



High-alert medications

The need for awareness and safeguards to prevent patient harm

By David U

When used in error, many medications are unlikely to cause harm to patients, but a small group of medications, known as “high-alert medications,” bear a heightened risk of causing patient injury or even death. Although mistakes may not be more common with these drugs, the consequences of an error are more likely to be serious, even devastating.

Examples of high-alert medications include concentrated electrolytes such as potassium chloride; high-potency opioid narcotics such as morphine, hydromorphone, and fentanyl; anticoagulants such as heparin and warfarin; and insulin. Similar lists of high-alert drugs are posted on the Web sites of the United States Pharmacopeia (www.usp.org) and the Institute for Safe Medication Practices (ISMP) (www.ismp.org). Special safeguards to prevent mishaps with high-alert medications include strategies such as limiting access, using auxil-

iary labels and automated alerts, standardizing ordering, preparation, and administration, and employing independent double-checks.

Over the past three years, ISMP Canada has received reports of approximately 500 medication incidents that caused patient harm and the top five drugs involved in these incidents were insulin, morphine, hydromorphone, heparin, and warfarin. These data support the safety initiatives that ISMP Canada has launched to assist Canadian health-care providers in managing the risks associated with these medications.

In 2003, after several deaths were reported in Ontario because of errors with potassium chloride concentrate, ISMP Canada, with the support of the Ontario Ministry of Health and Long-Term Care, undertook a major project to address the risks associated with this medication. Recommended actions included removing concentrated potassium chloride from patient care areas, solutions

standardizing and using commercially available dilute solutions. Since then, many provinces have adopted these recommendations, and 72 per cent of Canadian hospitals that responded to the 2005 Eli Lilly hospital pharmacy survey had removed concentrated potassium chloride from their nursing units. The project has been even more successful in Ontario hospitals, where the corresponding proportion was 96 per cent.

In late 2004, another major safety project was launched in Ontario, directed toward reducing the risk associated with the use of opioid narcotics; a similar project was undertaken in Alberta in the latter part of 2005. These projects provided practical assistance to hospitals implementing safeguards for these potent narcotics. Some of the priority recommendations included removing high-potency narcotics from wards, standardizing the concentrations of narcotic solutions, implementing a policy of independent double-checks for patient-con-

trolled analgesia administered by infusion, and implementing strategies to differentiate epidural infusions from intravenous infusions lines. A follow-up survey conducted by ISMP Canada at the end of 2005 found that 94 per cent of responding hospitals in Ontario had begun to implement some of these recommendations.

Another group of high-alert medications that deserves special attention is the anticoagulants (blood thinners). ISMP Canada has collaborated with researchers at Sunnybrook Health Sciences Centre and the Ottawa Health Research Institute to launch a number of projects in this area. Dr. William Geerts of Sunnybrook is leading an inpatient research study on compliance with clinical practice guidelines for thromboprophylaxis, and Dr. Alan Forster and colleagues in Ottawa are leading a study that will measure oral anticoagulant control among elderly patients in the community. With the assistance of the Canadian Healthcare Association, a

national survey on the use of anticoagulants by Canadian hospitals has recently been launched. Results of the survey will be made public at the end of the summer. ISMP Canada is also reviewing the storage, distribution, and preparation of high-potency heparin products in hospitals, as a number of mix-ups in the selection of these products have been reported.

Special safeguards are also needed for other high-alert drugs such as insulin, chemotherapeutic agents, and neuromuscular blockers. ISMP Canada will continue to monitor the use of these agents and encourages practitioners to submit reports on incidents occurring with these drugs as well as suggestions to improve their safe handling. The initiatives described above for other high-alert medications demonstrate that system-based strategies can be successful in mitigating risk.

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