



Letter to the Editor

Ethics of hand hygiene in a healthcare system



The Centers for Disease Control and Prevention, USA, defines hand hygiene as cleaning your hands by handwashing using antiseptic hand wash, antiseptic hand rub, or surgical hand antiseptics for the purpose of removing soil, dirt, and microorganisms. Cleansing the hands reduces the spread of potentially deadly germs to patients and the risk of colonization or infection caused by germs from the patient to the healthcare provider.¹ According to the World Health Organization, in low- and middle-income countries, the prevalence of healthcare-associated infection varies between 5.7 and 19.1%. Newborns are at a higher risk in low- and middle-income countries, with healthcare-associated infections being responsible for 4–56% of all causes of death in the neonatal period. The rate of healthcare-associated infection in developing countries is almost three times higher than it is in the developed countries, partly due to low standards of sanitation of healthcare workers.²

More than 150 years ago, a Hungarian–German physician, Ignaz Philipp Semmelweis, insisted that doctors performing necropsies wash their hands before delivering babies, thus reducing mortality due to streptococcal puerperal sepsis from 22 to 3%.³ This represented the first evidence indicating that cleansing heavily contaminated hands may reduce healthcare-associated transmission of contagious disease. Today, it is well known that the single most effective method to prevent nosocomial infections is maintaining hand hygiene by handwashing or hand disinfection.⁴ Yet, studies have continually shown that healthcare workers still fail to wash their hands, and the rates among doctors are especially low.⁵ In fact, one unobtrusive study found that doctors self-reported a handwashing rate of 73% after patient interaction, which differed vastly from the actual rate of just 9%.⁶ We all appreciate the fact that hand hygiene reduces the incidence of infection and must act to maintain the established standards.

To understand the objectives of different approaches to hand cleansing, the knowledge on normal bacterial skin flora is essential. In studies, the total bacterial counts on the hands of medical personnel have ranged from 3.9×10^4 to 4.6×10^6 colony-forming units (CFUs).⁷ In 1938, bacteria recovered from the hands were classified into two categories: transient (which colonize superficial layers of the skin) and resident (which are attached to deeper layers of the skin).⁸ Transient flora are more frequently associated with healthcare-associated infections but are also more easily removed by routine handwashing. These types of bacteria are often acquired by healthcare workers during direct contact with patients or

contact with contaminated surfaces.⁷ Although data regarding the types of patient care activities that result in the transmission of bacteria are limited, one study found that nurses can contaminate their hands with 100–1,000 CFUs of *Klebsiella* spp. even during relatively “clean” activities (e.g. lifting a patient; taking a patient's pulse, blood pressure, or oral temperature; or touching a patient's hand, shoulder, or groin).⁹

Research suggests that correct handwashing using either a plain soap or an antimicrobial product effectively removes soil and transient microorganisms (Fig. 1). Hand antisepsis can be effectively accomplished by the use of an alcohol-containing antiseptic hand rub. This technique, however, should only be used when the hands are not soiled with dirt or organic material. In cases where visible contaminants are present on the hands and handwashing facilities are not readily available, detergent-containing towelettes should be used before using antiseptic hand rubs. Surgical hand scrub technique differs throughout the medical community, but all, when carried out properly, remove or destroy transient microorganisms and reduce resident flora.⁵

Some additional rules for hand hygiene that healthcare workers should follow are as follows:⁵

- Cleanse hands before and after patient interaction
- Do not reuse disposable gloves
- Always dry hands with a clean towel after washing them
- Keep nails short enough to be able to clean under them
- Do not wear artificial nails
- Remove rings and bracelets
- Remove chipped nail polish
- Ensure sleeves do not get wet

A healthcare worker's hands are used for clinical examination, assurance, healing, and unknowingly transmitting disease. Studies have shown that an increase in adherence to handwashing protocols leads to significant drops in all nosocomial infection rates, including those of antibiotic-resistant bacteria (e.g. methicillin-resistant staphylococcus aureus).⁴ Proper hand hygiene has a tangible impact on the hospital environment; thus, it is the responsibility of every healthcare worker to follow established protocol. Maintaining hand hygiene is the simplest, most cost-effective way to keep patients healthy. Our goal should be not only to reduce the rate of healthcare-associated infections but also to drop it to zero.



Fig. 1. Handwashing technique with soap and water. (Adapted from WHO guidelines on hand hygiene in healthcare). WHO, World Health Organization.

Conflict of interest

Authors have no conflict of interest.

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