

**Course**

Health Science I

**Unit** Asepsis**Essential Question**

What is the most common way pathogens are transmitted in a health care setting?

**TEKS**

121.3 c 10 A-C

**TAKS**

ELA 1,4  
Science 1,2

**Prior Student Learning**

Basic understanding of the chain of infection.

**Estimated time**

1.5- 4.5 hrs

Use of disclosure lotion is critical to the student's awareness and understanding of the necessity for proper technique. Students visually discover which surface areas are more difficult to wash.

**Rationale**

An understanding of safety as it relates to community and self is necessary for the delivery of quality health care.

**Objectives**

Upon completion of this lesson, the student will be able to:

- Demonstrate proper hand washing procedure used in the health care settings;
- Demonstrate an understanding when hand sanitizer maybe used in place of performing standard hand washing procedure;
- Demonstrate proper technique for using hand sanitizer; and
- Evaluate a peer using skills check.

**Engage**

How do we keep from spreading germs from one patient to the next?

When should a health care worker use standard hand washing rather than hand sanitizer?

What is the advantage of using hand sanitizer for the patient?

What is the disadvantage of using hand sanitizer for the patient?

What is the advantage and disadvantage of using hand sanitizer for the health care worker?

**Key Points****Handwashing PowerPoint**

PowerPoint site found at the CDC

[http://www.cdc.gov/Handhygiene/download/hand\\_hygiene\\_core.ppt](http://www.cdc.gov/Handhygiene/download/hand_hygiene_core.ppt)

**Standard Handwashing Procedure**

- I. According to OSHA standards regarding blood borne pathogens, hand washing should be performed, at a minimum:
  - A. Before and after every patient contact
  - B. After removing gloves and other protective wear
  - C. After handling blood or other body fluids
  - D. When visibly contaminated with blood or tissues
  - E. Before leaving the patient area
  - F. Before and after eating, applying makeup, using the bathroom, handling contact lenses, handling equipment
- II. Importance of handwashing to reduce nosocomial infections

- A. Required in any health care profession.
  - 1. Reduces spread of disease from patient to patient
  - 2. Reduces spread of disease from patient to health care professional
  - 3. Reduces spread of disease from health care professional to patient
  - 4. Reduces spread of disease from health care professional to other health care professionals
  - 5. Reduce spread of disease to visitors in the health care facility
- III. Proper handwashing techniques include
  - A. Soap aids in the removal of pathogens.
  - B. Warm water
  - C. Friction
  - D. All surfaces of the hands must be cleaned – palms, backs, between the fingers.
  - E. Nails must be cleaned.
  - F. Fingertips pointed downward – prevents water from getting on forearms and then running back down onto the hands and recontaminating them.
  - G. Dry paper towels are used to turn faucet on and off – prevents contamination of hands from organisms on the faucet.
- IV. Indication for hand hygiene
  - A. When hands are visibly dirty, contaminated, or soiled, wash with non-antimicrobial or antimicrobial soap and water.
  - B. If hands are not visibly soiled, use an alcohol-based hand rub for routinely decontaminating hands.

**Cleaning Hands with Waterless Hand Sanitizer (also known as hand rubs)**

- I. Hand sanitizers work to kill microbes chemically
- II. Waterless hand sanitizer provides several advantages over hand washing with soap and water. However, they are not effective if organic matter (dirt, food, or other material) is visible on hands.
- III. Benefits of waterless hand sanitizer:
  - A. Require less time than hand washing
  - B. Act quickly to kill microorganisms on hands
  - C. Are more accessible than sinks
  - D. Reduce bacterial counts on hands
  - E. Do not promote antimicrobial resistance
  - F. Are less irritating to skin than soap and water
  - G. Some can even improve condition of skin
- IV. Both components, waterless hand sanitizer and friction, should be used increase effectiveness. Four steps:
  - A. Make sure all organic matter is removed from hands. All visible organic matter (for example: dirt) must be removed from hands prior

- to applying waterless hand sanitizer.
- B. Apply a dime sized amount of waterless hand sanitizer to the palm of one hand or use a waterless hand sanitizer wipe.
  - C. Rub hands together covering all surfaces of hands and fingers.
  - D. Rub until waterless hand sanitizer is absorbed.

### **Activity**

- I. Practice proper hand washing procedure using a disclosure solution such as glogerm and a black light.
- II. Demonstrate proper hand washing technique after practice and peer review. **Handwashing Procedure**
- III. Have students partner-up and swab each others hands. Divide a petri dish into 3 areas using marker and compare the growth.
  - Before washing
  - After hand sanitizer
  - After using proper hand washing technique

### Teacher Note:

Use wax pencil or permanent marker to make 3 divisions and label the bottom of Petri dish (dirty/ sanitizer/ soap). On sections labeled dirty, one student will touch fingers to plate before any cleaning, and then have the student's partner wash one hand with soap and water and then place fingers on that section of plate. Then, have the partner clean the other hand with hand sanitizer and then place fingers from that hand on the section of agar labeled sanitizer. Incubate for 24 – 48 hours and compare growth and record findings. Compare data to other class mates and classes.

### **Assessment**

Demonstrate proper hand washing technique after practice and peer review with 100% accuracy.

Handwashing rubric HOSA competitive Guidelines ([www. HOSA.org](http://www.HOSA.org))

### **Materials**

#### **For activity I & II**

handwashing soap

hand brush

orange/cuticle stick

paper towels

sink

disclosure solution ( Products are sold by many companies; GloGerm Company P.O. Box 537, Moab , Utah 84532 ([www.glogerm.com](http://www.glogerm.com)))

Hand Hygiene for health Care professionals power point from the CDC website.

**Materials****For activity III**

handwashing soap  
hand brush  
orange/cuticle stick  
paper towels  
sink  
hand sanitizer  
Petri dish with agar  
Wax pencil or permanent marker

**Accommodations for Learning Differences**

For reinforcement, students will list the steps for proper hand washing technique.

For enrichment, students will create posters to teach younger children how to wash hands, why hand washing is important, and when to wash hands.

**National and State Education Standards**

National Health Science Cluster Standards

HLC06.01

Health care workers will understand the existing and potential hazards to clients, co-workers, and self. They will prevent injury or illness through safe work practices and follow health and safety policies and procedures.

HLC06.02

Health care workers will understand the fundamentals of wellness and the prevention of disease processes. They will practice preventive health behaviors among their clients.

TEKS

121.3 (c) 10 A identify the cycle of the infectious process;  
121.3 (c) 10 B identify guidelines of standard precautions; and  
121.3 (c) 10 C demonstrates skills related to infection control.

Texas College Readiness Standards

Cross-Disciplinary

I. C. 1. Analyze a situation to identify a problem to be solved.  
I. C. 3. Collect evidence and data systematically and directly relate to solving a problem.

Science

I. A. 1. Utilize skepticism, logic and professional ethics in science.

## Procedure I Handwashing

	Possible	Allocated
1. Removed jewelry.	1	_____
2. Turned faucet on with paper towel, adjusted temperature (water should be warm) and discarded towel in waste container.	3	_____
3. Wet hands and wrists thoroughly with fingertips pointing down.	2	_____
4. Applied soap to get lather on hands.	1	_____
5. Put the palms of hands together and rubbed them using friction and a circular motion for 10-15 seconds.	3	_____
6. Put the palm of one hand on the back of the other hand, rubbed together several times and repeated after reversing position of hands.	3	_____
7. Interlaced fingers on both hands and rubbed them back and forth.	2	_____
8. Cleaned nails with an orange/cuticle stick and/or hand brush.	2	_____
9. Rinsed hands with fingertips pointed downward .	2	_____
10. Dried hands thoroughly, from tips of fingers to wrist, and discarded towel.	2	_____
11. Turned faucet off with dry paper towel and discarded towel in wastebasket.	2	_____
12. Avoided touching inside of sink.	3	_____
<b>TOTAL POINTS -- PROCEDURE I</b>	<b>26</b>	_____

*\*\*If a student jeopardizes the patient's or his/her own safety, or fails to perform a critical technique, and does not take immediate action to correct the error, the total points for the procedure, or specific subpart(s), will be deducted.*  
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