Pediatric Medical Errors
Part 2: Case Commentary
A Source of Tremendous Loss
Anita Catlin

In the previous article by author Elizabeth Dowdell, “A Pediatric Drug Overdose,” relates a distressing story about a medication error that contributed to the death of a child. Dowdell describes a series of events that leaves us with loss. What was lost?

- A child under our care.
- A nurse who left the profession.
- Charge nurses who resigned from the facility.
- Trust in a physician who had his own version of the truth.
- Belief that the medication use system would catch an error in process in a timely manner.

This article will discuss medication error prevention, and its relationship to the issues of floating, nurse-physician relations, and critical incident debriefing. The contributions of the National Council of State Boards of Nursing, Medication Administration Error Reporting and Prevention Council, the Institute for Safe Medication Practices, the American Academy of Pediatrics, and the Pediatric Pharmacy Advocacy Group will be highlighted. Attached information provided by the Institute for Safe Medication Practices will address the elements within the system that should prevent errors from reaching a patient.

Regarding the Nurses

Dowdell (2004) describes a medication error resulting from a nurse untrained in pediatrics being floated to a pediatric intensive care unit. Floating has long been an issue of concern to nurses and nurse managers. Board of Registered Nursing regulations from many states (Iowa State Board of Nursing, 2003) and past court cases such as Winkelman versus Beloit Memorial Hospital, 1992 (Govis, 2002), have made it quite clear that it is not only unlawful for a nurse to float to an area for which he or she has not been trained, but that the nurse manager making the assignment is also liable. Nurses and nurse managers are subject to discipline or suspension of license if floating is incorrectly accepted or incorrectly assigned. The nurse must be trained to work in the area of assignment, and many states (California Board of Registered Nursing, 2004) require by law demonstrated competency. Nurses may legally refuse an assignment for which he or she lacks clinical experience and education, but if an offer for training is then presented in preparation for floating, the training may not be refused (Govis, 2002).

Labor unions have also addressed floating in labor contracts. The Service Employees International Union (SEIU) (2004) Web site reports that nurses in union hospitals throughout the United States are guaranteed that they will not be floated to areas where they do not have the proper qualifications and orientation. In addition, floating nurses must sign off that the training was recent and satisfactory.

The number of qualified nurses on a unit has also contributed inversely to medication errors. In a study at Walter Reed Army Medical Center (Dukes, 2004), Patrician and Bosch examined all medication errors and near-miss medication errors on 14 inpatient units during the year 2003. The most significant finding of the study related to staffing and skill mix; for every 10% increase in registered nurses, there was a 14% drop in medication errors. Topping the list of errors were medications given at the wrong time, missed doses, and wrong doses.

The issue of staffing, along with communication with physicians about orders, has been targeted many times by those examining medication errors. The 2000 Institute of Medicine report “To Err is Human” (Cohn, Corrigan, & Donaldson, 2000), brought national attention to medication errors. The National Council of State Boards of Nursing (NCSBN) is devoting significant time and resources to creating an environment that will diminish the possibility for nurses to incorrectly administer a medication – as the NCSBN surveys new nurses annually about practice issues. The 2002 NCSBN Annual Survey (NCSBN, 2004) reported 50% of those nurses surveyed were involved in a patient care error, with 75% of errors being medication errors. When asked to select contributing factors to the errors, these nurses selected inadequate staffing and communication issues in interpreting doctors’ orders as the most highly contributing factors.

The NCSBN is continuing to investigate nursing errors in an epidemiological study begun in 2002. Fifteen State Boards of Nursing are participating in analyzing medication errors and looking for the answer to the question: “What are the factors that put a nurse at higher risk for making practice-related errors?”

The National Council has joined with several other organizations in a cooperative organization called MERP – the Medication Error Reporting and Prevention Council in the United States. The council is made up of stakeholders in safe medication administration. Representatives from every major health-related organization meet together in an ongoing effort to decrease the number of medication errors. The NCSBN sits on the leadership board of this group.

The MERP Council has mounted a nationwide campaign for medication error reporting and prevention. MERP plans to draft medication safety recommendations for colleges, schools, and state associations of medicine, pharmacy, and nursing; national professional associations; managed care organizations; and third-party payers. Goals of MERP (NCCMERP,2004) include 1) evaluation and examination of root causes of medication errors; 2) strategies to modify practice standards and guidelines; and 3) recommendations for changes in packaging, labeling, and product identity. MERP has had an active role in the development of bar coding all medications to be delivered to patients in a hospital setting, which may become mandated by the year 2006. It

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Pediatric Ethics, Issues, & Commentary focuses on exploring the interface between ethics and issues in clinical practice. If you have suggested topics or cases for consideration in the column, please contact Anita J. Catlin, DNSc, FAAN, at acatlin@napanel.net

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is estimated that 50% of all errors will be eliminated when this takes effect.

MERP defines a medication error as "... any preventable event that may cause or lead to inappropriate medication use or patient harm, while the medication is in the control of the health care professional, patient, or consumer. Such events may be related to professional practice, health care products, procedures, and systems, including: prescribing; order communication; product labeling, packaging and nomenclature; compounding; dispensing; distribution; administration; education; monitoring; and use" (NCCMERP Website, 2004). As MERP collects information on medication errors, this information is shared with the Institute for Safe Medication Practices (ISMP), a nonprofit organization that works closely with health care practitioners and institutions, regulatory agencies, professional organizations, and the pharmaceutical industry to provide education about adverse drug events and their prevention. ISMP uses this information to make improvements in drug distribution, naming, packaging, labeling, and delivery system design. ISMP has made major contributions through the analysis of medication errors.

The ISMP has compiled several excellent tools available on its Web site (www.ISMP.org) for decreasing error. Examples include a list of the abbreviations that have most frequently contributed to drug error (ISMP, 2004a) and the list of similar medication names (ISMP, 2004b). The ISMP reports that errors related to similar names is compounded by illegible handwriting, incomplete knowledge of drug names, newly available products, similar packaging or labeling, and incorrect selection of a similar name from a computerized product list. See Hedy Cohen's analysis in this issue (p. 334) for an ISMP-provided analysis of systems information to prevent medication error.

In addition to MERP and ISMP, the American Academy of Pediatrics (AAP) created a response to medication errors in children. The AAP released a recent policy statement (2003) called "Prevention of Medication Errors in Pediatric Inpatient Setting." This extremely comprehensive policy statement is a collaboration between the AAP Committee on Drugs and the AAP Committee on Hospital Care. One significant fact related by the AAP committees is the contrast of errors related to adults versus errors related to children. For adults, 1 to 30% of all hospital admissions are associated with a medication error, and 13% of the errors are associated with harm or death. In pediatrics, 1 error occurs in every six drug orders, with 31% associated with harm or death. The most commonly cited error in pediatrics was related to intravenous fluid doses and dosing intervals. The AAP report reminds us that children vary in weight, body surface, and organ system maturity, and that a recent weight in kilograms must be used to determine dosages.

The AAP authors provide an entire overview of the drug distribution process. They include 17 system wide recommendations, 14 provider guidelines on ordering medications, 8 prescriber education components, 9 pharmacy guidelines, 6 pharmacy education components, 7 nursing guidelines, 7 nursing education factors, and 7 patient and family guidelines. The nursing guidelines are excellent, and immediately address the need to calculate dosages, verify with another clinician, verify any extremely large or extremely small dosage, confirm patient identity, listen carefully and double check any parental questions, and be very familiar with operating the medication administration pumps. Verification of patient identity includes not just verifying the name, but also the child's weight, allergies, and previous medication use. The AAP states that prescribing physicians and nurses should discuss medication orders whenever possible. The two nurses who served as liaison to the AAP, Susan Dull, MSN, of the National Association of Children's Hospitals, and Mary Perkins, DNSc, of the American Hospital Association, should be commended for participation in this excellent document. The entire paper should be copied and made available to all pediatric nurses and included as part of every orientation.

The Pediatric Pharmacy Advocacy Group and the Institute for Safe Medication Practices (Levine, Cohen, Blanchard, Frederico, Magelli, Lomax et al, 2001) also created an extensive overview of pediatric safety measures. This document fully addresses the safe distribution of medications, and leading pharmacists discuss the ideal computer system that would verify the appropriateness of an order, calculate dosage by height and weight, examine the patient's medical profile, interact with other computer bases (such as the laboratory and archival patient history), use pharmacology information to assess drug interaction and contradiction, and provide oversight on the entire process.

The authors provide guidelines for automatic drug-dispensing systems. A valuable component of the document is the calculation instructions for intravenous dosing. This paper also contains extensive educational recommendations for pharmacists, physicians and nurses. These guidelines have been endorsed by the Society of Pediatric Nurses (SPN) and can be found posted on the SPN Web site.

Nurse-Physician Relations

Dowdell (2004) reports that a physician stated, "I never said that," and "I did say this." It seems outrageous that both professionals could not stand together to fight for this infant's life. What really occurred has not yet been revealed. What is certain is that nurse-physician relations could have been much improved. Paparella and Paparella (2002) also describe a case in which a child died due to nurse-physician confusion over a verbal order. They provide clear guidelines on very restricted use of verbal orders. In a study of 2,000 health care professionals conducted by the Institute for Safe Medication Practices (2004), the ISMP attributes intimidation as a root cause of medication error. In this study, half of the respondents had been intimidated into giving a medication in which they had questioned the safety. Participants reported feeling pressured to give the medication, and two-thirds reported being told "do not question my orders, just give it as you were told." The ISMP insists on a code of conduct and a zero tolerance policy towards intimidation regarding medication administration.

Researchers who have studied communication between nurses and physicians report improved communications can improve patient safety. Baggs and colleagues conducted a series of studies (Baggs & Ryan, 1990; Baggs, Ryan, Phelps, Richardson, & Johnson, 1992; Baggs, 1993 Baggs, 1996; Baggs & Schmitt, 1997; Baggs, Schmitt, Mushlin, Eldredge, Oakes, & Hutson et al, 1997) and consistently reported that extensive nurse-physician collaboration increased, it was associated with lower negative patient outcomes, less readmission, and less risk-adjusted mortality. These researchers also found improved relations between nurses and physicians increased nurse satisfaction and decreased nurse job stress. Similar findings were found by Mitchell, Armstrong, Simpson, and Lentz (1989), who reported improved nurse-physician communication was associated with lower risk-adjusted mortality and higher job satisfaction. Based on the above studies, Boyle and Kochinda (2004) conducted an experimental multisite clinical trial testing a collaborative communication intervention training for improving nurse-physician communication. Boyle and Kochinda (2004) were able to affect increases in satisfac-
tion and communication by both nurses and physicians and concluded that work teams can be trained to improve communication conditions and therefore improve patient safety.

Parental Role

The parental role was not discussed in the Dowell (2004) article. Parental education might also have been of assistance in preventing pediatric error. Pharmacist Diane Cousins, Vice President of the Center to Advance Patient Safety, has offered specific recommendations to parents of hospitalized children (Cousins, 2004). Cousins urged parents know their child’s weight in kilograms, alert the staff of the child’s allergies, list all medications in the chart that the child is taking, and identify the medications by size, shape, color, smell and sight. And if the child is old enough, have the child be familiar with his or her drugs as well. An educated family member at the bedside of the child described by Dowell (2004) may have added that extra caution alert for the nurse.

Critical Incident Debriefing

It is certain that the nurses involved in this incident underwent significant trauma. The fact that they no longer practice nursing indicates this. Every nurse remembers and may be haunted by medication errors years after the occurrence. Medication error debriefing is essential. While nurses historically underwent reprimand for medication error, it is unclear whether they ever received assistance to deal with the resulting stress of the incident. In a survey of stressful incidents for nurses (Burns & Harms, 1993), nurses’ most critical occurrence reported was the death of a child. Burns and Harms urged critical incident debriefing after incidents of stress to allow nurses to recover and remain in the profession. Milstein, Gerstenberger, and Barton (2002) report the need for health care providers to be trained in both providing stress debriefing for others and accepting stress debriefing for themselves. Psychologist Dyregrov (2002) has been instrumental in teaching about the necessity of stress debriefing for health care workers. Support for our colleagues is essential and in pediatrics especially. This has been well described by Reddick, Catlin, and Jellinek (2001).

Summary

The Dowell (2004) case report chills the reader. We must learn through its publication methods of prevention of medication error. The attached guidelines provided by the ISMP can lead us in a more cautious direction. Knowledge of the float regulations would have required that the involved hospital had ensured that a float nurse to pediatrics understood that medication dosages were weight dependent and that calculations were required prior to drug administration. Adequate staffing might have prevented the need for a float nurse and allowed for more attention to double checking calculations and drug administration. Dissemination of the guidelines from the AAP or those recommended by the SPN might have prevented this error. The age-old story of impoverished physician-nurse interaction has outlived its place in history. Nurse-physician collegiality and investment in the team approach will save children’s lives.

References


Table 1. Essential Systems Concerns (continued)

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<thead>
<tr>
<th>Key Elements</th>
<th>Failures</th>
<th>Essential Safety Strategies</th>
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<tbody>
<tr>
<td><strong>Environmental factors</strong></td>
<td>Lack of guidelines for the appropriate staffing of a PICU</td>
<td>• Proactively determine appropriate staffing patterns and what measures will be taken during periods of nursing shortages, e.g., close the unit to all new admissions</td>
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<td>• Evaluate the nurse for possible stressors as a result of reassignment</td>
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<td><strong>Competency &amp; staff education</strong></td>
<td>Lack of evaluating reassigned staff for PICU knowledge and competency</td>
<td>• Proactively cross-educate nurses to ensure NICU competency within 2-months of reassignment</td>
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<tr>
<td></td>
<td></td>
<td>• Temporarily reassigned nurses should be co-assigned with a PICU nurse</td>
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<tr>
<td><strong>Quality process and risk</strong></td>
<td>• Focusing safety education only on the physician and nurse involved in the error</td>
<td>• Develop changes within the medication-use system rather than relying on human infallibility to prevent error</td>
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<tr>
<td><strong>management</strong></td>
<td>• Focusing primarily on to low-leverage strategies such as prevent future errors policy and procedures</td>
<td>• Disseminate information to all practitioners about the error and ways to prevent its reoccurrence</td>
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<td>• Educate nursing staff about the components of an independent double check and high-alert drugs</td>
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**Notes:**

* High-alert medications are drugs that bear a heightened risk of causing significant patient harm when they are used in error. Although mistakes may or may not be more common with these drugs, the consequences of an error with these medications are clearly more devastating to patients.

** An independent double check is a redundancy in the system, which requires a second individual to verify accuracy of the drug therapy prior to administration. This way the second individual provides a fresh, unbiased look at the work of the first person. This check system should not be confused with the double check that many nurses perform on their own work.

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**Spotlight on Excellence**

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eter serve those infected and affected by HIV/AIDS. As an example, a $75 donation will allow one person to attend a Friends-Together camp for a day, and $150 will allow one person to attend a Friends-Together weekend camp. Smaller donations will buy school supplies, Christmas gifts, or fund education and outreach. For a current list of needed supplies, e-mail hiveducation@aol.com. Friends-Together can be reached at Friends-Together, PO Box 8054, Lakeland, FL 33802; phone (863) 686-7475; e-mail hiveducation@aol.com; or on the Web at www.friendstogther.org

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