PA PSRS
Pennsylvania Patient Safety Reporting System

Patient Safety Advisory

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Hold on to These Orders

Problem: For years, healthcare practitioners have struggled with what appears to be a fairly simple issue: How do you document and communicate *holding* a single dose or several doses of a medication, whether it is warfarin, insulin, or other medication? Reports from PA-PSRS demonstrate that orders to hold a medication can often result in a variety of missteps in the medication use process.

The classes of medications most frequently involved in breakdowns when communicating hold orders include:

- **Anticoagulants** such as Coumadin (warfarin), heparin, Lovenox (enoxaparin), and Fragmin (dalteparin). These medications were mentioned in one-third of all reports involving hold orders.
- **Antihypertensives** such as Vasotec (enalopril), Norvasc (amlodipine), Tenormen (atenolol) and Lopressor (metoprolol) were involved in over 16% of the reports.
- **Antidiabetic agents** such as insulin, glyburide, and Prandin (repaglinide) were associated with 15% of the reports.

Some examples of breakdowns that occur are simply process issues that occur during the transcription or order entry process, such as:

- Hold orders or the parameters for a hold order were not transferred to the medication administration record (MAR).
- When MARs were recopied, the hold order or corresponding parameters were omitted.
- Hold orders were not "taken off" or transcribed until *after* the dose of medication was administered.
- Hold orders were not sent to the pharmacy.
- Hold orders were missed by the pharmacist and not entered into the computer system.

Issues that arise during the prescribing process include the time when the hold order was written by the prescriber. For example:

> *Physician wrote a hold order for Coumadin. Order was written after the routine 18:00 administration time. The hold order was not processed prior to administration, and the patient received one additional dose of Coumadin.*

Medication orders sometimes are written without specific parameters or indications to specify when medication administration is intended to be restarted or discontinued. This was commonly seen with medications that effect blood pressure or heart rate. A report submitted to PA-PSRS stated:

> *While checking the MAR, a nurse noted that Norvasc was on hold since the 14th of the month on the old MAR but had not been transcribed onto the new MAR. Consequently, Norvasc 10mg was given at bedtime on the 21st of the month, when it should have been held.*

Problems have also been reported in which medications are ordered to be held for upcoming tests or procedures and then restarted once the procedure is completed. ISMP has reported on a case in which an elderly woman had already been hospitalized for several days when the attending physician requested a gastroenterology consult to determine if she was bleeding. He also wrote an order to "Hold Coumadin" with no parameters. Per protocol, the pharmacy interpreted this order as a discontinuation of COUMADIN (warfarin). The gastroenterologist performed an endoscopy, showing benign results. After the procedure, he rewrote orders for all the previous treatments and active medications using the patient's current 24-hour computer-generated MAR as a reference. However, since the warfarin was no longer an active order, it was not listed on the MAR. Thus, warfarin was not prescribed post-procedure. Six days later, the patient suffered a stroke, which was directly related to inadequate anticoagulation.[1]

The opposite type of error can also occur. In one case, a physician wrote an order to hold LOVENOX (enoxaparin) before a patient underwent implantation of a pacemaker, and also wrote to resume the

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medication 48 hours after the procedure. However, the MAR did not contain the specified timeframe before restarting the drug. Thus, the patient accidentally received a dose of Lovenox as soon as he returned to the ICU following the procedure.

Sometimes a specific hold order has an effect on other medications the patient may be taking as well. One example reported to ISMP includes a diabetic patient on continuous enteral feedings, who was also receiving 24 units of subcutaneous NPH insulin, twice daily, to control elevated glucose levels. The feedings were held for a CT scan, but no one discontinued the insulin. By the time the blood glucose was checked again, it measured only 26 mg/dL. Dextrose 50% was administered, and enteral feedings were restarted. Fortunately, the patient recovered with no lasting ill effects.[2]

Solutions

1. If a patient is receiving *daily* medications, such as warfarin, in doses that are based on *daily* lab results, some facilities reflect this on the pharmacy profile and the nursing MAR as an ongoing active order listing just the drug, route, and frequency, with clear annotation on the records to ensure that a dose is prescribed *each day* according to lab values. Each daily prescribed dose is then documented in the pharmacy profile and the nursing MAR. If a dose must be held due to a high INR value, an order for "No warfarin today" is obtained, including the date that the medication is supposed to be held.
2. If medication doses are not guided by daily lab values, hold orders are unsafe unless the prescriber includes specific instructions indicating when to resume the medication, and the specific instructions are clearly noted on the pharmacy profile and nursing MAR. For example, an order to hold furosemide for 48 hours need not result in discontinuation of the drug; rather, clear annotation can appear on the pharmacy profile and the nursing MAR of the conditions for holding and resuming the drug.
3. Orders to hold a medication indefinitely without specific instructions on when to resume the medication can lead to errors. A safer practice is for prescribers to discontinue the medication and rewrite the order when the medication is to be restarted. If an indefinite *hold* order is received, a nurse or pharmacist can clarify the order to learn if specific conditions can be added for resuming administration. If not, the drug can be discontinued.
4. The pharmacy computer can often generate a daily summary of prescribed therapy for each patient (usually prepared during the night) that is placed on the patient's chart for physician review. These summaries can include, in a discrete section, a list of medications discontinued within the past 48 hours. Physicians can then include this information in their daily review of order interpretation. This method can help to identify and fix any inadvertent discontinuation or continuation of a drug. The summaries would also help physicians when re-prescribing therapy after a procedure (or upon discharge).
5. While orders to hold a medication until after a procedure clearly include instructions on when to resume administration, these orders are unnecessary because, to be consistent with expectations regarding medication reconciliation, all medications are re-prescribed after such a transition in care, and the newly prescribed medications can be reconciled with the previously prescribed medications. If computerized prescriber order entry is available, it may be possible to place pre-procedure orders in a queue and re-prescribe them by releasing each individual drug as appropriate. Applicable post-procedure standardized order sets can also help if they contain prompts to remind prescribers to resume those medications, such as anticoagulants, that were held prior to the procedure.
6. When enteral feedings or total parenteral nutrition (TPN) orders are stopped or held for diabetic patients, any insulin they are receiving may need to be adjusted or discontinued. If enteral feedings or TPNs have the rate of infusion adjusted or held, prescribers need to simultaneously write an order to reflect any needed changes in the dosing of insulin. Directions to adjust or discontinue insulin under these conditions can be done prominently on MARs and on enteral feeding documentation. Pharmacists, working with dieticians or a nutrition team, if available, can improve safety by maintaining awareness of enteral feedings and alerting staff when diabetic patients with insulin orders have their feedings held or discontinued.

Notes

1. ISMP. Medication Safety Alert! Acute Care Edition. 24 March 2005;(10) 6.
2. ISMP. Medication Safety Alert! Acute Care Edition. 4 September 2003;(8) 18.

An Independent Agency of the Commonwealth of Pennsylvania

The Patient Safety Authority is an independent state agency created by Act 13 of 2002, the Medical Care Availability and Reduction of Error ("Mcare") Act. Consistent with Act 13, ECRI, as contractor for the PA-PSRS program, is issuing this newsletter to advise medical facilities of immediate changes that can be instituted to reduce serious events and incidents. For more information about the PA-PSRS program or the Patient Safety Authority, see the Authority's website at www.psa.state.pa.us.

ECRI is an independent, nonprofit health services research agency dedicated to improving the safety, efficacy and cost-effectiveness of healthcare. ECRI's focus is healthcare technology, healthcare risk and quality management and healthcare environmental management. ECRI provides information services and technical assistance to more than 5,000 hospitals, healthcare organizations, ministries of health, government and planning agencies, and other organizations worldwide.

The Institute for Safe Medication Practices (ISMP) is an independent, nonprofit organization dedicated solely to medication error prevention and safe medication use. ISMP provides recommendations for the safe use of medications to the healthcare community including healthcare professionals, government agencies, accrediting organizations, and consumers. ISMP's efforts are built on a non-punitive approach and systems-based solutions.