CLEANING VS. DISINFECTING
What to do to keep yourself safe

When we live around a lot of people, we are likely to come in contact with different microscopic organisms called pathogens. In order to protect ourselves from infections, we must properly clean, sanitize, and disinfect surfaces that people come in contact with.

What are the differences and why is each important?

CLEANING
Removes the particles, dust, or dirt from the surface. This could mean wiping off a table top, scraping dirt off of a table, or mopping the floor. Cleaning is good for surfaces that don't often get touched by the hands, but is not adequate for places that lots of people come in contact with.

Water or detergent solution are usually used. Without a proper solution or adequate rinsing, cleaning may just spread pathogens around the surface or can lead to cross contamination.

SANITIZING
Treats a clean surface with a stronger solution to reduce the number of germs to a low level. This gets rid of enough pathogens from the surface that it reduces the likelihood that someone will come in contact with germs on the surface.

A quick-drying solution that rinses away pathogens as it dries. These are only effective if allowed to air dry, usually for at least 30 seconds. Not a guarantee that all pathogens are killed.

DISINFECTING
Destroys remaining pathogens by killing or removing whatever is left on the surface after sanitizing.

A stronger solution designed to kill pathogens instead of getting rid of them. Most solutions require 10 or more minutes to ensure that all pathogens are killed.

STERILIZING
Ensures that all pathogens and body fluids are completely removed from the surface. Usually takes place in a machine like an autoclave, a dishwasher, or a washing machine. This process is designed for things that come into contact with other people's body fluids and are intended for re-use.

A method of killing all pathogens using high heat for an extended period of time, usually over an hour.

Pathogens are microscopic organisms or microbes that are invisible to the naked eye. There are lots of different types and many can make you sick if they get into your body.

Bacteria are found everywhere. There are good and bad bacteria, but certain types can cause illness. Some examples are E. Coli or antibiotic-resistant Staph (MRSA).

Viruses are found in lots of different places, but can only replicate once they get into the human body. Many can live on surfaces for a long time. Some examples are HIV, hepatitis C, or the flu.

Parasites attach to a host and feed off of them by taking their nutrients. Parasites can carry diseases on them and transmit them to the host. Examples would be lice or scabies.

Fungi are spores that invade tissues. They are attracted to moist or warm environments and a fungus can infect the skin or be breathed into the lungs. Some examples are athletes foot or yeast infections.

Each pathogen is unique and has a specific way that it likes to get into the body. There are different methods for reducing risk of infection with each type of pathogen.

For some, it is enough to practice good hygiene like regular bathing and proper hand washing. Others travel in specific body fluids like blood or feces and require extra steps to get rid of.

It can be difficult to kill certain types of blood borne pathogens, like HIV or hepatitis C virus, so even with good hygiene practices, it is still a good idea to get tested if you may have been exposed to someone else’s blood if you don’t know their status.

Different body fluids require certain cleansing solutions to make sure that pathogens are killed. A cleansing solution is a liquid mixture of chemicals designed to kill viral, bacterial, fungal, or parasitic pathogens.
There are lots of different types of cleansing solutions. Many make big claims about killing ‘germs,’ but what does that really mean? How effective are these chemicals, and what should they be used for?

**Alcohol**
Isopropyl or rubbing alcohol can be a good disinfectant for killing pathogens by destroying them through the drying process. However, alcohol solutions must be made with 100% isopropyl alcohol solution that is diluted with water to about 70%. Alcohol is good at killing the flu, HIV, and bacteria, but it is not effective in killing hepatitis C virus.

**Bleach**
Bleach is good at killing certain pathogens like the flu or bacteria when used properly. A bleach solution should contain 1 teaspoon of pure bleach to 1 gallon of warm water. The solution should be changed often and a clean, disposable wash cloth should always be used. Household bleach should be stored in a dark place and expires after 1 year. Bleach is effective at killing HIV, but is not 100% effective at killing hepatitis C virus.

**Hepastat**
Hepastat is one of the only disinfectants that is designed to kill nearly all pathogens, including bacteria, fungus, HIV, and hepatitis C virus. It is only effective if left to sit on a surface for 10 minutes before being wiped up with a clean wash cloth. Hepastat is designed to be sprayed onto surfaces and soaking materials in hepastat is not guaranteed to have the same effectiveness.

**Hydrogen Peroxide**
Hydrogen peroxide is a chemical compound made up of hydrogen ions and water. It oxidizes substances to remove them from a surface. It is only mildly effective at killing bacteria and fungus, and can be corrosive to the skin and eyes.

**Ammonia**
Ammonia is a sanitizer solution that is good for cleaning hard surfaces. Ammonia solutions should contain 1 cup of ammonia per 1 gallon of water. Though it is effective at killing certain fungi and bacteria, it is not recognized as a disinfectant for certain harmful bacteria, HIV, or hepatitis C virus.

**Barbicide**
Barbicide is another disinfectant that is approved to kill nearly all pathogens including bacteria, fungus, HIV, and hepatitis C virus. Unlike Hepastat, Barbicide is designed to soak materials in rather than be sprayed onto surfaces. Tools should soak in the liquid for at least 10 minutes and the solution must be switched out every 24 hours.

**Vinegar**
Vinegar is great at cleaning, however it is not approved to sanitize or disinfect surfaces from viruses or bacteria. To make a vinegar solution, combine equal parts vinegar and water. Vinegar is acidic and can degrade certain types of surfaces, so make sure to check before using vinegar to clean certain types of surfaces.

**Water**
Boiling water is a very effective disinfectant for most pathogens. Water must be at least 212 degrees for at least 20 minutes to sterilize, but note that boiling water is not effective at killing hepatitis C virus.

Since hepatitis C virus is transmitted through blood, it is good practice to try to rinse all of the blood off rather than try to kill the virus. The best way to rinse blood is with cold, clean water at least five times. After rinsing as much of the blood off as possible, then regular disinfecting is still recommended to kill any other viruses or bacteria that may be left.

All cleansing solutions have a specific purpose. Remember to always read labels to make sure that you are using it properly. When using a solution for something other than its intended purpose, it can impact the effectiveness in killing pathogens.

There are four steps to reduce your risk of exposure to pathogens. For all steps, remember to wear the proper protective equipment like gloves or goggles when necessary.

1. **Clean**
   Scrub or wipe visible dirt from the surface.

2. **Rinse**
   Rinse the area to remove the particles or body fluids. Avoid contamination of already cleaned areas by rinsing with low pressure water. Rinse several times if necessary.

3. **Sanitize**
   **Disinfect**
   Determine which is appropriate by assessing how many people come in contact with the surface, what the risk of exposure to pathogens is, and if there are any body fluids present.

How well the solution sanitizes or disinfects the surface can be affected by the temperature the solution is stored at and how strong the solution is.

Make sure to store chemicals between 55 and 120 degrees Fahrenheit and to read the back of the bottle to know the proper dilution ratio. A solution that is too weak will not be effective, and a solution that is too strong may be toxic to the person using it.

4. **Air Dry**
   Be sure to read the bottle to ensure that the solution rests on the surface for the appropriate amount of time. Most sanitizers require at least 30 seconds and most disinfectants require 10 minutes.

There are many things that are not intended for sharing or re-using, so even following these steps perfectly will not eliminate the risk of exposure to pathogens.

The best way to protect yourself is to know how different pathogens are transmitted and get tested after any potential exposures.