SA3. Cleaning and Disinfecting High-Touch Surfaces

High-touch surfaces are surfaces that are handled frequently throughout the day by numerous people. These surfaces include doorknobs, light switches, phones, sink faucets, and toys. High-touch surfaces can become contaminated by direct contact with bodily fluids or through indirect contact with other contaminated objects, such as inadequately cleaned rags and sponges or improperly washed hands. Pathogens can stay on surfaces if they are not properly cleaned and disinfected. For example, hepatitis A virus and rotavirus can survive up to one month on hard, non-porous surfaces, while norovirus can survive up to 56 days on the same types of surfaces. High-touch surfaces have been shown to play a role in the transmission of pathogens both directly by surface-to-mouth contact and indirectly by contamination of hands and subsequent hand-to-mouth contact.

A 2004 study by Barker et al. showed that contaminated fingers could transfer norovirus to as many as seven clean surfaces touched sequentially. Thus, properly cleaning high-touch surfaces daily is important to limit the spread of pathogens. Cleaning and maintenance prevents the build-up of soil, dust, or other foreign materials that can carry pathogens and support their growth. If cleaning is not properly performed, there is a risk of spreading pathogens instead of reducing them. Cleaning is removal of debris and involves two steps: (1) washing with a detergent and (2) rinsing with warm potable water.

Water and detergent alone may not be enough to kill all the microorganisms present, so the use of a disinfectant is also necessary. The previously referenced study by Barker et al. showed that when detergent-based cleaning did not sufficiently kill norovirus, the wiping cloth used could transfer the virus to a secondary surface. Cleaning with a detergent alone failed to decontaminate the tested surfaces in all but one case, even with a second wiping step. However, when the surface was treated with a disinfecting solution containing 5000 ppm available chlorine for 1 minute, norovirus could only be recovered from one surface.

When decontaminating surfaces, it is important to understand that there are differences between disinfectants and sanitizers. Both sanitizers and disinfectants are products regulated by the U.S. Environmental Protection Agency (EPA). However, there are some differences in the products. Disinfectants are used on hard inanimate surfaces and objects to destroy or irreversibly inactivate infectious fungi, bacteria, and viruses that are listed on the label. On the other hand, sanitizers are used to reduce, but not necessarily eliminate, bacteria and fungi from an inanimate surface to levels considered safe as determined by public health codes and regulations. Generally, sanitizers are used on food-contact surfaces and disinfectants on all other hard surfaces. Fabric can only be sanitized. Also, disinfectants must be able to destroy all microorganisms listed on their label in 10 minutes, while sanitizers must reduce the numbers of bacteria by at least 99.9% in 30 seconds. For high touch surfaces, it is important to use a disinfectant rather than a sanitizer.
PRACTICES

There are three levels of cleaning and sanitizing/disinfecting surfaces. In increasing rigor, they are routine cleaning, vomit/fecal episode cleaning, and outbreak cleaning. This section covers routine cleaning. Additional measures are required when cleaning after a vomit or fecal episode and during an outbreak.

Clean and disinfect high-touch surfaces every day, even if they are not visibly dirty. If they become visibly dirty, clean the surfaces immediately.

Cleaning

- Wash frequently touched surfaces with a clean, reusable cloth or a disposable towel dipped in detergent and warm water.
- Scrub vigorously to remove dirt and soil. Use a brush if the item is not smooth or has hard to reach corners.
- Rinse surfaces with warm to hot water to remove cleaning products and debris.
- Disposable towels are preferred for cleaning. If using clean rags, launder in hot water between cleaning uses.

Disinfection

- Follow the instructions on the label of the disinfecting solution.

*Do not mix disinfectants and cleaners unless the label indicates that it is safe to do so. The most common inappropriate mixture of cleaning agents is bleach with an acid or ammonia.*

- Prepare a disinfecting solution daily or as needed.
- Using a clean reusable cloth or a disposable towel, apply enough disinfecting solution to cover the surfaces thoroughly.
- Let the solution stand for the contact time given on the label. Make sure there is enough disinfecting solution on the surface that it does not dry up before the recommended contact time.

*Replace the disinfecting solution and cleaning cloths on a regular basis, such as when the water is visibly dirty, in order to reduce the contamination of other surfaces with dirty cleaning products.*

Cleaning Electronic Items

- Use disinfecting wipes.
- Wipe the entire surface, paying special attention to frequently touched surfaces, such as keyboards and buttons.
- It may be necessary to use more than one wipe to keep the surface wet for the given contact time.
Cleaning Toys

- Toys should be cleaned and disinfected daily.
- Any plastic or rubber toy that enters a child's mouth must be disinfected with 200 ppm bleach and air-dried, or run through dishwasher at a high temperature (170°F or 76.67°C).
- For toys that can be immersed, pour the disinfecting solution in a large basin or sink. Remove all visible debris from the surface of the toys, and allow the toys to soak for one to five minutes to achieve disinfection. Remove toys from the disinfecting solution and rinse with tap water.
- For toys that cannot be immersed in disinfecting solution, clean all surfaces of the toy ensuring that clean cloths and solutions do not become contaminated (DO NOT DOUBLE DIP). Allow surfaces to remain wet for 1 to 5 minutes to achieve disinfection.
- Fabric toys can only be sanitized.
- For soft toys, pre-wash to remove visible debris. Then wash with detergent/bleach. Discard if necessary.
  - Machine-wash the soft toys in hot water (at least 140-160°F or 60-71.1°C) using bleach if fabrics are white.
  - Dry toys in a dryer on the high heat setting.

Diaper-Changing Stations

- Surfaces should have a plastic covered pad without cracks.
- Use a disposable material to cover the pad on changing tables. Discard after each diaper change.
- Clean the surface after every diaper change by washing with detergent and water and rinsing with clean water.
- Apply disinfecting solutions, following recommended contact time.
- Let the station air dry before the next use.

Recommended Disinfectants

See U.S. EPA list of registered products effective against norovirus.

Follow product labels for use and dilution:
- Ethyl or isopropyl alcohol (70-90%)
- Sodium hypochlorite (5.25-6.15% household bleach diluted 1:500 provides >100 ppm available chlorine)
- Phenolic germicidal detergent solution
- Iodophor germicidal detergent solution

RECENT OUTBREAKS

A norovirus outbreak at an elementary school in 2007 was linked to computer equipment that had not been cleaned (i.e., keyboards).
REFERENCES


AUTHORS: Cortney Miller, M.S., Angela Fraser, Ph.D., Roman Sturgis, M.F.A. (editor) Department of Food, Nutrition, and Packaging Sciences, Clemson University, Clemson, SC  29634

Published: June 25, 2012

Revised: October 9, 2012

This material is based upon work supported by the Cooperative State Research, Education and Extension Service, U.S. Department of Agriculture, under Agreement No. 2008-51110-04335, the National Integrated Food Safety Initiative of the Cooperative State Research, Education, and Extension Competitive Grants Program. Any opinions, findings, conclusions or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the U.S. Department of Agriculture.

Questions or comments about this material should be directed to the Department of Food, Nutrition, and Packaging Sciences, Clemson University, Clemson, SC 29634.

A complete set of child-care training fact sheets can be downloaded from www.fightbac.org.