**A Near-Fatal Pediatric Accident: Is It Time to Reassess a Common Cost-Cutting Measure?**

Matthew Grissinger, RPh, FASCP

---

**Problem:** The Institute for Safe Medication Practices (ISMP) has received numerous reports that syringes of medications have been mistaken for saline flush solutions, which are used in intravenous (IV) catheters. Such errors often result from look-alike labeling and packaging of multiple-dose vials or from unlabeled or mislabeled syringes. That's exactly what happened recently in a pediatric emergency department (ED).

Vecuronium was administered to an alert three-year-old child who was not on ventilator support. Because commercially prepared, prefilled saline syringes were not available in the ED, nurses drew up supplies of saline flush syringes from multiple-dose vials and labeled them by hand. Before the child's admission to the ED, vecuronium syringes had been prepared for another patient who might have needed it; however, the syringes had never been used and they were not discarded. An unused syringe of vecuronium was labeled by hand, similar to the method used with the saline syringes. The vecuronium syringe somehow found its way into the saline supplies. As a result, the syringe containing vecuronium was mistakenly used to flush the child's IV line. The child became frightened and flaccid. All respiratory efforts ceased, and he was quickly intubated and ventilated.

Upon closer inspection of the syringe, ED personnel were able to identify the error. The child was treated supportively and sustained no serious harm. The child’s father, who was present at the time of the incident, reported it to the local press, and the event received extensive local media attention.

**Safe Practice Recommendation:** In many facilities where serious errors have occurred after replacing commercially available, prefilled syringes of saline and heparin with multiple-dose vials, practitioners and hospital leaders are reassessing the value of this cost-saving measure. The case described here is one of many in which an error might have been prevented if commercially available, prefilled syringes had been used. Their use in all patient-care units, when possible, is an important safety measure that combines unit-dose packaging and proper labeling of all syringes. In fact, any cost savings considered to be achievable through the use of multiple-dose vials can be quickly erased, because errors and cross-contamination between patients are more likely when these prefilled syringes are not available. This incident is also one of many in which a neuromuscular blocking agent was accidentally administered to a patient who was not intubated or properly sedated. The following measures are recommended:

1. It is preferable not to store these agents in patient-care units; the pharmacy department should dispense each dose outside the operating room with a bright “anesthesia red” auxiliary label that states “WARNING: PARALYZING AGENT.”

2. If these agents must remain in patient-care areas (such as in the ED or in critical-care units), the vials should be placed in plastic bags, the red auxiliary warning labels should be applied to both sides of the bag, and the same labeling should be used for all syringes of neuromuscular blockers that leave the preparer’s hands.

3. These drugs should be sequestered in a locked or secured box in the refrigerator or elsewhere as appropriate.

4. Syringes of unused or partially used doses should be immediately discarded. It is dangerous to allow anyone, especially untrained staff who might not recognize the hazard, to replace unused doses of neuromuscular blocking agents into stock. Although restricting the use of these agents affords some measure of safety, it cannot prevent practitioners from mistaking unsecured vials for other look-alike vials and it cannot prevent confusion surrounding drug names.

5. Two nurses should be required to independently check each dose before administration.

6. A policy should be established to automatically discontinue all neuromuscular blocking agents after patients are extubated.

---

**ISMP, a nonprofit organization located in Huntingdon Valley, Pennsylvania, provides independent practitioner review of medication errors submitted to the national MER program, operated by the U.S. Pharmacopeial (USP) Convention, Inc., of Rockville, Maryland, in cooperation with ISMP. ISMP also reports on progress made in correcting medication errors and problems.**

Call ISMP at 215-947-7797 or at 800-FAIL-SAF(E). Visit www.ismp.org or write to us at ismpinfo@ismp.org.