

Brief history of Personal Protective Equipment (PPE)

For hundreds of years people did not know what caused illnesses. Because no one knew why people got sick, demons or evil spirits were blamed. Over the last few centuries, scientists began to suspect that very tiny organisms might cause some diseases. Today we know that many diseases are caused and transmitted by these tiny living things called microorganisms. We call microorganisms “pathogens” if they cause illness or disease.

Microorganisms are found everywhere, even inside the human body. The same microorganism that assists with digestion in the human digestive system can cause a severe infection in the urinary system. Therefore a microorganism can be beneficial in one area, and harmful in another.

Pathogens can spread from person to person in several different ways. One method for preventing the spread of these pathogens is the use of personal protective equipment (PPE). Because the different pathogens are spread in different ways, the need for PPE will differ from case-to-case. There are times when the home health practitioner will need only protective gloves. At other times the practitioner will need to wear different types of PPE.

Asepsis

Per CDC, Asepsis is the prevention from contamination with microorganisms (U.S Department of Health and Human Services, 2013). Aseptic technique is using practices and techniques that prevent the spread of pathogens from one person to another. Among the most important concepts of aseptic technique is the use of PPE.

Personal Protective Equipment (PPE)

Per the U.S Federal Drug and Administration (FDA), personal protective equipment (PPE) refers to protective clothing, helmets, gloves, face shields, goggles, facemasks and/or respirators or other equipment designed to protect the wearer from injury or the spread of infection or illness. (U.S Federal Drug Administration, 2020). See Appendix A for the proper sequence of donning/ doffing PPE’s.

The use of PPE is so important that homecare agencies and other health care providers are required to provide it for all staff who may come in contact with potentially infectious materials. It is the practitioners responsibility to make certain that he or she carries a sufficient amount of PPE at all times. PPE that should be available to home health practitioner includes:

- Soap and/or alcohol-based hand washing gel and paper towels
- Disposable gloves
- Disposable masks
- Goggles
- Face shields and caps
- Water-resistant aprons and gowns
- Shoe coverings
- Barriers for cardiopulmonary resuscitation if applicable
- Special fit-tested masks for patients with pulmonary tuberculosis

Selecting PPE’s (Centers for Disease Control and Prevention (CDC), 2014)

When selecting PPE, the CDC recommends accounting for three factors:

1. What is the type of anticipated exposure? Which is also determined by the category of isolation precautions a patient may be on.
2. Durability and Appropriateness of the PPE for the task.
3. Fit of the PPE.

Soap and paper towels

There are many times before, during, and after a home health practitioner's visit that the aide must wash his or her hands. It is not a good idea to use bar soap, particularly soap belonging to the patient. Practitioners should not use the patient's cloth towels for drying the hands. They should carry their own supply of handwashing cleanser for washing as well as paper towels for drying the hands. Home health staff should learn and follow the agency policy for washing hands. Proper handwashing is the single most important task in preventing the spread of infection.

Disposable gloves

Home health practitioners should wear gloves whenever there is any likelihood that body fluids will come in contact with the hands. Gloves are important not only in protecting the hands, but in preventing the spread of pathogens from one area to another.

Basic principle of infection control is to work from clean to dirty. Even while wearing gloves, it is important to limit opportunities for "touch contamination" such as avoiding touching your face or unnecessary surfaces. Change gloves as needed especially when gloves are torn or heavily soiled. Disposable gloves should not be re-used; they should be discarded after every use in the nearest appropriate receptacle. (CDC, 2014).

Practitioners should wear a minimum amount of jewelry, especially rings, and should keep their fingernails trimmed. Jewelry and fingernails are difficult to clean and they can tear gloves.

Disposable masks and Goggles/ Face shields

Disposable masks should cover both the mouth and the nose and should be worn whenever the patient has an illness that is spread through the air. They should also be worn when there is any chance that body fluids may come in contact with the home health practitioner's nose or mouth. Most masks should be changed after about twenty minutes. Otherwise they may become wet with breath moisture and no longer be effective. Routine disposable masks are not effective barriers against the pathogen causing airborne agents such as tuberculosis (TB), measles, chicken pox. "Home health practitioners caring for patients with airborne infectious agents should utilize fitted respirators" (CDC, 2014).

Home health practitioners should wear goggles whenever there is a possibility of body fluids splashing towards the eyes. In some instances, it may be preferable to wear a face shield that protects the entire face. If a face shield is required, it should cover the forehead, extend below the chin, and wrap around the side of your face. The home health practitioner should also wear a cap to protect the hair. Personal prescription lenses do not provide optimal eye protection and should not be used as a substitute for goggles. (CDC, 2014).

Aprons and/ or gowns

Practitioners should wear water-resistant aprons when coming in contact with linen that may be soiled with body fluids, or any time there is a chance that the practitioner's clothing may become soiled. If the soiling is likely to be more extensive and include, a gown should be worn. (CDC, 2014).

Shoe coverings

Shoe coverings are usually not necessary in homecare. However, for certain patients, home health practitioners might need to protect their shoes from being soiled with body fluids.

Barriers for cardiopulmonary resuscitation

Whenever home health practitioners are trained and expected to perform cardiopulmonary resuscitation, protective barriers should be available. The agency should provide the barriers, and the home health practitioner must be responsible for making certain they always have them, since there is no way to predict when they may be needed.

Tasks that usually do not require the use of PPE

While there are many times home health practitioners must use PPE, there are also times in which PPE is not necessary. Practitioners should be aware of this, and should not wear PPE if it isn't needed. Staff may not likely need PPE when: (CDC, 2014).

- Assisting with ambulation
- Transferring or re-positioning patients
- Assisting with range of motion exercises
- Assisting with grooming and dressing.
- Taking vital signs

Responsibilities

The agency is responsible for making certain that home health practitioners have access to whatever PPE may be needed. You, as a home health practitioner also have some important responsibilities. Some of those include:

- Being certain to carry your PPE with you to every single visit
- Making certain that you restock your supply of PPE according to agency policy
- Wns Washing your hands frequently. Wearing gloves does not replace the need for washing the hands.
- Learning how to use all the PPE. This includes how to put on gloves and gowns, as well as how to remove dirty ones.
- Knowing how to properly discard used PPE. Practitioners should learn the agency policy for disposal of used PPE.
- Knowing when PPE is needed and always using it in those circumstances all of the time. Home health practitioners should assume that every patient has a disease that could be transmitted through body fluids. There should never be a lapse in using PPE.
- Being a good steward of the agency by taking and using only the PPE that is required for your duties.

Key Points

- If you fail to use PPE, you are endangering yourself, your patients, and your family. You could become infected with disease, or you could carry pathogens on your hands and clothing that might infect another patient or members of your family.
- You can never assume that any patient is free from disease that can be transmitted through body fluids. Use PPE appropriately with all patients.
- Use of gloves or other PPE does not eliminate the need for frequent, thorough handwashing.
- With very rare exceptions, PPE is designed to be disposable. Do not reuse any of it unless you have been instructed in the procedure for returning it to the agency for proper cleansing.
- PPE does nothing to prevent transmission of disease if it is not available or is not used properly.

Addendum for COVID-19: Caring for patients exhibiting symptoms or are under investigation.

It is essential that staff utilize their clinical judgment to determine that skilled need is immediate. If skilled care is not needed, clinicians must inform their patient, provide pertinent education as aforementioned, and alert the appropriate entities such as the providers' office. If skilled need is required, it is important that the clinician provide the best practice for following standard and pertinent transmission based precautions (respiratory droplets). The following clinical factors should be included when providing care:

1. Practice proper hand hygiene especially after removing PPE.
2. Appropriate utilization (donning/ doffing) of personal protective equipment (PPE) prior/after home health visit with more information from <https://www.cdc.gov/coronavirus/2019-ncov/hcp/respirator-use-faq.html>
 - a. Gloves
 - b. Gowns
 - c. Respiratory Protection - utilize a respiratory or facemask (if a respiratory is not available before entry)
 - d. Eye Protection - Personal eyeglasses are not considered adequate eye protection.
3. Recommended proper PPE sequence from <https://www.cdc.gov/niosh/npptl/pdfs/PPE-Sequence-508.pdf>
4. Home health clean bag technique with a recommended read from <https://www.hopkinsmedicalproducts.com/service/a/home-health-bag-technique-best-practic>
5. Disinfecting medical equipment
 - a. Clean and disinfect items per manufacturer guidelines. If guidelines allow, then
 - b. the CDC has recommended for disinfection diluted household bleach solutions, alcohol solutions with at least 7-% alcohol, and most common EPA registered household disinfectants.
 - c. The EPA has listed products that meet EPA's criteria for use against SARS-CoV-2, the case of COVID-19 found here: <https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2>
 - d. Diluted household bleach solutions can be used if appropriate for the surface. Follow manufacturer's instructions for application and proper ventilation. Check to ensure the product is not past its expiration date. Never mix household bleach with ammonia or any other cleanser. Unexpired household bleach will be effective against coronaviruses when properly diluted. Prepare a bleach solution by mixing 5 tablespoons (1/3rd cup) bleach per gallon of water or 4 teaspoons bleach per quart of water

Major distributors in the United States have reported shortages of PPE, specifically N95 respirators, facemasks, and gowns. Due to the scarcity of medical equipment, it is recommended not to discard expired PPE. As much as possible, dedicated medical equipment should be utilized for home health care. Reusable medical equipment should be cleaned, decontaminated, and maintained according to manufacturer reprocessing instructions after and between uses. If a clinician is unable to don PPE and a visit is necessary, the home health visit is not recommended to prevent the spread of COVID-19. Clinicians are instructed to call and notify their medical provider, await further instructions, and provide further instructions. Clinicians are urged to alert emergency medical services (EMS) and the emergency room regarding the patient's status of a possible COVID-19 case to allow pertinent receiving health care providers to take necessary standard and transmission based precautions. If with further, questions or clarification is needed, please contact the home health agency.

References

U.S Department of Health & Human Services (2013). Glossary. Retrieved from <https://www.cdc.gov/oralhealth/infectioncontrol/glossary.htm>

U.S Federal Drug Administration. (2020). Personal protective equipment for infection control. Retrieved from <https://www.fda.gov/medical-devices/general-hospital-devices-and-supplies/personal-protective-equipment-infection-control>

Centers for Disease Control and Prevention (CDC). (2014). Guidance for the selection and use of Personal Protective Equipment (PPE) in health care settings. Retrieved from <https://www.cdc.gov/hai/pdfs/ppe/ppeslides6-29-04.pdf>

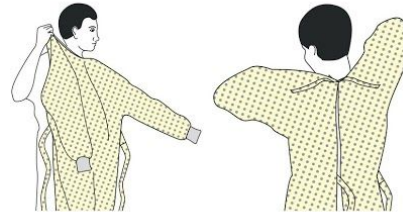
Appendix A

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



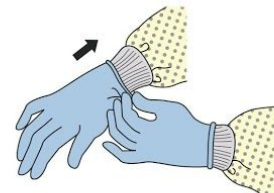
3. GOGGLES OR FACE SHIELD

- 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

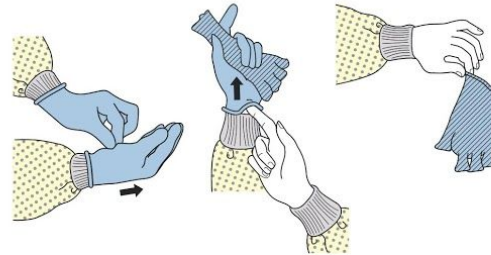


HOW TO SAFELY REMOVE PERSONAL PROTECTIVE EQUIPMENT (PPE) EXAMPLE 1

There are a variety of ways to safely remove PPE without contaminating your clothing, skin, or mucous membranes with potentially infectious materials. Here is one example. **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. GLOVES

- Outside of gloves are contaminated!
- If your hands get contaminated during glove removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Using a gloved hand, grasp the palm area of the other gloved hand and peel off first glove
- Hold removed glove in gloved hand
- Slide fingers of ungloved hand under remaining glove at wrist and peel off second glove over first glove
- Discard gloves in 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 or ear pieces
- If the item is reusable, place in designated receptacle for reprocessing. Otherwise, discard in a waste container



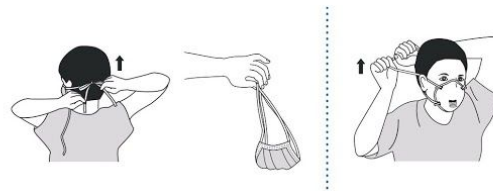
3. GOWN

- Gown front and sleeves are contaminated!
- If your hands get contaminated during gown removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Unfasten gown ties, taking care that sleeves don't contact your body when reaching for ties
- Pull gown away from neck and shoulders, touching inside of gown only
- Turn gown inside out
- Fold or roll into a bundle and discard in a waste container

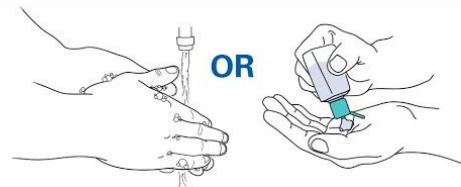


4. MASK OR RESPIRATOR

- 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



5. 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

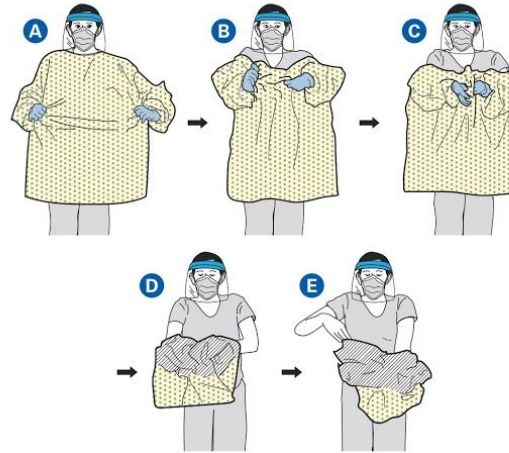


HOW TO SAFELY REMOVE PERSONAL PROTECTIVE EQUIPMENT (PPE) EXAMPLE 2

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



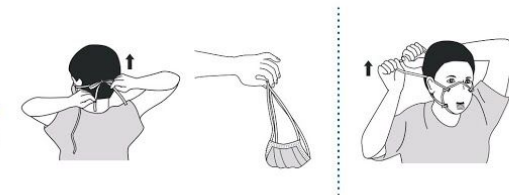
2. GOGGLES OR FACE SHIELD

- 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

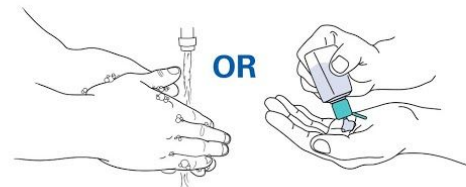


3. MASK OR RESPIRATOR

- 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

