

Early in the 19th century, handwashing procedures were introduced into patient care settings. When combined with other hand hygiene measures, the practice has proven to be extremely important over time and has reduced the microorganisms that cause hospital-acquired infections (HAI) and nosocomial infections.

Healthcare professionals' contaminated hands are the main way that pathogens spread. Maintaining good hand hygiene reduces the growth of bacteria, which lowers the chance of infection and lowers overall medical expenses, hospital stays, and eventually, reimbursement.

Hand hygiene is the single most critical practice in reducing the spread of illness in the healthcare setting, according to the Centers for Disease Control and Prevention (CDC). In spite of this data, research has consistently demonstrated that healthcare personnel do not sufficiently understand the value of hygiene, and compliance rates are still poor.

### *2023 Valedictory BioTalk - Introduction to Hand Hygiene*

The CDC states that knowledge of the skin's architecture is essential to comprehending the significance of hand hygiene and its influence on the pathogenic spread of bacteria. The epidermis acts as a barrier to keep out germs, heat, moisture, and other environmental threats. The epidermis, dermis, and hypodermis comprise the skin's structural layers, with the stratum corneum serving as the outermost layer. Microorganisms known as resident flora, which live beneath the stratum corneum and the skin's surface, are colonized by healthy skin.

Microbial antagonistic relationships and competition for resources within the environment are the two primary roles of this flora. These bacteria can cause infections in non-intact skin, the eyes, or sterile bodily cavities, but they are generally not harmful on intact skin

Healthcare personnel frequently come into direct, close contact with patients or come into contact with polluted inanimate objects or ambient surfaces that harbor transient bacteria. The outermost layers of skin are colonized with transient flora. Compared to native plants, it

is more easily eliminated by regular handwashing. The quantity of these organisms varies according to the region of the body. These sporadic organisms are the cause of infections linked to healthcare.

The CDC defines hand hygiene to include washing your hands with soap and water, using antiseptic hand washes, applying foams or gels, or using surgical hand antisepsis. Hand washing should be done before eating, after using the restroom, and anytime hands are obviously dirty or contaminated with blood or other bodily fluids. If there was a chance of coming into contact with *Bacillus anthracis*, Norovirus, or *Clostridium difficile*, hands should be cleaned.

The World Health Organization (WHO) emphasized the “Five Moments for Hand Hygiene,” which are predetermined rules, in 2009. These are:

Before touching or coming into contact with a patient

Before performing a clean or aseptic procedure

After an exposure risk to bodily fluids and glove removal

After contact with a patient and their immediate surroundings

After touching an inanimate object in the patient’s immediate surroundings even if no direct patient contact

When hands are not obviously dirty, alcohol-based hand sanitizers are the suggested product for hand hygiene. Follow the manufacturer’s instructions for applying and distributing alcohol-based products. Usually, 3 to 5 milliliters should be placed in the palm and firmly rubbed to cover all surfaces on both hands. It takes around 20 seconds for all areas to dry fully.

Healthcare personnel who work with patients and in facilities are observed to be washing their hands and using proper hand hygiene. Healthcare workers are adopting this approach more frequently as they work to create a safer atmosphere.



**Rub hands together for  
15 to 20 seconds**

**Rinse with  
running water**

**Dry hands using  
a paper towel**

Pathogens in the subungual areas of artificial nails and nail extensions pose a risk to the spread of microorganisms in the healthcare setting. It is advised that medical professionals avoid using them as a result. Hand hygiene standards include well-groomed nails and adherence to artificial nail regulations specified in facility-specific requirements. According to WHO recommendations, fingernails should not be longer than 0.5 cm. It is not appropriate to use an alcohol-based hand rub on hands that are obviously dirty. In this instance, handwashing with soap and water is advised by the CDC and WHO guidelines.

Healthcare providers who treat immunocompromised high-risk patients need to be extremely cautious when washing their hands since these patients are more likely to get opportunistic infections. While chlorhexidine may be a better option than soap and water for the elimination of transitory gram-positive bacteria, handwashing with soap and water will eradicate almost all transient gram-negative bacteria in just ten seconds.

If there is a chance that you may have come into contact with *Bacillus anthracis*, Norovirus, or *Clostridium difficile*, you must wash your hands. Spores are present in *Clostridium difficile* and *Bacillus anthracis*, and none of the ingredients in antiseptic handwash or hand rub

formulations are consistently sporicidal. In these situations, scrubbing your hands thoroughly with soap will help remove the spores from your skin.

### **Clinical Importance of Hand Hygiene**

Maintaining good hand hygiene is essential for lowering the risk of workplace exposure to infectious diseases, hospital-acquired infections, and the cross-transmission of microorganisms. As hospital-acquired illnesses are associated with higher rates of mortality and morbidity, practicing good hand hygiene is crucial to giving our patients safe, effective, and high-quality care. Hand hygiene compliance is influenced by ergonomics, staffing ratios, and educational initiatives for both patients and healthcare professionals.

The most economical method of preventing the spread of illnesses is for all healthcare personnel to routinely wash their hands. Healthcare professionals have high handwashing compliance rates, whereas the general public does not. At each clinic appointment, the patient should be informed about the advantages of handwashing by the nurse, pharmacist, and doctor.

### **Source**

*Toney-Butler TJ, Gasner A, Carver N. Hand Hygiene. [Updated 2023 Jul 31]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK470254/>*

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