

The Joint Commission Update

In this column an expert from The Joint Commission provides an update for readers.

Pediatric Safety in the Emergency Department Identifying Risks and Preparing to Care for Child and Family

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SIGNIFICANT improvements in the understanding of patient safety problems and the development of interventions have occurred in adult medicine, but there is limited understanding of these issues in pediatrics. Pediatric patients pose challenges because of their physical size and proportion, limited ability to communicate, and rapid deterioration of their conditions if not quickly and appropriately treated, compounded by the fact that most medical devices and medications used to treat them have not been tested for this population.¹

Several high-profile neonate medication errors in recent years have brought the issue of pediatric safety into public consciousness, but nurses and other healthcare professionals who work in emergency departments (EDs) have their own every-day experiences that point to the need for greater attention to safety for children. One of every 4 patients seen in US EDs is a child.² The majority of

these children are seen at non-children's hospitals. The large percentage of children seen in EDs can be attributed to numerous causes, such as lack of a primary care physician and use of the ED as an alternative. Common pediatric presentations in the ED include respiratory emergencies such as asthma or croup, dehydration, shock, head injury, poisoning, seizures, and anaphylaxis. All such disorders can become life-threatening if not managed appropriately.³

Child-specific characteristics that may contribute to risk factors include the following:

- physical characteristics—small or varied size and differing morphology;
- developmental variance and ongoing development—physiologically complex, and cognitive, emotional, and social; and
- minor status.

Children in EDs are at a high risk for medication safety events because of the unique dosing features involved and the stress and potentially rapid deterioration of the child's health status. The use of the ED for primary care for children also results a lack of a longitudinal medical history that increases safety risks. Hand-off communication from shift-to-shift or among care providers in both written and verbal forms is often not comprehensive or accurate.

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A study published in 2006 also found that most ED staff members are unfamiliar with how to treat pediatric patients appropriately.⁴ Although those physicians and nurses who specialize in emergency pediatrics are seeing more complex circumstances that require advanced care. Premature infants, low-birth-weight infants, newborns in crisis, and children with major disabilities and special healthcare needs all place special demands on EDs.⁵

ORGANIZATIONAL ISSUES WITH TREATING PEDIATRIC PATIENTS

Although most children visit general hospitals rather than specialized children's hospitals for emergency care, the appropriate services, staff, supplies, and equipment to treat pediatric patients often are lacking.⁶ A survey showed that only 6% of the hospitals had all the necessary equipment to care for children.⁷ Organizations seeking to assess their ability to provide pediatric emergency care and improve that care should consider the following issues:

- *Infrastructure to give sufficient voice to pediatric issues:* The Institute of Medicine² and American Academy of Pediatrics⁸ (AAP) recommend that hospital EDs appoint a physician coordinator and nurse coordinator to oversee pediatric clinical activities and ensure that clinicians have the appropriate skills and knowledge to treat pediatric patients appropriately.
- *Staff training and education:* The AAP recommends further that physicians and nurses staffing the ED have the necessary skill, knowledge, and training to care for children of all ages who be brought to the ED.⁸ There also needs to be consistency of staffing.
- *Systems design to support safety:* EDs that do not have quick access to physicians with pediatric expertise can reduce prescription errors by developing fill-in-the-blank order sheets to prevent errors of omission or incomplete instructions.

For example, use of a standardized format for the medication process might specify that all children must be weighed in kilograms, all orders must be double-checked by another individual at various points in the medication process, and so forth. A randomized, controlled trial found that using a preprinted order sheet with blank fields to be filled in by the prescribing physician decreased the rate of medication errors from 16.6% to 9.8%.⁹ Although hospitals await full implementation of computerized physician order entry systems, the use of preprinted forms may improve pediatric patient safety in the ED.

- *Policy development:* Policies, procedures, and protocols that specifically address pediatric patients are crucial to strengthening pediatric care, ensuring that staff receive the proper education and monitoring compliance. Hospitals should use available clinical guidelines or develop their own in consultation with the AAP's 12 guidelines.⁸

To address these issues, one intervention for improvement is the establishment of a Life-saving Interventions for Little Youth (LILY) Team. This team could include pediatricians, nurses, respiratory care practitioners, pharmacists, other pediatric clinicians, and emergency medicine staff. The LILY team evaluates and improves the capability and plans for treating children in the ED and includes evidence-based approaches to reduce errors in emergency and trauma care for children. By using a LILY team, organizations take the initiative to encourage self-reporting and needs assessment and keep the ED consistently prepared for meeting the particular needs of children safely.

Additional long- and short-term strategies for maximizing pediatric safety in the ED include the following:

- Increase availability of dosage forms and concentrations suitable for pediatric medication preparations. Pediatric dosage forms should be stored separately from adult dosage forms.

- When appropriate, encourage leadership to implement evidence-based approaches to reduce errors in emergency and trauma care for children. The Emergency Medical Services for Children and Pediatric Emergency Care Applied Research Network are recognized leaders in providing guidelines and research results.
- Keep all room supplies out of reach of small patients and their siblings, including hanging cables, supplies that can cause injury, and equipment.
- Have the supplies and equipment in the various sizes needed to support the care of pediatric patients.
- Prepare pediatric supply carts.
- Make sure disaster plans include care of the pediatric patient.
- Establish transfer agreements with organizations that can provide a higher level of pediatric care to help meet the patient's needs on entry to care.
- Implement an infant/child abduction prevention plan.
- Have a performance improvement plan with measures that are specific for pediatrics.

Leadership must be actively involved in this entire process, committing to the quality of care for pediatric patients, recognizing the gaps in care and being willing to support necessary changes, and sustaining implementation of improvements.

NURSING AND PEDIATRIC PATIENTS

Nurses play a role in all patient safety efforts and should be involved in efforts to enhance staff performance that leads to improved pediatric care in the ED. The bedside nurse is the gatekeeper for the patient and family and, therefore, must be responsible for ensuring safe care. Three areas that are particularly relevant to nursing include communication, medication management, and infection control. Strategies that nursing leaders can use to improve care in these areas includes the following:

- *Clinician communication*: Root-cause analyses reviewed by The Joint Commission consistently reveal that a majority of sentinel events in hospitals are caused by communication problems, among other contributing factors. Communication strategies within the ED should be designed to provide double-checks and verbal confirmations before treatments are provided. The Situation-Background-Assessment-Recommendation (SBAR) communication method provides a framework for communication among members of the healthcare team about a patient's condition and is a useful tool for the ED. The SBAR communication technique leaves no basic questions unanswered, prevents assumptions, and allows team members to provide necessary information without being interrupted. The SBAR method focuses on the following: What is the problem (situation)? What information is relevant/required (background)? What is the patient's status (assessment)? What needs to be done (recommendation)? The SBAR method is especially useful in reducing risk related to hand-off communication, such as when hand-offs in the ED occur among nurses on different shifts; among nurses in the ED and the inpatient unit when the patient is admitted; between specialists and ED physicians and nurses; and between nurses and transport staff, radiologists, psychologists, and any other individual who may need to take responsibility for the pediatric patient.
- *Pediatric medication safety*: The incidence of medication errors in pediatric patients is estimated as high as 1 in 6.4 orders.¹⁰ The challenges related to pediatric medication systems include wide variation of patient size, different dosing needs that are dependent on pharmacokinetic parameters related to development, individualization of doses, a lack of medications packaged for pediatric needs, and difficulty delivering micro-doses. The bedside nurse must be diligent when

reviewing pediatric medication orders, preparing medication for children, administering medication to children, and evaluating the response of the child after a medication has been delivered.¹¹ To improve pediatric medication safety, policies should support optimal dosing by using milligram per kilogram (mg/kg) measurements and showing calculations. Other strategies include the use of unit dose packaging of medications for individual patients; standardization of infusion concentrations; standardization of infusion pumps; use of technology such as “smart” pumps and clinical information systems with maximum dose alerts and clinical decision support; and robust medication error tracking and analysis. In addition, nurses should play a role in discharge teaching. Discharge teaching requires clear, concise directions for the caregiver and should include a return demonstration of medication administration from the family member. This will provide the family member with practice prior to the first administration of the medication.

- *Infection control:* Issues related to pediatric infection control and prevention vary with age and instrumentation. Vaccination history also can be significant. Hand hygiene is the single most effective preventive measure. Infection control and prevention measures should include anticipation of the need for infection control in certain patients (eg, cystic fibrosis, HIV, prolonged hospitalizations, antibiotic therapy or prophylaxis, long-term care, day care, rehabilitation patients, history of past infection) and routine empiric isolation of symptom complexes. Infection control guidelines for the pediatric population in the ED should be streamlined and easily accessible for isolation and visitor policies. Appropriate, up-to-date vaccination of patients and healthcare workers for influenza, varicella, pertussis, and pneumo-

nia also must be part of infection control efforts. Finally, education should be recurrent and intermittent for healthcare workers, patients, family, and support staff. Front-line nurses can mount a campaign to hold healthcare providers accountable for preventative measures. Simple hand-washing and equipment disinfection among patient applications can prevent the spread and cross-contamination of pediatric patient infections in the hospital.

Nurses also can play a role in 2 other areas related to pediatric patients and improving safety. First, nurses should increase the important partnership that is the foundation for family-centered care. Gone are the days of restricted visitation policies for family members. Nurses are the advocates who should focus on the inclusion of family members in the decision-making process; presence during procedures and resuscitation; and bidirectional education that occurs among children, families, and healthcare providers.¹² Given that the patient may not be able to communicate, the family also plays an important role in providing information to the caregiver to assist with correct diagnosis and treatment decisions.

Second, front-line staff, such as nurses, also must appreciate the importance and significance of occurrence reporting.¹³ It is impossible to determine exactly how many safety events have occurred with children since events are underreported. The organization's leaders must make reporting a nonpunitive event so that the front-line staff come to value the significance of reporting.

ESTABLISHING BENCHMARKS

Standardized approaches to communication, medication management, and infection control for pediatric patients in the ED require monitoring and modification, as appropriate, to ensure effectiveness. Hospitals measure performance in those areas to assess and improve performance as well as to meet accreditation and regulatory requirements.

Benchmarks specifically related to pediatric safety in the ED have thus far, though, been sparse. Joint Commission Resources, the not-for-profit affiliate of The Joint Commission, recently developed an online survey instrument to measure the pediatric safety environment in hospital EDs. The purpose of this instrument is to assist EDs in identifying opportunities for improvement and to track improvement in pediatric safety over time.

As the volume of respondents builds, the anonymous survey responses will be analyzed to create a reference (eg, benchmarks) so that hospital EDs will be able to see how their scores compare to others. To get a complete picture of the ED and hospital environment, survey participation is being sought from across disciplines and leadership such as senior leaders (individuals who have responsibility for the entire organization, such as a chief executive, vice president, or equivalent); department heads or managers (individuals with management responsibility in the ED); physicians, including hospitalists; and staff, including nurses, aides, technicians, and allied health staff. Each participating

hospital is asked to recruit at least 2 to 3 people in each of the 4 groups, more for front-line staff, if possible. There is no maximum number. The survey does not identify individuals, and Joint Commission Resources will not report individual results. A preview version of the survey is available at <http://www.zoomerang.com/survey.zgi?p=WEB227ARPKRPZ8>.

CONCLUSION

There is growing evidence that the epidemiology of errors and risk is different for children than in adult medicine. An enhanced pediatric presence throughout emergency care is necessary to make emergency care safer for the growing numbers of children who seek care in this setting. The strides that have been made in the past decade in accounting for human limits to reduce risk and prevent harm in adult medicine should be examined to address the complex issues facing all EDs that treat children. By identifying the problems, solutions that will improve patient safety and care can be implemented.

REFERENCES

1. Joint Commission Resources. *Safer Emergency Care: Strategies and Solutions*. Oakbrook Terrace, IL: Joint Commission on Accreditation of Healthcare Organizations, 2007.
2. Committee on the Future of Emergency Care in the United States Health System, Institute of Medicine. *Emergency Care for Children: Growing Pains*. Washington, DC: National Academies Press, 2006.
3. Duke enhancing pediatric safety: Emergency preparedness. <http://dukehealth1.org/deps/emergency.asp>. Accessed February 13, 2008.
4. Hunt EA, Hohenhaus SM, Luo X, Frush KS. Simulation of pediatric trauma stabilization in 35 North Carolina emergency departments: identification of targets for performance improvement. *Pediatrics*. 2006;117:641-648.
5. Joint Commission resources: Pediatric safety in emergencies. *Environ Care News*. 2008;11:2.
6. National Association of Children's Hospitals and Related Institutions: *FAQs on Children's Hospitals*. <http://www.childrenshospitals.net/AM/Template.cfm?Section=TaggedPageDisplay.cfm&TPLID=91&ContentID=16964>. Accessed January 25, 2008.
7. Gausche-Hill M, Schmitz C, Lewis R. Pediatric preparedness of US emergency departments: a 2003 survey. *Pediatrics*. 2007;120(6):1229-1237.
8. American Academy of Pediatrics (AAP), Committee on Pediatric Emergency Medicine, and American College of Emergency Physicians (ACEP). Care of children in the emergency department: guidelines for preparedness. <http://aappolicy.aappublications.org/cgi/content/full/pediatrics;107/4/777>. Accessed February 2, 2008.
9. Kozler E. Using a preprinted order sheet to reduce prescription errors in a pediatric emergency department: a randomized, controlled trial. *Pediatrics*. 2005;6:1299-1302.
10. Marino BL, Reinhard K, Eichelberger WJ, et al. Prevalence of errors in a pediatric hospital medication system: implications for error proofing. *Outcomes Manag Nurs Pract*. 2000;4:129-135.

11. Levin S, Cohen M, Blanchard N, et al. Guidelines for preventing medication errors in pediatrics. *J Pediatr Pharmacol Ther.* 2001;6:427-443.
12. Brown K, Mace S, Dietrich A, et al. Patient and family-centered care for pediatric patients in the emergency department. *Can J Emerg Med.* 2008;10(1):38-43.
13. Krug S, Frush K. Patient safety in the pediatric emergency care setting. *Pediatr Official J Am Acad Pediatr.* 2007;120:1367-1375.