Remote Computerized Prescriber Entry Errors—More Than ‘Remotely’ Possible

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**Problem:** The Institute for Safe Medication Practices (ISMP) was notified that a medical resident had prescribed an infusion of vecuronium (Norcuron, Bedford Laboratories) for the wrong patient via a computerized prescriber order entry (CPOE) system from a remote location outside the hospital. She had meant to order the infusion for a patient on mechanical ventilation in the intensive-care unit (ICU), but she accidentally prescribed the drug for a patient on a medical unit.

An inexperienced resident pharmacist processed the order and prepared the infusion, failing to recognize that a neuromuscular blocking agent should never be sent to a medical unit where patients are not intubated and on ventilators. The resident pharmacist affixed two labels to the bag; one label noted that the infusion was a high-alert medication, and the other stated that the drug was a paralyzing agent. The pharmacy technician who delivered the infusion did not think to question why the drug had been prescribed for a patient on the medical unit.

An independent double-check was required for this medication before administration; accordingly, two nurses verified the drug, the pump settings, and the patient. The infusion was started, after which the patient began walking to the bathroom. Paralysis began to set in, and he fell to the floor. Fortunately, he was able to call out for help. When the resident physician, along with the rapid-response team, arrived and asked what happened, one of the nurses questioned whether the “new drug” she had just hung could be responsible. Realizing the problem, the physician immediately stopped the infusion. The patient was treated and experienced no long-term effects.

The prescribing error escaped the attention of at least five staff members—the physician, the pharmacist, the pharmacy technician, and two nurses. The error was also able to slip through the system despite safeguards such as warning labels and double-checks. It is also likely that the nurses working on the medical unit, where the drug had never been used, had little knowledge of vecuronium, its indication, its paralytic effect, and the need for mechanical ventilation, despite the warning label.

**Safe Practice Recommendations:** When a prescribing error makes it all the way through the system and reaches a patient, it is clear that the cause is not a single human error or a knowledge deficit alone. In this case, there were several causes of the error and, consequently, multiple opportunities for improvement at each phase of the medication-use process.

**Prescribing.** The scenario described here highlights an important point. When handwriting orders, prescribers often have the correct patient’s chart available and are usually physically present in or near the patient’s unit; thus, they are limited to writing orders for patients who reside in that unit. However, when entering prescriptions into a CPOE system, prescribers can order medications from a remote location, thereby multiplying the risk of entering an order into the wrong patient’s record.

Despite the increased risk, safeguards are possible if CPOE technology is used to its fullest extent. For example, the CPOE system might be able to match an order for a neuromuscular blocking agent with an active order for mechanical ventilation and provide an alert if a match is not found. This option succeeds only if orders for starting and discontinuing mechanical ventilation are consistently entered into the CPOE system. Another option is to set up the CPOE system to limit the prescribing of neuromuscular blocking agents to patients in units where mechanical ventilation is permissible.

**Dispensing.** As with a CPOE system, the pharmacy’s computer system could be designed to restrict the prescribing of neuromuscular blockers to patients in units where mechanical ventilation is permissible. Alternatively, pharmacy staff members could be required to verify that the patient is receiving mechanical ventilation before they enter or review an order for a neuromuscular blocking agent—unless the patient is in a critical-care unit or the emergency department. If the neuromuscular blocker is dispensed from an automated dispensing cabinet, the drug should not be available via an override unless it is part of a rapid-sequence intubation kit. An independent double-check by another pharmacy staff member (which did not occur in the case cited here) should also be required even if a pharmacist has prepared the medication.

The warning labels affixed to neuromuscular blocking agents represent another area needing improvement. Labels that include the words “paralyzing agent” alone might not be sufficient to make it clear that the patient requires mechanical ventilation. A fluorescent red label, boldly stating, **Warning: Paralyzing Agent—Causes Respiratory Arrest;** may help to communicate this urgent message more clearly to nurses. A similar warning should appear in bold print on medication administration records (MARs).

**Administration.** It is obvious that nurses should have a thorough knowledge about the medications they are
administering. However, a lack of information about the drug is the most common cause of medication errors.1 Thus, more needs to be done than simply admonishing nurses who make an error that could have been prevented if they knew more about the drug. Making clear and concise drug information readily available to those who need it—at the click of a mouse with electronic MARs—is paramount, as is consistently instilling the message that safety trumps timeliness, to discourage rushing during drug administration.

Changes should also be made in the way an independent double-check for high-alert medications is conducted. In our scenario, a second nurse double-checked the drug before it was given. However, because a neuromuscular blocking agent reached a patient who was not receiving mechanical ventilation, it might appear that the double-check process failed—but did it? We don’t know the details of how the double-check was performed in this case, but we can consider the following:

- If the first nurse compared the pharmacy-dispensed drug with the drug ordered by the physician, verified the patient using two identifiers, and correctly programmed the pump to deliver the infusion according to the physician’s order, and
- If the second nurse compared the drug infusion with the physician’s order, verified the patient using two identifiers, and confirmed that all pump settings and the line attachment were correct, according to the physician’s order, then
- The independent double-check itself was performed correctly, despite the failure to detect the prescribing error.

Most likely, the problem was not that the nurses did not carry out an independent double-check according to a typical process used in many hospitals (i.e., independently comparing the “five rights” against the physician’s orders or a verified MAR). In fact, the nurses followed the physician’s orders perfectly. What was missing in the double-checking process was a cognitive review of the procedure, and the following questions should have been asked:

- Did the drug’s indication match the patient’s diagnosis or condition?
- Was the dose appropriate for this patient?
- Was the route of administration correct?

These questions, as well as others, need to be answered independently by the initial clinician preparing selected high-alert medications for dispensing and administration, along with a second clinician who double-checks the drugs. Without a cognitive review of the prescribed high-alert medication during a double-checking process, prescribing mistakes—which are the source of more than one-third of all medication errors1—might not be detected or corrected in time before affecting the patient.

REFERENCE


The reports described in this column were received through the ISMP Medication Errors Reporting Program (MERP). Errors, close calls, or hazardous conditions may be reported on the ISMP Web site (www.ismp.org) or communicated directly to ISMP by calling 1-800-FAILSAFE or via e-mail at ismpinfo@ismp.org.