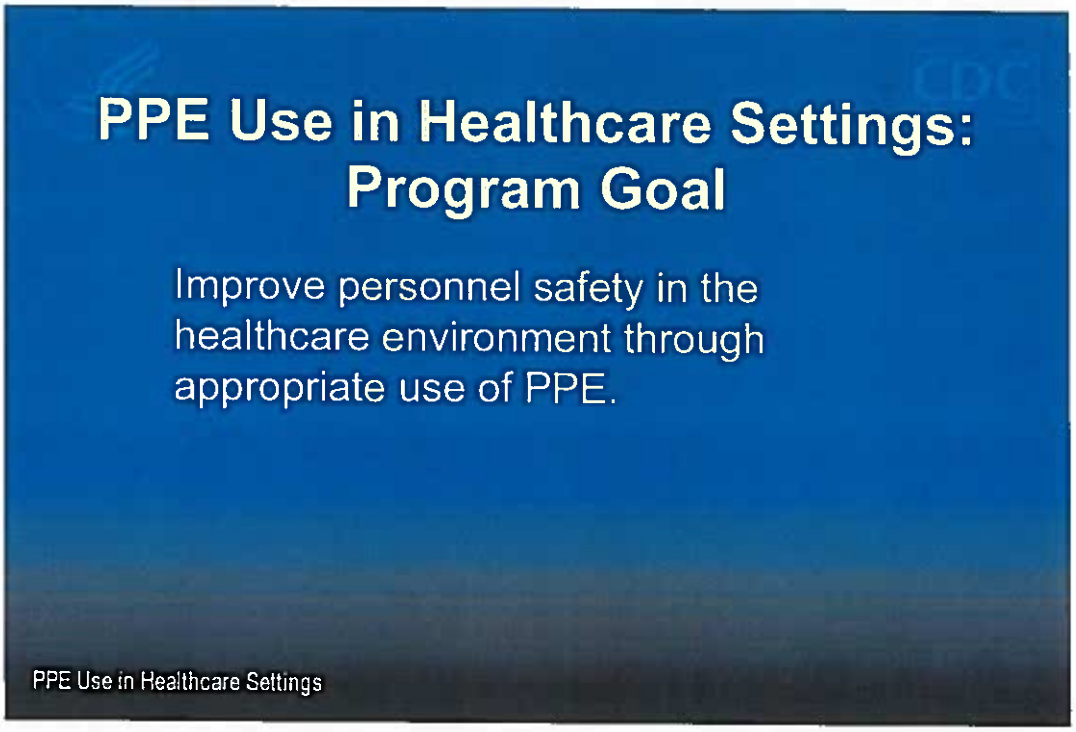
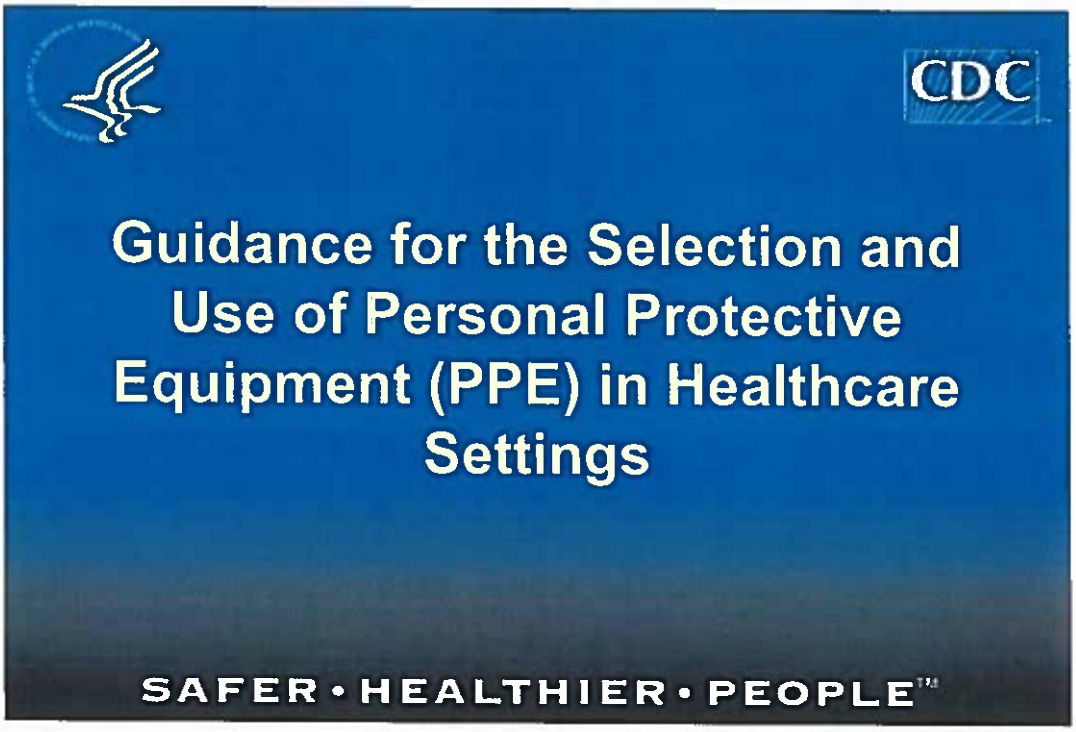
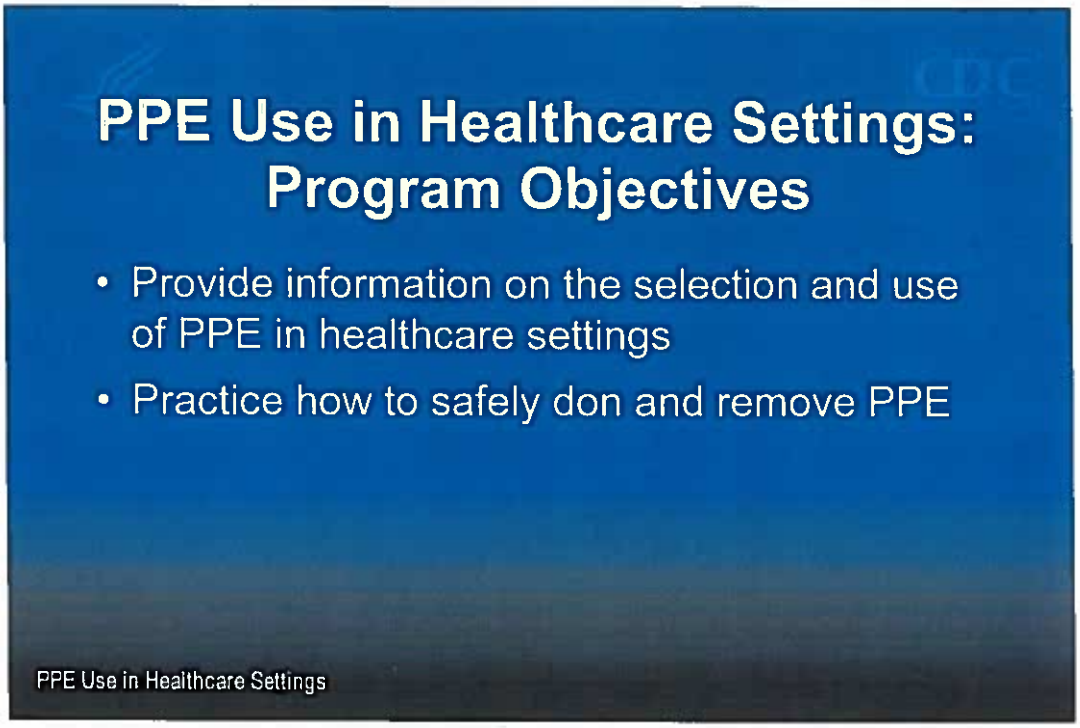
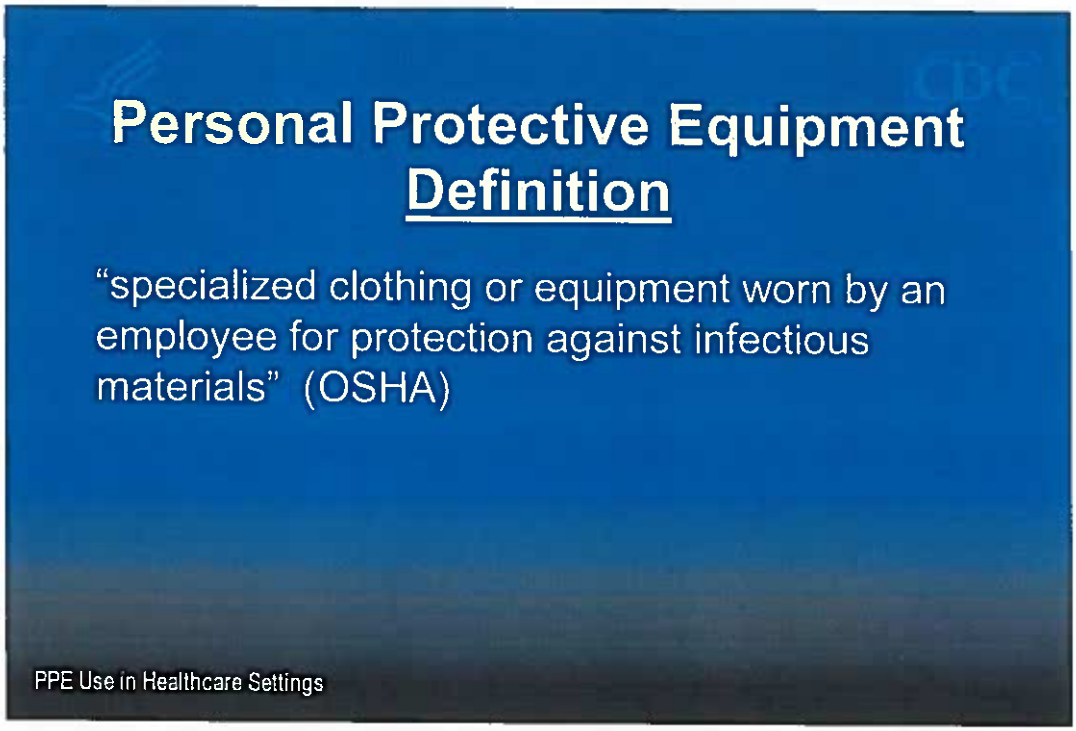


The goal of this program is to improve personnel safety in the healthcare environment through appropriate use of PPE.

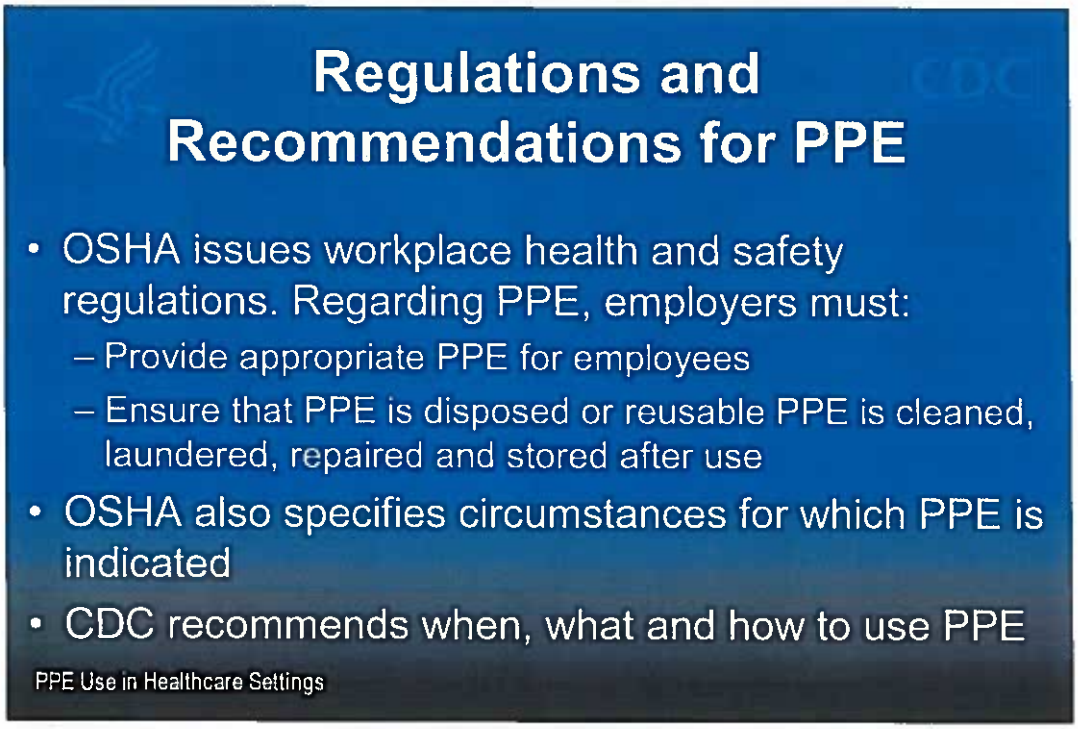

CDC
Guidance for the Selection and Use of Personal Protective Equipment (PPE) in Healthcare Settings
SAFER • HEALTHIER • PEOPLE™



The objectives of this program are to provide information on the selection and use of PPE in healthcare settings and to allow time for participants to practice the correct way to don and remove PPE.



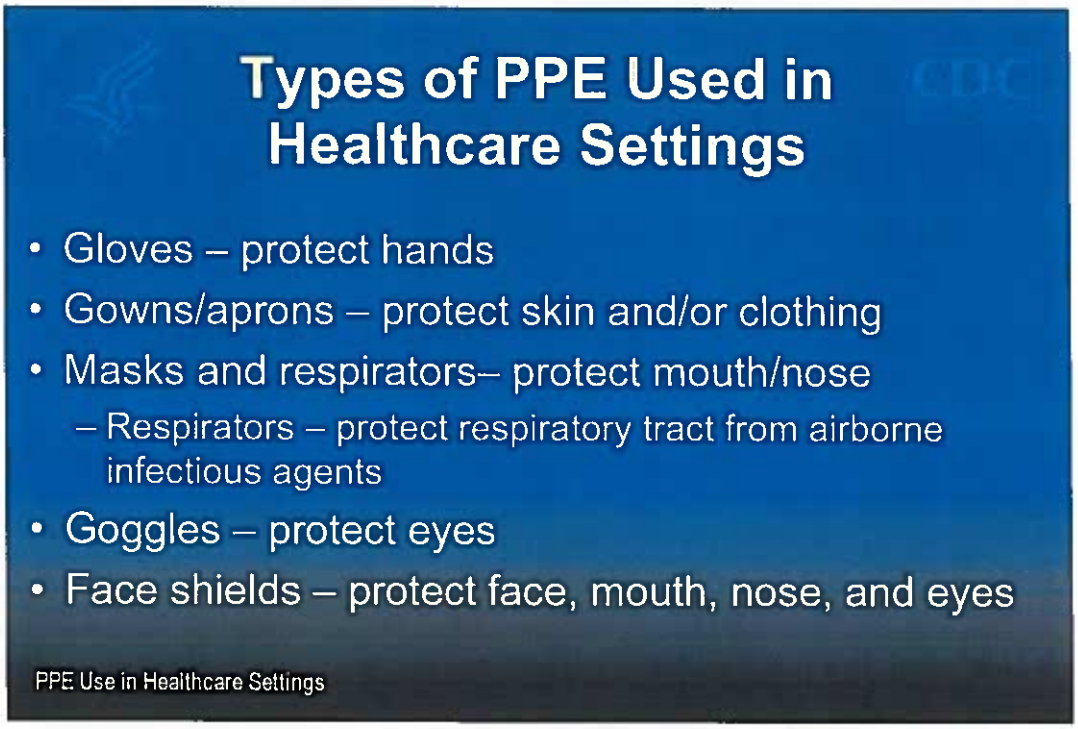
Personal protective equipment, or PPE, as defined by the Occupational Safety and Health Administration, or OSHA, is "specialized clothing or equipment, worn by an employee for protection against infectious materials."



OSHA issues regulations for workplace health and safety. These regulations require use of PPE in healthcare settings to protect healthcare personnel from exposure to bloodborne pathogens and *Mycobacterium tuberculosis*. However, under OSHA's General Duty Clause PPE is required for any potential infectious disease exposure. Employers must provide their employees with appropriate PPE and ensure that PPE is disposed or, if reusable, that it is properly cleaned or laundered, repaired and stored after use.

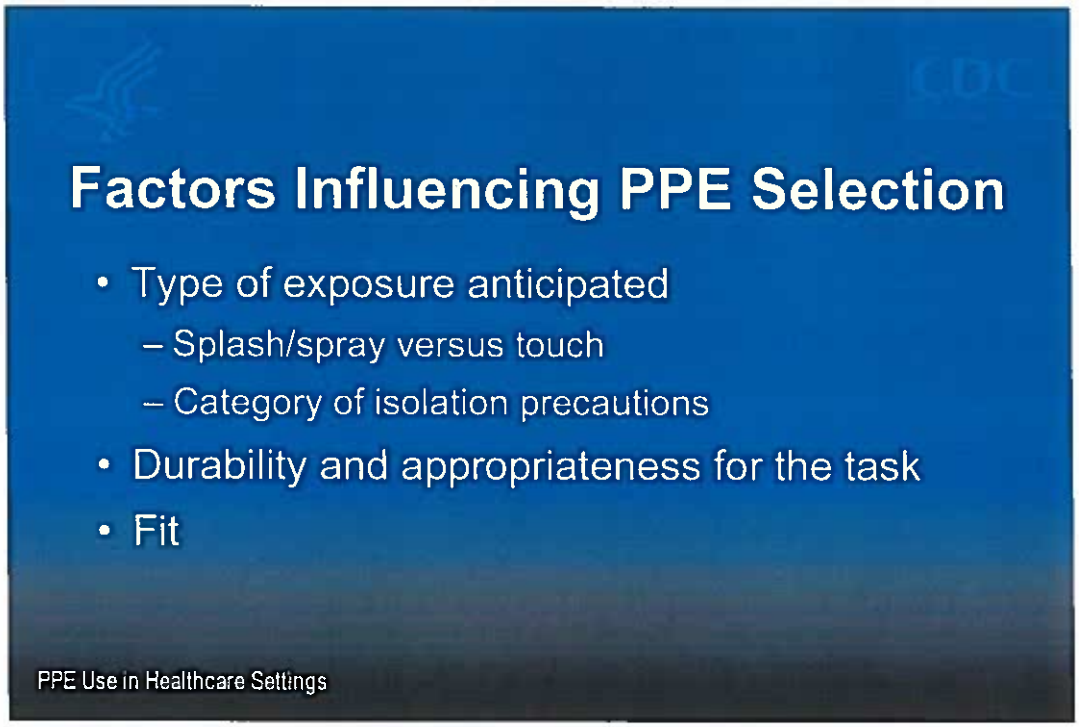
The Centers for Disease Control and Prevention (CDC) issues recommendations for when and what PPE should be used to prevent exposure to infectious diseases. This presentation will cover those recommendations, beginning with the hierarchy of safety and health controls.

The protection of healthcare personnel from infectious disease exposures in the workplace requires a combination of controls, one of which is the use of PPE. It is important to recognize that your protection as a healthcare worker also involves other prevention strategies. There are four major components to healthcare worker safety programs. First are training, such as you're receiving today, and administrative controls, like isolation policies and procedures, and procedures for recognizing patients with a communicable disease before they expose workers. Second are engineering controls like negative pressure rooms for patients with airborne diseases such as TB; third are work practice controls such as not recapping needles, and finally personal protective equipment. While PPE is last in the hierarchy of prevention, it is very important for protecting healthcare workers from disease transmission.



All of the PPE listed here prevent contact with the infectious agent, or body fluid that may contain the infectious agent, by creating a barrier between the worker and the infectious material. Gloves, protect the hands, gowns or aprons protect the skin and/or clothing, masks and respirators protect the mouth and nose, goggles protect the eyes, and face shields protect the entire face.

The respirator, has been designed to also protect the respiratory tract from airborne transmission of infectious agents. We'll discuss this in more detail later.



When you are selecting PPE, consider three key things.

First is the type of anticipated exposure. This is determined by the type of anticipated exposure, such as touch, splashes or sprays, or large volumes of blood or body fluids that might penetrate the clothing. PPE selection, in particular the combination of PPE, also is determined by the category of isolation precautions a patient is on.

Second, and very much linked to the first, is the **durability and appropriateness of the PPE for the task**. This will affect, for example, whether a gown or apron is selected for PPE, or, if a gown is selected, whether it needs to be fluid resistant, fluid proof, or neither.

Third is fit. (optional question) How many of you have seen someone trying to work in PPE that is too small or large? PPE must fit the individual user, and it is up to the employer to ensure that all PPE are available in sizes appropriate for the workforce that must be protected.

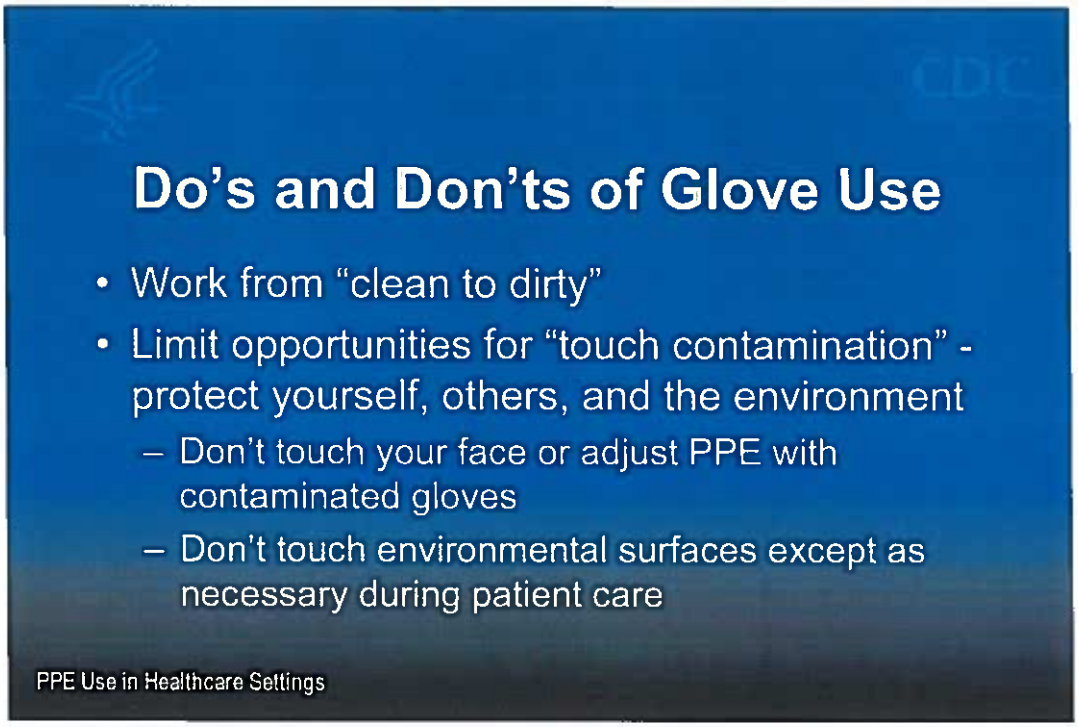
(Segue to next slide) With this as background, let's now discuss how to select and use specific PPE. After that we'll talk about which PPE is recommended for Standard Precautions and the various Isolation Precaution categories.

Gloves are the most common type of PPE used in healthcare settings. As you can see here, there are several things to consider when selecting the right glove for a specified purpose.

Most patient care activities require the use of a single pair of nonsterile gloves made of either latex, nitrile, or vinyl. However, because of allergy concerns, some facilities have eliminated or limited latex products, including gloves, and now use gloves made of nitrile or other material. Vinyl gloves are also frequently available and work well if there is limited patient contact. However, some gloves do not provide a snug fit on the hand, especially around the wrist, and therefore should not be used if extensive contact is likely.

Gloves should fit the user's hands comfortably – they should not be too loose or too tight. They also should not tear or damage easily. Gloves are sometimes worn for several hours and need to stand up to the task.

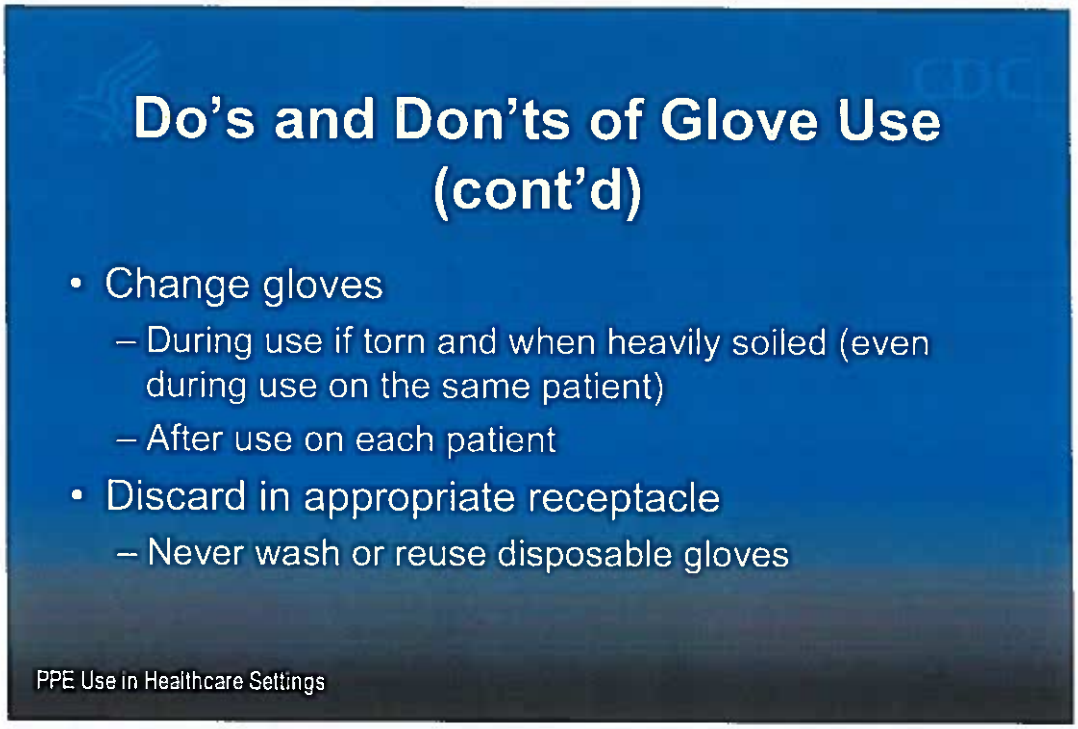
Who uses the other glove options? Sterile surgical gloves are worn by surgeons and other healthcare personnel who perform invasive patient procedures. During some surgical procedures, two pair of gloves may be worn. Environmental services personnel often wear reusable heavy duty gloves made of latex or nitrile to work with caustic disinfectants when cleaning environmental surfaces. However, they sometimes use patient care gloves too.



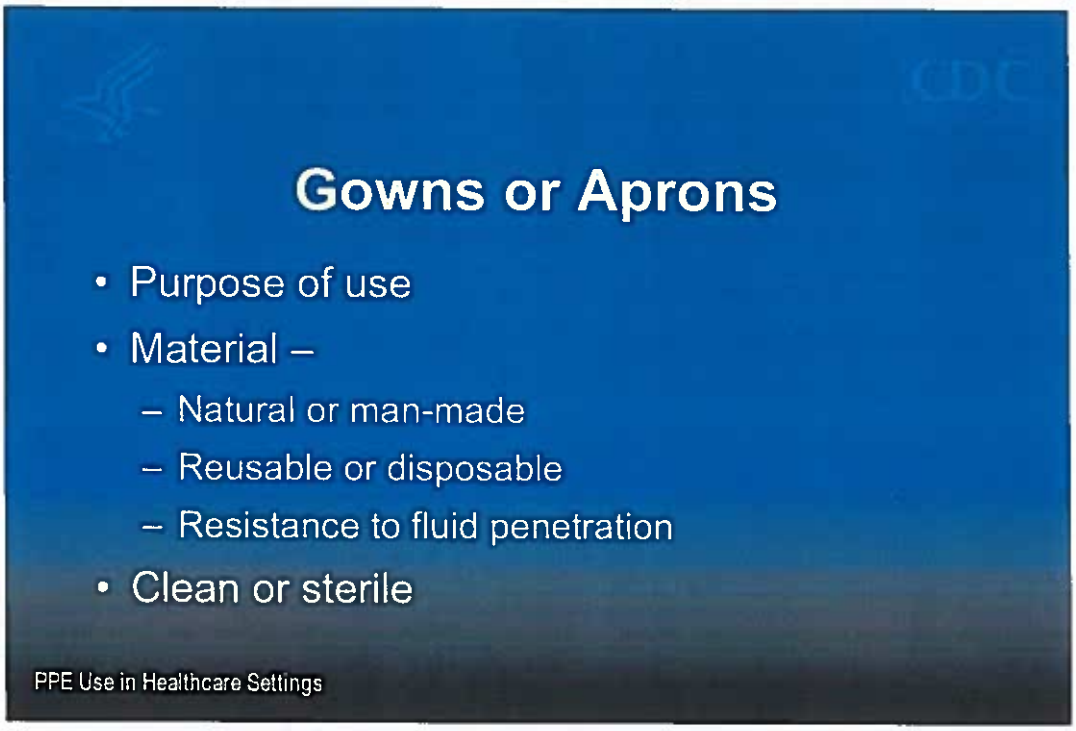
Gloves protect you against contact with infectious materials. However, once contaminated, gloves can become a means for spreading infectious materials to yourself, other patients or environmental surfaces. Therefore, the way YOU use gloves can influence the risk of disease transmission in your healthcare setting. These are the most important do's and don'ts of glove use.

Work from clean to dirty. This is a basic principle of infection control. In this instance it refers to touching clean body sites or surfaces before you touch dirty or heavily contaminated areas.

Limit opportunities for "touch contamination" - protect yourself, others and environmental surfaces. How many times have you seen someone adjust their glasses, rub their nose or touch their face with gloves that have been in contact with a patient? This is one example of "touch contamination" that can potentially expose oneself to infectious agents. Think about environmental surfaces too and avoid unnecessarily touching them with contaminated gloves. Surfaces such as light switches, door and cabinet knobs can become contaminated if touched by soiled gloves.



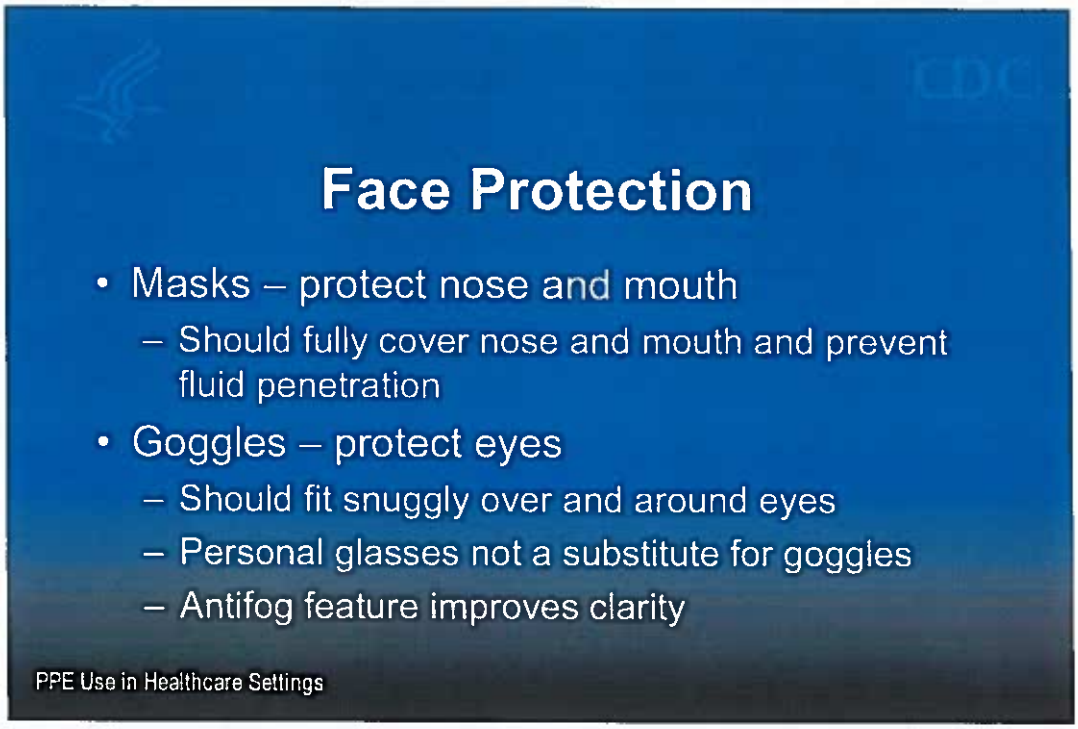
Change gloves as needed. If gloves become torn or heavily soiled and additional patient care tasks must be performed, then change the gloves before starting the next task. **Always** change gloves after use on each patient, and discard them in the nearest appropriate receptacle. Patient care gloves should never be washed and used again. Washing gloves does not necessarily make them safe for reuse; it may not be possible to eliminate all microorganisms and washing can make the gloves more prone to tearing or leaking.



There are three factors that influence the selection of a gown or apron as PPE. First is the purpose of use. Isolation gowns are generally the preferred PPE for clothing but aprons occasionally are used where limited contamination is anticipated. If contamination of the arms can be anticipated, a gown should be selected. Gowns should fully cover the torso, fit comfortably over the body, and have long sleeves that fit snuggly at the wrist.

Second are the material properties of the gown. Isolation gowns are made either of cotton or a spun synthetic material that dictate whether they can be laundered and reused or must be disposed. Cotton and spun synthetic isolation gowns vary in their degree of fluid resistance, another factor that must be considered in the selection of this garb. If fluid penetration is likely, a fluid resistant gown should be used.

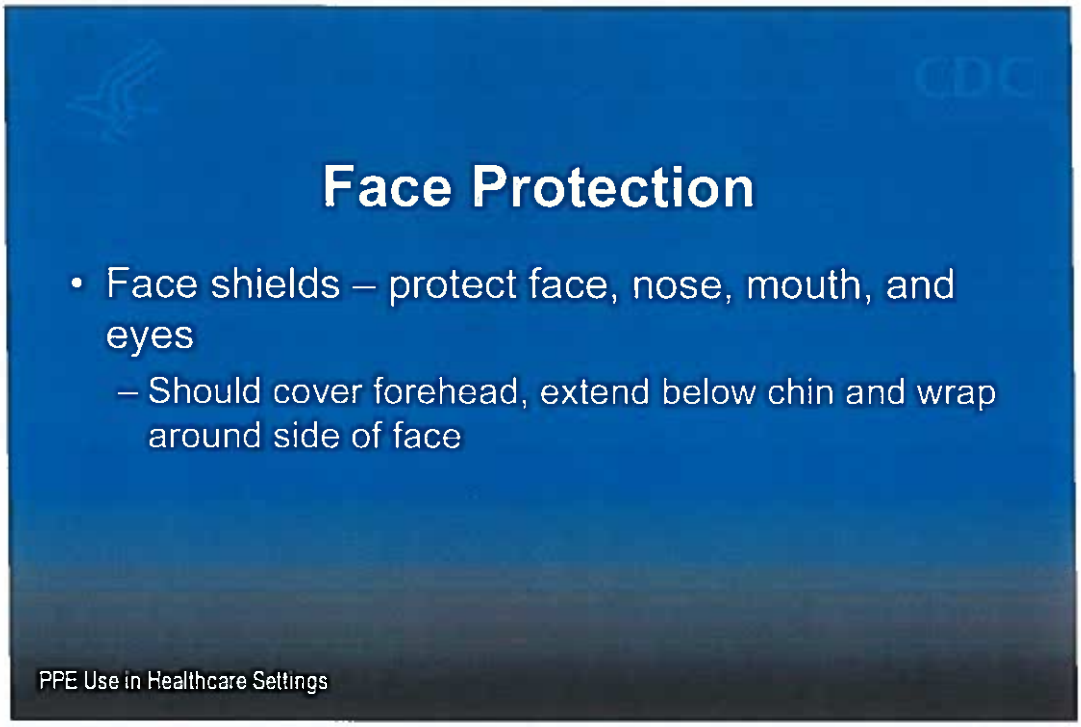
The last factor concerns patient risks and whether a clean, rather than sterile gown, can be used. Clean gowns are generally used for isolation. Sterile gowns are only necessary for performing invasive procedures, such as inserting a central line. In this case, a sterile gown would serve purposes of patient and healthcare worker protection.



A combination of PPE types is available to protect all or parts of the face from contact with potentially infectious material. The selection of facial PPE is determined by the isolation precautions required for the patient and/or the nature of the patient contact. This will be discussed later.

Masks should fully cover the nose and mouth and prevent fluid penetration. Masks should fit snuggly over the nose and mouth. For this reason, masks that have a flexible nose piece and can be secured to the head with string ties or elastic are preferable.

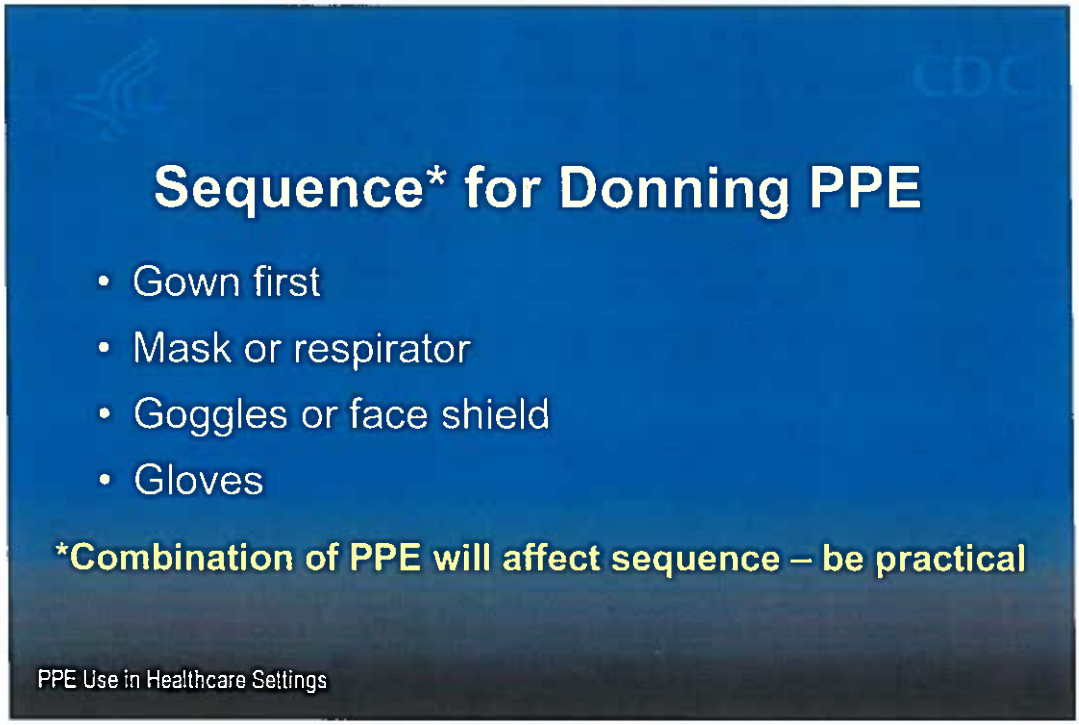
Goggles provide barrier protection for the eyes; personal prescription lenses do not provide optimal eye protection and should not be used as a substitute for goggles. Goggles should fit snuggly over and around the eyes or personal prescription lenses. Goggles with antifog features will help maintain clarity of vision.



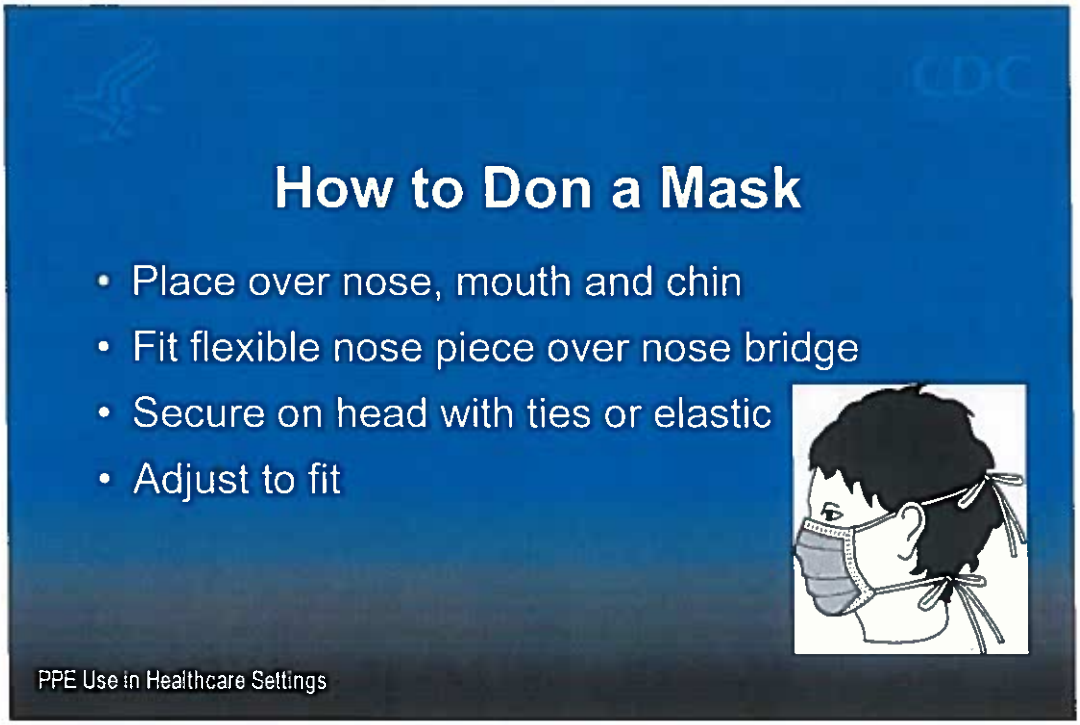
When skin protection, in addition to mouth, nose, and eye protection, is needed or desired, for example, when irrigating a wound or suctioning copious secretions, a face shield can be used as a substitute to wearing a mask or goggles. The face shield should cover the forehead, extend below the chin, and wrap around the side of the face.

This next segment will address how to safely don, use, and remove PPE.

NOTE TO TRAINER: Consider having a participant demonstrate donning and removing PPE as you go through this section.



The gown should be donned first. The mask or respirator should be put on next and properly adjusted to fit; remember to fit check the respirator. The goggles or face shield should be donned next and the gloves are donned last. Keep in mind, the combination of PPE used, and therefore the sequence for donning, will be determined by the precautions that need to be taken.



Some masks are fastened with ties, others with elastic. If the mask has ties, place the mask over your mouth, nose and chin. Fit the flexible nose piece to the form of your nose bridge; tie the upper set at the back of your head and the lower set at the base of your neck.

If a mask has elastic head bands, separate the two bands, hold the mask in one hand and the bands in the other. Place and hold the mask over your nose, mouth, and chin, then stretch the bands over your head and secure them comfortably as shown; one band on the upper back of your head, the other below the ears at the base of the neck.

Adjust the mask to fit. Remember, you don't want to be touching it during use so take the few seconds needed to make sure it is secure on your head and fits snuggly around your face so there are no gaps.

How to Don Eye and Face Protection

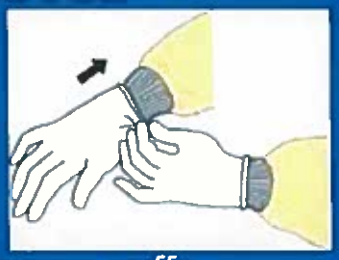
- Position goggles over eyes and secure to the head using the ear pieces or headband
- Position face shield over face and secure on brow with headband
- Adjust to fit comfortably

PPE Use in Healthcare Settings

If eye protection is needed, either goggles or a face shield should be worn. Position either device over the face and/or eyes and secure to head using the attached ear pieces or head band. Adjust to fit comfortably. Goggles should feel snug but not tight.

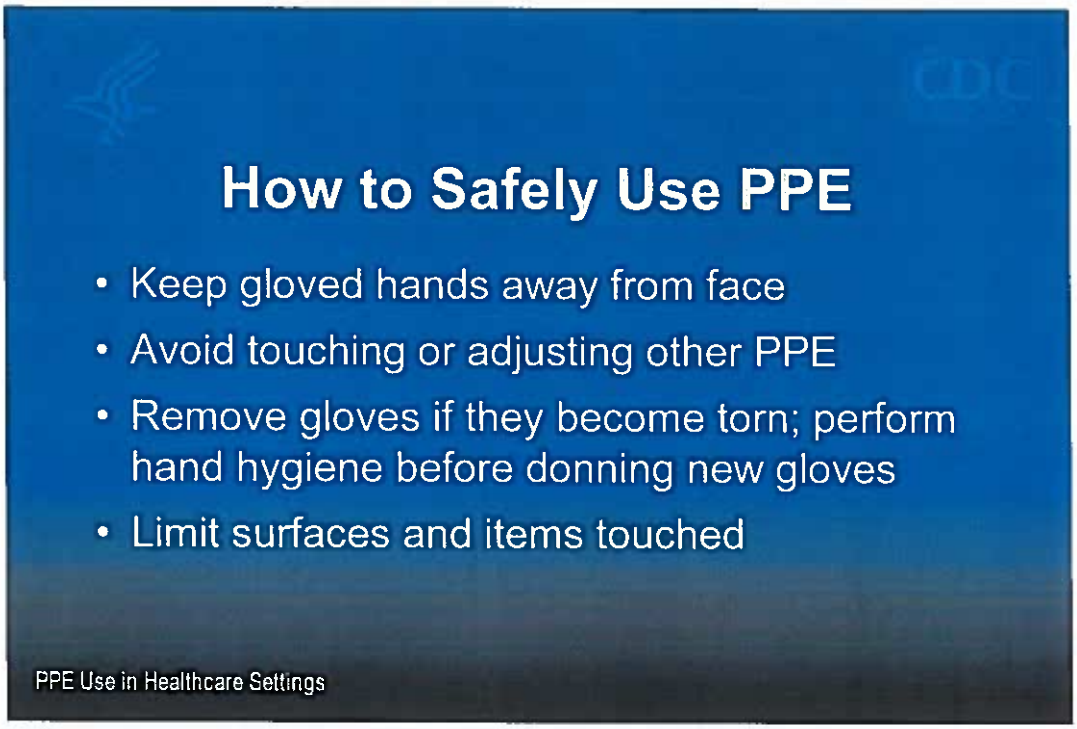
How to Don Gloves

- Don gloves last
- Select correct type and size
- Insert hands into gloves
- Extend gloves over isolation gown cuffs



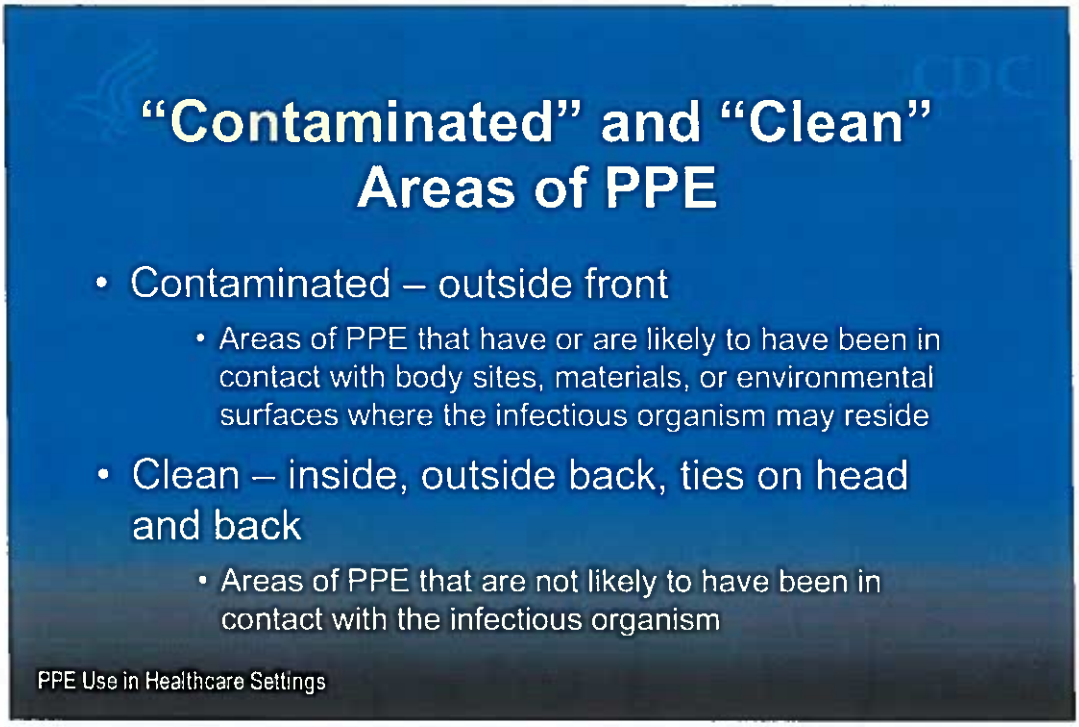
PPE Use in Healthcare Settings

The last item of PPE to be donned is a pair of gloves. Be sure to select the type of glove needed for the task in the size that best fits you. Insert each hand into the appropriate glove and adjust as needed for comfort and dexterity. If you are wearing an isolation gown, tuck the gown cuffs securely under each glove. This provides a continuous barrier protection for your skin.



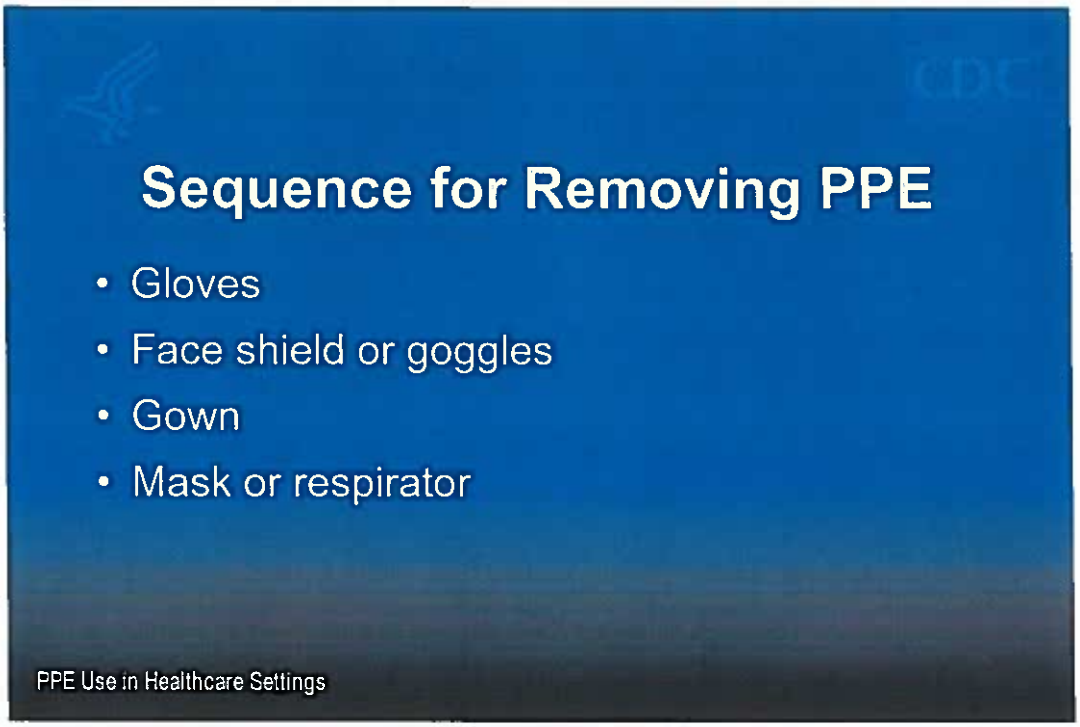
In addition to wearing PPE, you should also use safe work practices. Avoid contaminating yourself by keeping your hands away from your face and not touching or adjusting PPE. Also, remove your gloves if they become torn and perform hand hygiene before putting on a new pair of gloves. You should also avoid spreading contamination by limiting surfaces and items touched with contaminated gloves.

We've talked about donning and using PPE. Now we'll discuss how to safely remove PPE to protect you, your colleagues, and patients from exposure to contaminated materials.



To remove PEP safely, you must first be able to identify what sites are considered "clean" and what are "contaminated." In general, the outside front and sleeves of the isolation gown and outside front of the goggles, mask, respirator and face shield are considered "contaminated," regardless of whether there is visible soil. Also, the outside of the gloves are contaminated.

The areas that are considered "clean" are the parts that will be touched when removing PPE. These include inside the gloves; inside and back of the gown, including the ties; and the ties, elastic, or ear pieces of the mask, goggles and face shield.



The sequence for removing PPE is intended to limit opportunities for self-contamination. The gloves are considered the most contaminated pieces of PPE and are therefore removed first. The face shield or goggles are next because they are more cumbersome and would interfere with removal of other PPE. The gown is third in the sequence, followed by the mask or respirator.

How to Remove Gloves (1)

- Grasp outside edge near wrist
- Peel away from hand, turning glove inside-out
- Hold in opposite gloved hand

PPE Use in Healthcare Settings

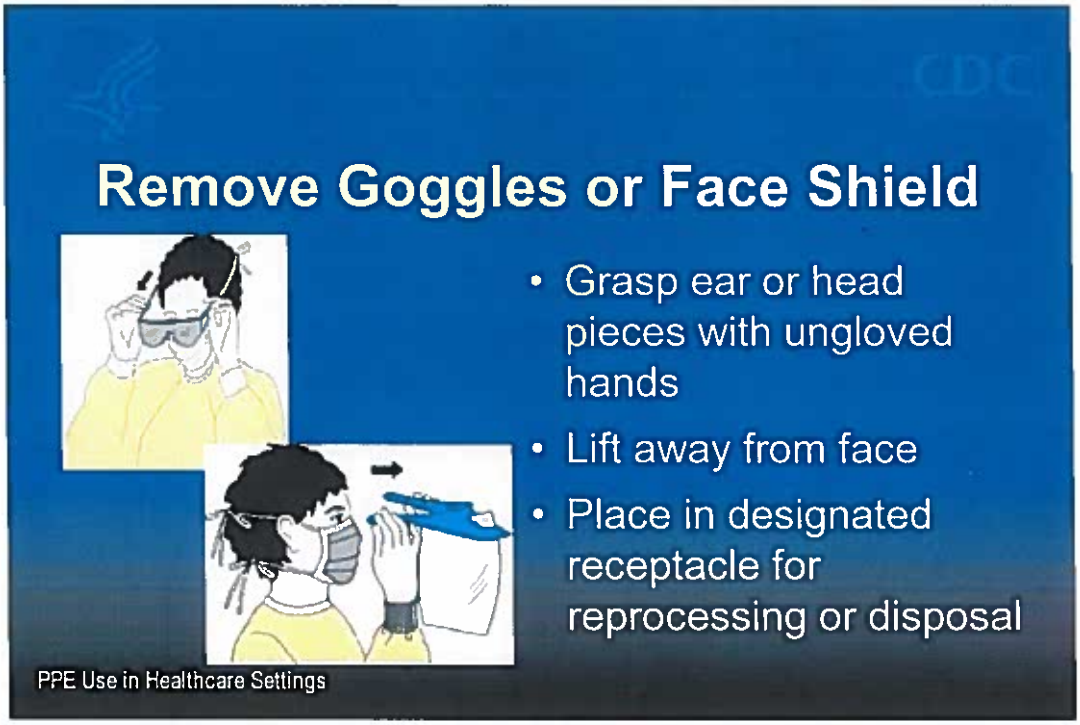
Using one gloved hand, grasp the outside of the opposite glove near the wrist. Pull and peel the glove away from the hand. The glove should now be turned inside-out, with the contaminated side now on the inside. Hold the removed glove in the opposite gloved hand.

How to Remove Gloves (2)

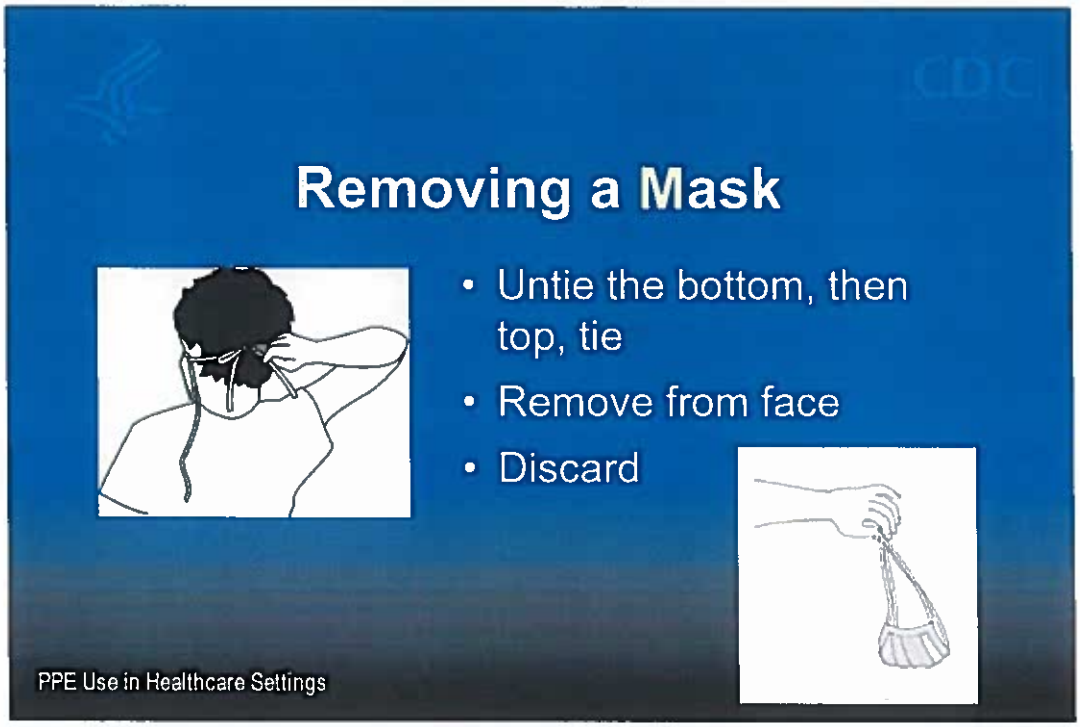
- Slide ungloved finger under the wrist of the remaining glove
- Peel off from inside, creating a bag for both gloves
- Discard

PPE Use in Healthcare Settings

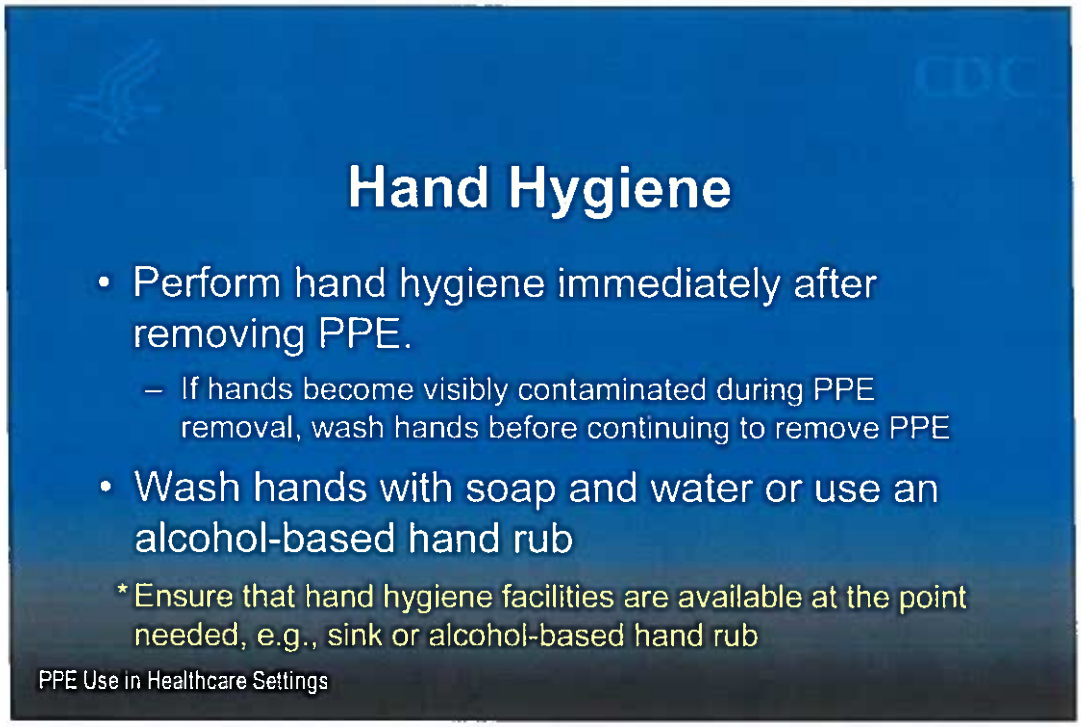
Slide one or two fingers of the ungloved hand under the wrist of the remaining glove. Peel glove off from the inside, creating a bag for both gloves. Discard in waste container.



Using ungloved hands, grasp the "clean" ear or head pieces and lift away from face. If goggle or face shield are reusable, place them in a designated receptacle for subsequent reprocessing. Otherwise, discard them in the waste receptacle.



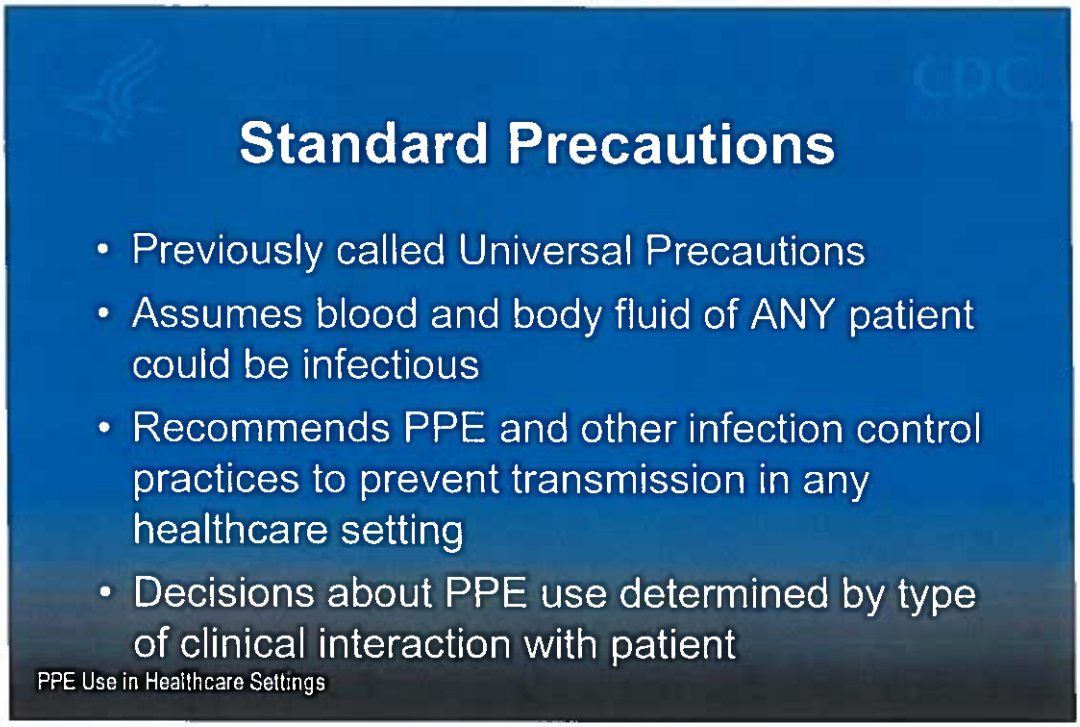
The front of the mask is considered contaminated and should not be touched. Remove by handling only the ties or elastic bands starting with the bottom then top tie or band. Lift the mask or respirator away from the face and discard it into the designated waste receptacle.



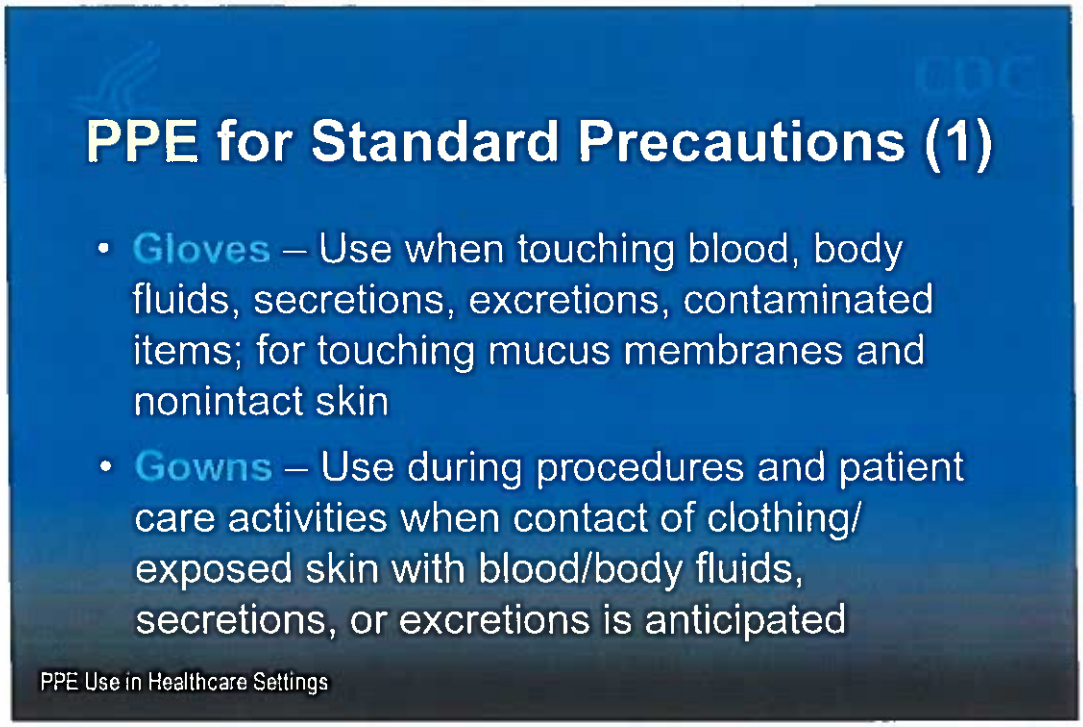
Hand hygiene is the cornerstone of preventing infection transmission. You should perform hand hygiene immediately after removing PPE. If your hands become visibly contaminated during PPE removal, wash hands before continuing to remove PPE. Wash your hands thoroughly with soap and warm water or, if hands are not visibly contaminated, use an alcohol-based hand rub.

Thus far we have discussed the various types of PPE, considered various factors that go into selecting appropriate PPE, and described how to don, use, and remove PPE safely. This last segment of this presentation will discuss **WHEN** to use which PPE.

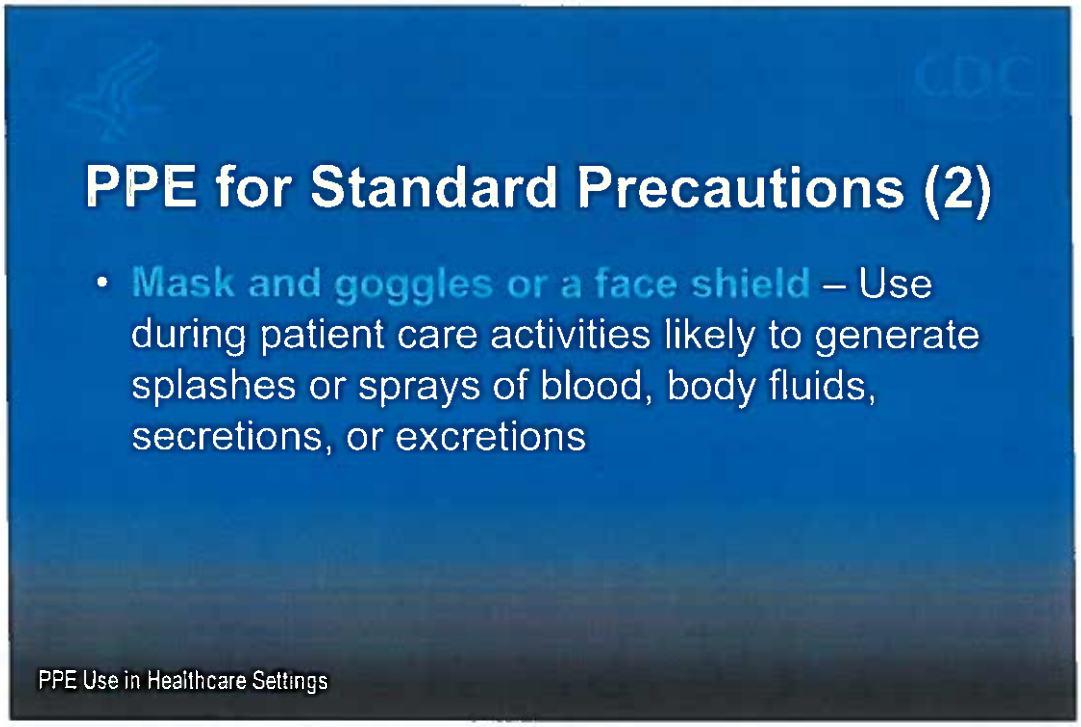
Decisions regarding when and which type of PPE should be worn are determined by CDC recommendations for Standard Precautions and Expanded Isolation Precautions.



Standard Precautions is an outgrowth of Universal Precautions. Universal Precautions was first recommended in 1987 to prevent the transmission of bloodborne pathogens to healthcare personnel. In 1996, the application of the concept was expanded and renamed "Standard Precautions." Standard Precautions is intended to prevent the transmission of common infectious agents to healthcare personnel, patients and visitors in any healthcare setting. During care for any patient, one should assume that an infectious agent could be present in the patient's blood or body fluids, including all secretions and excretions except tears and sweat. Therefore appropriate precautions, including use of PPE, must be taken. Whether PPE is needed, and if so, which type, is determined by the type of clinical interaction with the patient and the degree of blood and body fluid contact that can be reasonably anticipated and by whether the patient has been placed on isolation precautions such as Contact or Droplet Precautions or Airborne Infection Isolation.



Under Standard Precautions, **gloves** should be used when touching blood, body fluids, secretions, excretions, or contaminated items and for touching mucous membranes and nonintact skin. A **gown** should be used during procedures and patient care activities when contact of clothing and/or exposed skin with blood, body fluids, secretions, or excretions is anticipated. Aprons are sometimes used as PPE over scrubs, such as in hemodialysis centers when inserting a needle into a fistula.



Mask and goggles or a face shield should be used during patient care activities that are likely to generate splashes and sprays of blood, body fluids, secretions, or excretions.

Review the PPE requirements for each Task/Bench/Area.

Task/Bench/Area: Tube Room	
Hazard	**Description**
[x] Biological BBP	
[ ] Eye/Face Splash	
[ ] Respiratory	
[ ] Skin Splash	
[ ] Physical/projectile	
[ ] Electrical	
[ ] Chemical	
[ ] Other	
[ ] None	
PPE Required	
[x] Lab Coat	
[x] Gloves	
[ ] Safety glasses/goggles -D3 splash rated	
[ ] mask	
[ ] Face shield - stationary	
[ ] Face shield	
[ ] Respirator	
[ ] Hearing protection	
[ ] Other	
[ ] PPE Not Required	
Comments:	

Task/Bench/Area: Accessioning	
Hazard	**Description**
[x] Biological BBP	
[ ] Eye/Face Splash	
[ ] Respiratory	
[ ] Skin Splash	
[ ] Physical/projectile	
[ ] Electrical	
[ ] Chemical	
[ ] Other	
[ ] None	
PPE Required	
[x] Lab Coat	
[x] Gloves	
[ ] Safety glasses/goggles -D3 splash rated	
[ ] mask	
[ ] Face shield - stationary	
[ ] Face shield	
[ ] Respirator	
[ ] Hearing protection	
[ ] Other	
[ ] PPE Not Required	
Comments:	

Task/Bench/Area: Spin - Centrifuge	
Hazard	**Description**
[x] Biological BBP	
[ ] Eye/Face Splash	
[ ] Respiratory	
[ ] Skin Splash	
[ ] Physical/projectile	
[ ] Electrical	
[ ] Chemical	
[ ] Other	
[ ] None	
PPE Required	
[x] Lab Coat	
[X] Gloves	
[ ] Safety glasses/goggles -D3 splash rated	
[ ] mask	
[ ] Face shield - stationary	
[ ] Face shield	
[ ] Respirator	
[ ] Hearing protection	
[ ] Other	
[ ] PPE Not Required	
Comments:	

Task/Bench/Area: CSF and Body Fluids Handling	
Hazard	**Description**
[x] Biological BBP	
[X] Eye/Face Splash	
[X] Respiratory	
[ ] Skin Splash	
[ ] Physical/projectile	
[ ] Electrical	
[ ] Chemical	
[ ] Other	
[ ] None	
PPE Required	
[x] Lab Coat	
[X] Gloves	
[ ] Safety glasses/goggles -D3 splash rated	
[ ] mask	
[ ] Face shield - stationary	
[ ] Face shield	
[ ] Respirator	
[ ] Hearing protection	
[x] Other Work in hood	
[ ] PPE Not Required	
Comments:	

Task/Bench/Area: Spin - 24 urine prep

Hazard	Description
[x] Biological BBP	
[X] Eye/Face Splash	
[ ] Respiratory	
[X] Skin Splash	
[ ] Physical/projectile	
[ ] Electrical	
[X] Chemical	
[ ] Other	
[ ] None	

PPE Required

- [x] Lab Coat
- [X] Gloves
- [ ] Safety glasses/goggles -D3 splash rated
- [ ] mask
- [X] Face shield - stationary
- [ ] Face shield
- [ ] Respirator
- [ ] Hearing protection
- [ ] Other
- [ ] PPE Not Required

Comments:

Task/Bench/Area: Spin - open urine containers

Hazard	Description
[x] Biological BBP	
[X] Eye/Face Splash	
[ ] Respiratory	
[X] Skin Splash	
[ ] Physical/projectile	
[ ] Electrical	
[ ] Chemical	
[ ] Other	
[ ] None	

PPE Required

- [x] Lab Coat
- [X] Gloves
- [ ] Safety glasses/goggles -D3 splash rated
- [ ] mask
- [X] Face shield - stationary
- [ ] Face shield
- [ ] Respirator
- [ ] Hearing protection
- [ ] Other
- [ ] PPE Not Required

Comments:

Task/Bench/Area: Leaking containers of bloo	
Hazard	**Description**
[x] Biological BBP	
[X] Eye/Face Splash	
[ ] Respiratory	
[X] Skin Splash	
[ ] Physical/projectile	
[ ] Electrical	
[ ] Chemical	
[ ] Other	
[ ] None	
PPE Required	
[x] Lab Coat	
[X] Gloves	
[ ] Safety glasses/goggles -D3 splash rated	
[ ] mask	
[X] Face shield - stationary	
[ ] Face shield	
[ ] Respirator	
[ ] Hearing protection	
[ ] Other	
[ ] PPE Not Required	
Comments:	
Face shield and/or safety glasses with mask when splash risk when leaking containers.	

Task/Bench/Area: Client Services	
Hazard	**Description**
[ ] Biological BBP	
[ ] Eye/Face Splash	
[ ] Respiratory	
[ ] Skin Splash	
[ ] Physical/projectile	
[ ] Electrical	
[ ] Chemical	
[ ] Other	
[x] None	
PPE Required	
[ ] Lab Coat	
[ ] Gloves	
[ ] Safety glasses/goggles -D3 splash rated	
[ ] mask	
[ ] Face shield - stationary	
[ ] Face shield	
[ ] Respirator	
[ ] Hearing protection	
[ ] Other	
[x] PPE Not Required	
Comments:	

Task/Bench/Area: Courier Drop Off Counter	
Hazard	**Description**
[x] Biological BBP	
[ ] Eye/Face Splash	
[ ] Respiratory	
[ ] Skin Splash	
[ ] Physical/projectile	
[ ] Electrical	
[ ] Chemical	
[ ] Other	
[ ] None	
PPE Required	
[x] Lab Coat	
[x] Gloves	
[ ] Safety glasses/goggles -D3 splash rated	
[ ] mask	
[ ] Face shield - stationary	
[ ] Face shield	
[ ] Respirator	
[ ] Hearing protection	
[ ] Other	
[ ] PPE Not Required	
Comments:	

Task/Bench/Area: Drop off window	
Hazard	**Description**
[x] Biological BBP	
[ ] Eye/Face Splash	
[ ] Respiratory	
[ ] Skin Splash	
[ ] Physical/projectile	
[ ] Electrical	
[ ] Chemical	
[ ] Other	
[ ] None	
PPE Required	
[x] Lab Coat	
[x] Gloves	
[ ] Safety glasses/goggles -D3 splash rated	
[ ] mask	
[ ] Face shield - stationary	
[ ] Face shield	
[ ] Respirator	
[ ] Hearing protection	
[ ] Other	
[ ] PPE Not Required	
Comments:	