Standardizing Drug Infusions

Many critical care medication infusion errors continue to occur particularly during the coronavirus pandemic as smart infusion pumps are placed outside of patient rooms using several extension tubing sets.

In one example, a patient became hypotensive and a pharmacist assisted by preparing the medication outside of the patient room. The pharmacist prepared a standard norepinephrine infusion with 4 mg/250 mL (16 mcg/mL) and placed a handwritten label on the bag. Barcode scanning could not be performed and two errors ensued.

1. The nurse selected weight-based dosing option (mcg/kg/minute) on the smart infusion pump instead of mcg/min.
2. The nurse also selected the maximum concentration of 32 mg/250 mL (128 mcg/mL) instead of 4 mg/250 mL (16 mcg/mL).

Since the medication was titrated to maintain the patient's blood pressure, neither of these programming errors negatively impacted the patient. The provider changed the patient to the more concentrated dose to restrict fluid intake. The original error was caught and corrected by the nurse on the next shift who hung a new infusion bag with barcode label, changed the pump settings and tubing. The infusion and tubing were switched several times more between standard and more concentrated doses. There were concerns that the patient may have received accidental bolus doses and at low infusion rates it's possible that the medication was not reaching the patient given the volume left in the extension sets.

Recommendations to prevent this type of infusion error include:

- Standardize to either weight-based (mcg/kg/minute) or non-weight-based (mcg/minute) for norepinephrine dosing.
- Instead of using new extension sets with each change in concentration, consider disconnecting the existing extension tubing from the patient, flush it with the new concentration, and reattach it to the patient; however, each disconnection and reconnection increases the risk for infection.

Electronic Health Records and Test Patients

A major concern was raised during a state survey visit to a health system. A state surveyor at one of the hospitals (facility A) asked an emergency department (ED) nurse to review its "door-to-needle" process involving accessing alteplase for stroke patients. The nurse demonstrated the system by admitting a test patient in the electronic health record (EHR) then entering an order for alteplase injection. Since the EHR is connected to every facility in the health system, the nurse inadvertently admitted the test patient to another hospital (facility B). The test order was transmitted to the pharmacy at facility B where there happened to be a stroke patient in that ED. Fortunately, the prescribing provider at facility B caught the error before it reached the patient.

Reference

1. Institute for Safe Medication Practices. (2020). *Nurse Advise-ERR.* Retrieved from Institute for Safe Medication Practices: https://www.ismp.org/nursing/medication-safety-alert-december-2020

Recommendations to reduce this type of error include:

- Avoid creating test patients in a live EHR system; instead, use a test environment and train staff to use it when appropriate.
- If a test patient must be used within a live system, use a patient name that makes it obvious that it is not real, such as “Test Patient”.
- One hospital within a health system should not be able to affect the workflow at another hospital within the same system by “admitting” patients to the other location.
- Implement a standard communication process that includes the patient’s full name.
- Provide staff with instructions and procedures to follow when demonstrating workflow to surveyors.

Reference

1. Institute for Safe Medication Practices. (2020). *Nurse Advise-ERR.* Retrieved from Institute for Safe Medication Practices: https://www.ismp.org/nursing/medication-safety-alert-december-2020