



## Focus on High-Alert Medications

While all medications have a level of risk if used incorrectly, a small number of medications bear a heightened risk of significant patient harm when they are used in error. These drugs are commonly referred to as “high-alert” medications. Though mistakes may or may not be more common with these drugs, the consequences of errors with these medications are more devastating to patients.

*Approximately one in four medication error reports submitted to PA-PSRS involves a high-alert medication.*

A 1998 Institute for Safe Medication Practices (ISMP) study revealed that 11% of all serious medication errors involve insulin misadministration, and another 8.9% involved

heparin.<sup>1</sup> In addition, the summary information from the MedMarx<sup>SM</sup> 2002 report found that the top seven medications involved in events involving harm (comparable to Harm Score Categories E thru I in PA-PSRS) are high-alert medications including insulin, morphine, heparin, intravenous concentrated potassium chloride, warfarin, hydromorphone, and fentanyl.<sup>2</sup> These medications along with meperidine, intravenous chemotherapy, and neuromuscular blocking agents are among those considered high-alert medications.

Among medication error reports submitted to PA-PSRS, approximately one out of four reports involve high-alert medications. Of those reports:

- 44% involved pain management medications including morphine, hydromorphone (DILAUDID®), meperidine (DEMEROL®) and fentanyl.
- 14.2% involved heparin.
- 16.3% involved insulin products.
- 9.4% involved warfarin (COUMADIN®).

Sixty-five percent of Serious Events involving medications involved high-alert medications. Examples of medication errors involving high alert medications include:

- A patient receiving an infusion of fentanyl for pain control was ordered a 50 mcg bolus dose,

but received 50 mLs.

- Insulin was administered to the wrong patient based on blood sugar levels of another patient.
- Two reports concerned patients receiving concentrated epinephrine 1:1,000 undiluted intravenously.
- An intravenous heparin infusion was programmed to run at 150 mL/hr (the rate for the patient’s antibiotic) rather than the ordered rate of 10 mL/hr.

A list of common high-alert medications is available as a drop down box when entering reports into PA-PSRS at question 23. In addition, a complete list is available from ISMP ([www.ismp.org/MSAarticles/highalert.htm](http://www.ismp.org/MSAarticles/highalert.htm)) as well as in the PA-PSRS Training Manual and Users’ Guide in Appendix B, page 87.

Additionally, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) includes in their 2004 National Patient Safety Goals that organizations “improve the safety of using high-alert medications” by removing concentrated electrolytes (including, but not limited to, potassium chloride, potassium phosphate, and sodium chloride >0.9%) from patient care units and standardizing and limiting the number of drug concentrations available in the organization.<sup>3</sup>

Strategies to safeguard the medication use process for high-alert medications may include limiting access to these medications; using auxiliary labels and automated alerts; standardizing the ordering, preparation, and administration of these products; and employing automated or independent double checks when necessary.

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## Focus on High Alert Medications (Continued)

### Notes

1. Cohen MR, et al. Survey of hospital systems and common serious medication errors. *J Healthc Risk Manag* 1998;8(1):16-27.
2. Hicks RW, Cousins DD, Williams RL. Summary of information submitted to MEDMARX<sup>SM</sup> in the year 2002: The quest for quality. Rockville (MD): USP Center for the Advancement of Patient Safety; 2003.
3. Joint Commission on Accreditation of Healthcare Organizations. Facts about the 2004 national patient safety goals [online]. 2003 Jul 18. Available from Internet: <http://www.jcaho.org/accredited+organizations/patient+safety/04+npsg/facts+about+the+04+npsg.htm>



An Independent Agency of the Commonwealth of Pennsylvania

The Patient Safety Authority is an independent state agency created by Act 13 of 2002, the Medical Care Availability and Reduction of Error (“Mcare”) Act. Consistent with Act 13, ECRI, as contractor for the PA-PSRS program, is issuing this newsletter to advise medical facilities of immediate changes that can be instituted to reduce serious events and incidents. For more information about the PA-PSRS program or the Patient Safety Authority, see the Authority’s website at [www.psa.state.pa.us](http://www.psa.state.pa.us).



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The Institute for Safe Medication Practices (ISMP) is an independent, nonprofit organization dedicated solely to medication error prevention and safe medication use. ISMP provides recommendations for the safe use of medications to the healthcare community including healthcare professionals, government agencies, accrediting organizations, and consumers. ISMP’s efforts are built on a non-punitive approach and systems-based solutions.