

# Hand Hygiene

## **Lesson 1: Objectives**

After completion of this course you will be able to:

- Differentiate between normal flora and transient flora;
- Describe how organisms are spread from one person to another;
- Correctly perform hand hygiene;
- Properly use gloves; and
- Identify measures to reduce hand irritation associated with hand hygiene.

### *Introduction*

Infections are a serious problem in healthcare facilities. On any given day, about one in 31 hospital patients has at least one healthcare-associated infection. Performing hand hygiene is a simple yet effective way to prevent infections. Hand hygiene decreases the risk of healthcare-associated infections and the morbidity, mortality, and costs linked with these infections, as well as decreases the risk of the healthcare provider becoming colonized or infected. On average, healthcare providers clean their hands less than half of the times they should.

## **Lesson 2: The Spread of Pathogens**

The primary function of the skin is to reduce water loss, provide protection against abrasive action and microorganisms, and act as a permeable barrier to the environment. The basic structure of skin includes (from the outer- to inner-most layer) the superficial region, the epidermis, the dermis, and the hypodermis.

Normal (resident) flora are microorganisms that are always present on the surface of the skin and are less likely to be associated with infections. Transient flora are the microorganisms that temporarily colonize the skin and are most frequently associated with healthcare-associated infections. This may include bacteria, fungi, and viruses which reach the hands by direct skin-to-skin contact or indirectly via objects. Hand hygiene primarily aims at deactivating the microorganisms of the transient flora. These organisms spread from one person to another through the following sequence of events:

- The organism present on the skin or in the body secretion, excretion, or wound of a person, or on an environmental surface near the person, is spread to the hands of the healthcare worker.
- The organism is then capable of surviving for at least several minutes on the hands.
- Next, handwashing or the use of an alcohol-based hand rub by the healthcare worker is inadequate or left out entirely, or the product used for hand hygiene is inappropriate for the organism.

- Finally, the contaminated hands of the healthcare worker come in direct contact with another person, or with an environmental surface that comes into direct contact with another person.

Quiz Question:

Place the sequence of events in order of how an organism spreads from one person to another.

- 1. The organism present on the skin or in the body secretion, excretion, or wound of a person, or on an environmental surface near the person, is spread to the hands of the healthcare worker.**
- 2. The organism survives for at least several minutes on the hands.**
- 3. Handwashing or the use of an alcohol-based hand rub by the healthcare worker is inadequate or left out entirely, or the product used for hand hygiene is inappropriate for the organism.**
- 4. The contaminated hands of the healthcare worker come in direct contact with another person, or with an environmental surface that comes into direct contact with another person.**

### **Lesson 3: Hand Hygiene**

There are two methods for hand hygiene – washing with soap and water and alcohol-based hand sanitizer.

#### *Handwashing Guidelines*

The purpose of handwashing is to remove dirt, organic material and microorganisms. Water alone is not suitable for cleaning soiled hands.

You should wash your hands with plain or antimicrobial soap and water:

- When your hands are visibly dirty or contaminated;
- Before eating;
- After using the restroom;
- After caring for a person with known or suspected infectious diarrhea; and
- After suspected or proven exposure to spore-forming organisms such as *Clostridium difficile* or *Bacillus anthracis*. Alcohol-based hand rubs are not reliable in killing spores.

When washing your hands with soap and water, wet your hands with water and apply the amount of product necessary to cover all surfaces. Vigorously perform rotational hand-rubbing for at least 15 seconds on the palms and backs of both hands while interlacing and interlocking your fingers to cover all surfaces including the thumbs, fingertips and fingernails. Rinse your hands under running water and dry thoroughly with a disposable towel. Use a towel to turn off the faucet.

## **Lesson 4: Alcohol-Based Hand Rub Guidelines**

Compared to handwashing, alcohol-based hand rubs have been shown to be more effective in reducing the number of bacteria and viruses on hands, require less time to use, cause less irritation and dryness, and can be made more accessible at the point of care. Alcohol-based hand sanitizers are the preferred method for cleaning your hands in most clinical situations.

If your hands are not visibly dirty or contaminated, use an alcohol-based hand rub to decontaminate your hands in the following situations:

- Before direct contact with patients/residents;
- Before putting on gloves;
- Before performing an aseptic task or inserting/manipulating an invasive medical device;
- After direct contact with the intact skin of a patient/resident;
- After contact with blood, body fluids or excretions, mucous membranes, non-intact skin, and wound dressings;
- When moving from a contaminated to a clean body site during care;
- After contact with an object or environmental surface that is near the patient/resident since bacteria can survive for days on equipment and other surfaces; and
- Immediately after removing gloves.

If an alcohol-based hand rub is not available, wash hands with antimicrobial soap and water. Hand hygiene is also essential before handling medication or preparing food.

When using an alcohol-based hand rub, apply the product to the palm of one hand. Be sure to use an amount that is necessary to cover all surfaces of your hands. Vigorously perform rotational hand-rubbing on the palms and backs of both hands while interlacing and interlocking your fingers to cover all surfaces including the thumbs, fingertips and fingernails. Rub until completely dry. This should take at least 15 seconds and ensures that an adequate amount of product had been applied. It is neither necessary nor recommended to routinely wash hands after each use of an alcohol-based hand rub.

Quiz Question:

Place each situation under Handwashing or Alcohol-Based Hand Rub based upon which method of hand hygiene is appropriate.

<b>Alcohol-Based Hand Rub</b>	<b>Handwashing</b>
Before and after direct contact with patients	When your hands are visibly dirty or contaminated
Before putting on and immediately after taking off gloves	Before eating and after using the bathroom

After contact with blood, body fluids or excretions, mucous membranes, non-intact skin, and wound dressings	After caring for a person with known or suspected infectious diarrhea
After contact with an object or environmental surface that is near the patient	After exposure to spore-forming organisms

## **Lesson 5: Other Aspects of Hand Hygiene**

### *Gloves*

Wearing gloves during care is an additional intervention to help reduce the spread of organisms. Gloves must be used properly:

- Wear gloves when contact with blood or other potentially infectious materials (OPIM), excretions, secretions (except sweat), mucous membranes, non-intact skin, potentially contaminated skin or contaminated equipment could occur.
- Do not wear the same pair of gloves for the care of more than one person.
- Change gloves during care if gloves become damaged, visibly soiled with blood or body fluids, or when moving from a contaminated to a clean body site.
- Remove your gloves using a technique that does not contaminate your hands with the organisms on the surface of the glove.
- Wear gloves for all types of contact with a person or the environment if the person is on isolation precautions that require the use of gloves or if there is a unit-based procedure for universal gloving.

The use of gloves is an important addition to, but not replacement for, proper hand hygiene. If your task requires gloves, perform hand hygiene prior to donning gloves, before touching the individual or the environment, and immediately after removing gloves.

You should be aware of the location of soap and water, alcohol-based hand rub and gloves in your work area. If you find that soap and water, alcohol-based products or gloves are not available at the point of care, contact the appropriate personnel within your organization. Be advised, however, that alcohol-based hand rub dispensers can only be placed in locations that are compliant with local and federal fire safety regulations.

Select all of the proper uses of gloves.

- **\*Wear gloves when contact with OPIM, excretions, secretions (except sweat), mucous membranes, non-intact skin, potentially contaminated skin or contaminated equipment could occur**

- Wear the same pair of gloves for the care of more than one person to reduce expenses
- **\*Change gloves during care if gloves become damaged, visibly soiled with blood or body fluids, or when moving from a contaminated to a clean body site**
- **\*Remove your gloves using a technique that does not contaminate your hands with the organisms on the surface of the glove**
- You do not need to perform hand hygiene following the removal of gloves since the gloves protected your hands

### **Lesson 6: Fingernails and Artificial Nails**

Organisms can live under artificial fingernails both before and after using an alcohol-based hand sanitizer and handwashing. It is recommended that healthcare providers do not wear artificial fingernails or extensions when having direct contact with persons at high risk. Keep natural nail tips less than  $\frac{1}{4}$  inch long. Refer to your organization's policy on artificial fingernails and the wearing of jewelry by healthcare workers.

### **Lesson 7: Irritation from Hand Hygiene Measures**

Frequent and repeated use of hand-hygiene products, particularly soap, is a primary cause of irritant contact dermatitis among healthcare workers. Other factors that can contribute include the use of hot water for handwashing, low relative humidity (most common in winter months), failure to use facility-approved hand lotion or cream, and the quality of disposable towels. Wearing gloves (especially while hands are still wet), removing gloves and allergies to latex may also contribute to dermatitis. Hand lotions and creams can increase skin hydration and restore the barrier function of the skin. The regular use of such products can help prevent and treat irritant contact dermatitis.

### **Lesson 8: Conclusion**

(NOTE: You may wish to display the contact information for the appropriate personnel within your organization.)

Evidence supports the belief that improved hand hygiene can reduce healthcare-associated infection rates. You are empowered to remind other healthcare workers, regardless of rank or position, to perform hand hygiene. This should also be reinforced by those in your care. From their perspective, compliance with all elements of hand hygiene and glove practice is a reasonable expectation. If you have questions about hand hygiene, contact the appropriate personnel within your organization for guidance and assistance.

## Test Questions (10 questions Pre-test or 5 questions Post-test)

### Pool 1 (6 or 3 questions)

#### MULTIPLE CHOICE

1. Hand hygiene refers to:
  - a. Washing your hands with plain soap and water.
  - b. Using an alcohol-based hand rub.
  - c. Washing your hands with antimicrobial soap and water.
  - d. All of the above.
  
2. Alcohol-based hand rubs do not reliably kill which of the following:
  - a. Fungus.
  - b. Bacteria.
  - c. Spores, such as those found in *Clostridium difficile* (or *C. diff*).
  - d. Gram-positive bacteria.
  
3. Which of the following steps is not required when using an alcohol-based hand rub?
  - a. Wet your hands with water.
  - b. Apply enough product to cover all surfaces of your hands.
  - c. Rub your hands until completely dry.
  - d. Perform rotational handrubbing to cover all surfaces of your hands with the product.
  
4. Which of the following statements regarding hand hygiene is correct?
  - a. Hand hygiene decreases the risk of spreading organisms to others.
  - b. Hand hygiene decreases the risk of you becoming infected by organisms.
  - c. Hand hygiene decreases the number of deaths related to healthcare-associated infections.
  - d. All of the above statements are correct.
  
5. To be effective, an alcohol-based hand rub should be applied for \_\_\_\_\_.
  - a. 2-3 seconds.
  - b. At least 15 seconds.
  - c. 2 minutes.
  - d. 5 minutes.
  
6. The primary function of the skin is to:
  - a. Reduce water loss.
  - b. Provide protection against organisms.
  - c. Act as a barrier to the environment.
  - d. All of the above.
  
7. Which of the following actions is inappropriate in using gloves?
  - a. Changing your gloves between caring for more than one person.
  - b. Washing your gloves between uses.

- c. Changing your gloves when moving from a contaminated body site to a clean body site.
- d. Performing hand hygiene immediately after glove removal.

8. To effectively wash your hands, soap (after applied) should be rubbed on your hands over which of the following amount of time?

- a. 2-3 seconds.
- b. At least 15 seconds.
- c. 2 minutes.
- d. 5 minutes.

**Pool 2 (4 or 2 questions)**

**TRUE / FALSE**

9. You can use alcohol-based hand rub to kill *Clostridium difficile* or *C. diff* (the cause of antibiotic-associated diarrhea) on your hands.

10. Healthcare-associated infections can cause death among hospitalized individuals.

11. Water alone is suitable for cleaning soiled hands.

12. You should use a towel to turn off the faucet to avoid contamination of your hands after handwashing.

13. You should wash your hands with soap and water after each application of an alcohol-based hand rub.

14. Hand hygiene is not necessary if gloves were worn.

15. Alcohol-based hand rub dispensers can only be placed in locations that are compliant with local and federal fire safety regulations.

16. Regular use of hand lotions and cream can help prevent and treat hand irritation resulting from handwashing.

17. Alcohol-based hand rubs can be used when hands are visibly soiled.

# Hand Hygiene – Clinics

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- Describe how organisms are spread from one person to another;
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### *Introduction*

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## **Lesson 2: The Spread of Pathogens**

The primary function of the skin is to reduce water loss, provide protection against abrasive action and microorganisms, and act as a permeable barrier to the environment. The basic structure of skin includes (from the outer- to inner-most layer) the superficial region, the epidermis, the dermis, and the hypodermis.

Normal (resident) flora are microorganisms that are always present on the surface of the skin and are less likely to be associated with infections. Transient flora are the microorganisms that temporarily colonize the skin and are most frequently associated with healthcare-associated infections. This may include bacteria, fungi, and viruses which reach the hands by direct skin-to-skin contact or indirectly via objects. Hand hygiene primarily aims at deactivating the microorganisms of the transient flora. These organisms spread from one person to another through the following sequence of events:

- The organism present on the skin or in the body secretion, excretion, or wound of a person, or on an environmental surface near the person, is spread to the hands of the healthcare worker.
- The organism is then capable of surviving for at least several minutes on the hands.
- Next, handwashing or the use of an alcohol-based hand rub by the healthcare worker is inadequate or left out entirely, or the product used for hand hygiene is inappropriate for the organism.

- Finally, the contaminated hands of the healthcare worker come in direct contact with another person, or with an environmental surface that comes into direct contact with another person.

Quiz Question:

Place the sequence of events in order of how an organism spreads from one person to another.

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3. **Handwashing or the use of an alcohol-based hand rub by the healthcare worker is inadequate or left out entirely, or the product used for hand hygiene is inappropriate for the organism.**
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### **Lesson 3: Hand Hygiene**

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- After using the restroom;
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- After suspected or proven exposure to spore-forming organisms such as *Clostridium difficile* or *Bacillus anthracis*. Alcohol-based hand rubs are not reliable in killing spores.

When washing your hands with soap and water, wet your hands with water and apply the amount of product necessary to cover all surfaces. Vigorously perform rotational hand-rubbing for at least 15 seconds on the palms and backs of both hands while interlacing and interlocking your fingers to cover all surfaces including the thumbs, fingertips and fingernails. Rinse your hands under running water and dry thoroughly with a disposable towel. Use a towel to turn off the faucet.

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- Before direct contact with patients;
- Before putting on gloves;
- Before performing an aseptic task or inserting/manipulating an invasive medical device;
- After direct contact with the intact skin of a patient;
- After contact with blood, body fluids or excretions, mucous membranes, non-intact skin, and wound dressings;
- When moving from a contaminated to a clean body site during care;
- After contact with an object or environmental surface that is near the patient since bacteria can survive for days on equipment and other surfaces; and
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- Change gloves during care if gloves become damaged, visibly soiled with blood or body fluids, or when moving from a contaminated to a clean body site.
- Remove your gloves using a technique that does not contaminate your hands with the organisms on the surface of the glove.
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### **Lesson 7: Irritation from Hand Hygiene Measures**

Frequent and repeated use of hand-hygiene products, particularly soap, is a primary cause of irritant contact dermatitis among healthcare workers. Other factors that can contribute include the use of hot water for handwashing, low relative humidity (most common in winter months), failure to use facility-approved hand lotion or cream, and the quality of disposable towels. Wearing gloves (especially while hands are still wet), removing gloves and allergies to latex may also contribute to dermatitis. Hand lotions and creams can increase skin hydration and restore the barrier function of the skin. The regular use of such products can help prevent and treat irritant contact dermatitis.

### **Lesson 8: Conclusion**

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- c. Changing your gloves when moving from a contaminated body site to a clean body site.
- d. Performing hand hygiene immediately after glove removal.

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