Kids at highest risk of periop med errors

Children are at the highest risk of harmful drug errors during perioperative care—nearly 12% of pediatric errors were harmful, compared with 5% overall. In most cases, the harm was temporary. But 4 patients died, including 1 child, according to an analysis of 11,000 perioperative med errors. The 7-year study was released in March by MEDMARX, a national database for tracking and trending adverse drug events.

The OR was the site of the most errors—and the most harmful errors. Nearly 17% of OR med errors in children were harmful. In one case, a child died.

Among the report’s more than 40 recommendations:
• Dedicate pharmacists to perioperative units to oversee the distribution of medications.
• Better coordinate handoffs between surgical and recovery staff.

The report also alerts patients and their families to be vigilant to protect themselves.

Highlights of the results:

Outpatient surgery
Total errors submitted: 3,427
Harmful errors: 2.9%, with no reports of permanent harm or death.
Harm by population: Geriatric, 5.1%; adult 5.1%; pediatric, 3.6%.

The most common errors were prescribing, drug omission, and improper dose—pediatric patients were disproportionately affected by improper dose.

Leading causes of errors:
• performance deficit (failure to perform a task successfully despite knowledge, skills, and abilities to do so)
• procedure/protocol not followed (lack of familiarity with existing procedures and protocols for specific treatments)
• communication (communication that is confusing, intimidating, or lacking among staff, patient, family).

Cefazolin was the drug most often involved in medication errors. In pediatric patients, 25% of errors involved midazolam.

Recommendations
• Develop checklists to be completed before patients leave an area to minimize loss of information during handoffs.
• Devise strategies to help staff understand the cause of errors involving medications that have a high risk for harm.
• Empower patients to participate in preoperative safety activities such as marking the surgical site and providing current medications and allergies.
• Develop strategies to ensure preoperative antibiotics are administered at the correct time.
• Implement strategies to communicate allergy and other pertinent patient information to the perioperative team.
• Expand the pharmacy role by having a dedicated perioperative pharmacist.
Preoperative holding area

Total errors submitted: 779

Harmful errors: 2.8%. One required life-sustaining interventions. None resulted in permanent harm or death.

Harm by population: Adults, 7.1%; pediatric, 4.2%; geriatric, 2.6%.

Most common types of errors were wrong timing and/or omission of drugs. Handoffs and incomplete documentation contributed to many of the errors. Antimicrobial agents were the medications most frequently associated with errors.

Recommendations

• Eliminate potential for accidental administration of neuromuscular blocking agents.
• Ensure sufficient staff for timely administration of preoperative antibiotics.
• Expand pharmacy support so medications are available and prepared in the area they are being administered.

Operating room

Total errors submitted: 3,773

Harmful errors: 7.2%, including 12 sentinel events, of which 2 may have contributed to a patient’s death.

Harm by population: Harmful errors occurred in 16.7% of pediatric patients—1 was fatal. Adults accounted for 11.3% of harmful errors and geriatric patients 10.0%, with 2 events requiring life-sustaining interventions.

Improper dose was the most common error (32.4%) in pediatric patients. The majority of drugs involved in errors were antimicrobial agents or central nervous system agents, including opioid and nonopioid analgesics.

Recommendations

• Call on manufacturers to produce drugs in ready-to-use sterile packages with duplicate labels to avoid errors with labeling.
• Form a team to check surgeon preference cards to ensure appropriate use of abbreviations or acronyms, clarify medications intended for the procedure, and affirm instruments and equipment needs for the case.
• Provide practitioners with patient information, standardized dose charts, and assistive technologies to ensure proper medication calculations and formulations.
• Expand time-outs to allow review of preference cards, medication directions, patient allergies, and preoperative antibiotics.
• Ensure that practitioners adhere to the “repeat and verify” medication practice during handoffs between scrub personnel and surgeons.

Postanesthesia care unit

Total errors submitted: 3,260

Harmful errors: 5.6%

Harm by population: More than 20% of errors in pediatric patients resulted in harm, compared with 8.7% in adults and 8.8% in geriatric patients.

Patient-controlled analgesia machines were the cause of the most harmful errors, and many harmful errors were caused by tubing misconnections. Absence of allergy information also placed many patients at risk.

Medication errors were mainly associated with analgesic products and antimicrobial agents. The leading 4 products in harmful errors were high-alert central nervous system products used for analgesia.

Recommendations

• Develop strategies that ensure safe use of patient-controlled analgesia pumps.
• Work with manufacturers to develop forcing functions to prevent tubing misconnections.
• Reduce the potential for dose errors by using products in ready-to-use doses.
• Have a dedicated pharmacist to review all medication orders, evaluate routinely stocked medications, assist with medication reconciliation, and assist with standardized dosing.

The study was released by the US Pharmacopeia (USP) with the Uniformed Services University of the Health Sciences, the Association of periOperative Registered Nurses, the American Society of PeriAnesthesia Nurses, and MEDMARX.

—Judith M. Mathias, RN, MA

Read more about the MEDMARX report on the USP website www.usp.org under What’s New, or order the report on the USP website under Products. OR Manager also reported on this study in the March 2006 issue.

What leads to periop med errors?

Main factors included:
• handoffs from the operating room to the recovery area
• lack of oversight of medications during the perioperative period.

Most errors involved antibiotics and pain medications:
• failure to administer preoperative antibiotics
• failure to note patient medication allergies
• errors in setting up IV pumps
• administering medication overdoses to infants.

Poor penmanship, miscommunication, or math errors led to patients receiving medication doses 10 to 50 times higher than they should have.