Perioperative fire prevention recommendation changes

**Key words:** fire safety, ECRI, Anesthesia Patient Safety Foundation, National Fire Protection Association, AORN Fire Safety Tool Kit.

New relative humidity standards for health care facilities

**Key words:** American Society of Healthcare Engineers humidity standards; National Fire Protection Agency humidity standards; safe environment of care; heating, ventilating, and air conditioning; HVAC system.

Prevention of venous stasis in outpatient settings

**Key words:** deep vein thrombosis prophylaxis, DVT prevention protocol.

Mechanical deep vein thrombosis (DVT) prophylaxis

**Key words:** deep vein thrombosis, DVT prophylaxis, mechanical DVT prophylaxis.

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**Perioperative fire prevention recommendation changes**

**QUESTION:**

I have heard that recommendations regarding fire safety in the OR have changed. Can you tell me what groups are advising the change and what recommendations are being revised?

**ANSWER:**

The ECRI has changed its recommendations in collaboration with the Anesthesia Patient Safety Foundation. The changes primarily relate to the control of oxygen (O₂) during procedures on the head, face, neck, and upper chest. The revised recommendation states that air should be used when the procedure involves the head, face, neck, and upper chest unless supplemental O₂ is required to maintain the patient’s oxygenation. When supplemental O₂ is required, the anesthesia care provider should use the lowest concentration possible, and, unless the procedure requires verbal responses from the patient, the anesthesia care provider should use an endotracheal tube or at a minimum a laryngeal airway mask. When the supplemental O₂ is delivered via an open method under the drapes, supplemental air should be delivered at a rate of 5 L to 10 L per minute. This air flow facilitates removal of the excess O₂ from

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under the drapes.¹ When performing a tracheotomy, the surgeon should use a scalpel to enter the trachea instead of electrosurgery. During a bronchoscopy, an inhalation-exhalation gas monitoring device should be used to maintain the proper O₂ concentration.¹

The ECRI recommendations also emphasize that fire prevention is a team effort and that communication among team members is essential.¹ For example, when a patient is receiving supplemental O₂,

- the surgeon should be notified whenever the anesthesia care provider or the person who is monitoring the patient increases the O₂ flow above 30%, and
- the surgeon should notify the person who is monitoring the patient when electrosurgery is about to be used, which enables the provider to stop the flow of supplemental O₂.

In addition to changing the recommendations, the ECRI has changed the estimates of the number of surgical fires that occur in the United States per year. The new estimate of 550 to 650 is an increase from 50 to at least 100 estimated in 2006.¹ Electrosurgical active electrodes (ie, pencils) and lasers continue to be the most common ignition sources and cause approximately 80% of the fires.¹ An oxygen-enriched environment (ie, greater than 21% O₂) is involved in about 75% of the fires reported to occur in surgery.¹ The estimated percentages for the location of surgical fires, 29% in the patient and 70% on the patient, remains unchanged from 2006.²

AORN has recently revised the AORN Fire Safety Tool Kit based on the most current information from the ECRI and the National Fire Protection Association.³ The tool kit includes a new policy and procedure, scenarios for use during fire drills, and free continuing education contact hours. The policy and procedure, which applies to both the inpatient and outpatient settings, is in an electronic format and can be adapted to meet the needs of the facility. For more information and to download the AORN Fire Safety Tool Kit, visit the AORN web site at http://www.aorn.org/PracticeResources/ToolKits/FireSafetyToolKit. AORN

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References

New relative humidity standards for health care facilities

QUESTION:
The AORN “Recommended practices for a safe environment of care” states that the humidity in the OR should be between 30% and 60%, but my chief engineer informed me that this has changed. Is this correct?

ANSWER:
The Facility Guidelines Institute (ie, the committee responsible for authoring the guidelines for building codes) has adopted the standards of the American Society of Healthcare Engineers on OR humidity as of August 1, 2010.¹ The new guidelines state that the heating, ventilating, and air conditioning system shall be designed to maintain the humidity in newly constructed hospital and ambulatory settings within a range of 20% to 60%.¹ The change in the standards is based on the research completed by the American Society of Healthcare Engineers.² The research results found no compelling data to support the previous low relative humidity standard of 30%. The previous standards were created when flammable anesthetics were used and humidity was needed to prevent static electricity from creating sparks, which could have led to a fire.
It is important to note that the new guidelines have not been adopted by the Center for Medicare and Medicaid Services and other regulatory agencies. Before making changes to the heating, ventilating, and air conditioning system at your facility, contact your facility’s accrediting or regulatory agency (eg, the Joint Commission, state department of health, local or state fire marshal) to determine which version of regulations for relative humidity the agency has accepted:

- the new American Society of Healthcare Engineers standards (ie, 20% to 60%),
- the old American Society of Healthcare Engineers standards (ie, 30% to 60%), or
- National Fire Protection Agency (NFPA) limits (ie, 35%).

Some regulatory agencies adopt the Facility Guidelines Institute guidelines in their entirety, some will modify or adopt parts of the guidelines, some will not adopt any portion of them, and others will create their own guidelines. The recommendations in NFPA 99 and 101 are currently being considered for revision in the 2012 edition. The Center for Medicare and Medicaid Services Conditions of Participation require monitoring and logging of the temperature and humidity but do not dictate the frequency. The AORN “Recommended practices for safe environment of care” states that monitoring should be completed daily and that this recommendation is attributed to the Association for the Advancement of Medical Instrumentation. The daily log will assist in determining the need to take corrective actions in a timely fashion if necessary. A daily log also provides an accurate reference to create a plan of correction if the humidity is not within the recommended ranges.

Before making changes in the relative humidity, ascertain whether there are products in the inventory (eg, sterilization wraps) that have a manufacturer-stated specified range of humidity for proper storage. If product-related storage requirements are necessary, then all facility departments that have the product in their inventory should collaborate with the department that has control over the heating, ventilation, and air conditioning system (eg, engineering, maintenance) to ensure the storage requirements for that product. This communication should also be repeated when products or requirements change.

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References

Prevention of venous stasis in outpatient settings

QUESTION:
I work in an ambulatory surgery center and need clarification on the types of deep vein thrombosis (DVT) prophylaxis that apply to outpatient settings. What is the role of the RN in implementing the various prophylactic measures?
ANSWER:
The preferred method of DVT prophylaxis (ie, mechanical, pharmacological, mechanical-pharmacological combined) depends on the patient population and the types of procedures performed in the outpatient setting. Mechanical prophylaxis includes the use of graduated compression stockings, sequential compression devices, and early ambulation. Pharmacological prophylaxis involves administration of medications used to thin the blood (eg, low-molecular-weight heparin, low-dose unfractionated heparin, fondaparinux, vitamin K antagonist). Aspirin should not be used for DVT prophylaxis. The method of prophylaxis should be defined in the health care organization’s DVT prevention protocol.

The American College of Chest Physicians (ACCP) has developed evidenced-based recommendations for many patient populations.1 These recommendations are grouped by surgical specialty and have been used as a foundation by the various medical organizations to develop recommendations that pertain to their specialties. The ACCP recommendations or the appropriate medical specialty organization’s recommendations should be used as a reference for the development of the health care organization’s DVT prevention protocol, which should be specific to the organization’s patient population.

Typically, the patient population cared for in the ambulatory setting is at a low risk of developing DVT as defined by the procedure-based risk stratification of the ACCP.1,2 The risk may be increased, however, because of pre-existing patient-related risk factors (eg, presence of cancer, history of a previous venous thromboembolism, obesity, advanced age, delayed mobilization, increased acuity). Additional non-patient-related factors that increase the risk of DVT are an increase in the length or complexity of the surgical procedure and use of general anesthesia.1 These risk factors should be identified during the preoperative assessment conducted by a medical staff member and the perioperative RN as a requirement of the DVT prevention protocol. Information from the assessment should be used for developing the portion of the plan of care related to DVT prophylaxis. The DVT prevention protocol should state the preferred method of prophylaxis for each patient based on the risk assessment and the surgical procedure being performed.

The ACCP recommends early and frequent ambulation for patients who are at low risk for DVT without additional risk factors and who are undergoing general, gynecologic, urologic, laparoscopic, knee arthroscopy, or elective spine surgery.1 For patients not included in this list, the ACCP recommendations or other appropriate recommendations should be consulted.

The role of the nurse in DVT prophylaxis includes, but is not limited to,
- assessing the patient,
- consulting with medical staff members regarding the results of the nursing assessment,
- advocating for the patient if no physician orders have been received,
- instituting or administering the prophylactic treatment,
- verifying the proper operation and application of the chosen mechanical prophylactic method when mechanical prophylaxis is used, and
- educating the patient before discharge regarding the signs and symptoms of DVT and the importance of complying with any prophylaxis method, including ambulation.3,4

References
Mechanical deep vein thrombosis (DVT) prophylaxis

QUESTION:
Is there a recommendation regarding which of the mechanical DVT prophylaxis methods should be used?

ANSWER:
AORN does not make a recommendation regarding the type of mechanical DVT prophylaxis to use. This is a medical and health care organization decision that should be based on the evidence and the patient’s condition.  

Mechanical DVT prophylaxis consists of knee- or thigh-length graduated compression stockings, knee- or thigh-length pneumatic compression devices, and foot pneumatic compression devices. The pneumatic compression devices may be of a single or multichambered design and may inflate in a single pulse or consecutively starting at the distal portion and going to the medial portion of the device. For any of these devices to be effective, the device must be on the patient and be operational.  

Many of the compression devices require the pump to be connected to electricity, which requires removal of the compression wraps (eg, sleeves, leggings, garment) during ambulation. Patients often consider this awkward so they may not be compliant with putting the leggings back on after ambulating. Decreased compliance with using the compression device increases the risk of DVT. A recent study examined the use of a portable compression device that the patient can wear during ambulation; the compression cycles correlate with the exhalation phase of the respiratory cycle thus creating less resistance for the venous return. This device is also advantageous because the patient can take it home or to another care location after discharge, which enables continued prophylaxis.  

Patients are more likely to be compliant with using knee-high stockings because they are more comfortable and easier to apply than the thigh-high version. Knee-high stockings are also less expensive and avoid the unintentional constriction of the legs caused by the stocking being too tight in the thigh area. Furthermore, thigh-high stockings may be more difficult to size properly because the size of the patient’s thigh may not be proportional to the size of the patient’s lower leg. In one study, however, the thigh-high version was shown to be more effective at preventing postoperative DVT than the knee-high version.  

The nurse should measure the patient’s legs separately and select appropriately sized stockings for each leg by using the manufacture’s recommendations, independent of the stocking length. If a thigh-high version is ordered and the patient’s thighs are either too large or small for the stockings to fit appropriately, then the physician should be notified.  

In a systematic review of studies that compared graduated compression stockings with intermittent compression devices, Morris and Woodcock identified only weak evidence that the compression device is more effective than the stocking; seven of 10 studies did not show statistical significance and eight of the 10 studies were completed before the year 2000. The researchers considered the evidence weak because some of the studies had small sample populations or funding was provided by the compression device manufacturers. Morris and Woodcock also caution that, because of these factors, equivalence should not be assumed.
References


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When you find yourself puzzled by a clinical issue, remember that AORN’s perioperative nursing specialists are just a telephone call away. For answers to your questions, contact the Center for Nursing Practice at (800) 755-2676.

AORN’s Perioperative Standards and Recommended Practices is an excellent resource for perioperative nurses. Purchase your copy at www.aornbookstore.org.
Clinical Issues

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 to 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 1.2 continuing education contact hour (72-minute) program: __________________________

This program meets criteria for CNOR and CRNFA recertification, as well as other continuing education requirements.
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