Implementing AORN Recommended Practices for Medication Safety

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Continuing Education Contact Hours

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Purpose/Goal

To educate perioperative nurses about the AORN recommended practices for medication safety.

Objectives

1. Identify factors that increase the risk of medication errors.
2. Describe the medication use process.
3. Identify elements of a safe medication management plan.
4. Explain how the perioperative nurse can help promote medication safety.
5. Identify safe medication practices.

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Approvals

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Dr Hicks, Dr Wanzer, and Ms Denholm have no declared affiliations that could be perceived as posing potential conflicts of interest in the publication of this article.

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ABSTRACT

Medication errors in the perioperative setting can result in patient morbidity and mortality. The AORN “Recommended practices for medication safety” provide guidance to perioperative nurses in developing, implementing, and evaluating safe medication use practices. These practices include recognizing risk points in the medication use process, collaborating with pharmacy staff members, conducting preoperative assessments and postoperative evaluations (eg, medication reconciliation), and handling hazardous medications and pharmaceutical waste. Strategies for successful implementation of the recommended practices include promoting a basic understanding of the nurse’s role in the medication use process and developing a medication management plan as well as policies and procedures that support medication safety and activities to measure compliance with safe practices. AORN J 96 (December 2012) 606-619. Published by Elsevier, Inc., on behalf of AORN, Inc. http://dx.doi.org/10.1016/j.aorn.2012.09.012

Key words: AORN recommended practices, medication safety, medication use process, medication management plan.

Although perioperative areas may not be among the most frequently reported places where medication errors occur, the fact remains that medication errors do occur in these environments and have had consequences as serious as patient death. Medication errors strike at the heart of the health care tenet to do good and avoid harm. In support of this tenet, AORN’s “Recommended practices for medication safety” was first published electronically in December 2011.

The purpose of the recommended practices (RP) document is to help perioperative team members recognize risk points in the medication use process and to encourage collaboration with pharmacists to reduce opportunities for medication errors. The RP document is intended to provide guidance to perioperative nurses in developing, implementing, and evaluating safe medication use practices specific to the perioperative setting. The unique care demands of the perioperative environment (Table 1) can
present challenges to care providers with regard to the medication use process. The AORN recommendations can be adapted for use in various practice settings, including traditional ORs, ambulatory surgery centers, and other areas where operative and other invasive procedures are performed.

**WHAT'S NEW**
The “Recommended practices for medication safety” has been restructured and expanded to demonstrate how perioperative nurses draw on the knowledge of the nursing process in combination with the medication use process to reduce the likelihood of medication errors. The new recommendations underwent vigorous review, including review by representatives of the Institute for Safe Medication Practices, the US Food and Drug Administration, the American Nurses Association, the American Society of Anesthesiologists, the American Association of Nurse Anesthetists, and the American College of Surgeons. Key points in the RP document include pharmacy collaboration; risk points in the medication use process; preoperative assessment and postoperative evaluation, including medication reconciliation; and safe practices for handling hazardous medications and pharmaceutical waste.

**RATIONALE**
The Institute of Medicine has called on all health care professionals to make patient safety the standard of care. Evidence shows that medical errors

<table>
<thead>
<tr>
<th>Perioperative care demand</th>
<th>Threat to safe medication use</th>
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<tr>
<td>Requirement of aseptic transfer of medication</td>
<td>Contamination of the medication or the sterile field, break in sterile technique</td>
</tr>
<tr>
<td>Time sensitivity (eg, preparing medication too far ahead of time)</td>
<td>Increased risk of medication losing potency or expired medication being administered</td>
</tr>
<tr>
<td>Sensory distractions (eg, drilling equipment, cell phones, loud music, low lighting)</td>
<td>Miscommunication in hearing medication orders or reading medication labels</td>
</tr>
<tr>
<td>Potential for muffling of verbal medication orders because of the surgical mask</td>
<td>Miscommunication contributing to the wrong medication or wrong dosage being administered</td>
</tr>
<tr>
<td>Outdated or inaccurate preference cards</td>
<td>Wrong medication being transferred to the sterile field, delay in the procedure while the correct medication is obtained from the pharmacy or medication supply room</td>
</tr>
<tr>
<td>Multiple concentrations of high-alert medications</td>
<td>Overdose or wrong dose of the medication being delivered</td>
</tr>
<tr>
<td>Pharmacists not available or only available for limited hours</td>
<td>Risk of medication error or incorrect compounding of two or more medications</td>
</tr>
<tr>
<td>Limited storage areas where look-alike/sound-alike medications may be adjacent to one another</td>
<td>Wrong medication administered to the patient</td>
</tr>
<tr>
<td>Multiple hand offs as the patient moves through the system</td>
<td>Miscommunications resulting in missed dosages, missed allergies, or missed drug-to-drug interactions or contraindications</td>
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are costly and occur frequently within health care organizations and in perioperative settings specifically. Every year, patients’ lives are lost as a result of medical errors. Medication errors, a subset of medical errors, also contribute to increased incidences of morbidity and mortality. Medication errors rarely stem from a single cause; rather, errors are often related to failures that are multidisciplinary and multifactorial.

In a landmark study spanning seven years, researchers compiled more than 11,000 case reports of medication errors ranging from missed doses of medications to excessive doses of medications, wrong patient errors, and wrong medication errors. From this analysis, the researchers established the incidence of harm at 4.96% in the perioperative continuum, which compared unfavorably with the national reported incidence of harm of 1.3%. When examining only pediatric patients, the incidence of harm was noted at 16.7%.

Because medication errors in perioperative settings have a risk of causing harm, AORN recommends multidisciplinary collaboration to prevent medication errors. Such collaboration is supported because there often are medication hand-offs among perioperative team members, and the sterile team members and anesthesia professionals may give medications concurrently. Additionally, poorly integrated information systems and various forms of documentation can potentially inhibit successful information sharing across disciplines.

One of the underlying building blocks of safe medication use stems from the medication use process, a systems approach to core structures, processes, and outcomes that promote safe medication use (Table 2). The new RP document is structured to outline each phase of the medication use process and to identify risk points and evidence that supports the practice recommendations in each section. Key elements of each phase are often a focus of accreditation surveys. Examples include storage of medications (eg, separating medications that have look-alike labels), medication orders, safe injection practices, sharps safety, and the storage and use of multidose vials. Other recommendations included in the RP document specify compliance with federal, state, and local regulations, including those defined by the

### TABLE 2. The Medication Use Process

<table>
<thead>
<tr>
<th>Phase (step)</th>
<th>Definition</th>
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<tr>
<td>Procuring</td>
<td>The formal action of how organizations obtain products.</td>
</tr>
<tr>
<td>Prescribing</td>
<td>The action of a legitimate prescriber to issue a medication order.</td>
</tr>
<tr>
<td>Transcribing</td>
<td>Anything that involves or is related to the act of transcribing an order by someone other than the prescriber for order processing.</td>
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<tr>
<td>Dispensing</td>
<td>Begins with the pharmacist’s assessment of a medication order and continues to the point of releasing the product for use by another health care professional.</td>
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<tr>
<td>Administering</td>
<td>The action during which the medication product and the patient intersect.</td>
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<tr>
<td>Monitoring</td>
<td>Involves evaluating the patient’s physical, emotional, or psychological response to the medication and the recording of such findings.</td>
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Occupational Safety and Health Administration\textsuperscript{6,7} and the Environmental Protection Agency\textsuperscript{8} and enforced through the Resource Conservation and Recovery Act,\textsuperscript{9} the Clean Water Act,\textsuperscript{10} the Controlled Substances Act,\textsuperscript{11} and the United States Pharmacopeia Chapter \textless 797\textgreater .\textsuperscript{12}

**DISCUSSION**
Subtle differences in the medication use process exist within the perioperative setting compared with other health care settings. The demands present in the perioperative environment affect how staff members obtain and store medications and how perioperative professionals prescribe, dispense, or administer medications. The type of collaboration with pharmacists also may differ in perioperative settings. To clarify these issues, the following discussion focuses on practice recommendations for procuring and storing medications, prescribing and transcribing medication orders, encouraging pharmacy oversight, identifying risk points throughout perioperative care, monitoring the patient, and following safe practices.

The perioperative nurse, based on his or her knowledge and experience, should contribute to the facility’s medication management plan to ensure that the perioperative team role is addressed in each phase of the medication use process. The medication management plan used in the perioperative setting may have different elements from what is found in the organization’s overall medication management plan because of variations in delivery. For the discussion below, the term *medication management plan* is intended to describe the plan used in the perioperative setting.

**Procuring and Storing Medications**
Recommendation II in the RP document discusses practice recommendations for safely procuring and storing medications. During the public review process for the new RP document, perioperative nurses expressed confusion about the procuring phase of the medication use process. This illustrates that nurses may not recognize the importance of this phase. During procurement activities, medications are ordered from the supplier and delivered to the health care organization. Inadvertent errors can occur when suppliers ship the wrong product or when there are disruptions in the supply chain. The facility’s medication management plan should include detailed instructions for how to handle disruptions in the supply chain that result in product shortage or substitution and how to notify the health care team of interim disruptions. The plan also should outline the processes for separating look-alike or sound-alike products in a manner that minimizes the risk of swapping products as well as recognizing unused products that need to be returned to the pharmacy for correct identification, restocking, or reordering (eg, expired medications).

The act of procuring medications also includes compliance with federal, state, and local laws, as well as facility policies. The medication management plan should include considerations for minimizing the opportunity for product diversion (eg, controlled substances), establishing appropriate environmental controls (eg, temperature), discarding unused medications in a way that minimizes the risk of water contamination, and standardizing the placement of medication in all perioperative areas. Monitoring these activities should be part of the health care facility’s performance improvement plan. Performance improvement activities also should integrate prospective strategies to minimize opportunities for drug diversion as well as address pharmaceutical waste.

Understanding the way that medications are selected, procured, and stored in perioperative settings gives the perioperative nurse insight into opportunities to influence everyday risk points (Figure 1). For example, perioperative RNs can advocate for single-use vials by identifying specific quantities of medications that are commonly used and wasted because they are obtained in a quantity greater than what is routinely used. The perioperative nurse can contribute to the facility’s plan for safe storage by being knowledgeable about
potential errors from high-alert or look-alike medications and medications that are used infrequently.

**Prescribing and Transcribing Medication Orders**

Recommendations III and IV in the RP document discuss prescribing medications and transcribing medication orders. The medication management plan should provide direction for performing periodic reviews of preprinted medication order forms, standing orders, or preference cards. The organization should use only the most current documents and monitor use through version control or by identifying the latest update. Within the perioperative environment, orders can be written, electronic, standing, and verbal. Given that each type of order follows a different process, the burden for safety is shared between both the giver and receiver of the order.

Verbal orders should be limited as much as possible. When verbal orders are used, a policy should be in place to ensure order accuracy and to direct who can give or receive verbal orders. The person who receives the order is responsible for repeating the order back to the person who prescribed it. The perioperative nurse can implement several methods to promote accuracy of verbal orders (eg, using a digit-by-digit read back or writing the verbal order on a whiteboard in the OR and having the prescriber validate it). After the order is confirmed, the perioperative RN should promptly document the order in the perioperative record according to the health care facility policy.

Technology may help fulfill the health care organization’s responsibility to ensure that adequate reference materials are available to facilitate successful prescribing. Prescribers, nurses, and others who administer medications should have access to all pertinent patient information (eg, current medications, allergies) and clinical decision support information, including nationally recognized criteria such as the Beer’s criteria, which is a list of potentially inappropriate medications for older adults. Advanced practice nurses can identify the types of clinical decision support they need and help evaluate what is not working well with the technology used in the organization.
Perioperative nurses also may choose to participate on multidisciplinary teams that are responsible for identifying risk-reduction strategies to include in the medication management plan.

Computerized prescriber order entry (CPOE) is one example of a technology that helps to reduce risk with misinterpretation of medication orders from illegible handwriting or misunderstood verbal orders. Facilities that have CPOE systems in place or are planning to obtain such systems should engage the end user in designing order sets and evaluating the effectiveness of the system. Electronic entry does eliminate issues with handwriting orders but also can introduce errors if it is not monitored.\(^\text{15}\) If there is no CPOE system, the medication management plan should include a process for when and how medication orders are transcribed. Although transcribing activities may not occur as frequently in perioperative environments as they do in other areas of a health care organization, errors can occur when numbers are transposed or when documents are lost or misplaced.

**Pharmacy Oversight**

Recommendations I, II, V, and VI in the RP document discuss pharmacy involvement and oversight. Collaboration between the members of the perioperative team and pharmacists is a key component in reducing the risk of perioperative medication errors. Because pharmacists are trained to detect potential medication errors and to identify contraindications of medication and drug-to-drug interactions, they are integral members of the multidisciplinary team that plans, develops, and continuously evaluates the medication management plan. The type of setting directs how the pharmacist collaborates with the perioperative team.

Ensuring the pharmacy department’s oversight of the medication use process and engaging pharmacists in dispensing activities are keys to promoting safe medication use in perioperative settings. Pharmacists should be actively involved in dispensing activities, including planning the formulary, obtaining the medications, reviewing standard forms, and monitoring the use of automated dispensing devices. Pharmacists also should review orders and prepare medications and solutions as indicated.

The perioperative RN should collaborate with pharmacists and prescribers as needed during the medication reconciliation process to ensure that the medication list is up to date and that the patient understands why each medication, including those used on an as-needed (ie, PRN) basis, is on the list. The medication reconciliation process can alert the perioperative nurse to underlying disease processes that may require special attention during the physical assessment. By collaborating with pharmacy personnel and other members of the perioperative team, the perioperative nurse can develop an individualized nursing plan for medications.

**Perioperative Risk Points**

Recommendations VI, VII, VIII, IX, XI, and XII in the RP document discuss risk points associated with the administering phase of the medication use process throughout the perioperative phases of care. Using a consistent process for medication reconciliation enhances the perioperative nurse’s ability to identify risks associated with medications (eg, missed, duplicate, variations in dosages) during the preoperative assessment and postoperative evaluation. The medication reconciliation process should help ensure that all health care providers, both those who are prescribing and those who are administering medications, are aware of what herbal supplements the patient is taking, what medications have been taken or not taken on the day of the scheduled procedure, and when medications can be resumed after surgery (Figure 2). The preoperative nurse can identify the significance of medication allergies and potential contraindications and toxicity levels better when he or she understands which medications are routinely used in the scheduled invasive procedure. Additionally, on the day of the procedure, the RN should
ascertain whether the patient followed the preoperative instructions (eg, prescribed medication has been taken, NPO status is confirmed). At a minimum, the perioperative nurse should assess the patient and review the patient’s record to confirm his or her metric weight, medication history, and current medication orders before administering medications. When nurses in the preoperative and intraoperative areas perform all of these actions, they can confirm that the patient is adequately prepared for the procedure from a safe medication use perspective.

Intraoperatively, the perioperative nurse should demonstrate an understanding of safe medication practices, such as adhering to the seven rights for medication administration\(^{16,17}\) (Table 3), preparing medications as close as possible to the time of use, and using appropriate hand-off communications when delivering medications to the sterile field. In addition, the intraoperative team members should label the secondary containers (Figure 3), verify medications, and confirm dosages with the person who administers the medications on the sterile field.

Perioperative team members who handle hazardous medications also should comply with specific safety practices. These additional practices may require collaboration with pharmacists and medication manufacturers for proper disposal. Exposure to hazardous medications (eg, chemotherapeutic, cytotoxic agents) may affect how organizations process contaminated instruments.

In the final phases of postanesthesia care (ie, phase 2 recovery), the perioperative nurse should

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**TABLE 3. The Seven Rights of Safe Medication Practices**\(^1\)

<table>
<thead>
<tr>
<th>Right patient</th>
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<tbody>
<tr>
<td>Right medication</td>
</tr>
<tr>
<td>Right close</td>
</tr>
<tr>
<td>Right time</td>
</tr>
<tr>
<td>Right route</td>
</tr>
<tr>
<td>Right indication</td>
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<tr>
<td>Right documentation</td>
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coordinate patient education plans that are focused on discharge and aftercare instructions related to medication use. Patient education includes discharge teaching, not only to prepare for postoperative care, but also to address any change to the home medication management plan. The perioperative nurse can participate in medication reconciliation processes and involve the pharmacist or other team members to provide up-to-date information. The discharge plan also directs when the patient should follow up with the surgical provider and the primary care provider. The perioperative nurse should pay particular attention to ensuring that the patient or family member understands any change to the home medication regimen. Nursing documentation should reflect the changes and the patient’s or his or her family member’s understanding of the information.

**Monitoring**

Recommendation X of the RP document discusses the monitoring phase of the medication use process. Across all phases of care and in all perioperative settings, perioperative team members should monitor the patient for the desired therapeutic effect or adverse reactions to medications. Perioperative nurses are well positioned to assess the patient’s physical, emotional, or psychological response to medications. The nurse’s assessments provide an opportunity to detect the desired therapeutic effect and any unplanned adverse effect of the medications. Whenever the patient is progressing from one phase of perioperative care to another (eg, intraoperative care to the postanesthesia care unit), the nurse’s transfer of care report should include the patient’s response to medications administered in that phase of care (Figure 4).

Perioperative nursing documentation for adequate or adverse effects is a professional responsibility and, as such, the entire perioperative team may need to be involved in a review to confirm accuracy between what medications the nurses and prescribers administered and what medications were wasted or unused. Should the nurse detect adverse effects or an unexpected result, he or she should follow the organization’s plan to report the outcomes for use in quality improvement or other risk-management activities.
Safe Practices

Recommendations I, III, V, VII, VIII, and IX in the RP document discuss safe medication practices. Safe medication practices include the following actions:

- Obtain medications for only one patient at a time, regardless of whether the medication comes from an automated dispensing cabinet or other medication storage area.
- Obtain and prepare medications as close as possible to the time of use. Retrieving medications well ahead of a planned use is not advised.
- Use appropriate ancillary equipment and supplies, such as filter needles, transfer devices, and infusion pumps.
- Involve the pharmacy department when compounded preparations are planned for use.
- Discard any product that is not easily identifiable with a manufacturer or health care organization label.
- Use aseptic technique when transferring medications to the sterile field.
- Transfer medications to the sterile field without distractions and one medication at a time.
- Verify all medications that are transferred to the sterile field. Both the team member who receives the medication at the sterile field and the person who transfers the medication should verify it, including product name, strength, and expiration date.

Another aspect of safe practice during medication administration is ensuring that the environment is free of distractions. Distraction-free zones are critically important during the handling of high-risk medications or other products with narrow therapeutic ranges. Distraction-free zones also should be implemented during work with pediatric patient dosages and medication administration or with vulnerable patient populations (eg, elderly patients, pregnant patients) where there is a heightened risk for an adverse effect to occur. To assist with standardized dosages, weight-based assistive devices (eg, technology, laminated dosing cards) should be routinely included in practice.

Figure 4. At transfer of care, perioperative nurses should address what medications were administered and the patient’s response to the medications.
Perioperative administrators should promote the creation of a perioperative pharmacy and therapeutics committee to help with making decisions about medication use across all phases of perioperative care and ensure consistency within the health care organization. Committee members should include perioperative nurses and others who have expertise in identifying safe medication practices that are essential for creating safe medication use policies and practices for the organization. The medication management plan developed by the pharmacy and therapeutics committee should span each of the phases of the medication use process and be openly communicated to each member of the perioperative team. The committee’s plan also should promote technology that has demonstrated value to patient safety (eg, CPOE systems, automated dispensing cabinets) as well as determine the feasibility of implementing distraction-free zones and clinical decision support resources.

The Final Four

The final four recommendations in each AORN RP document discuss education/competency, documentation, policies and procedures, and quality assurance/performance improvement. These four topics are integral to the implementation of AORN practice recommendations. Personnel should receive initial and ongoing education and competency validation as applicable to their roles. Implementing new and updated recommended practices affords an excellent opportunity to create or update competency materials and validation tools. AORN’s perioperative competencies team has developed the AORN Perioperative Job Descriptions and Competency Evaluation Tools to assist perioperative personnel in developing competency evaluation tools and position descriptions.

Documentation of nursing care should include patient assessment, plan of care, nursing diagnosis, and identification of desired outcomes and interventions, as well as an evaluation of the patient’s response to care. Implementing new or updated recommended practices may warrant a review or revision of the relevant documentation being used in the facility. Policies and procedures should be developed, reviewed periodically, revised as necessary, and readily available in the practice setting. New or updated recommended practices may present an opportunity for collaborative efforts among nurses and personnel from other departments within the facility to develop organization-wide policies and procedures that support the recommended practices. The AORN Policy and Procedure Templates, 2nd edition, provides a collection of 15 sample policies and customizable templates based on AORN’s Perioperative Standards and Recommended Practices. Regular quality improvement projects are necessary to improve patient safety and to ensure safe, quality care. For details on the final four practice recommendations that are specific to the RP document discussed in this article, please refer to the full text of the RP document.

Educational Resources


Web site access verified August 3, 2012.
AMBULATORY PATIENT SCENARIO

Nurse B is the clinical director at a busy ambulatory surgery center with a large volume of pediatric patients. Perioperative nurses at the facility commonly administer over-the-counter medications such as cough syrups, antacids, analgesics, and antipyretics to the pediatric patients as needed. Because of the variance in patient weights, different amounts of these products are required for each patient.

While reading an excerpt from the AORN “Recommended practices for medication safety,” Nurse B learned that multidose containers must be clearly marked with an expiration date 28 days from the date the container is opened, irrespective of the manufacturer’s printed expiration date (ie, shelf life). Nurse B was successful in her previous efforts to shift to using single-dose vials for all injectable medications, but she had not realized the importance of applying the same principles to ingestible over-the-counter medications. She now realized that by not following this recommendation, there is a risk of cross-contamination with increased product handling, bacterial growth that could cause patient illness, and decreased efficacy over time that could reduce the therapeutic effects on the patient. To help her facility adhere to the recommendation for multidose containers and protect their pediatric patients, Nurse B asked the nursing staff members what they thought should be done about using and labeling multidose containers of over-the-counter medications.

The nurses on Nurse B’s team questioned whether over-the-counter liquids and antacids are considered multidose vials by the facility’s accreditation surveyors. The nurses also resisted discarding unused portions of the over-the-counter liquids regardless of the number of days the bottles had been opened.

Because of the resistance she received, Nurse B gathered additional data to support a policy change. She consulted with the pharmacist who was under contract with her ambulatory surgery center to evaluate the fiscal impact of discarding expired products. Together, Nurse B and the pharmacist surveyed the facility and found many partially filled bottles of liquid medications in various locations, and it was difficult to ascertain when each bottle had been opened. Next, the pharmacist estimated the cost of discarding the opened medications. Part of the nursing team members’ resistance to discarding the opened medications related to the amounts to be wasted and the replacement costs. With this in mind, coupled with lack of information available from the medication manufacturers regarding shelf life after opening, Nurse B added the topic to the month’s agenda for the quality assurance/performance improvement committee.

During the committee discussion, Nurse B mentioned that the liquid medications were not being dated when they were opened. As a result, it was impossible to determine the length of time the opened bottles had been on the shelf. As the committee members discussed the topic, they realized that because there was no way to know how long each of the opened bottles had been on the shelves, they were putting patients at risk for illness caused by bacterial growth in the medication or reduced therapeutic effects caused by decreased potency of the liquid medication over time. This made the committee members uncomfortable because they recognized that a large volume of patients had been given those liquid products.

Resources for Implementation

- AORN Nurse Consult Line. (800) 755-2676 or (303) 755-6300.

Web site access verified August 3, 2012.
During the meeting, the committee members revisited the “AORN recommended practices for medication safety.” Recommendation II.h.2 states, “Opened multidose medication containers must be dated to indicate expiration within 28 days of opening and should be discarded immediately upon expiration. When a product has been opened or a vial cap has been punctured or removed, the manufacturer’s expiration date is no longer valid and should be replaced with a new date.”

The members of the committee decided to comply with these best practices to be consistent when accreditation surveyors ask if they follow the national standards of care.

After the meeting, Nurse B wrote and implemented a new policy regarding over-the-counter medications, specifying that nurses label all liquid medications with an expiration date of 28 days after opening and discard all liquid medications after the expiration date. Together, the perioperative nursing team initiated a performance improvement activity to evaluate which products were discarded at 28 days and how much of the bottles were wasted at the time of disposal. The committee members agreed that Nurse B should continue to work with the pharmacy consultant to investigate the possibility of purchasing over-the-counter liquid medications in smaller unit doses if the evaluation showed that large quantities were being wasted.

In the end, the new policy and quality improvement program were a success because of successful collaboration with the pharmacy and because Nurse B initiated a timely discussion at the monthly quality committee meeting of the issue she had identified. Additional factors that led to success were taking decisive action to implement the policy and increase compliance with best practices and monitoring waste to determine whether additional changes would be needed to obtain a more appropriate unit size for some of the liquid medications.

**HOSPITAL PATIENT SCENARIO**

After reviewing AORN’s “Recommended practices for medication safety,” Nurse L, a perioperative educator, focused on the concept of preparing the medication as close as possible to the time of use. She knew that the preoperative areas had improved compliance with this safety practice because they had recently stopped spiking IV solutions in the evenings to prepare for the scheduled surgeries the next day. However, she also knew that the IV start cart was stocked with tuberculin syringes preloaded with lidocaine to be used as a local anesthetic injection to start IVs. All of the tuberculin syringes were identified with a preprinted label for the concentration of lidocaine, but the labels did not include a date or other information.

Nurse L wanted to address this practice with the perioperative nursing team because of the patient risks involved with preparing medications too far ahead of when they will be used. One key issue with this practice is that the person who draws up the medication is not the one who administers it, which creates a risk of inaccurate verification of what is actually being given. Additionally, this practice could lead to using medications that are out of date or increasing the risk of cross-contamination or a break in sterile technique with the medication being stored in a secondary container for a period of time. Finally, this practice also increases the risk of syringes being used for other purposes (eg, drug diversion if the medication is not secured).

To investigate, Nurse L went to Nurse R, a preoperative RN, and asked about the practice. Nurse R explained that he preloaded the syringes as a way to improve efficiencies and save time. He stocked the IV cart with plenty of preloaded and labeled syringes but did not calculate the number that were needed based on the schedule for the next day and did not monitor the number of unused, prelabeled syringes at the end of the day before preparing more to keep the cart stocked.
The educator took the recommended practices to the OR manager and showed her the following excerpts from the recommendations:

*Recommendation VIII.e. Medications should be prepared as close as possible to the time of use.*  

Recommendation VIII.e.4. Medications should not be pre-drawn up and stored on the anesthesia cart or elsewhere unless the pre-filled syringes are supplied by the manufacturer or pharmacy.  

Nurse L and the OR manager decided that Nurse R was using an outdated practice in his efforts to be efficient and that the issue needed to be discussed with all of the nurses who worked in the preoperative area. Together, the nurses established a new process that involved storing the multidose vial of lidocaine at a medication station away from the direct patient care areas, filling the syringe from the multidose vial immediately before it was needed, verifying the strength and name of the medication while applying a preprinted label, and taking the filled and labeled syringe directly to the patient’s bedside with the IV cart to start the patient’s IV. The preoperative nurses agreed to present the new process at the next department staff meeting to inform others about the change and ask for their support. The educator and the preoperative nurses agreed to monitor the new practice for 30 days to evaluate the effect on efficiencies and determine whether refinements to the process were needed.

This process change helped the nurses at the facility support best practices, including preparing medications as close as possible to the time of use, eliminating medications that are pre-drawn up and stored with the intention of using them later, and verifying the medication before administering it to the patient. The change helped protect patients by reducing the risk of cross-contamination or outdated medications being administered. The process change was successful because Nurse L collaborated with the nurses in the area where the change needed to occur and encouraged them to participate in developing the new process, and the changes were openly communicated in the department. Finally, by monitoring the process change, Nurse L was able to determine whether the process was working or whether it needed to be refined to improve efficiency and patient safety.

**CONCLUSION**

The perioperative RN plays an important role in safe medication use practices. AORN’s “Recommended practices for medication safety” is a comprehensive document that provides guidance to perioperative RNs in a variety of settings. Nurses should be included in the multidisciplinary team that develops the medication management plan and should participate in the quality improvement activities and evaluating compliance to advance the safe use of medications in the organization. By understanding the risk points in the medication use process, perioperative nurses can apply the principles of medication safety to their daily practice and influence change to reduce the risk of medication errors.

**Editor’s note:** The views expressed are those of the authors and do not reflect the official policy or position of the Uniformed Services University of the Health Sciences, the Department of the Defense, or the US Government.

**References**


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Implementing AORN Recommended Practices for Medication Safety

PURPOSE/GOAL
To educate perioperative nurses about the AORN recommended practices for medication safety.

OBJECTIVES
1. Identify factors that increase the risk of medication errors.
2. Describe the medication use process.
3. Identify elements of a safe medication management plan.
4. Explain how the perioperative nurse can help promote medication safety.
5. Identify safe medication practices.

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QUESTIONS

1. Factors that create the risk of medication errors in the perioperative setting include
   a. medication handoffs between team members.
   b. poorly integrated information systems.
   c. sterile team members and anesthesia professionals administering medications concurrently.
   d. the requirement of multidisciplinary collaboration.
   e. various forms of documentation that prohibit successful information sharing.
   a. 2 and 3
   b. 1, 4, and 5
   c. 1, 2, 3, and 5
   d. 1, 2, 3, 4, and 5

2. With regard to procuring medications, the facility’s safe medication use plan should include instructions for how to
   a. handle disruptions in the supply chain that result in product shortage or substitution.
   b. notify the health care team of interim disruptions.
   c. separate look-alike or sound-alike products to minimize the risk of swapping them.
   d. recognize unused products that need to be returned to the pharmacy.
   a. 1 and 2
   b. 3 and 4
   c. 1, 2, and 3
   d. 1, 2, 3, and 4

3. Nurses can advocate for the use of single-use vials by identifying specific quantities of
medications that are commonly used and wasted because they are obtained in quantities greater than what are routinely used.

a. true b. false

4. During the prescribing process, nurses can help minimize risks related to verbal orders by
1. using the Beer’s criteria to validate orders.
2. using digit-by-digit read back.
3. writing the verbal order on a whiteboard in the OR and asking the prescriber to validate it.
4. watching the prescriber document the order in the perioperative record.

a. 1 and 4 b. 2 and 3
c. 2, 3, and 4 d. 1, 2, 3, and 4

5. Pharmacists should be actively involved in obtaining medications, reviewing standard forms, and monitoring the use of automated dispensing devices.

a. true b. false

6. A consistent process for medication reconciliation should be used to
1. enhance the nurse’s ability to identify missed or duplicate medications.
2. help ensure that health care providers who provide and administer medications are aware of what herbal supplements the patient is taking.
3. identify medication allergies and potential contraindications.
4. ascertain when medications can be resumed after surgery.

a. 1 and 2 b. 3 and 4
c. 1, 2, and 3 d. 1, 2, 3, and 4

7. Intraoperatively, the perioperative RN should demonstrate an understanding of safe medication practices by
1. adhering to the seven rights for medication administration.
2. preparing medications as close as possible to the time of use.
3. using appropriate hand-off communications when delivering medications to the sterile field.
4. preparing medications well ahead of the scheduled procedure to save time.
5. verifying medications and confirming dosages with the person who administers the medications on the sterile field.

a. 1 and 2 b. 3, 4, and 5
c. 1, 2, 3, and 5 d. 1, 3, 4, and 5

8. During the postanesthesia phase, nursing documentation should reflect any changes to the home medication regimen and indicate whether the patient understands the home care regimen.

a. true b. false

9. During the monitoring phase, the perioperative nurse should
1. assess the patient’s emotional and psychological response to medications.
2. assess the patient’s physical response to medications.
3. document therapeutic or adverse effects of medications.
4. report adverse effects or unexpected outcomes according to facility policy.

a. 1 and 2 b. 3 and 4
c. 2, 3, and 4 d. 1, 2, 3, and 4

10. Safe medication practices include
a. optimizing use of automated dispensing cabinets to obtain medications for multiple patients at a time.

b. involving the pharmacy when compounded preparations are planned for use.

c. retrieving medications well ahead of a planned use to prevent procedure delays.
d. transferring all necessary medications to the sterile field together.
Implementing AORN Recommended Practices for Medication Safety

This evaluation is used to determine the extent to which this continuing education program met your learning needs. Rate the items as described below.

OBJECTIVES
To what extent were the following objectives of this continuing education program achieved?

1. Identify factors that increase the risk of medication errors. Low 1. 2. 3. 4. 5. High
2. Describe the medication use process. Low 1. 2. 3. 4. 5. High
3. Identify elements of a safe medication management plan. Low 1. 2. 3. 4. 5. High
4. Explain how the perioperative nurse can help promote medication safety. Low 1. 2. 3. 4. 5. High
5. Identify safe medication practices. Low 1. 2. 3. 4. 5. High

CONTENT
6. To what extent did this article increase your knowledge of the subject matter? Low 1. 2. 3. 4. 5. High
7. To what extent were your individual objectives met? Low 1. 2. 3. 4. 5. High
8. Will you be able to use the information from this article in your work setting? 1. Yes 2. No
9. Will you change your practice as a result of reading this article? (If yes, answer question #9A. If no, answer question #9B.)
9A. How will you change your practice? (Select all that apply)
1. I will provide education to my team regarding why change is needed.
2. I will work with management to change/implement a policy and procedure.
3. I will plan an informational meeting with physicians to seek their input and acceptance of the need for change.
4. I will implement change and evaluate the effect of the change at regular intervals until the change is incorporated as best practice.
5. Other: ______________________________
9B. If you will not change your practice as a result of reading this article, why? (Select all that apply)
1. The content of the article is not relevant to my practice.
2. I do not have enough time to teach others about the purpose of the needed change.
3. I do not have management support to make a change.
4. Other: ______________________________
10. Our accrediting body requires that we verify the time you needed to complete the 3.2 continuing education contact hour (192-minute) program: ______________________________