ISMP Medication Error Report Analysis

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Dispense a Needle With That Pen

A diabetic patient visited an endocrinologist at an academic medical center, where she was prescribed Humulin R (insulin regular concentrate) U-500 pens. The patient was to administer 140 units 3 times a day. The prescription was dispensed by the medical center's ambulatory pharmacy, where the patient was given the pens but no pen needles. Since she didn't have any needles for the pens, when she got home she used one of her U-100 syringes that she had used with her previous U-100 insulin to draw her insulin dose from the U-500 insulin pen cartridge (essentially using the pen as a vial). It's possible that she may have measured and administered as much as "140" units (700 units of U-500). Her daughter found her unresponsive and called for an ambulance. When emergency medical technicians arrived, they gave the patient 12.5 g of 50% dextrose and transported her to the hospital, where she fully recovered.

In a similar situation, a patient was previously using insulin glargine U-100 but switched to Toujeo (insulin glargine U-300). In this case, he was given pen needles to use with Toujeo, but at home, he decided to use up the remaining supply of U-100 syringes. Using the insulin pen cartridge as a vial, he drew up a dose, filling the U-100 syringe to the 100 unit mark—the same daily Lantus dose (100 units) he had been taking. This resulted in a dose of 300 units of Toujeo, not the prescribed 100 units, which led to hypoglycemia requiring hospital admission.

Plans are underway at the medical center where the most recent error was reported to give pharmacists authority to dispense pen needles without a prescription whenever insulin pens are prescribed. Perhaps insurance providers that currently require a prescription for needles should take note and allow pharmacists to dispense appropriate pen needles whenever a pen device has been prescribed. Also, it is critical for prescribers, nurses, and pharmacists to educate patients about the proper use of insulin pen devices, the importance of using the correct pen needle with the device, and to never use the insulin pen cartridge as a vial. In addition, a process should be in place prior to discharge to ensure that patients have the medications or prescriptions, equipment, and supplies needed at home to manage their insulin therapy (e.g., insulin, syringes or pen needles, blood glucose meter and strips, lancets, lancing device, glucagon emergency kit).

Med Wreck?

A patient with atrial fibrillation (nonvalvular) was admitted to a hospital for insertion of a left atrial appendage device used to prevent stroke in patients who are not good candidates for long-term anticoagulation. When preparing the patient's list of home medications, hospital staff entered VESicare (solifenacin) instead of the intended product, Vessel Care, a nutritional supplement the patient was taking. VESicare is used to treat overactive bladder with symptoms of incontinence, urgency, and frequency. However, the patient did not have this condition.

Because the error was not recognized, the order was converted to oxybutynin based upon the hospital's therapeutic formulary interchange for VESicare. A dose of 5 mg every 12 hours was ordered, which the patient received postoperatively. The patient developed urinary retention that required urinary catheterization, although it's unclear whether anesthetics given during the procedure may have also caused or contributed to the problem. The error was finally discovered by a pharmacist reviewing the patient's medication list during transition-of-care rounding prior to discharge.

The reporter commented that a more robust medication reconciliation process was needed. Prescribers do not always reconcile the medication list with the patient's indications or review the home medication list with the patient, especially if the patient was admitted for an elective procedure. While a home medication list is initially compiled by nurses, the actual reconciliation process is often incomplete. One suggestion would be to have a pharmacy staff member collect and verify the medication history, and then confirm that the prescriber has reviewed and reconciled the list (if the appropriate resources for such a pharmacy service are available). Also, prescribers, pharmacists, and nurses should attempt to verify that any drug prescribed, dispensed, or administered is indicated for the patient based on his or her medical conditions.

We notified the US Food and Drug Administration (FDA) as well as Astellas, which distributes VESicare in the United States, about the look- and sound-alike name confusion.

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Figure 1. Some believe a 0.4-mg dose requires all 25 tablets in the bottle.

25 Sublingual Nitroglycerin, All at Once

The entire contents of a 25-count bottle of sublingual nitroglycerin tablets have occasionally been administered erroneously as a single dose to patients with angina. Such an event nearly happened recently when a nursing student incorrectly interpreted the strength on the bottle label. The label on the Greenstone brand nitroglycerin tablet container (Figure 1) stated, “nitroglycerin sublingual tablets, USP, 0.4 mg” (or other strengths). Elsewhere on the label, it notes that there are 25 tablets in the container, but one’s eyes might easily miss that because it is not printed close to the drug name and strength. Because the bottle and tablets are so small, the student nurse thought a single dose must be all 25 tablets. She poured all the tablets into a medicine cup to administer them. Fortunately, her preceptor quickly noticed the mistake.

This error has been reported to the Institute for Safe Medication Practices (ISMP) in the past with other nitroglycerin products. In one case, a patient’s blood pressure dropped to 80/40 mmHg, requiring transfer to a critical care unit. In another case, the patient spit out the tablets because of the intense burning sensation in his mouth.

Unlike most tablet or capsule medications in hospitals, because of stability issues, nitroglycerin is dispensed in bottles of 25 tablets rather than in unit-dose packaging. The bottles are often stored on patient care units and may be the only stock bottle of tablets available on units if a robust unit-dose dispensing system exists. Some nurses who are accustomed to unit-dose packaging may not be expecting more than a single dose in a drug container.

We contacted the FDA and asked the agency to have nitroglycerin manufacturers indicate “0.4 mg *per* tablet,” or “Each tablet contains 0.4 mg,” on the carton and bottle label. A slash mark (0.4 mg/tablet) should not be used because the slash might be misinterpreted. For now, package the original amber glass bottle in a plastic bag or plastic amber vial, and affix a label listing the per tablet strength as well as standard dosing information. Remind all practitioners, “If you need more than 3 [pills, vials, or other dosage form], call the pharmacy.”

ON-Q Pump for Nerve Block Attached to IV Line

An elastomeric pump (ON-Q device) infusing a local anesthetic was purposefully connected to a peripheral intravenous (IV) line by an alert, hospitalized patient. He was receiving a continuous nerve block for pain management of an open fracture of the calcaneus (heel bone). He was in tremendous pain and attempted to help manage his pain by giving himself the drug from the ON-Q device IV. Fortunately, the patient’s nurse quickly identified the misconnection and took appropriate action. Anesthesia was notified, the patient was monitored, and the ON-Q pump was discontinued due to concern for compliance.

It is likely that many hospitals are seeing increased use of nerve blocks with local anesthetics to reduce opioid use. Keep in mind that accidental IV infusion of local anesthetics, including bupivacaine and ropivacaine, is concerning due to the potential for significant systemic toxicity, including cardiotoxicity. Therefore, increased awareness of patient safety concerns with elastomeric devices and regional anesthesia is needed to prevent the likelihood of similar events.

ON-Q devices are also used for epidural infusions, but it is unclear whether the requirement for new neuraxial connectors (NRFit) will affect elastomeric pumps used epidurally. The pumps do not currently use the new connector, and if they do in the future, this will require tubing that accepts the new connector.

Patient selection plays an important role in the safe use of elastomeric devices, both in and out of the hospital. Still, it is

hard to predict what a patient (or family member) might do. Therefore, warning patients about any manipulation of these devices on their own is warranted. Mix-ups like this can also occur when staff maneuver various types of tubing. For now, affix labels on lines if the patient has more than one port of entry into the body (eg, IV, arterial, umbilical, enteral, bladder, drainage tubes).

This is not the first time that an ON-Q pump (or other elastomeric pump) was involved in such an error. Other cases, along with prevention recommendations, appear on our website: www.ismp.org/sc?id=188 and www.ismp.org/sc?id=2918.

Don't Abbreviate Drug Names

A patient was being treated in a trauma bay after being seriously injured in a motor vehicle accident. The patient had initially been paralyzed with vecuronium for rapid sequence

intubation. Several minutes later, a trauma surgeon verbally ordered more vecuronium, saying she needed “10 of vec” (10 mg of vecuronium). But this was initially misheard as Tenivac (diphtheria and tetanus toxoids), a vaccine commonly given to trauma patients. Read back or repeat back of the verbal order either did not occur or was accomplished using the same abbreviated name and dose that the prescriber voiced, “10 of vec.”

Although Tenivac was administered (and likely would have been ordered anyway, given the patient's injuries), staff quickly recognized that vecuronium was also needed for continued paralysis while the trauma team performed an emergency procedure in the emergency department. Still, lessons learned: Don't abbreviate drug names—not even when communicating drug names orally—and repeat back (or read back, if the receiving practitioner is physically able to transcribe the order immediately) all verbal orders, saying the full drug name, dose, and dosing units.