ISMP Medication Error Report Analysis

Important Change With Heparin Labels

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Don't Truncate, Stem, or Shorten Drug Names

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These medication errors have occurred in health care facilities at least once. They will happen again—perhaps where you work. Through education and alertness of personnel and procedural safeguards, they can be avoided. You should consider publishing accounts of errors in your newsletters and/or presenting them at your inservice training programs.

Your assistance is required to continue this feature. The reports described here were received through the Institute for Safe Medication Practices (ISMP) Medication Errors Reporting Program. Any reports published by ISMP will be anonymous. Comments are also invited; the writers' names will be published if desired. ISMP may be contacted at the address shown below.

Errors, close calls, or hazardous conditions may be reported directly to ISMP through the ISMP Web site (www.ismp.org), by calling 800-FAIL-SAFE, or via e-mail at ismpinfo@ismp.org. ISMP guarantees the confidentiality and security of the information received and respects reporters' wishes as to the level of detail included in publications.

IMPORTANT CHANGE WITH HEPARIN LABELS

The US Pharmacopeial Convention (USP) had updated its labeling standards to promote presentation of the total strength per vial for heparin injection. The US Food and Drug Administration (FDA) recently announced that, effective May 1, 2013, heparin vial labels must express the strength per the entire container followed by the strength per mL in parentheses.

In the past, the strength was labeled only on a per mL basis, with the volume of the vial appearing in a different location. Thus, health care professionals sometimes failed to recognize that the vial contained much more than the per mL listing, which all too often led to dangerous heparin overdoses. ISMP brought this problem to the attention of FDA and USP at a 2003 USP Expert Committee meeting where the per mL strength designation on drug vials was discussed.

It should be noted that there will be a transition period before and after the official implementation date, during which both the current heparin labels and the revised heparin labels will be available (**Figure 1**). To minimize the potential for medication errors, purchasers and pharmacy managers should strongly consider separating the supplies of "current" and "revised" heparin, using all of the supplies of the current heparin before using products with the revised label. Watch carefully for these changes as new supplies of heparin are received.

BENADRYL DISPENSED INSTEAD OF VITAMINS FOR HOME PARENTERAL NUTRITION

A 47-year-old woman with a history of multiple gastrointestinal surgeries continued to experience severe nausea, vomiting, and chronic abdominal pain,

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Figure 1. Until now, heparin labels expressed concentration per mL (left). Revised labels express concentration primarily by volume in vial (right).

requiring daily parenteral nutrition (PN). The patient's home infusion company made and delivered the weekly supplies along with the 3-in-1 PN admixtures. Rather than dispensing the vials of multivitamins (which the patient adds at home), they inadvertently dispensed 84 vials of diphenhydramine injection (*Benadryl*).

The reason for this mix-up is unknown. The patient added diphenhydramine to the PN, which infused over 14 hours for 2 consecutive nights, resulting in significant drowsiness. She finally called the home infusion company on the third day to inquire about the different looking vials she was using. This is when the error was discovered. The home infusion company retrieved the remaining vials of diphenhydramine and replaced them with vials of the multivitamin product.

The infusion company has completed an internal investigation and is revamping its supply/distribution center to avoid a similar error in the future. A further improvement would be to require a documented, independent double-check of all supplies against the original patient's orders before delivery is made. Patients can also serve as a double-check by reviewing their delivered supplies when they arrive and again each night before beginning the infusion. Verification of the infusion against the current PN order is optimal, but a copy of the order must be requested from the home infusion company and provided to the patient for comparison.

POTASSIUM AND SODIUM ACETATE INJECTION MIX-UPS

Due to a national shortage of sodium bicarbonate injection, hospitals have been dispensing sodium acetate injection as an alternate alkalinizing agent. Sodium acetate is metabolized to bicarbonate on an equimolar basis in the body.

In many hospitals, both sodium and potassium acetate solutions are stocked in the sterile products area in the pharmacy (Figure 2). Normally, when used with an automated compounder, each additive has a barcode that is scanned to validate that the correct salt has been selected. Manually compounded solutions often do not include such a safeguard. Accidentally substituting potassium acetate in the mEq dosages commonly used for sodium acetate (eg, 40 mEq or more) could provide a potentially fatal dose of potassium.

Although the manufacturer has made every effort to highlight the danger of the potassium concentration in potassium acetate vials, a substitution error was made by an IV room technician who focused on the acetate component of the product during manual compounding. The checking pharmacist also focused on the acetate salt, and the error was not captured before reaching the patient. However, the error was caught before the entire IV product was administered, which prevented a potentially fatal situation.

During drug shortages, alternatives that are not commonly used present a potential for errors. Therefore, proactive risk-reduction strategies are necessary. To help reduce the risk of this particular error, the hospital removed potassium acetate from its usual location in the sterile products area. Now, if a vial of potassium acetate is needed, it must be retrieved from a storage area across the hall from the sterile products area. All pharmacy staff members received an educational e-mail about the change in the location of the product and the related safety issue.

Figure 2. Vials of potassium acetate (left) and sodium acetate (right).

Incidents like these are best prevented with pharmacy workflow software, such as *DoseEdge*, *ScriptPro Telepharmacy*, *i.v.SOFT*, or similar technology.¹ The software receives dose information from the pharmacy system, provides barcode scanning to match product and strength/dose with the order, and provides photographic dose verification and audit trail, including lot numbers, expiration dates, and so on, as needed.

DON'T TRUNCATE, STEM, OR SHORTEN DRUG NAMES

Just as health-related abbreviations can lead to confusion and medication errors,² so can the truncating, stemming, or shortening of drug names.

“Neo” is an example of a truncated name sometimes used in critical care settings (Figure 3). Usually it pertains to *Neo-Synephrine* (phenylephrine), but anesthesia staff frequently use neostigmine, which may also be referred to as “neo.” In fact, anesthesia staff may even be carrying syringes of each drug. This abbreviation is listed as an example of error-prone name stems in the book, *Avoiding Common ICU Errors*.³

Use of the stem “neo” can lead to other errors. In a report from the Quantros MEDMARX database, a verbal order was given for “neo” but the pharmacist heard “levo,” another commonly used stem name. A similar error occurred with “levo” on rounds when a physician asked a pharmacist to “d/c the levo.” The pharmacist discontinued the *Levophed* (norepinephrine) when the physician really wanted to discontinue the levofloxacin (*Levaquin*) that the patient was also taking. “Levo” can also be misunderstood as levodopa or levothyroxine.

To cite another example of name stemming, ISMP has recommended the avoidance of the use of “nitro drip,” as this can be interpreted as either nitroglycerin or sodium nitroprusside infusion. After one hospital went live with electronic prescribing, staff identified 3 errors in which nitroglycerin was intended but a nitroprusside infusion was ordered in error. The erroneous orders were not detected by the nurses but were later captured by the clinical pharmacist. The errors were related to the practitioner just typing “nitro” into the computer, and “nitroprusside” appeared first on the list.

As with all drugs, ISMP recommends using the full drug name in all communications. To provide redundancy, use the generic and brand names when possible. This should be standard practice in all order sets, medication administration records, and order entry

Figure 3. What's in the IV bag?

systems. Also, abbreviations should be avoided as much as possible with electronic infusion devices (eg, smart infusion pumps).

REFERENCES

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