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Perioperative Medication Safety Practices



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AORN Independent Study Activity

AORN Video with Study Guide

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Independent Study for Perioperative Medication Safety Practices

In 2011, AORN released a new “Recommended practices for medication safety.” The recommendations are fully achievable and are intended to reflect current knowledge that promotes optimal levels of practice. Perioperative registered nurses (RNs) are encouraged to adopt these practice guidelines across various practice settings – not only traditional operating rooms and ambulatory surgery centers, but also physicians’ offices, endoscopy centers, radiology departments, and other sites where invasive procedures are performed.

The “Recommended practices for medication safety” offers guidelines for perioperative RNs to develop, manage, and evaluate safe medication practices. These guidelines build on the RN’s knowledge of the nursing process (i.e., assessment, planning, implementation, and evaluation) and add a new dimension known as the medication-use process. The medication-use process has phases of pharmaceutical care commonly known as *procuring*, *prescribing*, *transcribing*, *dispensing*, *administering*, and *monitoring*. Perioperative RNs can reduce opportunities for medication errors by understanding the medication-use process.

The purpose of this independent study is to present key points from the “Recommended practices for medication safety” and to advocate for safe medication-use practices across the perioperative continuum. The “Recommended practices for medication safety” highlights the role of perioperative RNs, not only in administering medications safely, but also the important role they have in each phase of the medication-use process.

Perioperative RNs join many other health professionals in establishing a multidisciplinary team approach for medication management with the goal of preventing medication errors. This often means representation on the hospital pharmacy and therapeutics committee or in ambulatory surgery centers, the perioperative medication safety committee. The responsibilities of the medication safety committee include creating and enforcing a plan that outlines structures, processes, and professional responsibilities that promote risk-reduction strategies across all six phases of the medication-use process. The influence of medication safety committees is most evident when assessing the health care organization’s (HCO’s) formulary, selecting technologies that promote safe medication practices, and investigating medication information resources.

PROCURING

Safe medication-use practices begin with the procurement of medications, chemicals, reagents, and related supplies. This is the first point at which the perioperative RN can participate in the medication-use process. Perioperative RNs participate in the procuring phase of the medication-use process by identifying risk points when selecting, ordering, and storing medications. The perioperative RN’s participation at this point in the medication-use process is critical for several safety reasons. Perioperative RNs can influence how these products are obtained and how unexpected shortages will be handled and communicated. Products should be obtained only from manufacturers and suppliers that have established quality programs. Input from perioperative RNs is considered when determining how medications are stored at the facility, including monitoring par levels, how stock is rotated to ensure products are not stored beyond the expiration date, and how compliance with environmental concerns (eg, temperature) can be achieved and monitored. Perioperative RNs should identify concerns and seek solutions for emergency carts that contain rarely used medications to be sure the medications are not outdated or unavailable when needed.

A well-recognized threat to safe medication use deals with product names, either trade or generic. Too often, medications have names that look like or sound like other medication names. Perioperative RNs should familiarize themselves with the HCO’s list of products that fall into the look-alike or sound-alike categories. Ensuring that products are stored in a manner to reduce opportunities for mistakes occurring with look-alike or sound-alike medications is another important element of the perioperative medication safety plan.



Many of the medications associated with perioperative care have additional compliance requirements based on local, state, or federal regulations and laws. Perioperative nurses should oversee compliance with safe procurement and storage practices to eliminate the possibility of diversion. Complying with regulations

includes storing products securely in areas with limited access and completing accurate documentation for who accessed medications and appropriate waste.

Given that perioperative care can be delivered in multiple areas within a HCO, the perioperative medication safety plan should strive for standardization throughout the organization to the greatest extent possible. This means that perioperative RNs should participate in creating uniform unit-based protocols that mirror protocols in other areas. Examples of implementing uniformity can be achieved by standardizing medication dispensing cabinets, anesthesia carts, emergency carts, and forms used for ordering medications.

When automated medication dispensing cabinets are used in a facility, perioperative team members should consult with the cabinet's manufacturer to adopt their safety practices into the perioperative procedures (eg, how to "set up" the various compartments or bins). Perioperative RNs should identify risk factors, such as medications that are arranged alphabetically or with various strengths of a product adjacent to one another. Perioperative team members should advocate for arranging medication products across the compartments to avoid placing look-alike or sound-alike products in close proximity to one another and checking with manufacturers to access information on "best practices" for storing "high-alert" products. As nurses withdraw products from the medication dispensing cabinets, they should be suspicious if products in the same drawer or bin look different than they have in the past. Although errors that occur when stocking medication dispensing cabinets may be uncommon, they can happen and introduce opportunities for medication errors. For this reason, it is important for nurses to review and verify each product when each one is removed from the cabinet.

In their daily practice, perioperative RNs may be aware of many products that are available in different strengths and concentrations. Nurses should strive to minimize variations in packaging size and reduce the number of the concentrations available facilitates the goal of creating standardized dosing orders on procedure preference cards or standing medication order forms. Nurses can identify products that need to be obtained by the facility in the final unit-of-use concentrations to avoid requiring additional manipulation by health care professionals. Perioperative RNs can also influence a change in practice by advocating that the organization obtain single-use vials, an action that is highly preferred over stocking multi-dose vials, which promote the risk of cross contamination as well as unnecessary waste.

Nurses should ensure that chemicals and non-medication solutions are stored in separate areas in the facility. Having these products separated from medications reduces the possibility of mistaking a chemical solution for a medication. Chemicals and other non-medication solutions should rarely, if ever, be removed from the original container.

PRESCRIBING

Medication orders originate with a licensed prescriber. Within perioperative care, there can be multiple prescribers involved, such as primary care physicians, surgeons, anesthesia professionals, and advanced practice nurses. The prescriber bears the responsibility of providing clear, unambiguous medication orders that are complete and accurate. All prescribers should have access to patient level information as well as access to current reference material. Regardless of the manner in which medications are ordered, prescribers should promote safety by avoiding the use of acronyms, abbreviations, and trailing zeros. Nurses and prescribers should perform an annual review of their organization's "Do-not-use" list of abbreviations and acronyms with all team members and include a system to monitor these activities within their perioperative continuous quality improvement plan.

Medication orders can be conveyed through writing (eg, physician order), electronically (eg, computerized order entry), or verbally. Within the perioperative setting, there can be variations with written orders that range from long, handwritten orders, to fill-in-the-blank preprinted order forms. Standing orders frequently contain medication orders and preference cards may either list the medications to be available during a procedure or may identify medication orders. Each mode of order carries both safeguards to prevent errors and risks for introducing a medication error.

Many facilities are now investing in electronic systems that include prescribing and documenting features. When armed with clinical decision support, these electronic order systems offer many advantages to manual prescribing. The clinical decision support component of these systems can rapidly detect allergy information, medication-to-medication interactions, and out-of-range orders. Electronic systems can also reduce the incidence of unsigned verbal orders. Ideally, the perioperative team's input is essential in the decision making process involved in obtaining electronic systems.

TRANSCRIBING

Preference cards are commonly used in perioperative settings to:

- identify what is anticipated for the procedure and/or
- charge for medications that are used during the surgical procedure.

When medications are included on the preference card, the perioperative RN should comply with policies regarding transcribing the medication order to the perioperative record or the medication administration record to ensure accurate documentation. Perioperative team members should review preference cards at least annually. Any changes to a preference card must be clearly communicated to the surgeon to validate accuracy. Policies and procedures direct the process for updating electronic preference cards and establishing the medications on preference cards as standing orders. Medications listed on preference cards are not considered to be standing orders unless they have been reviewed and signed by the prescriber.

Medication orders may not be necessary if the medication is being given by the person prescribing the medication. Verbal orders, while generally discouraged, may occur in some perioperative settings when the RN will be the one to administer the medication. When the perioperative RN receives a verbal order, he or she must confirm with the order with the prescriber by verbally reading back the order digit-by-digit, or by writing the order on a white board so the prescriber can visually confirm the order. Verbal orders, when received, must be entered into the perioperative record as soon as possible.

DISPENSING

AORN's "Recommended practices for medication safety" strongly supports the involvement of pharmacists in the perioperative medication safety plan. Pharmacists not only serve in the role of dispensing medications for patient use, but also serve the HCO as experts throughout the medication-use process and related activities. Pharmacist oversight of standing orders, preprinted order forms, and preference cards should be evident. Pharmacists should also participate in a review of all medication orders before actual medication administration occurs. Facilities are encouraged to have decentralized (eg, satellite) services in the perioperative setting. Decentralized pharmacy services can assist with sterile compounding, providing medication reference materials, and ensuring compliance with documentation standards associated with controlled substances.

ADMINISTERING

Just as in any other part of nursing care, the medication-use process is closely linked to the nursing process. Therefore, the administering phase of the medication-use process consists of assessing the patient, planning for medication use, and implementing (administering) the medication.

Assessment. Perioperative RNs are responsible for many interventions that serve to ensure safe medication practices prior to medication administration. One of the earliest interventions occurs during the preoperative assessment when the patient's overall condition is assessed and the patient's weight is documented. Many medications use the metric system; therefore, perioperative RNs should document the patient's weight in both pounds and kilograms. Standardized conversions charts can assist with the process if the organization does not have weight scales that display the weight in both pound and kilograms.

Perioperative RNs also have a role in medication reconciliation. The nurse should interview the patient and family members to identify the reason the patient is taking each medication. Knowing the therapeutic indication of the medication before the planned procedure will identify underlying patient conditions that may influence positioning or other interventions during the planned procedure. To facilitate medication reconciliation, the patient should be reminded to bring all prescribed medications, over-the-counter products, and herbal supplements to the preoperative appointment. During this appointment, the RN should confirm the name of each product, the dosing schedule, the route of the medication administered (eg, oral, dermal patch), and review known allergies and other intolerances to medications. The RN should document the reconciliation process in a standard format that is easily reviewable by all members of the health care team. On the day of the scheduled procedure, the RN should reconfirm the medication reconciliation list and affirm that the proper preoperative medications (if any) were taken as directed.

Planning. To develop the patient's nursing medication plan, the nurse synthesizes the individualized plan of care based on the patient assessment, medication reconciliation, and the anticipated medications that will be used during the procedure. The nurse's responsibility within this plan includes contacting prescribers when a variance is noted or additional information is needed and collaborating with pharmacists or others to document dose calculations of routine and high-alert medications

and to identify toxic dose ranges. The nursing medication plan should also address timely administration of preprocedural antibiotics. For example, if the patient has an order for vancomycin, the plan would direct how early the patient needs to arrive at the facility to allow sufficient infusion time and avoid complications.

Implementing. To implement the nursing medication care plan, the RN follows safe medication practices in obtaining, verifying, preparing, and administering medications, regardless of the perioperative setting. Key points for implementing safe practices include:

- obtaining medications for one patient at a time,
- avoiding distractions and interruptions,
- preparing the medication as close as possible to the time of administration, and
- using safe injection practices.

A primary safe medication practice involves obtaining only medications for one patient at a time, regardless of where the medication is stored or from where the medication must be retrieved. It is essential not to combine medications for multiple patients, or to obtain medications for procedures scheduled later in the day. These steps are important in reducing wrong-patient medication errors. When obtaining medications, the nurse confirms the original order against the product in hand and considers the individualized nursing medication plan for patient conditions and allergies.

When the RN begins the process of medication preparation and administration, he or she must heed the rule “task to completion”. This rule infers that drug retrieval, preparation, and administration are all performed in a manner that is free of distractions. Interruptions are a large contributing factor to medication errors. Whenever there are distractions between the time the nurse retrieves and prepares the medication and the medication is administered, the nurse should stop the distraction and refocus before continuing or consider starting the whole process over. Medications that require reconstitution or compounding should be handled with additional care, including preparation as close to the time of administration as possible.

Perioperative nurses must also include identification of risk for tubing connection errors in the nursing medication care plan. Wrong-route errors involve medications or solutions intended for one route of administration inadvertently being given by another route when the tube or connection of one device is misconnected to another device. Such errors can carry serious consequences. To avoid wrong-route

medication errors, all tubes and connections should be traced from the point of origin to the point of insertion before medication administration. Ensuring that all lines and catheters are properly labeled can also help reduce wrong-route errors.

Perioperative RNs are encouraged to participate in developing, implementing, and monitoring policies that address patients with similar names. Established similar, name-alert practices should be communicated to all health care providers. Monitoring and reporting the frequency of patients with similar names within the facility should be part of the communication plan.

Administering medications on the sterile field. Many procedures require that medications be transferred to the sterile field. The majority of medication manufacturers do not prepare their products for direct placement on the sterile field. Therefore, the RN circulator must complete several additional interventions to reduce the risk of medication errors. Communication between the RN circulator, the person receiving the medication on the sterile field, and the person administering the medication to the patient is among the most important interventions for reducing the risk of medication errors.

In general, communication is one of the most important factors in patient safety. This is also true with medications on the sterile field because there are so many handoffs from the time the medication is obtained to the time the medication is administered. Each time the medication is passed from one individual to another is considered a hand off and labeling of the secondary medication container serves as a communication between hand offs. Before transferring the medication to the sterile field, the RN circulator must first confirm the medication in hand with the person receiving the medication onto the sterile field. This confirmation process includes medication name, strength, volume or dosage (as indicated), and expiration date. The RN circulator should use a sterile transfer device to deliver the medication to the field. The person receiving the medication on the sterile field must confirm the product and then label the product on the sterile field immediately upon receipt. Best practices encourage reconfirming allergies and establishing dose limits. Best practices discourage the use of removing stoppers from vials and pouring the medication into a sterile container.

Another best practice is to introduce only one product at a time onto the field. Each product transferred to the field may be subject to dose limits and should also be reviewed by the RN circulator who is transferring the medication and the person who is receiving the

medication onto the sterile field. If the medication is to be administered by someone other than the person who received the medication onto the sterile field, the name of the medication, dose limits, and other pertinent information should be verbally confirmed when handing the secondary container to the person, even if there is only one medication on the sterile field.

Communication also includes documentation and transfer of care reporting. Nurses should complete appropriate documentation in the accepted medico-legal format as close as possible to the time the medication is administered. Transfer of care reporting should include all medications on the sterile field when there is a relief in the scrub person or RN circulator personnel. To facilitate communications, all original containers should be retained until the end of the procedure. Retaining the original containers is essential if a medication error investigation is needed.

Perioperative team members should be aware of safe injection practices. One syringe and one needle per injection should be used when administering medication on the sterile field. When administering incremental doses to a single patient from the same syringe is an integral part of the procedure, however, the same syringe and needle may be reused, with strict adherence to aseptic technique. Safe injection practices also include education and compliance with sharps safety measures (eg, neutral zone passing) to avoid injury to health care workers.

MONITORING

Perioperative nurses are also in a position to monitor the therapeutic effectiveness of medications. For example, if an analgesic medication is administered, does the patient report comfort? Even when a patient is anesthetized, nurses should be monitoring patients for adverse reactions (eg, hives or other skin conditions that could result from antibiotic irrigation solution). Nurses should document all findings in the perioperative record as close as possible to the time the patient response is observed.

As the patient progresses to phase two recovery, many other safety interventions fall under the role of the perioperative nurse. Initially, the nurse must review postprocedure orders and resolve any noted discrepancy. Postprocedure orders should be consistent with the procedure that has just been performed and with preexisting conditions.

Postprocedural medication reconciliation is a joint responsibility between the patient, the nurse, and the

physicians. During this process, the nurse can provide valuable information to the patient such as when to resume routine medications. The perioperative nurse's responsibility also includes assessing the patient and family members for health literacy. Discharge plans must have a provision to ensure that the patient or family member fully understands the treatment and medication plan. The perioperative nurse should also provide written patient-centered instructions in appropriate language as well as the appropriate font size.

Perioperative nurses should recognize state pharmacy laws pertaining to dispensing of medications. Many procedures, especially in ophthalmology, use products that may be suitable for postprocedure care (ie, aftercare). AORN's "Recommended practices for medication safety" state that "Facility-based pharmacists should be available if any medications or pharmaceutical products are to be sent home with the patient from the perioperative area. Partially used solutions (eg, eardrops, eyedrops) should only be sent home with the patient after being properly labeled by a pharmacist in a manner that is consistent with state pharmacy laws regarding dispensing".

Nurses also participate in monitoring the patient for medication responses after the patient is discharged by initiating a postoperative phone call to the patient or family member. This aftercare assessment can identify actual or potential complications such as early infection or reaction to medications, nonadherence to medication treatment plans, and overall patient satisfaction. Documentation should include the nursing assessment of patient status and all responses to medications.

WORKPLACE SAFETY

Another important area of the perioperative medication safety plan should address the special care and handling of hazardous medications (eg, chemo therapeutic agents). Perioperative nurses can work with the HCO's safety officer to ensure compliance with state and federal worker safety guidelines. A comprehensive safety program should address the handling and disposal of potentially hazardous materials, emergency containment practices, and all equipment (eg, personal protective equipment including gloves, gowns) to manage spills. Chemotherapeutic agents or other hazardous medications may leave residue on instruments; therefore, the hazardous materials safety plan should also address cleaning and handling of instruments that are exposed to these substances.

ENVIRONMENTAL SAFETY

An emerging area of importance to all health care workers and facilities relates to pharmaceutical waste. Medications should be disposed of according to local, state, and federal regulations as well as manufacturer's guidelines. Disposal processes should be aimed at protecting the municipal water supply. In the past, it may have been common to pour unused solutions into drains, but today, newer guidelines suggest that alternative methods of disposal must be available for some medications and chemical solutions. Pharmacists are well-positioned to help identify options for disposal of medications that comply with local, state, and federal regulations.

SUMMARY

Perioperative nurses play a key role in identifying risks and planning solutions for the perioperative medication safety plan. Ongoing review and refinement of the plan helps to further reduce opportunities for medication errors based on compliance with the plan. Perioperative nurses should also seek out opportunities for designing, evaluating, and refining the plan. When perioperative nurses use the nursing process, coupled with knowledge of the medication-use process to evaluate the safety plan, patients will remain safer throughout the various phases of perioperative care. Nurses also play a key role in competency evaluation to ensure that health care workers maintain their knowledge about safe medication practices and medications used routinely as well as emergency medications and related equipment.

Perioperative team members bear the responsibility for continual quality improvement, which includes investigations when a medication error occurs. Investigations of medication errors can be conducted by individuals or teams who use a multitude of methods to detect and investigate findings. Even errors that were intercepted and did not reach the patient (ie, near misses) should be investigated because these events identify safety nets that prevented the error from injuring the patient. Perioperative nurses should advocate for their patient by ensuring that perioperative personnel participate in external, voluntarily, medication-error reporting programs (eg, Institute for Safe Medication Practices National Medication Error Reporting Program). Having robust reporting programs in place has resulted in lower incidences of harmful outcomes and will enhance the data available to identify trends for medication errors in perioperative settings.

AORN is a recognized leader for adopting safety practices that promote the role of perioperative RN. The "Recommended practices for medication safety" is but one tool available to help ensure that all patients are protected. Other resources are available from the Institute for Safe Medication Practices, the US Food and Drug Administration, and via AORN webinars.

RESOURCES

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Post Test

1. The first point in the medication-use process where the perioperative registered nurse can participate in is
 - a. procuring.
 - b. prescribing.
 - c. dispensing.
 - d. administering.
2. A patient safety strategy that reduces the opportunities for medication errors is
 - a. obtaining all medications from a single vendor.
 - b. storing chemicals, solutions, and medications in the same room.
 - c. arranging products in alphabetical order.
 - d. tracing the origin and insertion of all tubes and catheters.
3. Medications listed on preference cards are not considered to be standing orders unless they have been reviewed and signed by the prescriber.
 - a. true
 - b. false
4. When a perioperative registered nurse receives a verbal order, the first action would be to
 - a. copy the order onto a white board.
 - b. confirm by reading back the order to the prescriber.
 - c. enter the order in an electronic order system.
 - d. update the preference card.
5. Pharmacists should become involved in medication safety
 - a. from the beginning when the safety plan is being created.
 - b. when facilities design new forms.
 - c. during the medication reconciliation process.
 - d. in all of the above situations.
6. Which of the following statements describe an important value of the medication reconciliation process?
 - a. The patient is the sole source of information.
 - b. The patient's list of medications can help identify underlying patient conditions.
 - c. The patient's literacy level is documented during discharge teaching.
 - d. The patient's weight in kilograms is obtained for medication calculations.
7. Which one of the following is an important component of the nursing medication plan?
 - a. The plan begins when health care providers bring the patient into the room.
 - b. The plan assists health care providers with planning for preprocedural antibiotic administration.
 - c. The plan directs health care providers how to order home care.
 - d. The plan directs health care providers how to obtain all medications for all patients at one time in the medication room.
8. Key points for implementing safe practices include
 - a. obtaining medications for only one patient at a time.
 - b. avoiding distractions and interruptions when preparing medications.
 - c. preparing the medication as close as possible to the time of administration.
 - d. using safe injection practices.
 - e. all of the above practices.

9. Points at which the perioperative RN should verify the medication product include
 - a. at the point when the medication is being retrieved using the original order.
 - b. at the point when the RN circulator is ready to pass the medication to the scrub person.
 - c. at the point when each product is being placed on the sterile field.
 - d. all of the above situations.

10. Safe injection practices
 - a. are only applicable when medications are given intravenously.
 - b. are only applicable to local anesthetics.
 - c. include using one syringe per injection.
 - d. require that all health care workers receive the hepatitis B vaccination series.

11. After the patient undergoes cataract surgery, the unused portion of any eye drops should:
 - a. saved for the next procedure.
 - b. sent home with the patient.
 - c. sent home with the patient after being sent to the pharmacy for proper labeling.
 - d. returned to the stock room.

12. Unused solutions should be
 - a. poured down the drain with two witnesses.
 - b. returned to pharmacy for relabeling for the next procedure.
 - c. secured in a manner to prevent municipal water contamination.
 - d. retained for risk management personnel because unused solutions at the end of a procedure indicates that an error has occurred.

- 1. A
- 2. D
- 3. A
- 4. B
- 5. D
- 6. B
- 7. B
- 8. E
- 9. D
- 10. C
- 11. C
- 12. C

ANSWER KEY

**PERIOPERATIVE MEDICATIONS
SAFETY PRACTICES**

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