



# Nurse Advise-ERR®

Educating the healthcare community about safe medication practices

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## Shakespeare was on target—don't be a borrower or lender

The phrase, “Neither a borrower nor a lender be,” originated from Shakespeare’s famous play, *Hamlet* (1603), during which Lord Polonius gives this advice to his son who is heading back to school. Because our world is different today, you may believe this advice is outdated and irrelevant. But when it comes to medication safety, Shakespeare’s advice is timeless; medications should never be borrowed from or lent to others.

His advice is simple enough to follow, but practitioners can be tempted to borrow a “missing medication” (a dose that potentially should have been available) or the first dose of a new medication from another patient’s cassette, a discharged patient’s unused medications, or another patient care unit. Borrowing medications is a workaround used to speed the process of administering medications due to inherent or excessive wait times associated with pharmacy dispensing; this workaround increases the risk of an error.

Lest you believe that profiled automated dispensing cabinets (ADCs) and unit dose dispensing alone have sufficiently curtailed the practice of borrowing medications, a survey originally conducted in 2002 and repeated in 2008 (see Table 1, below) found that almost half of the 1,296 nurses who participated in the most recent survey still borrowed medications when doses for their

patients appeared to be missing on the unit.<sup>1</sup> Table 2, on page 2, describes just a few of the many errors that have been reported to ISMP as a result of borrowing medications (which are similar to errors associated with removing medications from floor stock or ADCs via an override function before pharmacy review of the orders).

Because there are many opportunities for error, the ideal medication administration system is one in which there is more than one practitioner between the drug and the patient. For example, while screening orders, a pharmacist may detect a prescribing error such as an inappropriate dose, a drug allergy, or a drug-drug interaction. While checking medications before administration, a nurse may detect a pharmacy dispensing error. While reviewing the patient’s medication administration record (MAR), a physician may detect the inadvertent discontinuation of a drug.

Pharmacies have a system of checks before medications are dispensed. Computer software can help screen the order for appropriateness and safety, and other staff typically prepare the medications and check them against the order before they are dispensed. However, this safety system is bypassed when doses are borrowed from other patients or obtained from an ADC before a pharmacist has screened the order. Thus, with borrowed medications, the system will not provide adequate safety checks to capture errors before they reach the patient.

Borrowing medications is not just a nursing problem; it’s a complex, interdisciplinary clinical issue that

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## safetywires

### ⚡ Distribute instructions for oral dispenser.

Take a look at the oral dispenser that accompanies morphine sulfate oral solution 100 mg/5 mL (Figure 1, below). The dispensing end of the plunger is pointed rather than flat—a specialty design not typically employed by key US hospital suppliers of oral syringes (e.g., Baxa, BD, B. Braun). It accompanies some liquid products for the purpose of providing a low residual syringe volume after drug delivery. The pointy tip fits into the hub area, pushing out liquid and leaving little behind in the dead space. However, confusion has been reported regarding how to measure liquids—from the end of the pointed tip of the plunger, or from the widest part of the plunger above the pointed tip. Some nurses have been using the tip of the plunger to read the volume against the syringe scale, **which is incorrect**. All doses should be meas-

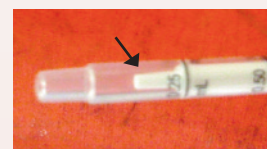


Figure 1. Some nurses have used the end of the plunger tip to measure liquids.

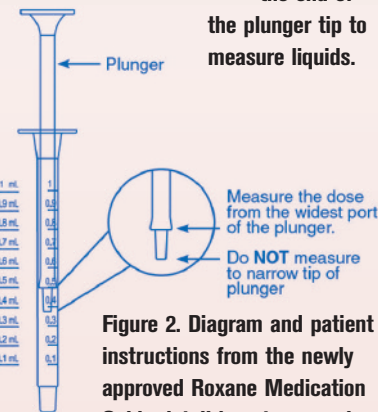


Figure 2. Diagram and patient instructions from the newly approved Roxane Medication Guide detail how to properly measure a dose using the special oral dispenser.

ured by aligning the widest part of the syringe plunger with the calibrated markings. By measuring from the tip,

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Table 1. Percent of nurses who borrow “missing medications” <sup>1</sup>		
Extent of Borrowing	2008 Survey	2002 Survey
Always borrow	5%	10%
Sometimes borrow	43%	61%
Never borrow	52%	29%

Shakespeare continued from page 1 requires ongoing team-work and excellent communication among nurses, pharmacists, and other healthcare practitioners. Assume that borrowing of medications does occur in your hospital and consider the following four-pronged approach to address this issue.

**1) Remedy the reasons for borrowing** Prohibition against borrowing medications via policy is not enough to ensure patient safety, as the reasons for this behavior are often rooted in system deficiencies. Talk with colleagues and learn why nurses and other practitioners may borrow medications from unauthorized sources, and address these issues in a collaborative manner. If turnaround time for dispensing medica-

tions (or review of orders to allow access to medications in ADCs) is perceived to be an issue, set up measures to identify the scope of the problem, address vulnerabilities, and gain consensus among nurses, pharmacists, physicians, and hospital leadership regarding acceptable timeframes for drug delivery or order review. Uncover and address common misconceptions about the need and clinical significance of starting new drug therapies immediately. If waiting for order clarification (as in some of the examples in Table 2), pharmacists should contact the nurse to communicate the reason for a delay in dispensing the drug, especially if the prescribed drug or dose might be unsafe for the patient.

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**Table 2. Examples of errors associated with borrowing medications**

A patient received two doses of **SEROQUEL (QUetiapine)** 100 mg instead of the prescribed 200 mg dose of **SERZONE** (nefazodone). When the nurse could not find the patient's dose of Serzone, she thought pharmacy had forgotten to dispense it. Instead of calling the pharmacy, she asked another nurse to borrow the medication from a unit close-by. This nurse misheard the request for Serzone as **SEROquel** and gave the nurse two 100 mg doses of the wrong medication. The patient experienced significant somnolence and sedation after receiving 200 mg of **SEROquel**.

A physician prescribed IV **ZOSYN** (piperacillin and tazobactam) for a patient with pneumonia. The nurse wanted to start the antibiotic right away, so instead of waiting for pharmacy to dispense the drug, she borrowed an unused dose from a patient who recently expired. The patient who received Zosyn (a drug in the penicillin drug class with potential for cross-sensitivity allergic reaction) had a known penicillin allergy and developed an anaphylactic reaction to the drug. Fortunately, the patient survived. The pharmacy had not dispensed the medication because staff were waiting for the prescriber to call back to change the order.

When a nurse found that she could not obtain a dose of **TORADOL** (ketorolac) from the unit's ADC via the override feature, she borrowed a dose from another patient and administered it to an aspirin-allergic patient. Fortunately, the patient did not experience a life-threatening reaction. The pharmacy had not released the medication in the profiled ADC because they were awaiting clarification of the order because Toradol is contraindicated in patients with an allergy to aspirin.

In a labor and delivery unit, a healthy young woman became hypotensive after starting epidural anesthesia. A nurse called an obstetrics resident known to be "difficult" at times, who snapped at the nurse and gave an order for **ePHEDrine** 10 mg slow IV push. The nurse, who was anxious because of the physician's behavior, made a mental slip and thought of "**EPINEPHrine**." With only a few ampuls of **EPINEPHrine** 1 mg on the unit, she decided to borrow more from the nursery. She found a 30 mL vial of **EPINEPHrine** 1:1,000 (1 mg per mL), withdrew 10 mL, and administered that amount to the patient. The patient immediately developed tachycardia, severe hypertension, and pulmonary edema. Fortunately, anesthesia staff responded and recognized the problem immediately. The patient was treated successfully and the baby was delivered safely.

A woman with atrial fibrillation, hypertension, lethargy, and constipation died while receiving enoxaparin and heparin concurrently. A cardiologist initially prescribed enoxaparin and warfarin. When a gastroenterologist recommended a colonoscopy, warfarin was discontinued and a heparin infusion was ordered. Enoxaparin administration continued every 12 hours. The heparin order was never faxed to the pharmacy. In order to administer the heparin bolus and begin the infusion, the nurse borrowed a vial of heparin and a premixed solution that the pharmacy had dispensed for another patient. Several hours later, the patient's aPTT was greater than 90 seconds. The heparin infusion was decreased, but by morning, the patient exhibited signs of internal bleeding and her aPTT was still elevated. Heparin and enoxaparin were discontinued, but the patient died despite aggressive treatment.

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nurses will administer more than the intended dose. A long-term care consultant pharmacist brought this issue to light when narcotic counts at three different facilities showed remaining volumes different than expected. Residents may have been given higher doses than prescribed if nurses measured the dose by aligning the plunger tip with the calibrated markings on the barrel. The error happened with a generic product, which is no longer on the market; however, Roxane distributes a morphine sulfate oral solution that uses the same syringe. The FDA-approved Medication Guide for the Roxane product has a section under "Patient Instructions for Use" that explains exactly how to use the syringe, and it has a detailed illustration showing how to accurately measure the product (Figure 2, on page 1). Education of nurses, pharmacists, and other healthcare professionals may be necessary if the "Patient Instructions for Use" information is not reaching them. Please pass this information along to nurses who work in areas where morphine 100 mg/5 mL or any other product packaged with this type of syringe is used. The reporter suggested that the company include the syringe diagram on the box flap of the product's carton; however, the carton may not always reach the nurse. If possible, patient-specific doses should be dispensed from the pharmacy in labeled oral syringes.

**⚡ Inaccurate dosing if insulin withdrawn from a pen cartridge.** A nurse called a pharmacist to express concern that a patient's insulin pen was not delivering the correct dose of insulin. To demonstrate the problem, the nurse took a standard insulin syringe, dialed the pen to 10 units, and injected the insulin into the syringe to measure how much would reach the patient. She found that the insulin syringe into which she injected 10 units of insulin really only contained 5 units of insulin. This was repeated twice with the same results.

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## 2) Decrease staff tolerance

Ensure nurses and other practitioners understand the risks and consequences of borrowing medications, and ensure pharmacists understand the risks and consequences of delayed order review and dispensing of medications. Promote reporting of conditions that contribute to delayed order review and dispensing, which may encourage and reward the practice of borrowing medications. Use this information to improve the medication-use system.

## 3) Identify reason(s) for missing medications

Missing doses are an inconvenience and could be related to problems with restocking ADCs or delivering medications to patient care units. However, a medication can be missing or not available for other reasons:

- The medication was already given but not documented on the MAR
- The dose was given on another unit
- The medication time or frequency was scheduled incorrectly and is being reviewed
- The order was incorrectly interpreted or mistranscribed onto the MAR or onto another patient's MAR
- The medication was not dispensed by pharmacy because of a

safety problem

- The dose was used to replace a previously dropped dose or a dose that had been vomited
- The drug was misplaced (e.g., removed from the pneumatic tube and left there or sent to the wrong nursing unit)
- Pharmacy never received the order
- A discontinued drug is still listed on the MAR
- The drug was in the refrigerator where it should be, but the nurse didn't know it was there
- The drug was borrowed for another patient

## 4) Eliminate unauthorized access to drugs

Discourage the accumulation of discontinued or unused medications in patient care units. Provide a secure container or ADC compartment for staff to place medications from discharged or expired patients as well as other discontinued or unused medications. Conduct frequent pharmacy rounds to collect these medications (including refrigerated items). Use profiled ADCs and establish stringent criteria for removal of medications. Monitor override reports for appropriateness.

### Reference

1) Cohen H, Shastay AD. *Nursing2008* survey report: getting to the root of medication errors. *Nursing2008* December 2008;38(12):39-47.

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The pharmacist went to the nursing unit, repeated the experiment, and also got just 5 units. When laying the pen down on the table, the pharmacist noticed that an air bubble was visible in the pen cartridge. Knowing how that could affect insulin delivery from the pen, he obtained a new pen from stock and repeated the previous experiment. This time, when 10 units were injected from the pen into the syringe, it now measured 10 units of insulin. The problem was traced to nurses using the pen cartridges as "mini" insulin vials by drawing doses out of the pen cartridge with an insulin syringe. It's a practice we've warned against because it's known to lead to inaccurate dose measurement as well as infection control concerns. When nurses are not sure how to use a pen, or encounter problems when using it, they may be tempted to remove the pen cartridge and use it as a vial. This can accidentally introduce air into the cartridge. Once any amount of insulin is withdrawn from the cartridge, it may no longer deliver the exact amount of insulin listed on the dispensing dial (and may also risk contamination of the remaining medication). In this instance, the patient was subjected to several injections and less effective blood glucose control because the pen was used in an unintended manner.

## Two new Medication Safety self-assessment tools

ISMP received a grant from the Commonwealth Fund to distribute an updated **2010 ISMP Medication Safety Self Assessment® for Hospitals**. Building upon ISMP's 2000 and 2004 self-assessment tools, the updated version will include many of the prior self-assessment items as well as new items associated with changes in healthcare during the past 6 years. Hospitals that used the prior self-assessment tools will be able to compare their prior scores to current scores to evaluate improvement. The new assessment tool will be distributed late in 2010.

ISMP, ISMP-Canada, and the International Society of Oncology Pharmacy Practitioners (ISOPP) will launch a new self assessment in 2011 to help hospitals and ambulatory cancer centers throughout the world evaluate **oncology medication safety**. This self assessment is supported through a grant from ISOPP. The Clinical Excellence Commission of New South Wales, the Australian Commission on Safety and Quality in Health Care, and the Cancer Institute of New South Wales will also provide grant support and expertise for the project. ISOPP received private sector support from Baxter Corporation, ICU Medical, Inc., Pfizer Oncology, and Roche.

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