

# Hand Hygiene Module

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# Objectives

- 1) Learn the importance of good hand hygiene in daily patient care.
- 2) Understand barriers to good hand hygiene and ways to overcome them.
- 3) Learn about the latest CDC hand hygiene guidelines.
- 4) Incorporate better hand hygiene practices into daily patient care with the goal of reducing the incidence of nosocomial infections.

1) What is the number one means of spread for nosocomial pathogens?

- 1) Central IV catheters.
- 2) Peripheral IV catheters.
- 3) Foley catheters.
- 4) Endotracheal tubes.
- 5) Hands of health care workers.

## 5) Hands of health-care workers.

The most common means of spread for pathogens is the hands. Studies have shown a lowered rate of spread with adherence to good hand hygiene among health-care workers, thereby preventing cross-contamination of both patients and personnel.

## 2) What are the barriers to good hand hygiene?

- 1) Lack of time / understaffing.
- 2) Lack of access to near-by sink.
- 3) Misunderstanding of the importance of hand hygiene.
- 4) Irritation and drying of skin by hand washing.
- 5) All of the above.

5) All of the above.

The biggest barrier to hand hygiene adherence is a lack of understanding on the part of health-care workers of the importance of protecting one's self and the patients we care for in our facilities.

### 3) Which of the following is the true statement?

- 1) Plain soap and water has been shown to be as effective as antimicrobial soap.
- 2) Antimicrobial soap and plain soap and water should routinely be used, unless gloves are worn on a routine basis.
- 3) Compared to soap and water, alcohol-based hand rubs are more drying on the hands because of their 60% isopropanol content.
- 4) Alcohol-based hand rubs can be used after hands are visibly soiled.
- 5) The most effective means of hand hygiene is the alcohol-based hand rub, followed by antimicrobial soap, then plain soap & water.

5) Alcohol-based hand rubs are the most effective means of hand hygiene, followed by antimicrobial soap, and plain soap & water.

When hands are visibly soiled, soap & water must be used instead. Hand hygiene practices should not be abandoned when gloves are used, since small defects in gloves can still transmit pathogens, or hands may become contaminated during glove removal. Both before and after each patient contact, use of alcohol-based hand rubs or soap & water must be used, even if gloves are worn.

Because most alcohol-based hand rubs contain emollients and moisturizers, they tend to be less drying on the hands than soap & water.

4) Studies have shown that adherence to hand hygiene can terminate outbreaks in health care facilities and to reduce overall infection rates, but not reduce transmission of antimicrobial resistant organisms (e.g. MRSA).

1) True

2) False

2) False.

Improved adherence to hand hygiene, either hand washing or use of alcohol-based hand rubs, has been shown to reduce transmission of antimicrobial resistant organisms as well as terminate outbreaks and overall infection rates in health care facilities.

In addition to traditional hand washing with soap & water, the CDC released guidelines recommending the use of alcohol-based hand rubs by health care personnel.

As of January 1, 2004, all JCAHO accredited health care organizations will be surveyed for implementation of the 2004 National Patient Safety Goals, which will include the goal of reducing the risk of health care-acquired infections by complying with the CDC hand hygiene guidelines.

5) Which of the following statements is true?

- 1) The use of gloves does not eliminate the need for hand hygiene.
- 2) The use of hand hygiene can replace the need for gloves.
- 3) Gloves reduce hand contamination by 99%, prevent cross-contamination, and protect patients and health care personnel from infection.

## 1) True

Disposable gloves and hand hygiene are not mutually interchangeable, but are complementary means of protecting health care workers and patients from infection. Gloves should be changed after each patient contact and hand hygiene should be practiced before and after each patient contact.

Gloves reduce hand contamination by 70-80%.

6) Which product kills the greatest number of microorganisms on the skin?

- 1) Soap & hot water.
- 2) Antimicrobial soap and water.
- 3) Alcohol-based hand rubs.

### 3) Alcohol-based hand rubs.

Alcohols have excellent in vitro germicidal activity against gram-positive and gram-negative vegetative bacteria, including multi-drug resistant pathogens (MRSA, VRE, etc.), *Mycobacterium tuberculosis*, and fungi. HSV, HIV, RSV, influenza virus, and vaccinia virus are susceptible in vitro to alcohols. HBV is somewhat less susceptible, but is killed by 60-70% alcohol, as is HCV.

Alcohols have very poor activity against bacterial spores (ex., *clostridium difficile*), protozoan oocysts, and certain nonenveloped (nonlipophilic) viruses.

7) All of the following are known risk factors for poor adherence to hand hygiene practices, except:

- 1) Physician status
- 2) Male health care worker
- 3) ICU personnel
- 4) Weekend work
- 5) High number of opportunities for hand hygiene per hour of patient care.
- 6) Wearing gowns / gloves.

#### 4) Weekend work.

Observational studies have identified several risk factors for poor adherence to recommended hand hygiene practices. Among these, being a physician, a nursing assistant, working during the week, wearing gowns & gloves, ICU work, automated sinks, activities with a high risk of cross-contamination, and a heavy patient load are all associated with worsening hand hygiene compliance.

Unfortunately, studies have shown that the higher the demand for hand hygiene, the lower the adherence. Overall average rates of adherence were 40%, with the highest adherence in pediatric wards and the lowest in ICUs. There was an inverse relationship between the number of opportunities for hand hygiene and the actual performance of the act by the health care worker.

8) Which of the following is false?

- 1) Freshly applied nail polish does not increase the number of bacteria recovered from periungual skin.
- 2) Artificial nails have not been associated with outbreaks of pseudomonas in neonatal ICUs.

## 2) False

Subungual areas of the hands harbor large numbers of bacteria, mostly coagulase-negative staphylococci, gram-negative rods, Corynebacteria, and yeast. *Chipped* nail polish may support the growth of large numbers of organisms on fingernails. Even after careful hand washing or use of surgical scrubs, health care workers often harbor substantial numbers of potential pathogens under the nail space.

Health care workers who wear artificial nails are more likely to harbor gram-negative pathogens on their fingertips, both before and after hand washing.

The CDC recommends that personnel avoid wearing artificial nails and to keep natural nails less than fi inch long if they care for patients at high risk for acquiring infections (eg, ICU).

## 9) Which of the following is true?

- 1) Adherence to the CDC guidelines will not increase time spent practicing good hand hygiene.
- 2) An anticipated increase in allergic contact dermatitis will occur with greater adherence to hand hygiene practices.

1) True.

It takes an average of 60 seconds to find a sink, wash the hands with soap & water, and dry them appropriately. On the other hand, the average time for use of alcohol-based hand rubs is 20 seconds. One study documented that on an 8-hour shift in the ICU, it took a nurse a total of 56 minutes to wash with soap & water based on 7 (60 second) hand washing episodes per hour. Use of alcohol-based hand rubs reduced this down to 18 minutes, based on 7 (20 second) episodes per hour.

So far, the incidence of allergic contact dermatitis due to alcohol-based hand rubs has been uncommon. Surveillance at a large hospital in Switzerland with > 10 years of experience using a commercial alcohol-based hand rub failed to document a single case of allergic reaction.

## 10) Which of the following is true?

- 1) Health care workers (HCW) who wore gloves during patient contact contaminated their hands with an average of 3 CFUs per minute of patient care versus 16 CFUs for those who did not wear gloves.
- 2) Unlike the case in direct patient contact, gloves have not been shown to reduce the risk of contaminating hands with pathogens from environmental surfaces.

1) True.

Wearing gloves will reduce the risk of acquiring pathogens on the hands from both direct patient contact, and from the environment around the patient, such as bed rails, sheets, tables, etc. This translates into a reduced risk of transmitting pathogens to other patients and to HCWs themselves.

Gloves are the only means of reducing heavy contamination of the hands, since hand hygiene practices will not remove all potential pathogens. Gloves must be changed and hands must be decontaminated when moving from a contaminated body site to a clean body site on a single patient, as well as when moving between patients.

The CDC recommends wearing gloves when contact with blood or other potentially infectious materials, mucous membranes, and nonintact skin could occur.

11) Gowning is indicated in patient care in all of the following situations, except:

- 1) When clothing may have contact with the patient.
- 2) When clothing may have contact with environmental surfaces.
- 3) Patients with diarrhea or incontinence.
- 4) Patients with draining wounds contained by a dressing.
- 5) Patient on contact and extended precautions.

4) Patients with draining wounds contained by a dressing.

Gowning is an essential part of contact and extended precautions, and must be practiced for every patient colonized with antimicrobial resistant organisms. In addition, gowning must be part of standard precautions when dealing with potential splashes of blood or body fluids, including draining wounds *not* contained by dressings and ostomies.

# Summary

Good hand hygiene practices remain the single most effective means of reducing the spread of nosocomial infections. This can translate into reduced morbidity & mortality rates, and a reduction in lengths of stay. With today's ever-increasing health-care costs, the net result will be a tremendous cost savings for institutions that adopt these guidelines and immeasurable benefits for the population of patients they serve.

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