The Truth About Germs
Fact Sheet

Micro-organisms play an important role in all our lives and many are so small they can only be seen under a microscope. Many micro-organisms are helpful to us whilst others can be harmful; micro-organisms that harm humans tend to be referred to as *germs*. These germs can be a bacteria, fungi and virus.

Germs mainly enter the home on people, food, in contaminated water or via pets and pests. Once inside the home they can be transferred from person to person or from the source to a person by direct contact, or through indirect contact via a surface and back again. This latter process is often called cross-contamination.

Cross-contamination is one of the greatest causes of illness and disease in the world, where a greater focus on the practice of improved and targeted hygiene measures in the home could lead to a reduction in infectious diseases on a global scale. Improved home hygiene strategies include:

- The need for home hygiene to receive the same scientific approach generally applied to hospitals or food manufacturing
- The recognition that good hygiene is not about trying to completely rid a home of germs, but about effectively implementing good hygiene measures or practices and using them in the right place at the right time
- The distinction in people's minds about the difference between removing dirt and hygienic cleaning

Hand washing

Why is hand washing so important?

The hands are one of the greatest ways cross-contamination and cross-infection can occur in the home. Hand washing is therefore the single most important thing you can do to help reduce the spread of infections. Regularly washing your hands properly with antibacterial soap and warm water can help protect you, your family, and others against the risk of infection. If antibacterial soap and warm water are not available, an alcohol-based hand sanitizer should be used.

Supporting evidence

- Diarrhoeal diseases are amongst the top three killers of children in the world today. The main barriers to the transmission of enteric pathogens are safe stool disposal and adequate hand washing. An analysis of several studies in developing countries showed that effective hand washing practices reduce the risk of diarrhoeal disease by 43% (28-54%)[1]
- Studies show that good hand washing practices reduce the transmission of diarrhoea and colds, and targeted disinfection at critical sites reduces the spread of infection in the home[2]
- According to research from 17 studies the simple act of hand washing reduces the risk of getting a stomach bug by as much as 47%[3]
- Hand washing can reduce the risk of respiratory infections in developing nations by 16%[4]
- The use of an anti-microbial soap reduces the number of bacteria on the hands even after a 15 second wash compared to a non-antimicrobial soap, and the improvement is even greater after a 30 second wash. Increasing the volume of an anti-microbial soap resulted in a greater reduction of bacteria than increased volumes of non-antimicrobial soap[5]

Surfaces

Why is surface cleaning so important?

Pathogenic micro-organisms and fungal spores entering the home can survive on surfaces for significant periods of time and can be transferred to the hands when touched. Germs from hands can then be transferred to other surfaces and other people, leading to infection. To break this chain of infection, household surfaces should be cleaned thoroughly with an antibacterial cleanser or disinfectant on a regular basis, reducing the risk of cross-contamination and lowering the risk of illness.

Supporting evidence

- Commonly touched surfaces are likely to be contaminated when a person with a rhinovirus infection is at home. Detectable, infectious rhinovirus on a contaminated site can be transferred to fingertips for at least 24 hours[6]
- Adults with colds commonly contaminate environmental surfaces with rhinovirus (rhinoviruses are responsible for approximately 50% of common colds in both adults and children). One study has shown that 35% of environmental sites in a hotel room become contaminated with rhinovirus when a person staying in the room has a rhinovirus cold. While person to person transfer of the rhinovirus by hand contact is most common, surface to hand transfer is also an important route, highlighting the importance of targeted surface disinfection[7]
- MRSA is present at hand-contact surfaces in many US homes. In a study MRSA was isolated from 9 out of 35 (26%) homes and *Staphylococcus aureus* was found in 34 out of 35 homes. Homes with a cat are significantly more likely to have sites contaminated with MRSA[8]

- In one study, an alcohol-based disinfectant spray was shown to be 100% effective in preventing the transmission of rotavirus from a hard surface to human volunteers[9]

Food hygiene

Why is food hygiene so important?

The micro-organisms that cause food-borne illness can be spread directly onto chopping boards, utensils, work tops and other foods from raw meat and vegetables during food preparation. These micro-organisms can then spread to other surfaces around the home via your hands. Once one person is infected with food-borne micro-organisms, it's highly likely that they will pass this onto others in your home and community, particularly if hygiene practice is poor. In order to prevent cross-contamination, surfaces and utensils that are used to make and prepare raw food, particularly poultry and meat, should be thoroughly cleaned with an antibacterial cleanser or disinfectant after each use.

Supporting evidence for the importance of food hygiene

- In 2003 the World Health Organization reported that approximately 40% of reported food-borne outbreaks in the WHO European Region over the past decade were caused by food consumed in private homes[10]
- In a worldwide home hygiene study by the Hygiene Council, 19% of kitchen surfaces were found to be contaminated with *E. coli*. This contamination could have come from raw meat which highlights the importance of handling food carefully and thoroughly cleaning potentially contaminated surfaces in the kitchen[11]
- Inadequate heating of food accounts for 11% of infectious outbreaks, inappropriate storage for up to 50%, while poor hygiene is responsible for up to 28% of outbreaks and surface contamination for 11%[12]
- Studies suggest that as much as 50-80% of *Salmonella* and *Campylobacter* infections occur within the home[12]
- Rinsing, as part of the cleaning process is a critical step in achieving hygiene in the kitchen. However, to achieve completely hygienic surfaces, the use of an antibacterial cleanser or disinfectant is be necessary[12]

Laundry

Why is laundry hygiene important?

Laundry hygiene is important as microbial and fungal transfer can occur between infected and non-infected clothing. Low temperature washing may not destroy all the germs and fungal spores. As a general rule of thumb, the lower the washing temperature, water volume and detergent level, the greater the risk of infection. Clothes, linen, towels and other fabrics should be laundered at a high temperature

(above 60^{o}C) in order to prevent cross-contamination and illness. Many germs such as *salmonella*, Hepatitis A, and rotavirus can even survive drying so it is important that care is taken when drying clothes. As wet laundry can be a potential breeding ground for mould, clothes should be dried outside or in an 'outdoor vented' clothes dryer in order to prevent any increase in humidity in the home and prevent mould growth if possible.

Supporting evidence for the importance of laundry hygiene

- Research studies have shown that organisms such as and *Staphylococcus aureus, E. coli* and *Pseudomonas aeruginosa* are present in home laundry and that 44% of washing machines contain bacteria like *E. coli* [13,14]
- One study found that a significant numbers of enteric viruses were found to survive washing and drying conditions commonly practiced in households. The addition of sodium hypochlorite with detergent significantly reduced the number of viruses. Treatment with bleach alone reliably caused reductions of greater than 99.99%[Error! Bookmark not defined.]

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