



## INFECTION PREVENTION FOR HAND HYGIENE

| **Continuing Education**

# CONTINUING EDUCATION: INFECTION PREVENTION FOR HAND HYGIENE

## DESCRIPTION

This seminar introduces you to the three elements of hand hygiene including handwashing, hand antisepsis and skin care, in accordance with the CDC Guidelines. You will also learn how using the proper infection control protocols and hand hygiene products can help prevent disease transmission.

- This is not an exhaustive presentation of all recommended infection control measures. Please refer to the complete set of CDC guidelines for more information and use your own professional judgment in interpreting the guidelines which are available free of charge on the CDC website.

## OBJECTIVES

- Gain a thorough understanding of proper hand hygiene methods and indications
- Learn strategies to minimize skin irritation and dryness
- Understand how to choose appropriate hand hygiene products
- Learn effective hand hygiene application techniques

## WHAT ARE THE CDC GUIDELINES?

- Consolidated recommendations for preventing and controlling infectious diseases
- Strategies designed to protect patients and health care workers
- Guidelines only, not government regulations
- CDC Guidelines for Hand Hygiene in Healthcare Settings, 2002; <http://www.cdc.gov/handhygiene>
- CDC Guidelines for Infection Control in Dental Health Settings, 2003; <http://www.cdc.gov/OralHealth/infectioncontrol/guidelines/index.htm>

## STANDARD PRECAUTIONS TO PREVENT DISEASE TRANSMISSION INCLUDE:

- Handwashing
- Use of Personal Protective Equipment (PPE)
- Cleaning and decontamination of patient care equipment with PPE
- Cleaning/disinfection of environmental surfaces
- Injury prevention

## SELF-REPORTED REASONS FOR LACK OF EFFECTIVE HAND HYGIENE COMPLIANCE:

- Handwashing agents cause skin irritation, dryness (irritant contact dermatitis)
- Lack of:
  - > Awareness of principles
  - > Soaps, paper towels, sinks
- Understaffing and insufficient time
- Inconvenient location
- Wearing gloves as substitute for handwashing
- Hands don't look dirty
- Perceived low risk of cross-infection

## ENEMIES TO SKIN HEALTH: FREQUENT OR PROLONGED HANDWASHING

- Destroys the protective function of the stratum corneum (the top layer of the epidermis)
- Dissolving and rinsing off the skin's natural oils\*
- Result can be irritant contact dermatitis (ICD)

## PREREQUISITES FOR EFFECTIVE HAND HYGIENE

- Clean, short nails, intact skin, no artificial nails, minimal jewelry, no infections on hands

## 3 ELEMENTS OF HAND HYGIENE (NON-SURGICAL DENTAL)

- Handwashing (cleansing)
- Hand antisepsis (disinfection)
- Skin care

## HAND HYGIENE ELEMENT #1

### INDICATIONS FOR HANDWASHING WITH SOAP AND WATER:

- When hands are visibly dirty or contaminated with infectious material or visibly soiled with blood/other body fluids
- Before and after eating
- After using the restroom

### HAND SOAP OPTIONS\*

- **Plain Soap:** Detergents that do not contain antimicrobial agents or contain low concentrations of antimicrobial agents that are effective solely as preservatives
- **Antimicrobial Soap:** Soap (i.e.,detergent) containing an antiseptic agent
  - › Antiseptic agent - Antimicrobial substances that are applied to the skin to reduce the number of microbial/transient flora (alcohols, chlorhexidine, chlorine, hexachlorophene, iodine, PCMX, triclosan, etc.)

\*CDC, MMWR 2002; 51 (No. RR-16): [3-4]

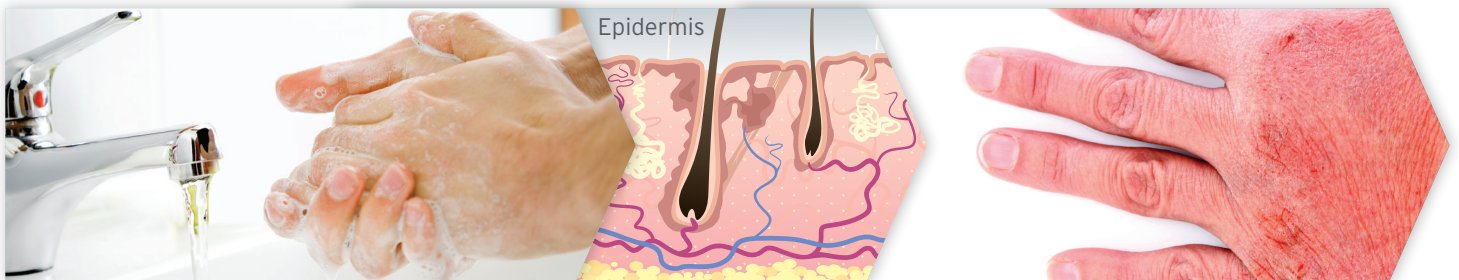
“Handwashing is the single most important measure health care personnel (HCP) can take to prevent the transmission of infectious diseases in health care settings.”

– Molinari J, Harte J, Practical Infection Control In Dentistry, 2010: 125

### DO'S OF HANDWASHING\*\*

- Wash hands when visibly soiled. If not visibly soiled, alcohol-based hand rub is adequate. Hand wash should last at least 15 seconds.
- Use lukewarm water
- Use only soaps/lotion products made for healthcare professionals
- If using a scrub brush, it is recommended not to scrub too vigorously
- Rinse and dry hands well

\*\*CDC, MMWR 2003; 52 (No. RR-16): [15]



Frequent contact with water (handwashing, etc.)

Skin's ability to protect itself becomes impaired

Epidermis becomes more permeable

Harmful substances are able to penetrate the skin more deeply

Irritant contact dermatitis (ICD) can develop

### CHOOSING A HAND SOAP

Factors to consider:

- Skin integrity after repeated use
- Ease of lathering
- Scent
- Consistency (i.e., “feel”)
- Acceptance of product by health care personnel

- Accessibility of product
- Dispenser systems
- Cost per use
- Compatibility with soaps, alcohol-based hand rubs, gloves and lotions

- CDC, MMWR 2002; 51 (No. RR-16): [33]

Suggestion: If using alcohol-based hand rub regularly, wash with plain soap to remove debris.

## HAND HYGIENE ELEMENT #2 | HAND ANTISEPSIS

### HAND ANTISEPSIS INDICATIONS

- Before treating each patient (e.g., before glove placement)
- After treating each patient (e.g., after glove removal)
- Bare hand contact of inanimate objects likely to be contaminated by blood or saliva
- Leaving the dental operator or dental laboratory

- Molinari J, Harte J, Practical Infection Control In Dentistry, 2010: 128

### HAND ANTISEPSIS OPTIONS

#### Antiseptic Wash

- Water and antimicrobial soap (chlorhexidine, iodine and iodophors, chloroxylenol, triclosan)

#### Alcohol-based hand rub (ABHR)

- 60%-95% ethanol or isopropanol
- Drying effect of alcohol can be reduced or eliminated by adding 1% to 3% glycerol or other emollients

- CDC, MMWR 2003; 52 (No. RR-17): [15]

- Goal: Reduce the number of viable microorganisms on hands
- Use either antiseptic handwash or antiseptic hand rub
- CDC, MMWR 2002; 51 (No. RR-16): [3]

## WHY ALCOHOL-BASED HAND RUB?

**GOOD**  
REGULAR SOAP

**BETTER**  
ANTIMICROBIAL SOAP

**BEST**  
ALCOHOL-BASED HAND RUB  
(foam or gel)

- Kills more effectively and more quickly than handwashing with soap and water
- Is less damaging to skin than soap and water, resulting in less dryness and irritation
- Is easy to use: requires less time than handwashing with soap and water
- Bottles/dispensers can be placed at the point of care so they are more accessible
- Have not been shown to cause allergic reactions
- Allows the protective function of the skin to be maintained

- CDC, MMWR 2002; 51 (No. RR-16): [11-19]

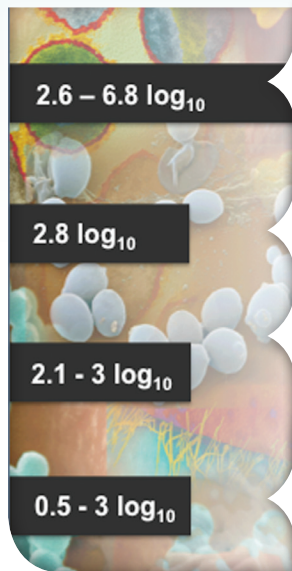


Like soap and water, alcohol dissolves natural skin oils.

**THE DIFFERENCE:** These oils are rubbed back into the hands during the hand rub process rather than washed away with soap and water.

## KILL RATES: COMPARING ANTIMICROBIAL AGENTS

Alcohol has a higher kill rate than other antimicrobial agents.



### STRONGEST KILL RATE\*

Antiseptic hand rub with ethanol, isopropanol and n-propanol (alcohol)

### LOWER KILL RATE THAN ALCOHOL\*

Antiseptic handwash with triclosan (most antimicrobial soaps)

Antiseptic handwash with chlorhexidine gluconate (CHG)

### LOWEST KILL RATE\*

Handwash with non-antimicrobial soap

\* Kampf G, Kramer A. Epidemiologic background of hand hygiene and evaluation of the most important agents for scrubs and rubs. Clin Microbiol Rev. 2004;17:863-893.

## CHOOSING A HAND ANTISEPTIC

Factors to consider:

- Contains skin-conditioning agent
- Skin integrity after repeated use
- Product effectiveness
- Acceptance of product by health care personnel
- Potential irritants/allergens in active ingredients
- Compatibility with lotions used in the dental office
- Scent
- Dispenser/delivery systems
- Cost per use

If hands are not visibly soiled, using an alcohol-based hand rub is adequate.  
- CDC, MMWR 2002; 51 (No. RR-16): [1-45]

## GAPS IN COVERAGE

Areas frequently missed during hand antisepsis:\*

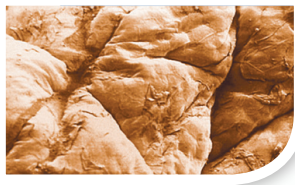
- Fingertips
- Thumbs
- Under the nails
- Between the fingers
- Cuticles

**Key:** Follow proper application technique to optimize hand hygiene (Hand Care Application Guide, IMS-406)

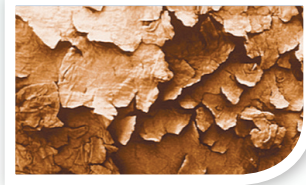
\*Buchrieser O, Neuhold G, Kristl A et al. Flaws in conducting hand disinfection. Hyg Med. 1996;21:12.



## HAND HYGIENE ELEMENT #3 | HAND LOTION



Normal, healthy skin



Cracked, scaly skin

- Primary defense against infection and transmission of pathogens is healthy, unbroken skin
- Hand lotion recommended to ease the dryness resulting from frequent handwashing and to prevent dermatitis

- CDC, MMWR 2003; 52 (No. RR-17): [16]

### RISKS POSED BY SKIN DAMAGE

Cracked and scaly skin provides ideal hiding spots for microorganisms.

Antiseptics cannot reach hidden pathogens.

Hand antisepsis is in danger of becoming ineffective.

Hand lotion minimizes the occurrence of dermatitis associated with hand antisepsis or handwashing.

### HAND LOTION INDICATIONS:

- Beginning and end of work day
- After breaks
- When required or desired

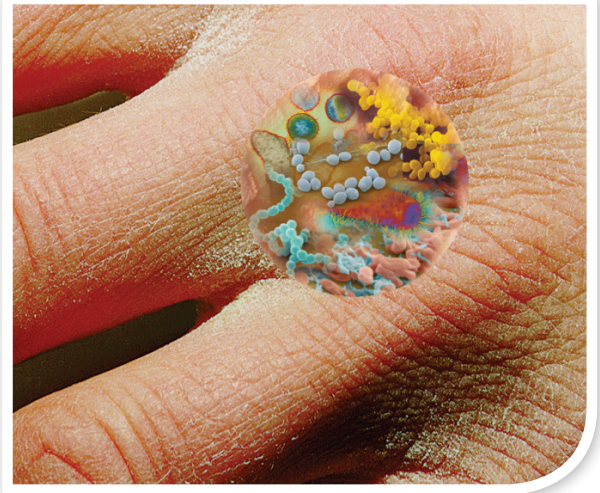
### CHOOSING A HAND LOTION

- You should use only medical approved hand lotions
- Other lotions may:
  - > Make hand hygiene less effective
  - > Cause breakdown of latex gloves
  - > Become contaminated with bacteria if dispensers are refilled
- It is important to consider the interaction between lotions, gloves, dental materials and antimicrobial products (such as Chlorhexidine Gluconate)
- Hand lotions and creams often contain humectants and various fats and oils that can increase skin hydration and replace altered or depleted skin lipids that contribute to the barrier function of normal skin.

- <http://www.cdc.gov/handhygiene/training/interactiveEducation>

- Petroleum-based lotion formulations can weaken latex gloves and increase permeability.
  - > Lotions containing petroleum or other oil emollients should only be used at the end of the work day.

- CDC, MMWR 2003; 52 (No. RR-17): [16]



## HAND HYGIENE FOR ORAL SURGICAL PROCEDURES

### Purpose:

Reduce resident hand skin flora to prevent introduction of organisms into the operative site in the event of a break in gloves.

- CDC, MMWR 2002; 51 (No. RR-16): [17]

### Indications:

Before donning sterile surgeon's gloves for oral surgical procedures including:

- Biopsy
- Periodontal surgery
- Apical surgery
- Implant surgery
- Surgical extraction of teeth

- Molinari J, Harte J, Practical Infection Control In Dentistry, 2010: 131

### HAND HYGIENE RECOMMENDATIONS FOR ORAL SURGICAL PROCEDURES

- Use combination surgical hand antiseptics and sterile surgeon's gloves
- Use antimicrobial soap and water or plain soap and water, followed by an alcohol rub that contains an antimicrobial agent with persistent activity
  - › Persistent activity – Prolonged activity that prevents or inhibits proliferation or survival of microorganisms after application

- Molinari J, Harte J, Practical Infection Control In Dentistry, 2010: 131



### CHOOSING A SURGICAL HAND ANTISEPTIC

Use antimicrobial agents that:

- Reduce microorganisms on intact skin
- Are non-irritating
- Feature broad spectrum of activity
- Are fast-acting
- Feature a persistent antimicrobial effect

- CDC, MMWR 2002; 51 (No. RR-16): [18]

## RECOMMENDATIONS TO INCREASE HAND HYGIENE COMPLIANCE

### Addressing Skin Irritations

- Use lotions when indicated or needed.
- Use ABHR, as it helps the skin regenerate.\* \*\* \*\*\*
- Do not stop using ABHR if you experience a burning sensation
  - Can usually be traced to existing damage on hands, not the use of ABHR

### Strategies to Improve Compliance

- Education
- Make hand hygiene possible, easy, convenient
- Make alcohol-based hand rub available
- Patient education
- Reminders in the workplace
- Change in hand hygiene product
- Promote skin care for workers' hands

- CDC, MMWR 2002; 51 (No. RR-16): [26]

\* Kampf G et al. Emollients in a propanol-based hand rub can significantly decrease irritant contact dermatitis. Contact Dermatitis. 2005;53:344-349.

\*\* Kampf G, Wigger-Alberti W, Wilhelm KP. Do atopics tolerate alcohol-based hand rubs? A prospective, controlled, randomized double-blind clinical trial. Acta Derm Venerol. 2006;86(2):140-143.

\*\*\* Löffler H. How irritant are alcohols? 8th International BODE Hygiene Days. June 8-14, 2007.