

Healthy Steps for Handwashing

During the 19th century, women in childbirth were dying at alarming rates in Europe and the United States. Up to 25% of women who delivered their babies in hospitals died from childbed fever (puerperal sepsis), later found to be caused by *Streptococcus pyogenes* bacteria.

As early as 1843, Dr. Oliver Wendell Holmes advocated handwashing to prevent childbed fever. Holmes was horrified by the prevalence in American hospitals of the fever, which he believed to be an infectious disease passed to pregnant women by the hands of doctors. He recommended that a physician finding two cases of the disease in his practice within a short time should remove himself from obstetrical duty for a month. Holmes's ideas were greeted with disdain by many physicians of his time.

In the late 1840's, Dr. Ignaz Semmelweis was an assistant in the maternity wards of a Vienna hospital. There he observed that the mortality rate in a delivery room staffed by medical students was up to three times higher than in a second delivery room staffed by midwives. In fact, women were terrified of the room staffed by the medical students. Semmelweis observed that the students were coming straight from their lessons in the autopsy room to the delivery room. He postulated that the students might be carrying the infection from their dissections to birthing mothers. He ordered doctors and medical students to wash their hands with a chlorinated solution before examining women in labor. The mortality rate in his maternity wards eventually dropped to less than one percent.

Despite the remarkable results, Semmelweis's colleagues greeted his findings with hostility. He eventually resigned his position. Later, he had similar dramatic results with handwashing in another maternity clinic, but to no avail. Ironically Semmelweis died in 1865 of puerperal sepsis, with his views still largely ridiculed.

Perhaps handwashing seemed odd at the time. The lack of indoor plumbing made it difficult to get water. In order to make the water comfortably warm, it would have to be heated over a fire. Besides, contact with water was associated with diseases such as malaria and typhoid fever. It is difficult perhaps in our current day to imagine physicians being so resistant to what we now consider common practice. But the resistance continued.

In the 1870's in France, one hospital was called the House of Crime because of the alarming number of new mothers dying of childbed fever within its confines. In 1879, at a seminar at the Academy of Medicine in Paris, a noted speaker stood at the podium and cast doubt on the spread of disease through the hands. An outraged member of the audience felt compelled to protest. He shouted at the speaker: "The thing that kills women with [childbirth fever]...is you doctors that carry deadly microbes from sick women to healthy ones." That man was Louis Pasteur. Pasteur, of course, contributed to the germ theory of disease (whereas the founder to this theory was Robert Koch). He was a tireless advocate of hygiene, but his efforts too were initially met with skepticism. Skepticism, however, was not the only problem facing advocates of hygiene.

In 1910, Josephine Baker, M.D. started a program to teach hygiene to child care providers in New York. Thirty physicians sent a petition to the Mayor protesting that "it was ruining medical practice by...keeping babies well."

Despite its rocky beginnings, handwashing has become a part of our culture. Handwashing and other hygienic practices are taught at every level of school, advocated in the work place, and emphasized during medical training. According to the United States Centers of Disease Control and Prevention (CDC), "**Handwashing is the single most important means of preventing the spread of infection.**"

Yet, recent studies and reports indicate that lack of or improper handwashing still contributes significantly to disease transmission. While we are all potentially at risk of contracting hand-transmitted illnesses, one-third of our population is especially vulnerable, including pregnant women, children, old people, and those with weakened immune systems.

Nosocomial infections are infections acquired by patients while they are in the hospital, unrelated to the condition for which the patients were hospitalized. The CDC estimates that from 5% to 15% of all hospital patients acquire some type of nosocomial infection. Hospital personnel can also become infected. In 1993, 11 health-care workers became ill with hepatitis A because they didn't wash their hands after treating one of two patients with hepatitis A.

Hospitals are not the only places in which handwashing is important. A recent study in *Infectious Diseases in Children* states: "In spite of all the studies about the benefits of handwashing, improper or infrequent handwashing continues to be a major factor in the spread of disease in day-care." Each year, children in daycare centers, elderly in convalescent homes, and contact lens wearers acquire infections transported on hands.

Cleanliness in the food-service industry has long been of concern with regard to transmission of foodborne illness. During the last nine years, the popularity of iguanas and other reptiles has resulted in a startling increase in the incidence of *salmonella* infections.

Salmonella sp. is a rod-shaped bacteria with over a thousand strains capable of causing infection (salmonellosis). *Salmonella* is easily transferred among humans and animals by both direct and indirect contact. The great increase in mass production of certain food products, including poultry and eggs, has resulted in a large increase in salmonella infections. In uncooked, room-temperature food, *Salmonella* multiplies at an alarming rate. In addition to other strict hygiene practices when handling uncooked poultry and raw eggs, scrupulous handwashing is necessary, using hot and soapy water.

In the 1970s, many of us may remember having baby turtles. Researchers discovered a disturbing problem, however. A quarter million children contracted salmonellosis from their tiny pets. Legislation was quickly enacted regulating the sale of pet turtles. In recent years, the increasing popularity of reptile pets, particularly green iguanas, has brought the *Salmonella* issue back in the news.

The CDC has reported an alarming number of cases of unusual strains of *Salmonella* causing infections in both adults and children. These strains seem to be associated with reptiles. The infections have been contracted by both direct and indirect contact. Once again, pet owners are being cautioned to take adequate measures when handling their pets, including proper handwashing.

The lack of handwashing is surprising. We have hot running water and the benefits of many antimicrobial soaps to prevent infections. In the food-service industry, studies indicate that inadequate handwashing and cross-contamination is responsible for as much as 40% of foodborne illnesses, including *Salmonella*. It is estimated that there are over 80 million cases of food poisoning in the United States each year, resulting in greatly increased health care costs, loss of job productivity, and as many as 10,000 deaths per year. About 20,000 people die from nosocomial infections each year, due primarily to the lack of infection control programs. \$500 million would be saved if just 17% of the nosocomial infections were prevented. This money could be used for such things as cancer or AIDS research. What a simple act, handwashing, with such remarkable benefits if it were to be practiced properly.

Wirthlin Worldwide, an international research firm, conducted a Handwashing Observational and Telephone Survey for the Bayer Corporation Pharmaceutical Division, in association with the American Society for Microbiology. Among their findings:

- People do not wash their hands as often as they think they do. Wirthlin's telephone survey found that 94% of respondents (1004 adults) claimed they always wash up after using the restroom. The observational survey viewed 6333 adults in public restrooms in New York, Chicago, Atlanta, New Orleans and San Francisco (3236 males and 3097 females) and found that only 68%, in fact, did so.
- Women washed their hands more often than men (74% versus 61%).
- The telephone survey found that people are most likely to say they wash their hands after changing a diaper (78%) and before handling or eating food (81%). Questioned about other activities, far fewer said they washed their hands after petting an animal (48%), coughing or sneezing (33%), or handling money (22%).

The most important thing that you can do to keep from getting sick is to wash your hands.

By frequently washing your hands, you wash away germs that you have picked up from other people, or from contaminated surfaces, or from animals and animal waste.

What happens if you do not wash your hands frequently?

You pick up germs from other sources and then you infect yourself when you:

- Touch your eyes
- Or your nose
- Or your mouth.

One of the most common ways people catch colds is by rubbing their nose or their eyes after their hands have been contaminated with the cold virus.

You can also spread germs directly to others or onto surfaces that other people touch. And before you know it, everybody around you is getting sick.

The important thing to remember is that, in addition to colds, some pretty serious diseases -- like hepatitis A, meningitis, and infectious diarrhea -- can easily be prevented if people make a habit of washing their hands.

When should you wash your hands?

You should wash your hands often. Probably more often than you do now because you can't see germs with the naked eye or smell them, so you do not really know where they are hiding.

It is especially important to wash your hands

- Before, during, and after you prepare food
- Before you eat, and after you use the bathroom
- After handling animals or animal waste
- When your hands are dirty, and
- More frequently when someone in your home is sick.

CDC cites five common household scenarios in which disease-causing germs can be transmitted by contaminated hands.

1. **Hands to food:** germs are transmitted from unclean hands to food, usually by an infected food preparer who didn't handwash after using the toilet. The germs are then passed to those who eat the food.
2. **Infected infant to hands to other children:** during diaper changing, germs are passed from an infant with diarrhea to the hands of a parent; if the parent doesn't immediately wash his or her hands before handling another child, the germs that cause diarrhea are passed to the second child.
3. **Food to hands to food:** germs are transmitted from raw, uncooked foods, such as chicken, to hands; the germs are then transferred to other foods, such as salad. Cooking the raw food kills the initial germs, but the salad remains contaminated.
4. **Nose, mouth, or eyes to hands to others:** germs that cause colds, eye infections, and other illnesses can spread to the hands by sneezing, coughing, or rubbing the eyes and then can be transferred to other family members or friends.
5. **Food to hands to infants:** germs from uncooked foods are transferred to hands and then to infants. If a parent handling raw chicken, for example, doesn't wash his or her hands before tending to an infant, they could transfer germs such as salmonella from the food to the infant.

Handwashing can prevent the transfer of germs in all five of these scenarios. CDC recommends vigorous scrubbing with warm, soapy water for at least 15 seconds.

What is good hand washing technique?

There is more to hand washing than you think! By rubbing your hands vigorously with soapy water, you pull the dirt and the oily soils free from your skin. The soap lather suspends both the dirt and germs trapped inside and are then quickly washed away.

Follow these four simple steps to keeping hands clean:

1. Wet your hands with warm running water.

2. Add soap, then rub your hands together, making a soapy lather. Do this away from the running water for at least 15 seconds, being careful not to wash the lather away. Wash the front and back of your hands, as well as between your fingers and under your nails.
3. Rinse your hands well under warm running water. Let the water run back into the sink, not down to your elbows.
4. Dry hands thoroughly with a clean towel. Then turn off the water with a clean paper towel and dispose in a proper receptacle.

What type of soap should be used?

Any type of soap may be used. However, bar soap should be kept in a self draining holder that is cleaned thoroughly before new bars are put out and liquid soap containers should be used until empty and cleaned before refilling.

To prevent chapping use a mild soap with warm water; pat rather than rub hands dry; and apply lotion liberally and frequently.

What are some mistakes I should avoid regarding hand washing?

- DON'T use a single damp cloth to wash a group of children's hands.
- DON'T use a standing basin of water to rinse hands.
- DON'T use a common hand towel. Always use disposable towels.
- DON'T use sponges or non-disposable cleaning cloths unless you launder them on a regular basis, adding chlorine bleach to the wash water. Remember that germs thrive on moist surfaces!

A word or two about hand sanitizers and antibacterial soap.

Typically, people carry between 10,000 and 10 million bacteria on each hand. We all know the importance of good hand washing in reducing harmful microorganisms on the skin, but what about those times when there is no access to hand washing facilities or not enough time to wash thoroughly? Can a hand sanitizer (alcohol gel) serve as a suitable alternative to hand washing?

Research has shown that hand sanitizers can be as effective as hand washing only in certain situations. The type of soil which may be present on hands can significantly alter their effectiveness. Because dirt, food or anything else on your hands can make the alcohol less effective, it is important to first wash hands with soap and water.

Now let's throw antimicrobial soaps into the mix. Antimicrobial soaps contain an antiseptic agent to help lower the number of microbial flora. A key factor in its effectiveness is that it must be left on the skin long enough to work, as in a good 30-45 second scrub. Also, there is concern that use of antimicrobial soaps may lead to bacterial resistance.

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