

## Guideline Implementation: Preoperative Patient Skin Antisepsis

LIZ COWPERTHWAIT, BA; REBECCA L. HOLM, MSN, RN, CNOR

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### Purpose/Goal

To provide the learner with knowledge specific to implementing the updated AORN "Guideline for preoperative patient skin antisepsis."

### Objectives

1. Identify the key takeaways from the preoperative patient skin antisepsis guideline.
2. Explain the steps involved in performing preoperative skin antisepsis.
3. Identify factors in selecting an antiseptic for the surgical patient.
4. Describe US Food and Drug Administration recommendations for storage of skin antisepsis products.
5. Discuss the RN's role in developing policies and procedures for skin antisepsis.

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Ms Cowperthwaite and Ms Holm have no declared affiliations that could be perceived as posing potential conflicts of interest in the publication of this article.

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# Guideline Implementation: Preoperative Patient Skin Antisepsis



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## ABSTRACT

Performing preoperative skin antisepsis to remove soil and microorganisms at the surgical site may help prevent patients from developing a surgical site infection. The updated AORN “Guideline for preoperative skin antisepsis” addresses the topics of preoperative patient bathing and hair removal, selection and application of skin antiseptics, and safe handling, storage, and disposal of skin antiseptics. This article focuses on key points of the guideline to help perioperative personnel develop protocols for patient skin antisepsis. The key points include the need for the patient to take a preoperative bath or shower and the need for perioperative personnel to manage hair at the surgical site, select a safe and effective antiseptic for the individual patient, perform a safe preoperative surgical site prep, and appropriately store skin antiseptics. Perioperative RNs should review the complete guideline for additional information and for guidance when writing and updating policies and procedures. *AORN J* 101 (January 2015) 72-77. © AORN, Inc, 2015. <http://dx.doi.org/10.1016/j.aorn.2014.11.009>

Key words: *skin antisepsis, skin prep, microorganisms, surgical site infection.*

**P**erioperative personnel perform preoperative patient skin antisepsis to remove soil and transient microorganisms at the surgical site. Reducing bacteria at the surgical site may help prevent the patient from developing a surgical site infection (SSI).<sup>1</sup> Perioperative RNs, working with other perioperative team members, play a key role in developing protocols for preoperative patient skin antisepsis, selecting an antiseptic that will be safe and effective for the individual surgical

patient, and applying the antiseptic in a safe and effective manner.

The AORN “Guideline for preoperative patient skin antisepsis”<sup>2</sup> (formerly titled “Recommended practices for preoperative patient skin antisepsis”) was updated in August 2014. AORN guideline documents provide guidance based on an evaluation of the strength and quality of the available evidence for a specific subject. The updated skin antisepsis guideline addresses the topics of

preoperative patient bathing and hair removal, selection and application of skin antiseptics, and safe handling, storage, and disposal of skin antiseptics. This article elaborates on key takeaways from the guideline document; however, perioperative RNs should review the complete guideline for additional information and for guidance when writing and updating policies and procedures.

Key takeaways from the AORN “Guideline for preoperative patient skin antisepsis” include

- Patients should bathe or shower before surgery with either soap or an antiseptic solution.
- Hair at the surgical site should be left in place unless the hair will interfere with the procedure.
- Safe effective preoperative antiseptics should be selected for the individual patient.
- Skin antiseptics should be applied according to the manufacturer’s instructions for use.
- Unopened skin antiseptics must be stored in the original single-use container (Figure 1).

## SCENARIO

Mr C is a 57-year-old man with thyroid carcinoma. He is on an iodine-restricted diet and is scheduled for a total thyroidectomy at an ambulatory surgery

center. On the day before surgery, Nurse N calls Mr C to obtain his medical and surgical history and to provide preoperative instructions. She instructs Mr C to bathe with soap and water and shampoo his hair that evening or the next morning before coming in for surgery. She also instructs him not to apply any alcohol-based hair or skin products or any lotion after bathing because these substances could pose a fire hazard or interfere with the effectiveness of the antiseptic. After Mr C’s arrival at the surgery center the next morning, Nurse N confirms with Mr C that he did take a preoperative shower using soap and water. She documents this information in the preoperative record.

After Mr C changes into the patient gown, Nurse N performs a preoperative assessment. She observes that Mr C has a large amount of hair on his chest and neck. She reviews the surgeon’s orders and performs hair removal using clippers in the preoperative area. After shaving the minimum surgical site area required, Nurse N disposes of the single-use clipper head. She ensures that all loose hair is collected and removed from the patient and surrounding linens. She documents in Mr C’s record that she removed the hair at the surgical site using clippers and the time that the hair was removed.

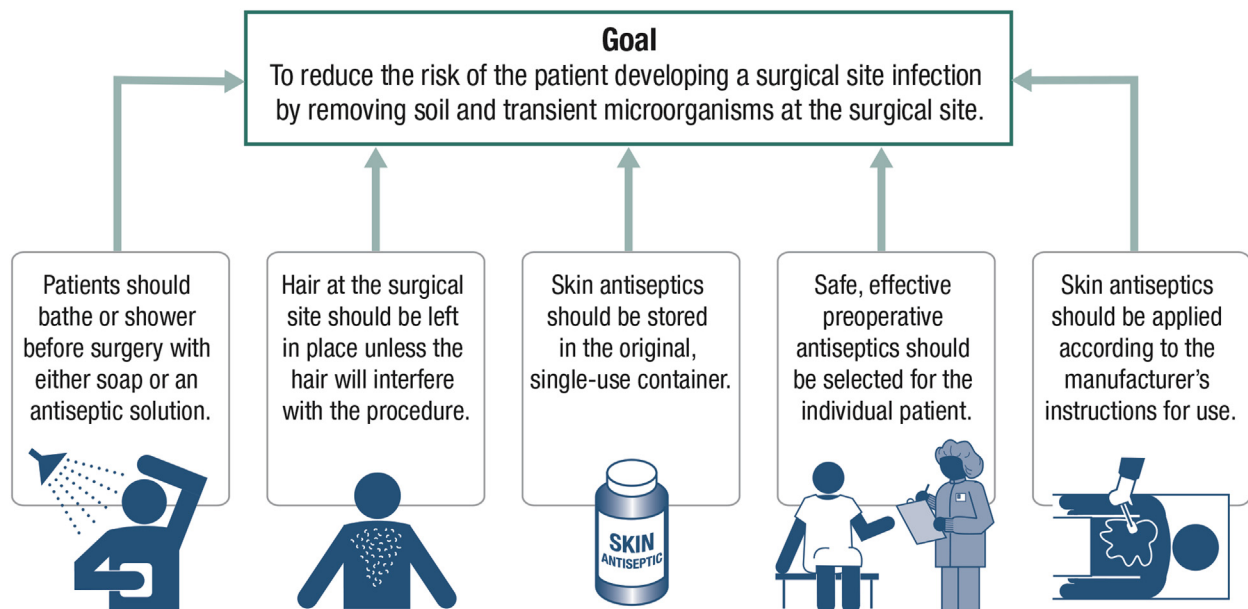


Figure 1. Key takeaways from the AORN “Guideline for preoperative patient skin antisepsis.”

The surgeon arrives in the preoperative area and reviews the findings from Mr C's history and physical examination. After discussing the planned surgical procedure, the surgeon and Mr C cooperatively identify and mark the surgical site and complete and sign the informed consent. The anesthesia professional and the RN circulator, Nurse Q, then transport the patient to the OR.

In collaboration with the surgeon and anesthesia professional and based on the patient's diagnosis and assessment, Nurse Q selects 4% chlorhexidine gluconate (CHG) for the surgical prep and performs hand hygiene. He confirms the surgical site and assesses the patient's skin. He obtains a single-use container of CHG and, after donning sterile gloves, performs the surgical prep using aseptic technique and according to the manufacturer's instructions. He ensures that no solution pools under the patient or around the patient's ears. After completing the prep, Nurse Q determines that the surgical site

marking is still visible and discards the single-use container that holds the remaining prep solution.

The surgical team allows adequate time for the prep solution to dry before applying the surgical drapes. Nurse Q documents that he performed antisepsis of the surgical site with CHG and that the patient's skin was intact and free from any abrasions or irritation.

Mr C undergoes the thyroidectomy without incident. At the end of the surgical procedure, Nurse Q evaluates the patient's skin; he documents that no irritation has occurred as a result of the antiseptic. The scrub person and surgeon then apply the dressing.

### KEY TAKEAWAYS DISCUSSION

The key takeaways from the AORN "Guideline for preoperative patient skin antisepsis" focus on preoperative bathing or showering, managing hair at the surgical site, selecting an effective antiseptic for the individual patient, performing

a safe preoperative surgical site prep, and appropriately storing skin antiseptics. Fundamental to implementing this guideline is adherence to the principles of sterile technique and following the manufacturer's instructions for use of the antiseptic throughout the skin antisepsis process.

### Preoperative Bathing

Preoperative patient bathing before surgery may reduce microbial skin contamination. Therefore, surgical patients should be instructed to shower or bathe with soap or a skin antiseptic on the night before or the day of surgery.<sup>3-14</sup> No one soap or antiseptic product has been determined to be superior

## Resources for Implementation

- Guidelines Implementation: Preoperative Patient Skin Antisepsis web page. AORN, Inc. [http://www.aorn.org/Topics\\_of\\_Interest/Aseptic\\_Practice/Preoperative\\_Patient\\_Skin\\_Antisepsis/](http://www.aorn.org/Topics_of_Interest/Aseptic_Practice/Preoperative_Patient_Skin_Antisepsis/).
- AORN Syntegrity® Framework. AORN, Inc. <http://www.aorn.org/syntegrity>.
- ORNurseLink™. <http://ornurselink.aorn.org>.
- *Perioperative Competency Verification Tools and Job Descriptions* [CD-ROM]. Denver, CO: AORN, Inc; 2014. <http://www.aorn.org/CompetencyTools>.
- *Policy and Procedure Templates* [CD-ROM]. 3rd ed. Denver, CO: AORN, Inc; 2013. [http://www.aorn.org/Books\\_and\\_Publications/AORN\\_Publications/Policy\\_and\\_Procedure\\_Templates.aspx](http://www.aorn.org/Books_and_Publications/AORN_Publications/Policy_and_Procedure_Templates.aspx).
- *The Roadmap to ASC Compliance* [CD-ROM]. Denver, CO: AORN, Inc; 2012. [https://www.aornbookstore.org/Product/product.asp?sku=MAN543&dept\\_id=1](https://www.aornbookstore.org/Product/product.asp?sku=MAN543&dept_id=1).

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to others for use in preoperative bathing to reduce the potential for SSI. In the scenario, Nurse N advises the patient to shower or bathe with soap on the day of or the day before surgery in accordance with the Guidelines from the National Institute for Health and Care Excellence.<sup>4</sup> Some research supports the use of 2% CHG-impregnated cloth products for preoperative bathing.<sup>15-23</sup> More research is needed to determine whether use of soap or an antiseptic is more effective for preoperative bathing, how many baths or showers should be taken before surgery, and the optimal timing for preoperative bathing.

### Hair at the Surgical Site

Hair at the surgical site should be left in place when it will not interfere with the surgical procedure. Hair removal may cause skin trauma that could increase the patient's risk for developing an SSI.<sup>5,24</sup> In the scenario, Nurse N determines that hair at the surgical site will interfere with the procedure. In select clinical situations in which hair is removed, clipping the hair or using a depilatory may cause less skin trauma than shaving with a razor.<sup>4,6,7,24-28</sup> Nurse N removes the hair in the preoperative area so that hair is not dispersed into the air of the operating or procedure room.

The evidence on this topic is limited in that some of the studies reviewed did not have sample sizes adequate to determine the effect of hair removal on SSI development, and studies did not use a standardized definition of SSI. More research is needed to determine the effect of hair removal on SSI development, the most effective method for removal, and the optimal timing of hair removal before the surgical procedure.

### Antiseptic Selection

No one antiseptic has been determined to be the most effective in preventing SSI. In the health care facility, a multidisciplinary team that includes perioperative RNs, physicians, and infection preventionists should evaluate and select antiseptic products based on a review of current research literature and US Food and Drug Administration (FDA)-approval status. The perioperative team should select a health care facility–approved antiseptic for the individual patient “based on the patient assessment, the procedure type, and a review of the manufacturer’s instructions for use and contraindications.”<sup>2(p52)</sup>

Nurse Q does not use an alcohol-based product because of the surgery’s proximity to the patient’s airway and hair and the potential use of electro-surgery. Nurse Q also does not use an iodine- or iodophor-based antiseptic because this patient has a thyroid disorder and could be susceptible to iodism.<sup>29</sup> He makes sure the prep solution does not pool around the patient’s ears because CHG may cause deafness if it comes in contact with the middle ear.

## What Else Is in the Guideline?

Read the AORN “Guideline for preoperative patient skin antisepsis”<sup>1</sup> to learn what the evidence says about the following:

- Can the patient wear artificial nails or nail polish for surgery being performed on the hand or foot? (Recommendation I.a.3)
- Should preoperative skin antiseptic solutions be clear or tinted? (Recommendation III.a.4)
- Is seafood allergy related to iodine allergy? (Recommendation III.b.1)
- Are chlorhexidine gluconate and alcohol-based skin antiseptics appropriate for neonates? (Recommendation III.b.6)
- Should the patient’s jewelry be removed before skin antisepsis is performed? (Recommendation IV.b.2)

1. *Guideline for preoperative patient skin antisepsis*. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2015:43-66.

## Antiseptic Application

Nurse Q follows the antiseptic manufacturer's instructions for use to apply the preoperative patient skin antiseptic in a safe and effective manner. Ensuring that the antiseptic has not pooled under the patient and allowing the antiseptic to dry for the time recommended by the manufacturer may help prevent the patient from receiving a chemical injury<sup>30-36</sup> or may reduce the risk of fire if the antiseptic is flammable.<sup>37-40</sup>

## Antiseptic Storage

In November 2013, the FDA issued a drug safety communication requesting that manufacturers package over-the-counter topical antiseptic products in single-use packaging because of the potential for contamination of unsterile antiseptic products. These containers should be used only one time for one patient. Skin antiseptics should be stored in the original single-use container.<sup>41</sup> Nurse Q uses a skin antiseptic that has been stored in its original single-use container and discards the container after use in accordance with the FDA recommendations.

## CONCLUSION

As patient advocates, perioperative nurses help ensure that actions are performed to reduce patients' risks of developing SSIs. Perioperative RNs also should participate in multidisciplinary teams to evaluate and select skin antiseptics products for use in the facility and help ensure that policies and procedures for skin antiseptics are up to date and in compliance with regulatory requirements. The AORN "Guideline for preoperative patient skin antiseptics" is an evidence-based resource that perioperative RNs can use to help influence safe perioperative practice in their facilities. **AORN**

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**Liz Cowperthwaite, BA**, is the senior managing editor at AORN, Inc, Denver, CO. *Ms Cowperthwaite has no declared affiliation that could be perceived as posing a potential conflict of interest in the publication of this article.*

**Rebecca L. Holm, MSN, RN, CNOR**, is the clinical editor for the *AORN Journal*, AORN, Inc, Denver, CO, and an RN in perioperative services at Skyridge Surgery Center, Lone Tree, CO. *Ms Holm has no declared affiliation that could be perceived as posing a potential conflict of interest in the publication of this article.*

*This guideline implementation article is intended to be an adjunct to the complete guideline document upon which it is based and is not intended to be a replacement for that document. Individuals who are developing and updating organizational policies and procedures should review and reference the full guideline.*

## Guideline Implementation: Preoperative Patient Skin Antisepsis

### PURPOSE/GOAL

To provide the learner with knowledge specific to implementing the updated AORN “Guideline for preoperative patient skin antisepsis.”

### OBJECTIVES

1. Identify the key takeaways from the preoperative patient skin antisepsis guideline.
2. Explain the steps involved in performing preoperative skin antisepsis.
3. Identify factors in selecting an antiseptic for the surgical patient.
4. Describe US Food and Drug Administration recommendations for storage of skin antisepsis products.
5. Discuss the RN’s role in developing policies and procedures for skin antisepsis.

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### QUESTIONS

1. Key takeaways from the AORN “Guideline for preoperative patient skin antisepsis” include
  1. applying skin antiseptics according to the manufacturer’s instructions for use.
  2. instructing patients to bathe or shower before surgery with either soap or an antiseptic solution.
  3. removing hair at the surgical site in the OR as close as possible to the time of surgery.
  4. selecting safe effective preoperative antiseptics for the individual patient.
  5. storing unopened skin antiseptics in the original single-use container.
    - a. 4 and 5
    - b. 1, 2, and 3
    - c. 1, 2, 4, and 5
    - d. 1, 2, 3, 4, and 5
2. When Nurse N makes the preoperative telephone call, she instructs Mr C that on the night before or the morning of surgery, he should
  1. bathe with soap and water.
  2. gargle with oral antiseptic solution.
  3. not apply any alcohol-based hair or skin products.
  4. shampoo his hair.
    - a. 1 and 3
    - b. 2 and 4
    - c. 1, 3, and 4
    - d. 1, 2, 3, and 4
3. When performing the surgical site antisepsis for Mr C, Nurse Q
  1. obtains a single-use container of the selected antiseptic.
  2. performs hand hygiene.



3. confirms the surgical site and assesses the patient's skin.
4. adheres to the antiseptic manufacturer's instructions.
5. ensures that no solution pools under the patient or around the patient's ears.
6. determines that the surgical site marking is still visible.
  - a. 1, 3, and 5
  - b. 2, 4, and 6
  - c. 1, 2, 4, 5, and 6
  - d. 1, 2, 3, 4, 5, and 6
4. The surgical patient's hair should be left in place when it will not interfere with the surgical procedure.
  - a. true
  - b. false
5. The perioperative team should select a health care facility—approved antiseptic for the individual patient based on a review of
  1. the manufacturer's instructions for use.
  2. the patient assessment.
  3. the procedure type.
  4. product contraindications.
  - a. 1 and 2
  - b. 3 and 4
  - c. 1, 3, and 4
  - d. 1, 2, 3, and 4
6. Nurse Q does not choose an alcohol-based antiseptic prep solution for Mr C because of the risk of fire related to
  1. potential use of electrosurgery.
  2. proximity of the surgical site to the electro-surgical unit grounding pad.
  3. proximity of the surgical site to the patient's airway.
  4. proximity of the surgical site to the patient's hair.
  - a. 1 and 2
  - b. 2 and 3
  - c. 1, 3, and 4
  - d. 1, 2, 3, and 4
7. Nurse Q does not use an iodine- or iodophor-based antiseptic for Mr C because these products
  - a. are less effective than chlorhexidine gluconate.
  - b. could cause iodism in Mr C.
  - c. will stain the skin.
  - d. are highly allergenic.
8. Nurse Q ensures the prep solution does not pool around the patient's ears because chlorhexidine gluconate may cause deafness if it comes in contact with the middle ear.
  - a. true
  - b. false
9. According to US Food and Drug Administration recommendations,
  1. manufacturers should package over-the-counter topical antiseptic products in single-use packaging.
  2. containers of topical antiseptic solutions should be used only one time for one patient.
  3. antiseptic solutions should be stored in the original single-use container.
  - a. 1 and 2
  - b. 1 and 3
  - c. 2 and 3
  - d. 1, 2, and 3
10. Perioperative RNs should participate in multidisciplinary teams to
  1. evaluate and select skin antiseptics products for use in the facility.
  2. help ensure that policies and procedures for skin antiseptics are up to date.
  3. help ensure that policies and procedures for skin antiseptics are in compliance with regulatory requirements.
  - a. 1 and 2
  - b. 1 and 3
  - c. 2 and 3
  - d. 1, 2, and 3

## Guideline Implementation: Preoperative Patient Skin Antisepsis

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### OBJECTIVES

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

1. Identify the key takeaways from the preoperative patient skin antisepsis guideline.  
*Low 1. 2. 3. 4. 5. High*
  2. Explain the steps involved in performing preoperative skin antisepsis.  
*Low 1. 2. 3. 4. 5. High*
  3. Identify factors in selecting an antiseptic for the surgical patient.  
*Low 1. 2. 3. 4. 5. High*
  4. Describe US Food and Drug Administration recommendations for storage of skin antisepsis products. *Low 1. 2. 3. 4. 5. High*
  5. Discuss the RN's role in developing policies and procedures for skin antisepsis.  
*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 not? (*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 1.1 continuing education contact hour (66-minute) program: \_\_\_\_\_