports described the following circumstances:

1. *"Accessing the ADC to remove Paxil 20 mg noted Nifedipine 90 mg instead"*
2. *"The nurse entered the automatic drug cabinet (ADC) to retrieve liquid multivitamin and liquid Propanolol was in the space."*
3. *"The nurse went into the machine to obtain liquid Tylenol and liquid Prograf was in the drawer."*
4. *Calcium Gluconate placed in a drawer reserved for Sterile Water*

Our participants were fortunate, however. The wrong drug was identified prior to administration. These events were near misses and the patients for whom the medications were intended were not harmed. Unfortunately, all patients are not as lucky. In September 2006, the Institute for Safe Medication Practices (ISMP) cited a tragic case in which three premature infants died after receiving an overdose of heparin. According to ISMP, this may have occurred because heparin vials containing 10,000 units/mL were placed in an automated dispensing cabinet where vials containing 10 units of heparin per ml were normally kept. The vials looked similar, and the nurses did not notice that the ones that were taken from the cabinet actually contained 10,000 times more heparin than they expected.

How could an event such as this happen using an ADC? The photo below, submitted by a participating hospital, clearly illustrates how this type of mix-up occurs.

ISMP notes that errors in filling automated dispensing cabinets are common, and so it is important to double-check the contents of these cabinets before they leave the pharmacy. Indeed, the literature cites a variety of problems associated with the use of ADCs. These are beyond the scope of this article but are comprehensively addressed in the references listed at the conclusion of this article.

Automated Drug Dispensing Cabinet Safety and Staff Complacency

ADCs are widely believed to increase medication safety and security. Even with the perceived safety of these devices, the need for proper staff diligence remains. There are a multitude of examples in healthcare that have led us to conclude that technology can significantly contribute to patient safety. Not uncommonly, complacency surfaces where automation or technology play a pivotal role in a process. Consider the following scenario.

A pharmacist receives and enters an order into the pharmacy computer. A nurse types the patient's name on ADC keyboard and selects the drug that matches the patient's name and retrieves the proper drug/dosage. Everything works out as planned in almost every case. With such a high degree of accuracy and knowledge that the cabinet is "computerized," staff naturally believe nothing could go awry.

If, however, if the pharmacy tech misplaces the drug when restocking the ADC, the nurse may open the correct drawer, remove a dose from the proper coordinate and glance at the label. The obvious danger inherent in this “grab and go” methodology is that the nurse will likely not notice that it's the wrong product. This clearly illustrates the potential for drug administration errors where staff believes that if it’s computerized, the potential for error is too remote to be of concern. (9)

A starting point for addressing this behavior is to take steps to increase awareness about the adverse effects of complacency. The belief that "If its computerized, it’s correct” must be dispelled. Staff should be periodically reminded that errors could occur when blindly trusting automation and technology. Staff must maintain vigilance when working with technology and automation to avoid the false sense of security that comes with complacency.

Vigilance may not be enough

Staff vigilance, regardless of the extent, may not be enough in matters involving ADC medication stocking. Many facilities have or are considering the purchase of systems that utilize bar-code technology. A future Advisory feature will explore technologies currently available such as bar coding that reduce medication errors.

CONCLUSION

It has been 11 months since we started collecting data on Near–Misses on a voluntary basis from hospitals and surgicenters in Florida. After a slow start, we now have sixteen facility participants in the system and continue to bring in new facilities. They range from inner city to rural, from academic to private practice, and from not-for-profit to HMO. This range allows us to collect more meaningful data that will hopefully yield important lessons for us all. The one message that is becoming very clear to us is that the errors that one of us makes are being experienced by many other facilities. The names change, the incidents don't. We are also seeing repeat near misses from the same institutions. This suggests that we may not be addressing today's near misses well enough to prevent them from recurring and potentially becoming tomorrow's morbidity or mortality.

While we continue to collect data and drill down, whenever possible, into the root causes, our ultimate goal of analyzing these reports is to use a system such as the Australian Incident Monitoring System (AIMS). This is, however, still far off. According to the experts who run the Australian system, meaningful analysis can only occur once thousands of near misses are reported. In order to achieve this goal, we will need more facilities to participate and report all of their near misses. This is a difficult task to request, but the end result will potentially improve the safety of healthcare in all of our facilities.

We sincerely appreciate and thank those facilities that have been project participants thus far. Your contributions have been significant and have enabled the project to progress to the point where we are today. There is still an incredible amount of potential that can be realized through greater facility participation.

In short, we can't fully achieve the goals of this project without your support. We urge you to convince leaders in other facilities to become members of our reporting group.

With deep appreciation,

The NMRS Team

ADVISORY CITATIONS

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