MEDICATION ERRORS

Shedding “Lyte” on the Multifaceted Nature of Errors

Matthew Grissinger, RPh, FASCP

PROBLEM: According to a recent report, a mix-up occurred as a result of confusion between sodium acetate and potassium acetate. A physician prescribed 5% dextrose in water (D/W) with sodium acetate 150 mEq/L, 100 ml/hour, for a patient with lymphoma. He also ordered potassium chloride 60 mEq/250 ml of normal saline (NS).

The pharmacy received the orders one day before the patient was admitted to the hospital. A night pharmacist entered the orders and placed them on hold, but he inadvertently selected 150 mEq of potassium acetate, not sodium acetate, per liter of solution. The computer did not display a warning about the excessive amount of potassium in the potassium acetate solution or about the order of two solutions with potassium additives.

After the patient was admitted, the day pharmacist activated the orders without noticing the error. A pharmacist specializing in intravenous infusions (the IV pharmacist) considered the amount of potassium acetate to be excessive. He called the night pharmacist, who “remembered” the order as potassium acetate and suffered no permanent injury.

SAFE PRACTICE RECOMMENDATION: The confusion surrounding sodium acetate and potassium acetate provides an example of the multifaceted nature of medication-related errors. From the scenario described in this article, most readers can probably identify more than one system failure that led to the error. Conversely, there is more than one way to prevent such an error. Here are some suggested strategies:

1. As a way of reducing order-entry errors, mnemonics for potassium acetate and sodium acetate should not appear on the same screen next to each other, and the chemical symbols Na and K should not be used.
2. The maximum doses for potassium (and other electrolytes) should be established and entered into the computer, and the system should be tested regularly to ensure that warnings appear for unsafe doses, including those related to each component of combination products (e.g., potassium phosphate, or penicillin G potassium).
3. If orders are entered and held for activation at a later time, staff members should not overlook the opportunity to verify the order entry by comparing the information against the order copy before activation. Preparing IV admixtures from the label and the order copy also provides an opportunity to verify order entry data and should become part of the procedure for all IV mixtures. In this case, following such a practice would have provided the IV pharmacist with the information needed to correct the error.
4. At a minimum, all order-entry clarifications should be sought from the original order or the prescriber. Although the IV pharmacist expressed concern about the amount of potassium acetate in the solution, another pharmacist convinced him that the order was accurate. Thus, a clear procedure should be established to address drug safety concerns.
5. Before using MARs, nurses should verify their accuracy by comparing them against the original orders. Comparing the solution’s label with the original order before administration might also have helped the nurses detect the error (this practice is recommended for all pharmacy-prepared IV electrolyte solutions).
6. Electrolyte replacement protocols should be established to guide therapy. Even if the staff had followed a potassium protocol (not sodium, as ordered), it is possible that the error might have been detected during a comparison of the typical dose of potassium acetate with the patient’s dose.
7. When replacing electrolytes, staff members should thoroughly investigate any corresponding abnormal serum levels for a possible link to an error.