



Washing hands carries little-publicized risks

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From a young age, hand washing has been associated with preventing the spread of infection and illness. While this is almost always true, hand washing has also been linked to a few health problems.

Dermatitis

A recent study by Dr. Eugene B. Kirkland and Dr. Susan Nderost of the Universal Hospitals Case Medical Center linked too much hand washing with soap to hand dermatitis, a skin condition which results in scaling, redness, itching, and burning due to exposure to allergens or irritants.

Participants, who were all healthcare workers and frequent hand washers, were tested for allergic reactions to chemicals commonly used in soaps over the course of six months.

Fifty-eight percent of the participants developed dermatitis on their hands, which was associated with soap use. Alcohol-based hand cleaners had no effect on hand dermatitis. All of the severe dermatitis cases occurred between the months of November and April, and those who washed their hands more than 10 times a day were the most likely to develop the skin condition.

Nederost noted, "Steps to take to minimize contact dermatitis are to avoid hand washing with soap and [to avoid] washing when feasible, use alcohol-based hand sanitizers more often and use cream-based lotions."

Many hospitals have begun providing hand lotion near sinks for healthcare workers to use directly after washing their hands.

Lowered antibacterial activity

According to a study conducted by Dr. Elaine Larson of Columbia University School of Nursing, hand washing with soap alters a hand's pH and lipid levels for days, leading to skin damage. Although dry hands do not have statistically significant differences in

microbial counts, they are more likely to harbor pathogens. Larson's study found that dry nurses' hands were twice as likely to be colonized by bacteria such as *Staphylococcus hominis*, which has been known to cause infection in patients with compromised immune systems.

Despite the fact that many bacteria cover our skin, most are harmless unless they cross the protective barrier created by the skin. If skin becomes cracked or begins to bleed because it is too dry, this increases the risk of bacteria crossing into the body and causing an infection. These risks are of course higher for those who wash or scrub their hands a great deal, such as surgeons and surgical nurses.

On an interesting note, women's skin was just found in a study by the University of Colorado at Boulder to harbor a larger variety of bacteria than men's skin. The average human hand holds 150 bacteria species, while the study found over 4,700 species of bacteria on their 102 subjects' hands.

Though the researchers do not know why this is true, they hypothesize that it might be due to men's more acidic skin or differences in sweat production, lotion use, skin thickness, or hormones. The paper also noted that hand washing with regular soap only removes a small portion of the hand's bacteria.

Antibacterial resistance

The increasing popularity of antibacterial and antimicrobial soaps has also increased the prevalence of antibiotic-resistant bacteria. Though washing with soap will eliminate most of the hand's bacteria colonies, some pathogens with a genetic pre-disposition to resist the soap's antibiotic properties will survive. When these resistant bacteria divide, they pass their resistance on, creating entire colonies of antibiotic-resistant bacteria.

Perhaps the most commonly known antibiotic-resistant bacteria is MRSA, methicillin-resistant *Staphylococcus aureus*. Originally quite rare, MRSA is now common not only in hospitals, but in the community at large, as well. Stronger methods of killing *S. aureus*, vancomycin and linezolid, were developed, but as of 2002 and 2003, VRSA and LRSA have respectively been detected in the United States.

Besides continually developing new drugs, antibiotic resistance can be slowed by carefully limiting use of antibacterial or antimicrobial soaps and cleaners. The scientific community still debates the relative merits of using antibacterial soaps. However, hand washing still remains the best way to prevent diseases.

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