ISMP Medication Safety Alert!®

A federally certified Patient Safety Organization

Nurse Advise-ERR®

Educating the healthcare community about safe medication practices

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Remote electronic prescribing can lead to wrong patient errors

ISMP received a report from a hospital in which a medical resident had prescribed a NORCURON (vecuronium) infusion for a patient via a computerized prescriber order entry (CPOE) system in a remote location. She meant to order the infusion for a patient on a ventilator in ICU but accidentally entered the order for a non-ventilated patient on a medical unit. An inexperienced resident pharmacist processed the order and prepared the infusion, failing to recognize that the neuromuscular blocking agent should never be sent to a medical unit where patients are not intubated and receiving ventilator support. The pharmacist affixed two labels to the bag: one noting that the infusion was a high-alert medication, and the other stating that the drug was a "paralyzing agent." The pharmacy technician who delivered the infusion did not know that this medication should not be administered on a medical unit where patients were not typically ventilated.

An independent double-check was required for this medication before administration, so two nurses verified the drug, strength, pump settings, and patient. The infusion was started, after which the patient began walking to the bathroom. He fell to the floor once paralysis began to set in, but fortunately, he was able to call out for help. The resident physician was called, along with the rapid response team. When the 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 infusion was immediately stopped. The patient was treated and suffered no long-term effects, although he was frightened by the experience.

The error escaped the attention of at least five clinicians–the prescribing physician, pharmacist, pharmacy technician, and two nurses. The error also made it 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 Norcuron's use, its paralytic effect, and the need for mechanical ventilation.

When a prescribing error is missed by several practitioners and reaches a patient, it's clear that more than a single human error or knowledge deficit alone allowed the error to occur. In this case, there were multiple causes of the error and, thus, multiple opportunities for improvement at each phase of the medication-use process.

What's missing during a double-check is a cognitive review of the drug's appropriateness...

Prescribing. When handwriting orders, prescribers often have the actual patient's chart in hand; thus, they are limited to writing orders for patients that reside on the unit where they are physically present and able to verify the correct patient with two unique identifiers. But when employing CPOE, prescribers can order treatments and medications from a remote location, increasing the risk of entering orders into the wrong patient's record. Safeguards are possible if CPOE technology is maximized. For example, the CPOE system may be able to match an order for a neuromuscular blocking agent with an *active* order for mechanical ventilation, and provide an alert if

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Conducting an independent double-check ✓✓✓✓

An independent double-check of a high-alert medication is a procedure in which two clinicians separately check (alone and apart from each other, then compare results) each component of prescribing, dispensing, and verifying the high-alert medication before administering it to the patient. The following information must be verified during the double-check process:

Comparison to prescriber's order:

- ✓ Is this the prescribed drug?
- ✓ Is this the prescribed dose/strength/rate and route of administration?
- ✓ Is this the right patient (use two patient identifiers, not the room number)?
- ✓ Is this the prescribed frequency/time for drug administration?

Additional cognitive checks:

- ✓ Does the drug's indication correspond to the patient's diagnoses?
- ✓ Is this the right drug formulation?
- ✓ Are dose calculations correct?
- ✓ Is the dosing formula (e.g., mg/kg) used to derive the final dose correct?
- ✓ Is the prescribed dose/frequency/timing appropriate for this patient?
- ✓ Is the route of administration safe and proper for this patient?
- ✓ Are pump settings correct, including the concentration?
- ✓ Is the infusion line attached to the correct port (if applicable)?
- ✓ Has appropriate monitoring been prescribed and guidelines followed?

Nurse Advise-ERR® funding for 2009

We are very pleased to announce that this newsletter will again be offered **FREE** to US nurses in 2009 through educational grants from **McKesson** and **Baxter Healthcare.** Please join us in thanking our 2009 supporters by sending a message to ismpinfo@ismp.org. We will forward all messages to appropriate company representatives.

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a match is not found. Another option is to set up the CPOE system to limit the prescribing of neuromuscular blocking agents to patients on units where mechanical ventilation is permissible. (Neuromuscular blocking agents used during rapid sequence intubation typically are not entered into the CPOE system *before* use; thus, this safeguard would not interfere with the use of a neuromuscular blocking agent during an emergency in any area of the facility.)

Pharmacy verification and dispensing. As with a CPOE system, the pharmacy computer system could limit the preparation and dispensing of neuromuscular blocking agents until it has been verified that the patient is being mechanically ventilated. If the neuromuscular blocking agent is obtained from an automated dispensing cabinet or refrigerator, the drug should not be available via 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 above-cited case, should also be mandated, even if a pharmacist has prepared the medication. This independent double-check should include verifying the patient location and the use of mechanical ventilation.

Labeling. Labels that state "paralyzing agent" alone may not be sufficient to make it clear that the patient requires mechanical ventilation. More informative, fluorescent red labels, which

boldly state "Warning: Paralyzing Agent–Causes Respiratory Arrest!" may help to communicate this important message more clearly. A similar warning should appear in bold print on medication administration records (MARs).

Drug information. It goes without saying that nurses should have knowledge about the medications they administer. However, research confirms that the most common cause of medication errors is the lack of information about the drug.[1] There are too many medications, including generic and brand versions, to expect every nurse in every work setting to know every drug. Therefore, admonishing nurses who make a medication error due to a knowledge deficit will not solve the problem. Clear and concise drug information must be readily available, at the click of a mouse on computers, dispensing cabinet screens, and electronic MARs. Also, it is important to consistently instill the message that safety trumps timeliness and to discourage rushing during drug administration. Nurses who take the time to investigate unfamiliar medications should be applauded, not chastised for taking extra time to obtain necessary information about the drug before it is administered.

Independent double-checks. The process for completing an independent double-check for high-alert medications must be periodically reviewed, as changes in the way it is carried out may be necessary. In the above cited case, a second nurse double-checked the drug before it was administered. However, because a neuromuscular blocking agent reached an unventilated patient, many would conclude that the double-check process failed. But did it? Consider the following:

If the first nurse compared what pharmacy had dispensed with the physician's order, 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 to the physician's order, verified the patient using two identifiers, and confirmed that all the pump settings

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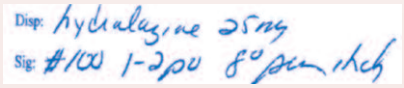
safetywires

Abbreviation of concern. An order for a medication was received with instructions to "give q mon." Depending on the medication, "mon" might indicate once every month, especially if the letter "m" is not capitalized, or once every Monday, especially if the "M" is capitalized. At best, "mon" (or "Mon") is an unclear abbreviation and should not be used.

Detecting mental slips. Ever wonder why doctors should always include the purpose or indication on prescriptions? Here's one reason why: to help detect a mental slip by the



prescriber. A physician accidentally prescribed hydr**ALAZINE** instead of hydr**OXY**zine for his patient. These medications have names and strengths that are similar. In this case, the pharmacist immediately recognized that the physician had made a mental slip. She contacted the prescriber and had the order changed. There's a grateful patient out there somewhere.

Special Announcements...

Check out ISMP's new Practitioner in Residence program. This comprehensive 1-week "rotation" held at ISMP's office in suburban Philadelphia, PA, is designed to assist healthcare professionals who hold or plan to hold medication/patient safety positions in their organization and want to rapidly advance their safety leadership skills. Participants will work closely with ISMP experts on an individual project while completing medication safety learning modules tailored to their educational needs. They will attend didactic sessions on priority medication safety issues and interact with ISMP staff as they carry out their mission to learn about medication errors, design and test effective error-reduction strategies, and advocate for patient safety. For more information, please visit: www.ismp.org/Consult/practitioner.asp.

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and the line attachment were correct according to the physician's order; **then**

The independent double-check, itself, was carried out perfectly, despite the failure to detect the prescribing error.

Most likely, the problem wasn't that the nurses did not carry out an independent double-check according to a typical process used in many hospitals–independently comparing the "five rights" against the physician's orders or a verified MAR. In fact, the nurses followed the physician's order perfectly. What is missing in the double-checking process is a cognitive review of the appropriateness of the drug, dose, and route of administration. Does the drug's indication match the patient's diagnoses or conditions? Is the dose appropriate for this patient? Is the route of administration proper?

These questions and more need to be answered independently by the initial clinician verifying selected high-alert medications, along with a second clinician double-checking the drugs. See the right column on page 1 for details about conducting an independent double-check. Without a cognitive review of the medication during the double-checking process, prescribing errors—which are the source of more than a third of all medication errors[1]—may not be detected and corrected before reaching the patient. (For more on safeguarding neuromuscular blocking agents, visit: www.ismp.org/newsletters/nursing/issues/NurseAdviseERR200612.pdf).

Reference: 1) Leape LL, Bates DW, Cullen DJ, et al. Systems analysis of adverse drug events. *JAMA* July 5, 1995; 274(1):35-43.

Announcements (cont'd)...

ISMP teleconference series. Please join us for the first in a series of teleconferences in 2009 on high-alert medications, ***Reducing the Risk of Patient Harm from Opiates***, to be held on **January 21**. Learning the common types of errors with high-alert medications and barriers to optimal therapy and safety is fundamental to selecting the most effective error-reduction strategies and reducing the risk of patient harm. Participation in the January teleconference will help ensure that you focus your medication safety efforts on the most significant contributors to patient harm from errors with opiates. To receive discounted pricing, register for the entire series of teleconferences on high-alert medications, including **anticoagulants** (April), **chemotherapeutic agents** (July), and **insulin** (October). For details, please visit: www.ismp.org/ education-al/teleconferences.asp.

ConsmerMedSafety.org

An ISMP website that alerts consumers to drug safety issues

"*Preventing medication errors is no longer just a responsibility for health professionals–consumers like you can also play a vital role.*" That's what the homepage banner says on our new consumer website, ConsumerMedSafety.org (www.consumermedsafety.org). ConsumerMedSafety.org (see home page to the right) is the only website exclusively designed to bring the message of adverse drug event prevention directly to consumers. There are few websites that offer consumers quality information about medication safety; and to the best of our knowledge, there are no other websites dedicated entirely to consumers **and** hosted by a charitable organization with a singular mission to understand the causes of medication errors and provide time-critical error-reduction strategies to the healthcare community, including consumers.

This unique, interactive website provides reliable, expert advice that will clearly impact medication safety. The site offers consumers various methods of learning about drug safety, including but not limited to the following:

- Blinded, memorable stories about actual errors that have happened and how to prevent them
- Peer-reviewed advice from safety experts, including you, our health professional readers
- A consumer error-reporting program that communicates issues to ISMP, FDA, and medical product manufacturers to foster large-scale changes in healthcare
- Safety tools and resources, such as how to take/administer medications by various routes, and which medications cannot be crushed
- Emailed, safety alerts from ISMP, FDA, and our safety partner, iGuard.org, personalized according to the list of medications the consumer provides to us via a secure database
- Emailed notification of applicable drug recalls or drug class recalls that may affect consumers, based on the list of medications they provided.

We hope that you will consider linking your hospital or department's website to ConsumerMedSafety.org and that you and your family will take advantage of our unique medication alert system as well. Please also keep us in mind for any safety issues you would like to communicate directly to a wide audience of healthcare consumers, including patients, family members, and caregivers. We welcome your comments regarding the website (ismpinfo@ismp.org) and will endeavor to continuously improve it to ensure it meets the needs of consumers and makes an impact on medication safety.

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Special Recognition...

Our 2008 Nurse Advise-ERR® Clinical Advisory Board

Production of this peer-reviewed newsletter would not be possible without the assistance of a reliable and talented clinical advisory board. As 2008 nears an end, we want to thank each of the following members of the advisory board for their dedication to making this newsletter a valuable medication safety resource for clinicians.

Happy Holidays...

The staff and trustees at the Institute for Safe Medication Practices wish you joy, health, and happiness this holiday season!

ISMP Trustees

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