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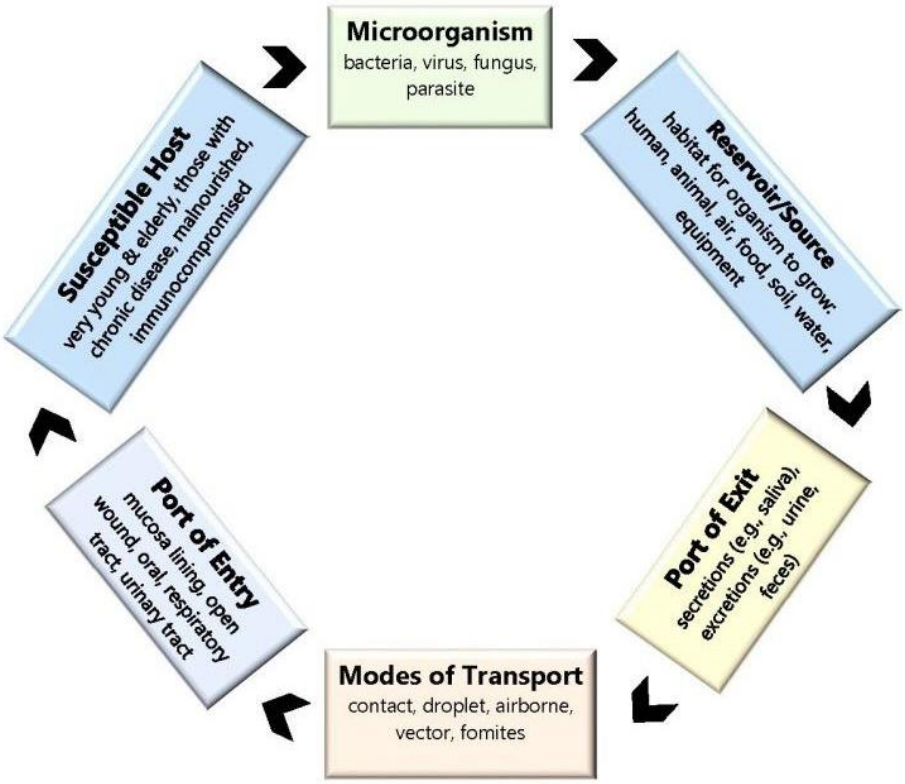
Infection Control Health & Safety Alert

Introduction

In order to understand infection control first we need to learn something about germs/microorganisms and how they spread infection. Germs/microorganisms live all around in us in our everyday lives: in the air, in the water, in the ground and in and on our bodies. Some are beneficial, and some are not. Many help us stay healthy. In comparison, only a few germs/microorganisms are known to cause infection (2) (22).

In order for harmful germs/microorganisms to spread infection, they must enter the body, multiply, and cause a physical reaction. In order for this to happen a series of things must take place in a particular order. This is referred to as the **chain of infection** (7).

The Chain of Infection



1. Germs/microorganism: a germ, bacteria, virus, fungus, parasite, etc.
2. Reservoir: the place/environment where the harmful germs/microorganisms live.
3. Port of exit: the way the germ/microorganism leaves the reservoir.
4. Mode of transport: how the germ/microorganism is carried/spread around.
5. Port of entry: how the infectious germ/microorganism enters the host.
6. Susceptible host: the vulnerable person in which the germ/microorganism causes the infection (2) (7).

The Germ/Microorganism

A disease producing infectious organism. Also commonly referred to as bacteria, germs, pathogens, viruses, parasites, and fungi/fungus.

The Reservoir

Many places in the environment can function as reservoirs for germs/microorganisms.

Some examples:

- Dry surfaces such as countertops, doorknobs, tables, keyboards, light switches, etc.
- Wet surfaces and moist environments such as sinks, faucets, toilets, showers, etc.
- Decaying debris such as waste in the trash can, old flowers in vases containing water, water leaks in the home which can cause rotting wood, etc.
- Indwelling medical devices such as a gastrointestinal feeding tube, or urinary catheter, etc.
- A person's blood stream, saliva, urine, feces, lungs, nasal passages, skin, and wounds (7).

Port of Exit

The port of exit is the means or the way in which the infectious germ/microorganism leaves its reservoir. An example occurs when a person touches a contaminated surface with their hands, then touches another surface (skin to surface); or when a person touches another person's contaminated skin and then touches their own skin (skin to skin) (7).

Mode of Transport

Germs/microorganisms cannot move on their own. They require a person or the environment to move them around (7).

Some of the ways people and the environment transmit infectious germs/microorganisms are by:

Direct Transmission

- Person to Person (e.g., direct touch via the mouth, hands, etc.).
- Droplets (e.g., direct droplet spray).
- Skin (e.g., chickenpox, ringworm, etc.).
- Body Fluids (e.g., bloodborne pathogens, etc.).

Indirect Transmission

- Airborne Particles (e.g., particles that remain airborne for hours).
- Contaminated Objects (e.g., dirty medical objects).
- Vector-Borne (e.g., ticks - Lyme, mosquitoes - malaria, etc.).
- Food and Drinking Water (e.g., E. Coli or Salmonella in food/water, etc.).
- Animals (e.g., Anthrax – sheep, rabies – animals, etc.).
- Environmental Factors (Hookworm – soil, etc.) (7).

Port of Entry

The port of entry is the opening where the infectious germ/microorganism enters the host/body. Some examples of openings (portals) in the body are the mouth, nasal passages, eyes, urinary tract, lungs, surgical incisions, and/or other wounds on the skin (CDC, 2022). When germs/microorganisms enter a host, the person may have visible symptoms of infection, such as coughing, sneezing, running nose, watery eyes, fever, etc.; or a person may be colonized with the infectious germs/microorganisms, and may not show any signs or symptoms, but can still pass the infection to others (2) (7).

Susceptible Host

The susceptible host is the person who is vulnerable to infection within their body. Basically, everyone is a susceptible host, but people who are not vaccinated are considered to be the most vulnerable to infection, along with the youngest and oldest individuals in the population due to their weakened immune systems (2) (31) (7).

Other more vulnerable people includes those who have:

- Surgical wounds.
- Pressure injuries.
- Other open wounds.
- Burns affecting the skin.
- Individuals with any underlying physical health issues such as diabetes or heart disease.
- A depressed immune system such as those with cancer or HIV.
- Anyone who takes several medications for health issues (2) (31) (7).

Infection Control Basics

Infection Control is all about breaking a link in the chain of infection to stop and/or reduce the spread of harmful germs/microorganisms in the environment. The single most important thing everyone can do to reduce the spread of infectious germs/microorganisms is to wash their hands regularly.

Infection control, prevention and awareness regulations are governed by the Centers for Disease Control (CDC) and the Occupational Safety and Health Administration (OSHA) (11).

Basic infection control is referred to in the healthcare industry as Standard Precautions which are a core set of infection prevention practices required for **ALL** direct care, regardless of the level of care being provided, weather an individual is well or showing signs and symptoms of infection (4) (7).

Standard Precaution safeguards are based on assessment of risk, common-sense practices, and the uses of personal protective equipment (PPE) to provide a defense against infectious germs/microorganisms and to prevent the spread of infection from person-to-person (2) (24).

It is best practice for all persons responsible for providing any type of direct care to be trained and adhere to infection control and prevention practices when there is a possibility or risk of contact with blood, other body fluids and mucous membranes (2) (28) (29) (20) (8).

Standard Precautions include:

- Proper hand hygiene.
- The use of personal protective equipment (PPE) based on potential exposure.
- Environmental cleaning, sanitizing and disinfecting.
- Practice of proper respiratory hygiene and cough etiquette.
- Knowledge of isolation precautions.
- Correct handling of laundry.
- Safe handling of sharps.

It is best practice to educate individuals receiving direct care, along with their family members, and friends regarding methods to reduce the spread of germs/microorganisms, agency infection control practices, and the use of PPE. Any supplied educational information should be developed based on the individual's intellectual capacity, cultural background and knowledge of language comprehension (8).

Proper Hand Hygiene

Proper hand hygiene includes hand washing and/or disinfecting hands with alcohol-based hand sanitizers. Cleaning the hands is the single most important action which everyone can do to reduce the spread of infectious germs/microorganisms (32) (33) (5) (20).

Best practice infection control starts with the washing of both hands for a minimum of 15 to 20 seconds with mild soap and warm water when hands are visibly dirty, after coming into contact with blood or body fluids and after using the toilet. All surfaces of the hands should be cleaned to include the front and back of both hands, between the fingers and under the fingernails (32) (33) (5) (20).

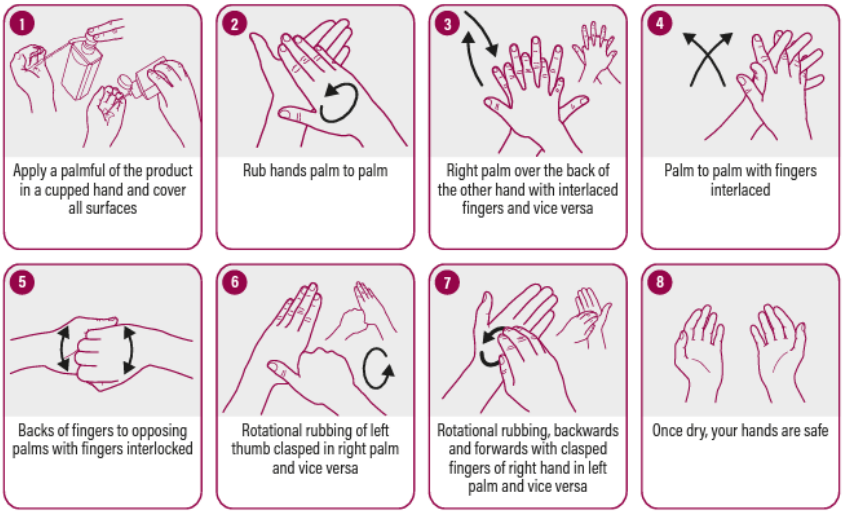
Alcohol-based hand sanitizers, with a minimum of 60% alcohol, are recommended by the Centers for Disease Control and Prevention (CDC) and the World Health Organization (WHO) as the preferred way to clean hands when they are not visibly soiled. Using alcohol-based sanitizers is a convenient and fast way of cleansing hands, resulting in less skin irritation and dryness (32) (5) (24).

Use common sense decision making about cleansing hands with soap and water when available and the use of alcohol-based hand sanitizers. Typical hand hygiene should be done:

- Before and after direct physical contact with an individual.
- After contact with body fluids, mucous membranes, broken skin or wound dressings.
- After removing gloves.
- Before medication administration.
- Before handling food (33).

The effectiveness of alcohol-based hand sanitizer requires good technique, which includes applying the manufactures recommended amount of the solution, then rubbing both hands together covering all surface area until all the solution has dissolved. Both the use of alcohol-based hand sanitizers and washing with soap and water throughout the day are suggested when providing care for individuals (5) (24).

Best practice use of alcohol-based hand sanitizer:



The only exception to the use of alcohol-based hand sanitizer is when coming into contact with bacterial spores of *C. diff* (*Clostridium difficile*) because not all the spores are killed by the alcohol-based hand sanitizers. If, or when, hands are exposed to *C. diff* it is most important to wash hands with soap and water to dislodge all bacterial spores before touching other surfaces or individuals to avoid the spread of these infectious germs/microorganisms (5) (20).

Caregivers should be educated on how to recognize *C. diff* when they come into contact with the bacteria. *C. diff* is a foul smelling, mucous filled, runny, watery diarrhea which is typically the result of several courses of antibiotics which disturb the flora and fauna in the gut (5) (20).

Wearing gloves is not a substitute for proper hand hygiene. Hand hygiene supplies should be made available in direct care settings (8).

Factors which can reduce the effectiveness of good hand hygiene are:

- Jewelry such as bracelets and rings can be contaminated with infectious germs/microorganisms. Reducing the amount of jewelry worn while providing personal direct care will decrease the chances of spreading germs/microorganisms to others. Rings can puncture or tear gloves, and/or cause gloves to not fit properly. In the event bracelets cannot be removed they should be pushed as far up the wrist as possible to allow for cleansing of the hands (12).
- Dry cracked damaged skin on hand can trap infectious germs/microorganisms becoming a mode of transmission. Open sores, cuts, and abrasions on the hands should be covered prior to providing direct care to individuals. To help skin on hands stay healthy and well hydrated the use of barrier creams or non-perfumed lotions is recommended after hand washing or using alcohol-based sanitizers (12).
- Fingernails have been shown to harbor higher numbers of germs/microorganisms, up to nine times greater in artificial nails and extenders. Cracked and damaged nail polish increases the number of infectious germs/microorganisms on the hands. Long, sharp fingernails can puncture and tear gloves causing exposure to germs/microorganisms (12).
- Using extremely hot water to wash hands removes protective oils and increases the likelihood of damage to the skin. Using water alone is not adequate in removing dirt or infectious germs/microorganisms from the hands, a sufficient amount of soap is required (12).

Personal Protective Equipment (PPE)

Prior to the COVID-19 pandemic the majority of DBHDS licensed provider agencies didn't find it necessary to provide isolation precautions at their locations in the community nor to supply a full set of personal protective equipment (PPE) to their direct care staff (17). Single use non-sterile disposable gloves was the only PPE typically needed.

The lessons learned were regardless of the level of care provided within an agency direct care staff responsible for providing supports to individuals should be educated and have an understanding of why PPE is used and how to use it effectively whenever the need arises (19) (16) (8) (17).

It is best practice for provider agencies to have a written policy along with a monitoring system, and qualified staff member, or members, responsible for the education and management of infection control practices which should include how to use, when to use, and what PPE to use for each task provided to sick and well individuals (28) (19) (13) (8).

PPE was created to act as a barrier between the caregiver and the individual. Its use should be based on the activity being performed and whenever there is a possibility of coming into contact with blood, body fluids, and infectious germs/microorganisms (13) (8) (24).

Using PPE properly is imperative in reducing the spread of infection because when it's not used correctly, overused, or underused, it can add to the spread of infectious germs/microorganisms (21) (13) (24).

Types of PPE:

- Gloves are used to protect hands and serve as a barrier.

- Gowns, aprons, shoe covers, and head coverings are to protect skin and clothing from becoming contaminated.

- Face masks are to protect the mouth and nose from breathing in infectious germs/microorganisms.

- Respirators are for increased protection against inhalation of infectious germs/microorganisms.

- Goggles are to protect eyes.

- Face shields are for additional protection of the mucous membranes to include the face, mouth, nose and eyes.

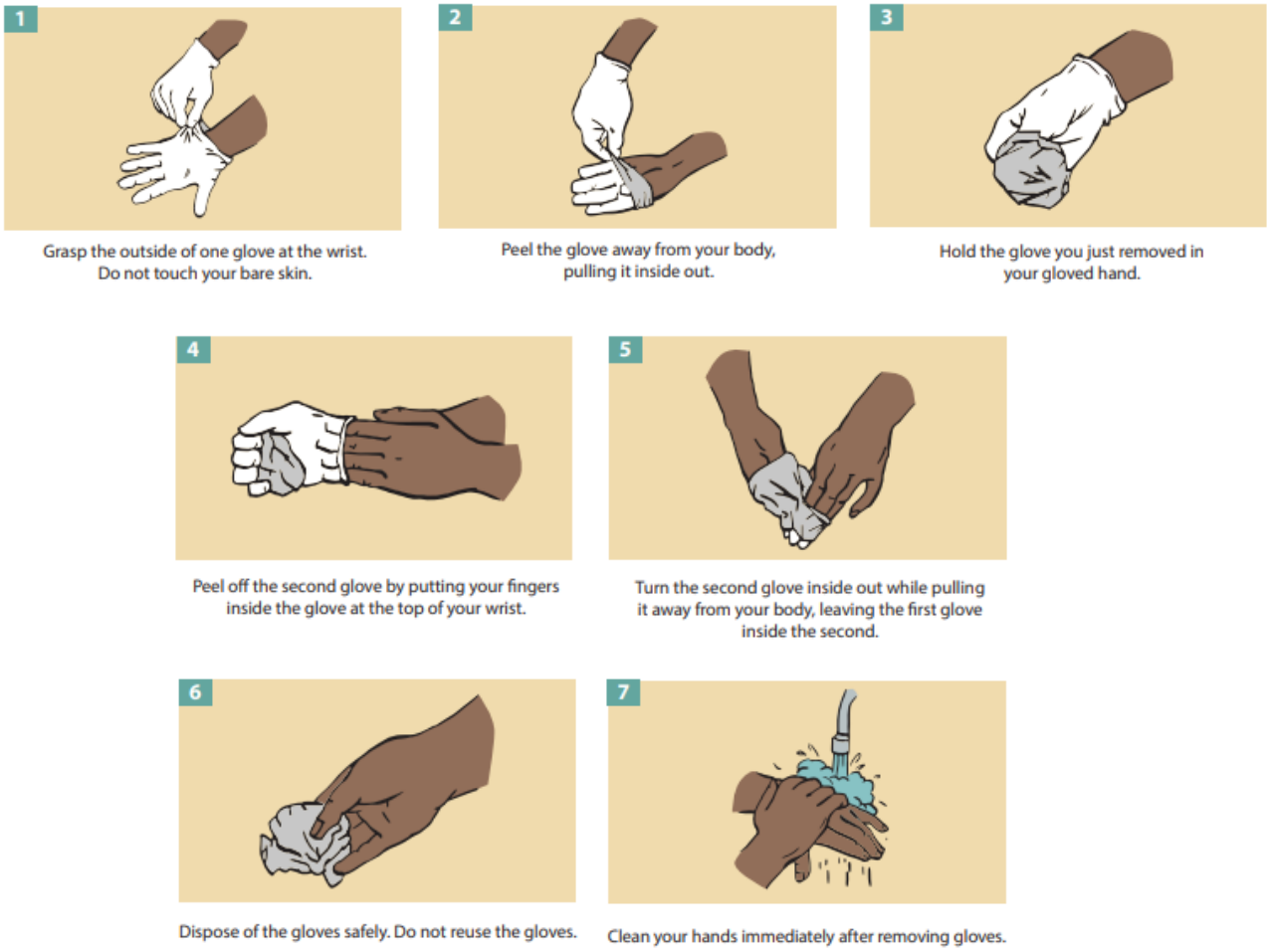
PPE should fit correctly and comfortably to increase the likelihood of it being used by direct support staff. Poor fitting PPE can potentially increase risk to caregivers and cause the spread of infectious germs/microorganisms (19).

Single use disposable gloves are meant to be used when there is a possibility of contact with contaminated infectious materials, an individual's mucous membranes, and/or damaged skin. Hands should be cleansed before gloves are put on and again when gloves are removed (8).

Typically good hand hygiene and single use disposable gloves are the only needed PPE when assisting individuals who are not showing any signs or symptoms of illness with bathing, and toileting. As well, proper hand hygiene is the only infection control measure needed when feeding, dressing and positioning individuals (33) (12).

The World Health Organization's, Glove Use Information Leaflet, reviews the appropriate and inappropriate use of single use non-sterile disposable gloves along with other types of medical grade gloves (33).

How to remove single use non-sterile gloves (9).



Single use disposal gloves and gowns should never be washed and reused. Gloves should be changed in between care of different individuals. The same pair of gloves should never be worn to complete numerous direct care tasks with different individuals. Gloves are to be changed once a task is completed or when they are visibly soiled or damaged (8).

Donning PPE is putting it on in the correct sequence.

SEQUENCE FOR PUTTING ON PERSONAL PROTECTIVE EQUIPMENT (PPE)

The type of PPE used will vary based on the level of precautions required, such as standard and contact, droplet or airborne infection isolation precautions. The procedure for putting on and removing PPE should be tailored to the specific type of PPE.

1. GOWN

- Fully cover torso from neck to knees, arms to end of wrists, and wrap around the back
- Fasten in back of neck and waist

2. MASK OR RESPIRATOR

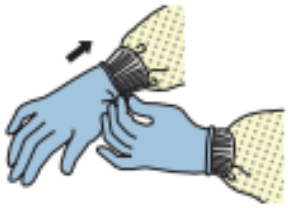
- Secure ties or elastic bands at middle of head and neck
- Fit flexible band to nose bridge
- Fit snug to face and below chin
- Fit-check respirator

3. GOGGLES OR FACE SHIELD

- Place over face and eyes and adjust to fit

4. GLOVES

- Extend to cover wrist of isolation gown



USE SAFE WORK PRACTICES TO PROTECT YOURSELF AND LIMIT THE SPREAD OF CONTAMINATION

- Keep hands away from face
- Limit surfaces touched
- Change gloves when torn or heavily contaminated
- Perform hand hygiene

CDC

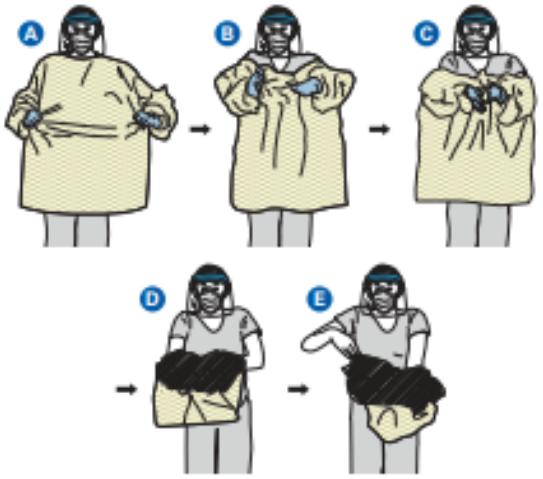
Doffing PPE is taking it off in the correct sequence.

HOW TO SAFELY REMOVE PERSONAL PROTECTIVE EQUIPMENT (PPE) EXAMPLE 2

Here is another way to safely remove PPE without contaminating your clothing, skin, or mucous membranes with potentially infectious materials. **Remove all PPE before exiting the patient room** except a respirator, if worn. Remove the respirator **after** leaving the patient room and closing the door. Remove PPE in the following sequence:

1. GOWN AND GLOVES

- Gown front and sleeves and the outside of gloves are contaminated!
- If your hands get contaminated during gown or glove removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Grasp the gown in the front and pull away from your body so that the ties break, touching outside of gown only with gloved hands
- While removing the gown, fold or roll the gown inside-out into a bundle
- As you are removing the gown, peel off your gloves at the same time, only touching the inside of the gloves and gown with your bare hands. Place the gown and gloves into a waste container

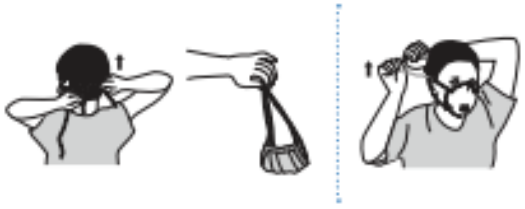


2. GOGGLES OR FACE SHIELD

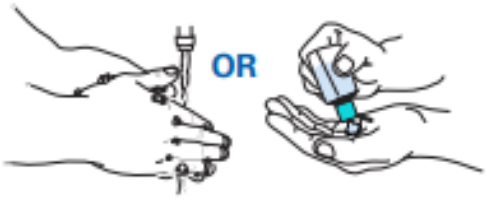
- Outside of goggles or face shield are contaminated!
- If your hands get contaminated during goggle or face shield removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Remove goggles or face shield from the back by lifting head band and without touching the front of the goggles or face shield
- If the item is reusable, place in designated receptacle for reprocessing. Otherwise, discard in a waste container

3. MASK OR RESPIRATOR

- Front of mask/respirator is contaminated — DO NOT TOUCH!
- If your hands get contaminated during mask/respirator removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Grasp bottom ties or elastics of the mask/respirator, then the ones at the top, and remove without touching the front
- Discard in a waste container



4. WASH HANDS OR USE AN ALCOHOL-BASED HAND SANITIZER IMMEDIATELY AFTER REMOVING ALL PPE



PERFORM HAND HYGIENE BETWEEN STEPS IF HANDS BECOME CONTAMINATED AND IMMEDIATELY AFTER REMOVING ALL PPE

When there is a chance of direct support caregivers having their clothing soiled when providing care (which would expose them to body fluids) then clothing covers are recommended, such as a gown or apron, or shoe covers. When an activity might produce splashes or sprays of body fluids, then a mask, goggles, face shields and/or a combination is recommended to reduce exposure of infectious germs/microorganisms (8).

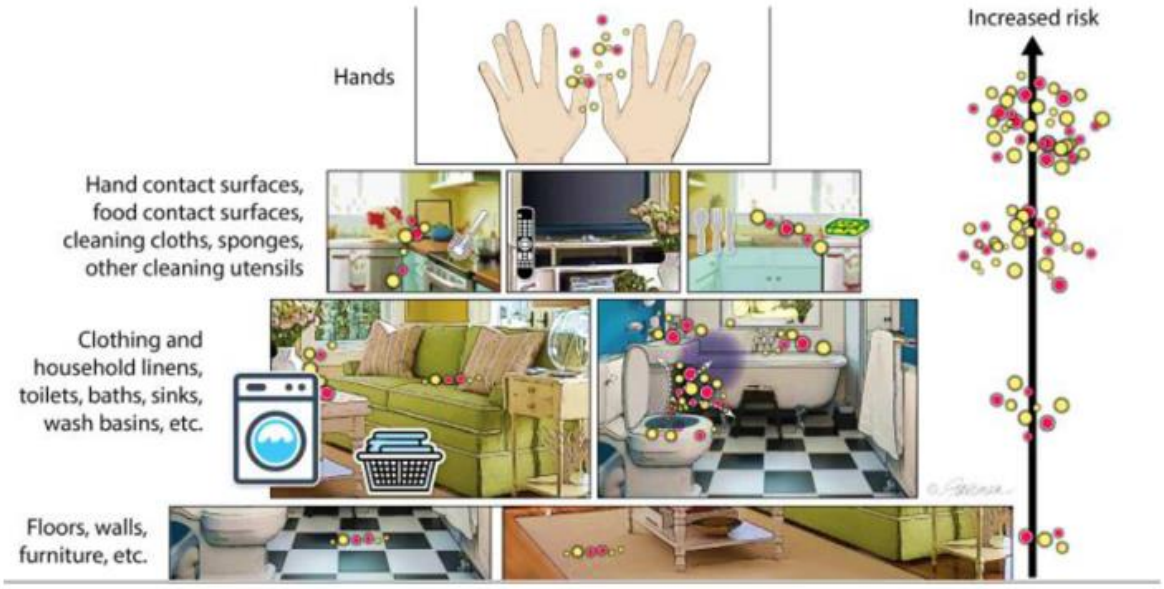
The correct removal, or doffing, of PPE after being exposed to infectious germs/microorganisms has been shown by research to be the most challenging for direct support caregivers. Doffing contaminated PPE incorrectly can spread infectious germs/microorganisms to others and the environment. It is best practice for direct care staff to be observed doffing PPE prior to being exposed to learn proper technique and to develop good doffing routines (21).

CDC Sequence for Donning and Removing Personal Protective Equipment [PDF – 3 Pages] This poster demonstrates safely donning (putting on) and doffing (removing) PPE.

Environmental Cleaning, Sanitizing and Disinfecting

The most likely surfaces to become contaminated with infectious germs/microorganisms are those used repetitively during activities of daily living (ADLs), such as bathing, dressing, eating, and toileting. Research studies have shown harmful germs/microorganisms take certain routes of transmission to find their next susceptible host in the environment (26).

Surfaces with the highest risk of transmitting infection are the hands, commonly touched high traffic areas and items, surfaces used for food preparation, and the apparatuses/tools used to clean those surfaces such as sponges, wash clothes, dish towels, mop heads, etc.. It is most critical to clean, sanitize, and disinfect these areas and items regularly in order to break the chain of infection (26).



Targeted routine cleaning, sanitizing and disinfecting surfaces should be dependent on the level of contact and the level of dirtiness (8). The difference between cleaning, sanitizing and disinfecting is:

- Cleaning involves soap, water and scrubbing. Cleaning removes most infectious germs/microorganisms, visible dirt, and contaminants from the surface.
  - Clean regularly used surfaces daily, and/or at minimum three times a week and when surfaces are visibly soiled (6).
  - Clean them more often if people in the household are sick or more likely to get sick (9).
  - Surfaces should be cleaned using a product suitable for that surface (9).

  - Clean high-touch hard surfaces such as light switches, doorknobs, and countertops regularly and after there are visitors in the home (9).
  - Clean surfaces such as floors, tabletops, countertops when spills occur, and when these surfaces are visibly soiled (6).
  - Clean walls, blinds, carpets, rugs and window curtains in common areas and individual rooms when these surfaces are visibly soiled and at minimum twice yearly (6).
  - Vacuum carpets and rugs regularly and dispose of dirt safely. Change vacuum cleaner bags if required per manufacturer's instructions (9).

  - When laundering soft items such as clothing, towels, and linens use detergent and recommended water temperatures per manufacturer's instructions on the label. Dry items completely (9).

  - Clean electronics such as phones, tablets, touch screens, keyboards, and remote controls regularly and when visible soiled by following manufacturer's instructions and recommendations (9).
  - Follow manufacturers' instructions for proper use of cleaning products such as recommended dilution, storage, shelf-life, and safe use and disposal (6).
  - Cleaning tools, such as sponges, wash clothes, dish towels, mop heads, or other cloth cleaning apparatuses should be laundered and allowed to dry completely and/or replace per the manufacturer's instructions after use (9).
- Sanitizing reduces infectious germs/microorganisms down to levels considered safe by public health codes (9).

- Surfaces should be cleaned with soap, water, and scrubbed first before sanitizing (9).
- Some high-touch surfaces and/or sensory objects might require sanitizing such as special eating utensils, any sensory items which are put into the mouth, food contact surfaces after a natural disaster or emergency, or the inside of the refrigerator when a food items are recalled (9).
- If surfaces and objects are cleaned carefully with soap, water and scrubbing then sanitizing on a daily basis may not be necessary (9).
- Surface sanitizing should be done by using a commercial sanitizer spray registered with the EPA or a 1 to 10 parts weak bleach solution (6).
- Sanitize surfaces which have been touched with, or contaminated by raw meat, poultry, their juices, including the inside of the sink. For more information on food safety, please visit CDC's Food Safety page. (9).
- Some dishwashers offer a sanitizing cycle which can be used for some eating utensils (9).
- Some objects can be sanitized by either boiling, steaming or using an approved spray or weak bleach solution. Check manufacturer's recommendations (9).
- Before storing or using an item which has been sanitized place it on a clean, unused dish towel or paper towel to allow it to air dry completely. Rubbing or drying a sanitized object may transfer germs/microorganisms back onto the object (9).

- Disinfecting surfaces and objects completely kills most germs/microorganisms which is done using EPA registered commercial chemicals or a bleach solution of 1/3 cup of bleach added to 1 gallon of water, or 70% alcohol solutions (6) (9).
  - Disinfectants are chemicals designed to kill germs/microorganisms and must be registered with the EPA. Their overuse or misuse is a public health and environmental concern due to the ability of infectious germs/microorganisms to mutate into superbugs becoming resistant to some disinfectants and antibiotics (15) (9).
  - Disinfecting or sanitizing is only needed when someone in the home is sick or someone who is visibly sick has recently visited, or there are individuals in the home with suppressed immune systems, such as those being treated for cancer, have had a recent organ transplant, HIV, etc., otherwise everyday cleaning is all that is needed to reduce infectious germs/microorganisms in the environment (9).

  - First clean surfaces and objects before disinfecting, next read and follow manufacturer's instruction on disinfectant products to ensure proper use, storage, and disposal (9).

- Protect skin and eyes from potential splashes by wearing the recommended protective equipment, such as reusable household cleaning rubber gloves and goggles (9).
- Follow disinfectant directions concerning contact time. Make sure to leave the solution on the surface long enough to kill the infectious germs/microorganisms (9).
- If using disinfectants indoors make sure to have good ventilation by opening doors and windows, along with the use of a fan to move the air. Breathing strong chemical can negatively affect the respiratory system and cause lung damage (9).
- Room temperature water is to be used to dilute disinfecting chemicals unless otherwise noted by manufacturer's instructions. Always label diluted disinfectant solutions (9).
- Always store chemicals out of reach of those who may be harmed (9).
- Don't mix disinfecting products or chemicals with each other. **Never** mix bleach and ammonia together, this produces a toxic gases called chloramines which can cause serious damage the respiratory system when inhaled (9).
- After using disinfecting chemical wash hands with soap and water for a minimum of 20 seconds (9).

Respiratory Hygiene or Cough Etiquette

To reduce the spread of respiratory infections through airborne and droplet transmission respiratory hygiene or cough etiquette was added to Standard Precautions in 2007 (3).

Respiratory hygiene or cough etiquette should be implemented whenever an individual is showing signs and symptoms of a respiratory infection.

To include:

- Covering the mouth and nose when coughing or sneezing either with a tissue or the elbow.
- When tissues are used to cover the mouth and nose when coughing or sneezing a non-touch receptacle, such as a trash can, for disposal should be provided.
- Wash hands or use alcohol-based hand sanitizer after coughing and sneezing, and after touching the mouth or nose before making contact with other individuals or surfaces.
- Individual showing signs and symptoms of a respiratory infection should be encouraged to wear a mask when in areas with others.
- Encourage sick individuals to stay separate from others whenever possible to reduce the spread of infection.
- Educate everyone who is capable of understanding on the importance of the use of prevention measures to reduce the spread of respiratory infections (3).

Knowledge of Isolation Precautions

Understanding isolation precautions helps direct caregivers reduce the spread of harmful germs/microorganisms. Isolation precautions are meant to separate the infected individual from the general population until they are no longer sick (14).

Infectious individuals should remain in their room away from others with a sign posted at their room door to inform others of the isolation requirements.

Typically isolation precautions are used in the hospital and/or in a rehab clinical setting, but with the COVID-19 pandemic many households also were required to adjust to isolation precautions too (14).

When an individual is on isolation precautions the number of visitors and direct support caregivers should be limited. A full set of PPE is generally used when an individual is put on isolation precautions by a healthcare professional in a clinical setting (13).

Different infectious germs/microorganisms require different types of isolation.

- Transmission based precautions should be followed when an individual first starts to feel sick but has not been diagnosed by a healthcare provider yet.
  - These precautions are a "just in case" measure to reduce the spread of a possible serious harmful germs/microorganism.
  - This type of isolation precaution can be stopped once the individual has been diagnosed (14) (11).
- Contact precautions are used to reduce the spread of harmful germs/microorganisms in the environment when caring for an infected individual.
  - Some examples of germs/microorganisms which can cause infection in the lungs and gut, which would require contact precautions are: COVID-19, norovirus, and *C. diff* (14) (11).
- Bloodborne precautions are needed when there is a possibly of coming into contact with known contaminated blood, or body fluids such as HIV/AIDS, Hep B or Hep C.
  - If or when a direct support caregiver comes into direct contact with infectious blood or body fluids which might contain infectious blood the area should be washed with soap and water as soon as possible, then follow the agencies infection control policies regarding exposure.
  - It is best practice for all direct support caregivers to be vaccinated against hepatis B (14) (11).
- Droplet precautions are used to protect against germs/microorganisms in the mucus membranes in the mouth, nose, sinuses, throat, and lungs.
  - Flu (influenzas), whooping cough (pertussis), mumps, and other respiratory illnesses such as COVID-19 would require droplet precautions to reduce their spread (14) (11).
- Airborne precautions are needed when harmful germs/microorganisms are very small and can remain in the air for long distances.
  - Airborne precautions require a special negative pressure room in the hospital which does not allow air flow out of the room.
  - Anyone entering a negative pressure room should wear a special respirator mask (14) (11).

Individuals on isolation precautions have been shown to have increased depression due to the separation from their peers. It is important to remind individuals that isolation is a temporary situation which will end once they are feeling better (23).

Correct Handling of Laundry

Proper handling of contaminated bed sheets, blankets, towels, and individual's clothing is important to reduce the spread of germs/microorganisms. Research has shown when laundry is handled correcting there is a low likelihood of harmful germs/microorganisms being transmitted via laundry (1).

- Infectious germs/microorganisms from body substances such as blood, skin, stool, urine, vomit, and other body fluids and tissues can contaminate textiles and fabrics (1).
- Transmission of harmful germs/microorganisms due to sullied laundry can happen via direct contact or by air from lint produced by sorting and handling (1).
  - For this reason soiled laundry should never be shaken out into the air while indoors (1).
- The first step in handling laundry properly is removal of contaminated linen, or clothing (1).
- It is best practice to rinse out larger bulk solids of stool, vomit, blood or body fluids in a utility sink prior to putting them into the washing machine to reduce the contamination level of the laundry equipment (1).
- If necessary PPE such as a gown to cover staff clothing, gloves, and a mask maybe required when laundering heavily polluted textiles and fabrics, along with good ventilation to reduce contamination of staff clothing and breathing of airborne particles (1).

Laundering disinfects textiles and fabrics; it does not make them sterile. Always refer to the manufactures instructions when using laundry detergents, chlorine bleaches, alternatives or softeners along with the manufactures directions on the fabric (1).

- The use of hot water when washing has been shown to improve the reduction harmful germs/microorganisms (1).
- The laundering process can be boosted with the addition of chlorine bleach. Chlorine bleach is a broad-spectrum chemical germicide which kills germs/microorganisms (1).
- Not all fabrics can be laundered using chlorine bleach, check manufactures labeling before using (1).
- Active oxygen-based detergents alternatives offer protection to fabrics and are color safe with antimicrobial benefits similar to chlorine bleach (1).
- Some consumer home washing machines are equipped with a tub-basin cleaning cycle which can be run after soiled contaminated textiles and fabrics are laundered for improved infection control (1).
- After washing bedding, blankets, towels, sheets, and clothing should be dried completely, folded and stored appropriately (1).

It is best practice for mattresses to be safeguarded with a protective cover to reduce body fluids from soaking into them.

- Several difference brands and types are available which can be cleaned when contaminated (1).
- Pillows should be laundered per manufactures recommendation (1).
- A fitted sheet is not a mattress cover (1).
- Wet mattresses can provide harmful germs/microorganisms a reservoir to thrive, they should be disinfected and completely dried before the next use (1).

Safe Handling of Sharps

To reduce the chances of being exposed to bloodborne pathogens it is important for direct care staff to learn how to handle used contaminated sharps correctly (14).

- Needles, scalpels, and any other medical tools which cut or go into the skin are considered sharps (14).

If or when a direct caregiver is stuck or cut with a contaminated used sharp they could possibly be exposed to infectious bloodborne pathogens such as the hepatitis C virus (HCV), hepatitis B virus (HBV), and human immunodeficiency virus (HIV) (18) (11).

To reduce the possibly of infection and to avoid injury safe handling of sharps is of the highest importance. To decrease these occurrences agency providers are encouraged to have a written policy and training for direct caregivers who may be handling contaminated used sharps (18).

- When needles or sharps are used they should not be unpackaged or removed from their wrapping until it is time for their use (18) (11).
- Always keep sharps pointed away from yourself and others. Keep fingers away from the end of sharps (18) (11).
- Don’t attempt to push sharps down inside of a sharps disposal container with your hands (14) (11).
- Needles should never be bent or broken prior to disposal into a sharps container (18) (11).
- Never attempt to recap needles after they have been used (18) (11).
- Infectious contaminated broken glass should never be picked up by hand. The use of a dustpan and broom is recommended (18) (11).

When sharps are used there should be a sharps disposal container closely available. A sharps disposal container is made from hard puncture-resistant plastic, which is leakproof, hazardous color-coded red, and closeable meaning with a lid or flap which does not allow for the removal of used sharps. To avoid spilling of contaminates sharps containers are to be kept in an upright position (18).

Sharps disposal containers have a fill line indicating when no more sharps should be added. Overfilling containers can increase the chances of infectious contamination. Once a sharps container is full it should be sealed and disposed of in accordance with hazardous waste disposal and guidelines in your community.

No one should ever attempt to open or reach into a sharps container that holds used contaminated sharps for any reason (18) (27).

If there is a chance of contaminates leaking from a closed sharps container during handling, storage, transport or shipping then it should be enclosed in another leak proof red color hazardous container to prevent spills (18).

The U.S. Food and Drug Administration (FDA) recommends checking with the trash disposal and or health department in your area to find out how to properly dispose of fill used sharps containers. Several methods are available depending on your location (27).

- Drop off boxes and supervised collection sites may be available at some doctor's offices, hospitals, pharmacies, health departments, medical waste facilities, fire and or police departments. This service may require a small fee or be free.
- Household hazardous waste collection sites allow the drop off of sharps disposal containers at local waste collection facilities. Contant should be made ahead of time to verify expectance of sharps containers (27).
- FDA mail back programs. The FDA offers a mail back program for certain cleared sharps disposal containers. Depending on the size of the container fees may apply. Check with the disposal container manufacture for any specific instructions for mailing back their disposal containers (27).
- Special waste collection in residential communities offer specific days when hazardous waste can be pick-up from homes. There can be fees applied for each container collected. Some waste collection facilities require a phone call to request specific pick-up while other communities have regular days scheduled (27).

For more information specific to your state, call Safe Needle Disposal at 1-800-643-1643 or e-mail info@safeneedledisposal.org. Information they can provide for your state includes:

- types of sharps containers that can be used,
- disposal programs in your area,
- how to label your sharps disposal containers,
- how to secure the lid of your sharps disposal container, and
- whether sharps disposal containers can be thrown away in the common trash.

Caregiver Considerations

It is best practice for direct support caregivers to certify they are tuberculosis free prior to providing care to individuals. A tuberculosis (TB) screen can be done by any qualified licensed healthcare professional (30).

A TB skin test requires two visits. The first is to have the test administered under the skin and the second to read the test results after 48 to 72 hours (10).

The test results are based on the size of the raised area, hardness at the site and swelling. If the raised wheel on the skin goes away after the waiting period then the test is negative meaning the TB disease is unlikely. If the raised wheel becomes hard, redden, and swollen the TB test is positive which requires additional testing to determine if the individual has dormant TB or active TB (10).

Licensed DBHDS Providers

As employers in the Commonwealth of Virginia, licensed DBHDS providers must follow the Virginia OSHA-approved State Plan. If you have questions about the Virginia State Plan, please contact:

Virginia Occupational Safety and Health (VOSH) Headquarters Main Street Centre.

600 East Main Street, Suite 207, Richmond, VA 23219

Tel: (804) 371-2327 Fax: (804) 371-6524

Virginia State Plan

OSHA Employer Resources

- Hepatitis B Vaccination: Information for Healthcare Providers
- Appendix A Hepatitis B Vaccination Acceptance or Declination Form
- OSHA Fact Sheet: Hepatitis B Vaccination Protection
- OSHA Tuberculosis
- OSHA Bloodborne Pathogens Exposure Reporting
- Training Requirements in OSHA Standards
- Developing and Delivering Effective Training
- Publications
- Videos
- Interactive Web-Based Training
- Safety and Health Topics
- Hazard Alerts
- Harwood Grantee Materials
- Alliance Program Materials
- Additional Resources
- Training and Reference Materials Library
- Resource for Development and Delivery of Training to Workers
- OSHA Publications
- CDC's Safety Culture in Healthcare Settings

General Resources

- The DBHDS Office of Integrated Health Supports Network: https://dbhds.virginia.gov/office-of-integrated-health/
- The DBHDS Office of Licensing: https://dbhds.virginia.gov/clinical-and-quality-management/office-of-licensing/
- The DBHDS Office of Human Rights: https://dbhds.virginia.gov/clinical-and-quality-management/human-rights/
- World Health Organization - Hand Hygiene: Why, How & When? https://cdn.who.int/media/docs/default-source/documents/health-topics/hand-hygiene-why-how-and-when-brochure.pdf
- OSHA Factsheet Protecting Yourself When Handling Contaminated Sharps: https://www.osha.gov/sites/default/files/publications/bbfact02.pdf

- CDC How to remove gloves: https://www.cdc.gov/vhf/ebola/resources/pdfs/poster-how-to-remove-gloves-p.pdf
- Sequence for Putting on Personal Protective Equipment (PPE): https://www.cdc.gov/hai/pdfs/ppe/ppe-sequence.pdf
- Virginia Code: 12VAC35-105-440. Orientation of new employees, contractors, volunteers, and students.
- Virginia Code: 12VAC35-105-510. Tuberculosis screening.
- Virginia Code: 12VAC35-105-720: Health Care Policy

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To the best of the OIHSN Nursing Team's knowledge the information contained within this alert is current and accurate. If the reader discovers any broken or inactive hyperlinks, typographical errors, or out-of-date content please send email to communitynursing@dbhds.virginia.gov to include the title of the Health & Safety alert with specifics details of concern.

Hepatitis B Vaccination
Acceptance or Declination Form

Hepatitis B is a serious disease that affects the liver. It is caused by the Hepatitis B virus (HBV), and it spread through contact with the blood or other body fluids of an infected person. The vaccine to prevent Hepatitis B is usually given in a series of three shots. The vaccine series has proven to give long-term protection from HBV infection, possibly lifelong. My signature below verifies I have received training on the risk involved and I understand that due to my occupational exposure to blood or other potentially infectious materials, I may be at risk of acquiring Hepatitis B Virus (HBV) infection. I also understand that I must either accept or decline the vaccination.

Employee Signature _____

Employee Printed Name: _____

Job Title: _____

Supervisor: _____

You must select ONE (1) of the following:

Acceptance

I understand the benefits and risk of the vaccine and I consent to receive the vaccine at no cost to me. I understand that I am responsible for keeping my appointments in accordance with the recommended vaccine series (three injections; initial, one month later; and last injection within five months of the second injection).

Employee/Volunteer Signature: _____

Date: _____

Declination

I have received training, and I understand that due to my occupational exposure to blood or other potentially infectious materials, I may be at risk of acquiring Hepatitis B Virus (HBV) infection. I have been given the opportunity to be vaccinated with Hepatitis B vaccine, at no charge to myself. However, I decline the Hepatitis B vaccination at this time. I understand that by declining this vaccine, I continue to be at risk of acquiring Hepatitis B, a serious disease. If, in the future I continue to have occupational exposure to blood or other potentially infectious materials, and I want to be vaccinated with Hepatitis B vaccine, I can receive the vaccination series at no charge to me. I understand I need to notify my supervisor _____ if I change my mind and would like to receive the vaccine in the future. I will need to sign a Hepatitis B vaccine acceptance form at that time.
I am declining at this time, but I would like more information about Hepatitis B vaccine. ☐

Employee Signature: _____

Date: _____

Vaccination Previously Received

I have already received the Hepatitis B vaccination:

Employee Signature: _____

Date: _____

Infection Control Health & Safety Alert Quiz/Evaluation

Name: _____ Date: _____

Email Address: _____

Quiz:

1. Some germs are beneficial to us, and some are not.
   a. True b. False
2. In order for harmful germs to spread infection the germ must enter the body, multiply and cause a physical reaction.
   a. True b. False
3. The way a germ is carried or spread around is called the “mode of transmission”.
   a. True b. False
4. A reservoir is the vulnerable person in which the germ causes infection.
   a. True b. False
5. Infection Control is all about breaking a link in the chain of infection to stop and/or reduce the spread of harmful germs in the environment.
   a. True b. False
6. After germs have entered the susceptible host, the person may or may not have visible symptoms of infection but can still pass the infection to others.
   a. True b. False
7. Having any of the following greatly increases an individual’s risk of becoming a host for infection: (Choose all that apply.)
   a. Surgical wounds.
   b. Pressure injuries.
   c. Other open wounds.
   d. Burns affecting the skin.
   e. Diabetes or heart disease.
   f. A depressed immune system.
   g. Polypharmacy (taking multiple medications)
   h. All of the above.
8. Basic infection control is referred to as Standard Precautions and is a required practice for all direct caregivers.
   a. True b. False
9. Cleaning the hands is the single most important action which everyone can do to reduce the spread of infectious germs.
   a. True b. False
10. Alcohol-based hand sanitizers should have a minimum of 60% alcohol in order to be effective against germs.
    a. True b. False
11. You should always wash your hands with warm water and soap if contaminated with Clostridium difficile spores because they are not killed by 60% alcohol-based hand sanitizers.
    a. True b. False
12. Wearing gloves is not a substitute for proper hand hygiene.
    a. True b. False

Infection Control Health & Safety Alert Quiz/Evaluation

Name: _____ Date: _____

Email Address: _____

13. No one should ever attempt to open or reach into a sharps container that holds used contaminated sharps for any reason.
    a. True b. False
14. Overfilling sharps containers can increase the chances of infectious contamination.
    a. True b. False
15. Soiled laundry should never be shaken out into the air while indoors because it may spread infectious germs into the environment.
    a. True b. False
16. When an individual is on isolation precautions the number of visitors and direct support caregivers should be limited.
    a. True b. False
17. Individuals showing signs and symptoms of a respiratory infection should be encouraged to wear a mask when in areas with others.
    a. True b. False
18. Covering the mouth and nose when coughing or sneezing either with a tissue or the elbow is a part of good respiratory hygiene and is considered to be good coughing/sneezing etiquette.
    a. True b. False
19. Teaching individuals to use proper coughing/sneezing etiquette (whenever cognitively/physically possible), can help lower their risk of getting sick.
    a. True b. False
20. It is important to always store, and transport purchased chemicals and cleaning agents out of reach of individuals in all environments (home, vehicles, etc.) within their “community”.
    b. True b. False

<u>Evaluation:</u>

1. Was the information presented in this Health & Safety Alert helpful?
    a. Yes b. No
2. Will you use this Health & Safety Alert information to train other staff?
    a. Yes b. No
3. Will you attend the Regional Nursing Meeting to obtain the Continuing Nursing Education (CNE) unit for this Health & Safety Alert?
    a. Yes
    b. Yes, but I would have attended the meeting regardless
    c. No
    d. No, I am not a nurse
4. What topic(s) would you like to have presented in a Health & Safety Alert for CNE’s?

_____

_____

5. Other Comments:

_____

_____