

Hand Hygiene (Ambulatory) – CE

ALERT

Hand hygiene is not optional.

OVERVIEW

Hand hygiene is the most important and most basic component in preventing and controlling the transmission of infection. Hand hygiene is the primary method used by health care team members to reduce the spread of germs or infection between the patient and the health care provider.³ Proper hand hygiene has been shown to significantly reduce infection and colonization rates for multidrug-resistant organisms.⁴

Hand hygiene is a general term that applies to handwashing, antiseptic handwash, antiseptic hand rub, and surgical hand antisepsis. Handwashing refers to washing hands with plain soap and water. An antiseptic handwash is defined as washing hands with soap and water or other detergents containing an antiseptic agent. An antiseptic hand rub is performed by applying an antiseptic hand rub product to all surfaces of the hands to reduce the number of microorganisms on the skin. Many antiseptic detergent preparations have persistent antimicrobial activity.⁵

The most common mode of transmitting infection or organisms between patients is contact with a health care team member's hands. For example, a health care team member assists a patient who has excessive pulmonary secretions to expectorate mucus. Then, the health care team member leaves that patient and cares for another patient. If the health care team member fails to perform hand hygiene, organisms from the first patient's mucus are transmitted to other surfaces (e.g., door handle) and the second patient.

Health care team members should not wear jewelry, including rings and watches, on the hands or wrists in patient care areas because of the increased risk of bacterial growth under it.¹ If jewelry is worn, it must be removed before performing hand hygiene.⁵ The World Health Organization (WHO) strongly discourages wearing rings or other jewelry in the health care setting.⁵

Long fingernails and artificial nails harbor bacteria, and artificial fingernails have been implicated in outbreaks of gram-negative bacteria and yeast infections.¹ Therefore, neither artificial nails nor extenders should be worn, and natural fingernails should be kept at a length no longer than 2 mm.¹

Hand rubbing with an alcohol-based solution is the recommended action for health care team members when performing routine hand hygiene. Studies have shown that alcohol-based hand rubs are superior to antimicrobial detergents in their ability to reduce bacterial counts.⁵

Hand hygiene guidelines recommend the use of alcohol-based products, unless the hands have been exposed to bodily fluids or are visibly soiled or when the patient has suspected or confirmed spore-forming pathogens (e.g., *Clostridium difficile*).^{2,5} Spore-forming pathogens are known to be highly resistant to killing by alcohol. Mechanically handwashing with soap and water or antimicrobial soap and water may help physically remove spores from the surface of contaminated hands.²

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Health care team members should wash their hands with antimicrobial soap and water in these situations:⁵

- When hands are visibly dirty
- When hands are visibly soiled with blood or other bodily fluids
- When hands are contaminated with proteinaceous material
- After using the bathroom
- After exposure or suspected exposure to spore-forming pathogens (e.g., *C. difficile*)

If hands are not visibly soiled or do not meet any of the above criteria, health care team members should use an alcohol-based hand rub for routinely decontaminating hands in these situations:

- Before and after direct contact with patients
- Before and after donning clean or sterile gloves⁵
- Before performing a clean or sterile task (e.g., inserting a peripheral vascular catheter, administering or preparing medication, accessing a vascular access device)¹
- After contact with a patient's intact skin (e.g., taking a pulse or blood pressure, lifting a patient)
- After contact with bodily fluids or excretions, mucous membranes, nonintact skin, and wound dressings
- When moving from a contaminated body site to a clean body site on the same patient¹
- After contact with inanimate objects (including medical equipment) in a patient's immediate vicinity¹

If an alcohol-based hand rub is not available, health care team members should wash hands with an antimicrobial soap and water. Health care team members should avoid washing hands with soap and water in addition to using an alcohol-based hand rub because it is unnecessary and may lead to dermatitis.

EDUCATION

- Instruct the patient about proper hand hygiene techniques.
- Provide developmentally and culturally appropriate education based on the desire for knowledge, readiness to learn, and overall neurologic and psychosocial state.
- Educate the patient about situations in which hand hygiene is required.
- Educate the patient about the risks for infection in health care facilities.
- Educate the patient that he or she can play an important role in improving hand hygiene compliance by reminding health care team members to perform hand hygiene.
- Encourage questions and answer them as they arise.

PROCEDURE

1. Inspect the surface of the hands for dermatitis or breaks or cuts in the skin or cuticles.
2. Inspect the hands for visible soiling.
3. Inspect the condition of the nails. Be sure that fingernails are short, filed, and smooth. Remove artificial nails, if worn.
4. Cover any skin lesions before providing patient care.
5. Push long uniform sleeves above the wrists. If jewelry is worn on the hands or arms (e.g., ring, watch), remove it during hand hygiene.

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Rationale: Pushing the sleeves up and removing jewelry provides complete access to the fingers, hands, and wrists. WHO strongly discourages wearing rings or other jewelry in the health care setting.⁵ Wearing rings contributes to the contamination of the hands, and wearing watches may decrease implementation of hygiene of the wrists.¹

Hand Antisepsis Using an Instant Alcohol Waterless Antiseptic Rub

1. Dispense the recommended amount of product per the manufacturer's instructions into the palm of one hand.

Rationale: Many microorganisms on hands come from the subungual region (beneath the fingernails). Enough product is needed to thoroughly cover the hands.

2. Rub the hands together, covering all surfaces of the hands and fingers with antiseptic rub.
3. Rub the hands together until the alcohol is dry. Allow the hands to completely dry before donning gloves.

Rationale: The alcohol must dry to ensure complete antimicrobial action and to decrease the incidence of skin irritation.⁵

Perform hand hygiene with an instant alcohol waterless antiseptic rub, from start to dry, for 20 to 30 seconds.⁵

Do not use an alcohol waterless antiseptic rub for hand hygiene when spore-producing pathogens are suspected or confirmed, such as from acute food poisoning.

Handwashing Using Plain or Antimicrobial Soap and Water

1. Stand in front of a sink, keeping the hands and uniform away from the sink surface.

Rationale: The inside of the sink is a contaminated area. Reaching over the sink increases the risk of touching the edge, which is contaminated.

If the hands touch the sink during handwashing, repeat handwashing.

2. Turn on the water. Turn on the faucet, press the knee or foot pedals, if available, to regulate the flow and temperature.
3. Avoid splashing water on the uniform.

Rationale: Microorganisms travel and grow in moist environments.

4. Regulate the temperature to ensure that the water is warm.

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Rationale: Warm water removes less of the protective oils on hands than hot water.

5. Wet the hands and wrists thoroughly under the running water. Keep the hands and forearms lower than the elbows during washing.

Rationale: The hands are the most contaminated parts to wash. Water should flow from the least to most contaminated area, rinsing microorganisms into the sink.

6. Apply the recommended amount of soap or antiseptic to the hands according to the manufacturer's instructions for use. Soap granules and leaflet preparations are also an option.

Rationale: Using antiseptic exclusively can be drying to the hands and may cause skin irritations.

7. Lather hands thoroughly.

8. Apply friction and perform handwashing for at least 15 seconds² or for the length of time stated in the manufacturer's instructions. Interlace the fingers and rub the palms and back of the hands together using a circular motion for at least five cycles.² Keep the fingertips down to facilitate removal of microorganisms.

Rationale: Soap cleanses by emulsifying fat and oil and lowering surface tension. Friction and rubbing mechanically loosen and remove dirt and transient bacteria. Interlacing the fingers ensures that all surfaces are thoroughly cleansed.

9. Clean the areas under the fingernails with the fingernails of the other hand and additional soap or clean them with a disposable nail cleaner.

Rationale: The area under the nails may be highly contaminated, increasing the risk for transmission of infection from the health care team member to the patient.

10. Rinse the hands and wrists thoroughly, keeping the hands down and the elbows up.

Rationale: Rinsing mechanically washes away dirt and microorganisms.

11. Dry the hands thoroughly from the fingers to the wrists with a paper towel, single-use cloth, or warm air dryer.

Rationale: Drying from the cleanest (fingertips) to least clean (wrist) avoids contamination. Drying the hands prevents chapping and roughened skin.

12. To turn off the hand faucet, use a clean, dry paper towel to avoid touching the handles with the hands. Turn off the water with the foot or knee pedals, if applicable.

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Rationale: Wet towels and hands allow the transfer of pathogens from the faucet by capillary action.

13. Discard the paper towel or single-use cloth, if used, in the proper trash receptacle.

14. Apply an organization-approved lotion or barrier cream to hands. Avoid petroleum-based lotions.

Rationale: Lotion helps minimize skin dryness. The organization-approved lotion or barrier cream will be compatible with antimicrobial soaps and latex.

15. Reinspect the surface of hands for obvious signs of dirt or other contaminants.

EXPECTED OUTCOMES

- Hands and areas under fingernails are clean and free of debris.
- Health care team member remains free from health-care associated infection.
- Patient remains free from health care–associated infection.

UNEXPECTED OUTCOMES

- Hands or areas under fingernails remain soiled.
- Repeated use of soaps or antiseptic cause dermatitis or cracked skin.
- Health care team member contracts a health care-associated infection.
- Patient contracts a health care–associated infection.

REFERENCES

1. Association of PeriOperative Registered Nurses (AORN). (2020). Hand hygiene. In *Guidelines for perioperative practice* (pp. 273-298). Denver: AORN. ([Level VII](#))
2. Boyce, J.M. and others. (2002). Guideline for hand hygiene in health-care settings: Recommendations of the healthcare infection control practices advisory committee and the HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force: Society for Healthcare Epidemiology of America/Association for Professionals in Infection Control/Infectious Diseases Society of America. *Morbidity and Mortality Weekly Report*, 51(RR-16), 1-45. (classic reference)* ([Level VII](#))
3. Centers for Disease Control and Prevention (CDC). (2020). Hand hygiene in healthcare settings. Retrieved on March 12, 2020 from <https://www.cdc.gov/handhygiene/providers/index.html> ([Level VII](#))
4. World Health Organization (WHO). (n.d.). Evidence of hand hygiene to reduce transmissions and infections by multi-drug resistant organisms in health-care settings. Retrieved March 12, 2020, from http://www.who.int/gpsc/5may/MDRO_literature-review.pdf?ua=1 ([Level I](#))
5. World Health Organization (WHO). (2009). WHO guidelines on hand hygiene in health care: First global patient safety challenge: Clean care is safer care. Retrieved March 12, 2020, from http://apps.who.int/iris/bitstream/10665/44102/1/9789241597906_eng.pdf (classic reference)* ([Level VII](#))

ADDITIONAL READINGS

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Centers for Disease Control and Prevention (CDC). (2016). Handwashing: Clean hands save lives: When and how to wash your hands. Retrieved March 12, 2020, from <https://www.cdc.gov/handwashing/when-how-handwashing.html>

*In these skills, a “classic” reference is a widely cited, standard work of established excellence that significantly affects current practice and may also represent the foundational research for practice.

Elsevier Skills Levels of Evidence

- **Level I** - Systematic review of all relevant randomized controlled trials
- **Level II** - At least one well-designed randomized controlled trial
- **Level III** - Well-designed controlled trials without randomization
- **Level IV** - Well-designed case-controlled or cohort studies
- **Level V** - Descriptive or qualitative studies
- **Level VI** - Single descriptive or qualitative study
- **Level VII** - Authority opinion or expert committee reports

Supplies

- Alcohol-based waterless antiseptic containing emollients
- Easy-to-reach sink with warm running water
- Antimicrobial or regular soap
- Organization-approved lotion or barrier cream
- Paper towels or air dryer
- Disposable nail cleaner (optional)

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