Advance preparation of IV fluids and IV fluid hang time

**QUESTION:**
At our ambulatory surgery center, a nurse suggested that we prepare the IV equipment before the start of the surgery schedule in an effort to improve our efficiency. Preparation includes connecting the IV tubing, spiking the bag (ie, inserting the tubing spike into the IV solution bag), and priming the tubing. Is this a safe practice, and how far in advance can we prepare the IV before using it for a patient? When the infusion begins, is there a time limit for completing the infusion of IV fluids?

**ANSWER:**
The Association for Professionals in Infection Control and Epidemiology (APIC) recommends that spiked IV solutions be used within one hour of being prepared. According to the US Pharmacopeia, “opened or needle-punctured single-dose containers, such as bags, bottles, syringes, and vials of sterile products and compounding sterile preparations (CSP), shall be used within one hour if opened in worse than ISO [International Organization for Standardization] class 5 air quality, and any remaining contents must be discarded.” The ISO air quality standards specify the decimal logarithm of the number of particles 0.1 micrometer or larger permitted per cubic meter of air. An ISO class 5 clean room has at most \(10^5 = 100,000\) particles per cubic meter.

The time limit for complete infusion of an IV bag of fluids depends on the type of fluid. The
Centers for Disease Control and Prevention (CDC) recommends that lipid-containing solutions (eg, 3-in-1 solutions) be completed within 24 hours of hanging the solution and lipid emulsions be completed within 12 hours. Blood and blood products should be infused within four hours of hanging the blood or blood product. There are no time limit recommendations for the hang time of other parenteral fluids because of inconclusive evidence. The CDC categorizes this as an unresolved issue.³

Safe practices for medication administration cannot be overstated in terms of patient safety. The APIC recommends use of the following aseptic techniques with any injection, infusion, and medication vial practices.

- Perform hand hygiene before accessing supplies, handling vials and IV solutions, and preparing or administering medications.
- Use aseptic technique in all aspects of parenteral medication administration, medication vial use, injection, and glucose monitoring procedures.
- Store and prepare medications and supplies in a clean area on a clean surface.
- Never store needles and syringes unwrapped because sterility cannot be assured.

Discard all opened vials, IV solutions, and prepared or opened syringes that were involved in an emergency situation.¹

Developing sound infection control practices and strategies to reduce intravascular catheter-related infections should be approached from a multidisciplinary perspective to improve patient outcomes and reduce costs related to treating a healthcare-associated infection.³

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References

Medication reconciliation across the continuum of care

QUESTION:
Practitioners at our facility are struggling to comply with the Joint Commission’s National Patient Safety Goal 8: Accurately and completely reconcile medications across the continuum of care. The process that was implemented in our facility has shown poor results. Do you have any information regarding processes that have been successful?

ANSWER:
Medication reconciliation is defined as the “process of comparing a patient’s medication orders to all of the medications that the patient has been taking.”¹ As a result of the problems encountered by organizations in implementing the goal, the Joint Commission has decided to evaluate and revise the expectations for accredited organizations.² Although the Joint Commission continues to recommend that organizations address medication reconciliation, survey findings related to the goal will not be factored into the accreditation decision, nor will the findings generate Requirements for Improvement. In addition, the findings will not appear on the accreditation report. During the evaluation period, Joint Commission surveyors will continue to collect data on medication reconciliation processes and make suggestions for improvement. With the assistance from members of multiple health care disciplines, health care
organizations, surveyors, and other stakeholders, the Joint Commission anticipates that the improved goal will be ready for implementation by January 2011.

Perioperative RNs can make a difference in preventing adverse medication reactions by actively participating in the medication reconciliation process. A number of negative outcomes can occur if practitioners are not aware of the medications a patient is taking. For example, it is very important to know whether a patient is taking aspirin on a routine basis. In a review of the literature on antiplatelet agents in the perioperative period, however, the reviewers concluded that patients should not stop taking aspirin unless the risk of bleeding outweighs the thrombotic risk from withholding the medication.3 Practitioners must also determine whether a patient is taking herbs such as garlic, St John’s wort, and echinacea, which can increase the patient’s risk for bleeding and can affect the central nervous system and cardiovascular system.4

Practitioners should consider implementing the following strategies for a successful medication reconciliation process5:

■ Develop a policy and procedure for medication reconciliation.
■ Identify which members of the health care team are responsible for the reconciliation process.
■ Ask the patient to bring a list of the medications he or she is currently taking, including vitamins and over-the-counter medications, such as sleep aides, herbal medications, pain relievers, and cold remedies.
■ Place the list in a visible area on the patient’s health care record.
■ Ensure that perioperative RNs know where the list is posted and refer to it frequently.

As important is that patients are given clear instructions about which medications should be resumed after surgery and which should not be resumed, as well as any new medication orders.

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References

Preventing pressure ulcer development in surgical patients

QUESTION:
I have been tasked with leading an evidence-based practice project at our facility related to pressure ulcer prevention in surgical patients. There are conflicting opinions about which risk assessment tool to use. Does AORN recommend a particular tool?

ANSWER:
AORN does not recommend a particular ulcer risk assessment tool; however, there are several tools available to assist perioperative nurses in identifying patients at risk for pressure ulcers (eg, Braden scale, Norton scale, Waterlow scale). The purpose of the Braden Pressure Risk Assessment Scale is to determine a patient’s risk by using six risk factors (ie, sensory perception, mobility, moisture, nutrition, activity, friction/shear). In the Braden scale, the lower the score, the higher the risk of developing a pressure ulcer. The Norton scale incorporates five risk factors (ie, mobility,
incontinence, activity, mental state, physical condition). Like the Braden scale, in the Norton scale, the lower the score, the higher the risk of developing a pressure ulcer. The Waterlow scale was designed to promote awareness as well as to be used as an assessment tool to complement prevention modalities and treatment options. The Waterlow score includes 11 risk areas (ie, build/weight, continence, skin type, mobility, gender/age, appetite, tissue malnutrition, neurologic deficit, surgery/trauma, specific medications, additional risk factors [eg, smoking]). With the Waterlow scale, the higher the score, the higher the risk of pressure ulcers.

Anthony et al conducted a review of the literature concerning these scales and suggested that the use of a risk assessment scale alone does not reduce the incidence of pressure ulcers. Success in reducing pressure ulcers may be the result of a combination of using an assessment scale and providing staff member education and training.

Several studies and literature reviews have examined pressure ulcers and surgical patients. Schoonhoven et al conducted a study on risk factors for pressure ulcer development during surgery. The researchers found that, although there were several variables associated with the risk of ulcer development, only length of surgery longer than four hours was a significant predictor for the development of stage II or greater pressure ulcers. The researchers suggested that, because the length of surgery cannot be changed, preventive measures aimed at reducing pressure and shearing forces during surgery should be implemented for all patients whose surgery time is anticipated to last longer than four hours. Measures include using pressure-reducing mattresses, heel protection, or both. No recommendations on intervention measures related to other risk factors associated with ulcer development were made in this study.

Feuchtinger et al conducted a literature review on the evidence of risk factors for pressure ulcer development in cardiac surgery patients and concluded that prevention strategies should be used to support increased oxygenation and tissue tolerance for pressure. Strategies include temperature and blood pressure management, maintenance of normal albumin levels, and awareness of the patient’s age and comorbidities, such as diabetes mellitus, renal insufficiency, and cerebrovascular disease. These strategies should be implemented in addition to use of pressure-relieving devices in the intraoperative and postoperative periods.

Researchers have determined that surgical patients require an assessment by the perioperative RN that includes additional information about factors that occur during surgery that may contribute to an increased risk of pressure ulcer development. These factors include, but are not limited to,

- length of the surgery,
- increased hypotensive episodes during surgery,
- low core temperature during surgery, and
- reduced mobility on postoperative day one.

Evidence-based practices to prevent the development of pressure ulcers in surgical patients include

- using a pressure-reducing mattress on the OR bed for all individuals identified as being at risk for pressure ulcer development;
- positioning the patient to reduce the risk of pressure ulcer development during surgery;
- elevating the patient’s heels completely off the bed (ie, offloading them) to distribute the weight of the leg along the calf without putting all the pressure on the Achilles tendon and then flexing the knee slightly;
- paying attention to pressure redistribution before and after surgery.

Your team should conduct a thorough literature review of the existing information on pressure ulcer assessment, available assessment tools, and prevention management. Practitioners should be aware that the Centers for Medicare and Medicaid Services no longer provide additional payment for treatment if a patient develops a stage III or...
greater pressure ulcer that was not present on admission. Using an established tool in conjunction with education, clinical expertise, and critical thinking can be a winning combination in addressing the problem of pressure ulcers in the perioperative setting. ROBIN CHARD
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References


The author of this column has no declared affiliations that could be perceived as posing a potential conflict of interest in the publication of this article.
This evaluation is used to determine the extent to which this continuing education program met your learning needs. The evaluation is printed here for your convenience. To receive continuing education credit, you must complete the Learner Evaluation online at http://www.aorn.org/CE. Rate the items as described below.

PURPOSE/GOAL
To educate perioperative nurses about providing safe nursing care throughout the perioperative continuum.

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

1. Discuss practices that could jeopardize safety in the perioperative area.
   Low 1. 2. 3. 4. 5. High

2. Discuss common areas of concern that relate to perioperative best practices.
   Low 1. 2. 3. 4. 5. High

3. Describe implementation of evidence-based practice in relation to perioperative nursing care.
   Low 1. 2. 3. 4. 5. High

CONTENT
4. To what extent did this article increase your knowledge of the subject matter?
   Low 1. 2. 3. 4. 5. High

5. To what extent were your individual objectives met? Low 1. 2. 3. 4. 5. High

6. Will you be able to use the information from this article in your work setting? 1. Yes 2. No

7. Will you change your practice as a result of reading this article? (If yes, answer question #7A. If no, answer question #7B.)

7A. 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: _______________________

7B. 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 teach others about the purpose of the needed change.
   3. I do not have management support to make a change.
   4. Other: _______________________

8. Our accrediting body requires that we verify the time you needed to complete the 0.9 continuing education contact hour (54-minute) program: ____

This program meets criteria for CNOR and CRNFA recertification, as well as other continuing education requirements.
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AORN recognizes these activities as continuing education for registered nurses. This recognition does not imply that AORN or the American Nurses Credentialing Center approves or endorses products mentioned in the activity.
AORN is provider-approved by the California Board of Registered Nursing, Provider Number CEP 13019. Check with your state board of nursing for acceptance of this activity for relicensure.

Event: #10060; Session: #4024 Fee: Members $4.50 Nonmembers $9
The deadline for this program is October 31, 2013.
Each applicant who successfully completes this program can immediately print a certificate of completion.