ISMP Medication Error Report Analysis

Dangerous Close Call With Wintergreen Oil

Are 10 mL Syringes Needed When Giving Drugs Via Venous Access Devices?

Use of “NoAC” Abbreviation

Unsafe Frequency Notation

2014-15 Targeted Medication Safety Best Practices for Hospitals

Michael R. Cohen, RPh, MS, ScD, and Judy L. Smetzer, RN, BSN†*

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.

DANGEROUS CLOSE CALL WITH WINTERGREEN OIL

The drug facts label on bottles of wintergreen oil (methyl salicylate) (**Figure 1**) indicates that it is used for “temporary relief of muscular aches and pains due to over exertion or fatigue.” It is supposed to be applied topically to the affected area.

The product is actually used by surgical staff who apply it to their paper face masks to make surgical smells less noxious, such as during bowel surgeries. When the hospital set up its new computer

system by updating an older version, this product was already available on the formulary. However, the primary hospital formulary indication (odor reduction) did not match the drug facts label (muscle aches).

During the drug build process for the new computer system, it was not recognized that this product should not be available for ordering by the prescriber, so it was added to the order entry system without limits on dose, route, or frequency.

*President, Institute for Safe Medication Practices, 200 Lakeside Drive, Suite 200, Horsham, PA 19044; phone: 215-947-7797; fax: 215-914-1492; e-mail: mcohen@ismp.org; Web site: www.ismp.org. †Vice President, Institute for Safe Medication Practices, Horsham, Pennsylvania.

Figure 1. Wintergreen oil.

A prescriber later found the product on the drug list and ordered it to be used at the patient's bedside for the formulary indication as an air freshener. Directions were provided by the prescriber using the comment field of the computer system. A bottle of wintergreen oil was dispensed and placed in the patient's room.

The concentration of this product is 89%, and it comes in a small (59 mL) bottle. Because the bottle is so small, it could easily be mistaken as an oral unit dose liquid. Just 5 mL of oil of wintergreen contains an amount of salicylate equivalent to 5 aspirin tablets (325 mg each), so swallowing it could lead to salicylism (<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2859737/>). Fortunately, the product in this case was not used inappropriately, and it did not result in patient harm. However, there have been a number of other incidents where other topical products left at the bedside were swallowed by a confused patient.

Ensuring safe use of this product requires intervention. Hospitals should either remove the product from use or limit areas where it is available. Air fresheners from environmental services in spray form are generally available for use in patient rooms. Computerized order entry systems should prevent prescribers from ordering this product if it is stocked in the pharmacy, where it should only be used as an ingredient for compounding. The drug should be listed in order entry systems in a way that avoids use by any route other than topical.

This product can be purchased without a prescription and may also pose risks at other practice sites and in a patient's home.

ARE 10 ML SYRINGES NEEDED WHEN GIVING DRUGS VIA VENOUS ACCESS DEVICES?

There seems to be some confusion in the field about the syringe size needed for intravenous (IV) drug administration when a medication is administered via venous access devices (VAD) such as an implanted port or a peripherally inserted central catheter (PICC).

It is well known in IV therapy circles that smaller syringes create greater amounts of pressure during injection than larger syringes. The Infusion Nurses Society (INS) has identified that the pressure generated by the flush, if too high, can damage the catheter. The INS standard (Infusion Nursing Standards of Practice, Standard 4.5. Flushing and Locking, Practice Criteria H) states, "To prevent catheter damage, the size of the syringe used for flushing and locking should be in accordance with the catheter manufacturer's directions for use. Patency is assessed with a minimum 10 mL syringe filled with preservative-free 0.9% sodium chloride. Flush syringes holding a smaller volume and/or designed to generate lower amounts of pressure may also be used to assess patency."

Unfortunately, in their labeling, some IV catheter manufacturers have extended this to include IV medication injections. That, in turn, has understandably led hospitals to restrict IV injections of medication to syringes of 10 mL (or 10 mL diameter) or more. This has often led to nurses emptying the contents of prefilled medication syringes under 10 mL into a 10 mL syringe prior to injection, defeating the entire purpose of unit dose syringes, such as Carpuject or pharmacy-prepared and labeled syringes.

There are multiple dangers with this practice, because it does not allow the ability to perform bedside medication barcode scanning. It can lead to partial loss of the dose, will likely result in unlabeled syringe contents, and will increase the chance of accidental contamination. This practice may also compromise accurate measurement of tiny doses of medication intended for pediatric patients. The INS standard also states, "Administration of small quantities of medication should be given in a syringe appropriately sized for the dose required following confirmation of catheter lumen patency." We confirmed with INS that, in most cases, extemporaneous repackaging at the bedside is not necessary once patency has been confirmed.

We spoke to a representative from Bard Access Systems, one of the largest manufacturers of IV access devices. The representative told us that, with the exception of a 1 mL prefilled syringe, a strategy now being sanctioned for the company's catheters and ports is to initially assess catheter patency with a saline flush using a syringe with the diameter of a 10 mL syringe. Once patency is assured, medication administration in a smaller diameter syringe is acceptable. The representative told us that the company is changing product labeling to reflect this newer strategy arising from its research and development department.

As the Bard representative pointed out, "Each facility will have to determine the best practice for their facility based on manufacturers' recommendations and current nursing practice, and weigh the risks versus benefits."

USE OF "NoAC" ABBREVIATION

A pharmacy student on a hospital internal medicine rotation had a patient admitted to the coronary care unit with atrial fibrillation. The patient had been taking warfarin prior to hospitalization. A new order was written for amiodarone for the arrhythmia, but this drug can interact with warfarin and enhance its anticoagulation effect.

Upon review of the patient's medical record, the student and other team members saw a cardiology note that stated, "Patient is taking Coumadin and was placed on amiodarone. There is an interaction. Instead of adjusting the Coumadin dose, consider NoAC." The entire medical team, the pharmacy preceptor, and the student all assumed that this meant, "Due to the potential interaction between warfarin and amiodarone, consider using no anticoagulation (discontinue the warfarin)." The cardiologist was contacted to confirm this interpretation. To everyone's surprise, the physician said he was actually using the abbreviation "NoAC" instead of writing out the words "New (or novel) Oral Anticoagulant." He meant that instead of warfarin, one of the direct thrombin inhibitors, such as dabigatran, should be considered.

A quick search of the Internet reveals frequent use of the abbreviation "NoAC," and its use has become more popular with the introduction of the newer anticoagulants. ISMP plans to add "NoAC" to its list of potentially dangerous abbreviations, and we strongly caution providers not to use it clinically.

It should be noted that drug interactions can occur between amiodarone and direct thrombin

inhibitors, decreasing clearance and thus increasing plasma levels of the anticoagulant. The dabigatran label does not recommend a dosage adjustment (www.ismp.org/sc?id=281), although it is probably wise to use the drugs together with caution until more is learned. The apixaban label recommends a dose reduction to 2.5 mg or to avoid concomitant use (www.ismp.org/sc?id=282), and the rivaroxaban label states that combined use should be avoided (www.ismp.org/sc?id=283).

UNSAFE FREQUENCY NOTATION

Staff at a long-term acute care hospital with a skilled nursing unit told us that they often receive patients from acute care hospitals. Some electronic medical records list medication times such as "Daily06" or "Daily08" to indicate once-daily dosing at a specific time of day. However, they have had 2 instances in which this notation was misinterpreted when noted on the hospital discharge summaries. In one case, vancomycin 1,500 mg IV "Daily08" was transcribed as vancomycin 1,500 mg every 8 hours for an 83-year-old patient with a serum creatinine of 1.7 mg/mL. The error was caught by a pharmacist who was calculating the correct dose based on patient parameters. The frequency was corrected before harm occurred. In another case, pantoprazole 40 mg IV "Daily06" was transcribed as every 6 hours. An admitting physician caught the mistake before the patient received the first dose. It makes sense to avoid that format if possible.

2014-15 TARGETED MEDICATION SAFETY BEST PRACTICES FOR HOSPITALS

This year marks the 20th anniversary of the founding of the Institute for Safe Medication Practices (ISMP). We've learned a great deal during those 20 years, and it's largely thanks to the readership of *Hospital Pharmacy* and their willingness to report medication errors and hazardous conditions. Our anniversary made us think long and hard about ways we can improve upon our safety mission. One topic that reoccurs in discussions at ISMP is how saddened we are when we must repeatedly publish articles about well-known, yet easily preventable, medication errors that result in serious patient injuries or death.

For example, our *ISMP Medication Safety Alert!* publication and this *Hospital Pharmacy* column have each described cases of IV vincristine given intrathecally, overdoses of liquid medicines due to dose measurement errors, burns from application of glacial acetic acid, dosing errors resulting from pound-

kilogram confusion, and IV injections of oral liquids. These errors are all too familiar in health care. It's time to put a stop to these preventable yet repetitive errors!

ISMP has launched the *2014-15 Targeted Medication Safety Best Practices for Hospitals* to identify, inspire, and mobilize widespread adoption of consensus-based best practices on specific error-related issues that continue to harm patients or cause death. The targeted best practices are realistic strategies upon which hospitals can focus their medication safety efforts over the next 2 years. The best practices have been reviewed by an external expert advisory committee and each is accompanied by a rationale.

The *2014-15 Targeted Medication Safety Best Practices for Hospitals* target these primary areas of focus:

- IV vincristine
- Oral methotrexate
- Patient weights in metric units
- Oral syringes
- Oral liquid dosing devices
- Glacial acetic acid

We strongly encourage adoption of these practices in all US hospitals. We will be monitoring the effectiveness of this effort through surveys to get a sense of the current level of implementation of these best practices as a baseline. The best practices are fully described on ISMP's Web site at: www.ismp.org/tools/bestpractices/. We hope your hospital will participate. ■

Educating the Healthcare Community about Safe Medication Practices

Consulting

- RCAs
- Risk and technology assessments

Education

- Webinars
- Free online resources
- Unique learning programs and workshops

Error Reporting and Analysis

- Only voluntary national reporting program

Publications

- Acute care, community/ambulatory, nursing newsletters

www.ismp.org