Hand Hygiene

What We Know

› Proper performance of hand hygiene by healthcare workers is probably the most important factor in the prevention of healthcare-associated infection (HAI; formerly called hospital-acquired infection and nosocomial infection) and cross-infection between patients and healthcare personnel(1,2,3,4,6,7,8,10,12,14,15,17)

- Researchers have found that many healthcare workers do not adhere to facility protocols for hand hygiene; HAIs develop in as many as 1 in 10 patients in the United States, and 15–30% of HAIs are thought to be preventable by the proper performance of hand hygiene(3,15)
  - Authors of a systematic review of 96 studies on hospital staff adherence to protocols for hand hygiene found that the overall rate of adherence was 40%. Adherence rates were lower in the intensive care unit (ICU) (30–40%) than in other patient care areas (50–60%), lower among physicians (32%) than nurses (48%), and lower before patient contact (21%) than following contact with patients (47%)(2)
  - Reasons for poor adherence to proper hand hygiene practices include heavy workloads, lack of time, lack of access to resources, and complaints of dry, irritated, and sore skin on the hands(8,12)

› The World Health Organization (WHO) has identified the promotion of hand hygiene practices in health care as a priority measure; as a result of research conducted by the WHO, the “My 5 Moments of Hand Hygiene” concept was developed(16,17)
  - According to “My 5 Moments of Hand Hygiene,” performing hand hygiene using soap and water is a priority on five occasions involving the performance of patient care; these are(16,17)
    - before touching a patient
    - after touching a patient
    - after touching anything in the patient’s immediate environment
    - before performing clean and aseptic procedures
    - after exposure to body fluids
  - To promote the implementation of their recommendations for improvement of hand hygiene practices, WHO developed a multimodal strategy with 5 key components:
    1) ensuring system changes that allow healthcare workers to perform hand hygiene, including access to soap and water and alcohol-based hand rubs at the point of care; 2) training/education of healthcare workers about the importance of hand hygiene and the use of correct procedures; 3) monitoring of hand hygiene practices and infrastructure and provision of feedback; 4) use of visual reminders of the importance of hand hygiene in the workplace; and 5) creation of a safety climate within the institution(16)
  - Researchers recently studied the effects of implementation of the WHO multimodal strategy for improving hand hygiene in 55 departments in 43 hospitals in Costa Rica, Italy, Mali, Pakistan, and Saudi Arabia. They found that the overall compliance rate increased from 51% before the intervention to 67% afterwards(1)
  - Researchers originally found that the use of alcohol-based hand rub solutions was effective in reducing the incidence of HAI and in increasing adherence to protocols for performing hand hygiene(10)
• Alcohol-based hand rubs are solutions that contain one or more types of alcohol, including ethanol, isopropanol, and N-propanol, that are rubbed thoroughly over the hands to kill microorganisms on the skin.\(^\text{(14-17)}\)
  
  – Alcohol-based hand rubs kill microbes by denaturing proteins, inhibiting enzymes, and inducing cytoplasmic membrane lysis.\(^\text{(2,11)}\)

• Alcohol-based hand rubs were found to be more effective in removing an assortment of microorganisms (e.g., bacteria, viruses, fungi, and multidrug-resistant organisms) from the hands of healthcare workers than washing with non-medicated soap and/or other antiseptic agents and water.\(^\text{(13-17)}\)
  
  – Disinfectant hand rub solutions containing 60–90% alcohol have maximal antimicrobial activity and can be used for both hygienic and surgical hand disinfection.\(^\text{(10,14)}\)
  
  – Alcohol-based hand rubs remove more microbes, require less time for use, and irritate the hands less than performing hand hygiene using soap or antiseptic agents and water.\(^\text{(10,14)}\)

- Alcohol-based hand rubs appear to have greater efficacy when dispensed on the hands as a foam rather than as a gel.\(^\text{(11)}\)

- More recently, researchers report that alcohol-based hand rub solutions do not remove dirt and debris found on the hands and they do not kill certain spores of common bacterial pathogens (e.g., Bacillus anthracis, Clostridium difficile).\(^\text{(2,11,14)}\)

• Performing hand hygiene with either non-antimicrobial or antimicrobial soap and water has been found to be more appropriate than the use of alcohol-based hand rubs when the hands are visibly soiled with blood or other body fluids.\(^\text{(2,11,14)}\)

  – Currently, alcohol-based hand rubs are recommended for use as an alternative to soap and water when hands are not visibly soiled and before and after contact with patients, before entering or exiting a patient care area, before and after contact with medical equipment (e.g., wheelchairs) or office equipment (e.g., computer keyboards), and after removing gloves.\(^\text{(14)}\)

• Hands should be thoroughly dried after using an alcohol-based hand rub and before gloving.\(^\text{(4,12)}\)

- The United States Centers for Disease Control and Prevention (CDC) evidence-based guidelines regarding hand hygiene include the following:\(^\text{(4)}\)

  • General technique for performing hand hygiene using soap and water is to wet hands with warm water and apply the amount of product to hands recommended by the manufacturer; rub hands together vigorously for at least 15 seconds, covering all surfaces of the hands and fingers; rinse hands with water and dry thoroughly with a disposable towel; and use the towel to protect the skin when turning off the faucet.\(^\text{(4)}\)

  – The use of warm water instead of hot and mild skin cleansers is recommended to reduce the risk for skin irritation and contact dermatitis.\(^\text{(2,17)}\)

  • Use of antimicrobial or non-antimicrobial soap and water when hands are visibly dirty or soiled with blood, other body fluids, or proteinaceous material and when caring for a patient who has diarrhea or is vomiting.\(^\text{(4)}\)

  – Although researchers confirmed that performing hand hygiene with soap and water was more effective than using alcohol-based hand rub solutions in removing C. difficile spores, they reported that use of soap and water still left a significant number of spores on the healthcare providers’ hands; the solutions that were found to achieve a greater than 10-fold decrease in spore count were a heavy-duty Borox brand name product, an industrial solution designed to remove printer ink, and a peracetic acid/surfactant prototype.\(^\text{(6)}\)

  • Avoid wearing artificial nails or nail extenders when in direct contact with patients, particularly in high risk areas such as the intensive care unit.\(^\text{(4)}\)

- It is widely recognized that improved adherence to protocols for hand hygiene is needed in healthcare organizations worldwide.\(^\text{(1,2,13,16,17)}\)

• Monitoring of hand hygiene in U.S. inpatient facilities is mandated by The Joint Commission (TJC) and is required for hospital reaccreditation.\(^\text{(9,13)}\)

  – After determining that 8 leading hospitals in the U.S. were able to achieve a hand hygiene compliance rate of only 82%, TJC recently amended its infection control standard that called for hand hygiene compliance of > 90%; the standard (IC.01.04.01) now calls for all hospitals to initiate efforts to improve compliance with hand hygiene guidelines.\(^\text{(9,13)}\)

  - The need to improve adherence to hand hygiene guidelines in order to reduce risk of HAIs is also one of TJC’s National Patient Safety Goals (NPSGs) for 2016. NPSG.07.01.01 requires accredited organizations to comply with categories IA, IB, and IC of the current CDC and/or WHO hand hygiene guidelines. The elements of performance (i.e., implementation
criteria) for this NPSG include implementing a hand hygiene program in accordance with the CDC and/or WHO hand hygiene guidelines, setting goals for improving compliance with the guidelines, and improving compliance with the guidelines based on established goals\(^9\)

Education and training interventions to improve adherence to proper hand hygiene practices have generally been found to be ineffective\(^5,8,15\)

- Interventions that have shown promise include those that focus on the individual use of social pressure (e.g., peer pressure) and those that aim to influence organizational culture; positive reinforcement behavioral interventions in combination with education have been shown to have short-term (< 6 months) positive effects\(^5,8,15\)
- Researchers who conducted a study at a children’s hospital involving 9,322 observations over a 5-year period reported an increase of 39.9% to 97.9% in hospital-wide compliance with hand hygiene practices following the implementation of multiple educational and other interventions, including installation of new alcohol-based hand rub dispensers, initiation of routine feedback from healthcare workers, hospital staff education, and adding a goal regarding hand hygiene to employee and executive incentive programs\(^5\)

What We Can Do

- Learn about recommendations for hand hygiene in order to reduce the incidence of HAIs in your facility and increase patient and staff safety; share this information with your colleagues
- Model good hand hygiene techniques to your colleagues and patients; volunteer to assist with healthcare worker training for correct and effective use of alcohol-based hand rub solutions and proper techniques for performing hand hygiene using soap and water
- Collaborate with your facility’s infection prevention and education departments to provide education for clinicians of all specialties regarding strategies for avoiding cross-contamination with microorganisms and other strategies to reduce incidence of HAIs

Note

- Recent review of the literature has found no updated research evidence on this topic since previous publication on January 15, 2016
References


