Personal Protective Equipment and Standard Precautions

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Part 1: Selecting & Using Personal Protective Equipment
• Recognize the different types of personal protective equipment available to healthcare workers.
• Identify best practices in the indications for & use of PPE.
• Be able to effectively demonstrate how to safely don and doff PPE.
Defining Personal Protective Equipment (PPE)

“Specialized clothing or equipment worn by an employee for protection against infectious materials” - OSHA
Regulations and Recommendations

OSHA \(^1\) – BBP 1910.1030(d)(3)

- Personal protective equipment is **required** if exposure to blood and other potentially infectious materials is anticipated.

- Appropriate PPE **must** be provided by the employer.

- PPE is considered appropriate **only** if it does not permit blood or other potentially infectious materials to reach employees clothes, skin, eyes, mouth, or other mucous membranes.

- Employees **must** remove and discard PPE before leaving patient room.

- Employers **must** provide PPE training on employment, within one year of previous trainings, and as needed. Training must include:
  - When PPE is necessary, what PPE is necessary, and how to correctly don and doff.
Regulations and Recommendations

NIOSH/CDC

• It is recommended that competency in donning and doffing PPE be accomplished by demonstration with the opportunity for return demonstration.

• The type and duration of precautions used for selected infections and conditions are recommended based on the available literature supporting best practices.²
Types of PPE Used in Healthcare Settings

• Gloves – Protect hands from germs and reduce the spread of germs.

• Gowns – Protect clothing and skin from contamination and reduce the spread of germs.

• Eye protection – Protect mucous membranes from blood and bodily fluids.

• Masks – Protect respiratory tract from infectious agents and prevent the spread of germs from nose and mouth.
Gloves

Best Practices in Glove Use

• Durable
• Correct fit
• Vinyl, latex, or nitrile
• Disposable
• Single-use
• Clean or Sterile

• Not an acceptable alternative to hand hygiene
  • Hand hygiene should be performed after removal.
  • Gloves should be changed and hands washed when moving from a contaminated body-site to a clean body-site.
  • Work from clean to dirty.

Gloves should be worn when contact with blood/bodily fluids or other potentially infectious materials could occur.
Gowns

Best Practices in Gown Use

• **Resistant to fluid penetration** (OSHA requirement)
• Disposable
• Secured at the waist and neck
• Single-use for one patient only
• Removed before leaving the patient’s environment and hand hygiene performed.
• Easy to don and doff

Gown should be worn to protect clothing and skin when contact with blood, bodily fluids, secretions, or excretion is reasonably anticipated.
## AAMI PB70 Standards

<table>
<thead>
<tr>
<th>Liquid barrier Performance levels</th>
<th>Descriptions for use</th>
</tr>
</thead>
</table>
| **Level 1**                       | Used for MINIMAL risk situations  
                                   | Provides a slight barrier to small amounts of fluid penetration |
| **Level 2**                       | Used in LOW risk situations  
                                   | Provides a barrier to larger amounts of fluid penetration through splatter and some exposure through soaking |
| **Level 3**                       | Used in MODERATE risk situations  
                                   | Provides a barrier to larger amounts of fluid penetration through spatter and more fluid exposure through soaking than level 2 |
| **Level 4**                       | Used in HIGH risk situations  
                                   | Prevents all fluid penetration up to 1 hour  
                                   | May prevent virus penetration for up to 1 hour. |

Reference: [https://www.fda.gov/medicaldevices/productsandmedicalprocedures/generalhospitaldevicesandsupplies/personalprotectiveequipment/ucm452775.htm](https://www.fda.gov/medicaldevices/productsandmedicalprocedures/generalhospitaldevicesandsupplies/personalprotectiveequipment/ucm452775.htm)
Mouth, Nose, and Eye Protection

Best Practices in Face Protection

• Good fit – Masks should fully cover nose/mouth and goggles should fit snuggly over and around eyes.

• Combination masks with fluid shields can be used to offer simultaneous protection to mouth, nose, and eyes.

• Consider masks with ear loops versus ties.

• Prescription glasses should not be used as a substitute for eye protection.

• Fluid resistant

Wear PPE protecting the mouth, nose, and eyes during procedures and patient-care activities when exposure to splashes, sprays, or droplets of blood or bodily fluid is expected.
Part 2:

How to Safely Don and Doff PPE
Sequence for Donning PPE

1. Gown

2. Mask or Respirator

3. Goggles or Face Shield

4. Gloves

Key Points

• The type of PPE used will vary on the precautions required
• Keep hands away from face
• Limit surfaces touched
• Change gloves when torn, heavily contaminated, or when moving from dirty body-site to clean body-site.
• Perform hand hygiene
Donning a Gown

- Ensure correct size and type
- Secure at waist and neck
Donning Face Protection

• Ensure correct, snug fit.
• Fit flexible nose piece of masks over bridge of nose.
• Secure any ties or ear loops and adjust.
Donning Gloves

• Ensure correct size and type
• Extend gloves over isolation gown cuffs
Sequence for Doffing PPE

**Example # 1**

1. Gloves

2. Goggles or Face shield

3. Gown

4. Mask or Respirator

5. Hand Hygiene

**Example # 2**

1. Gown and Gloves

2. Goggles or Face shield

3. Mask or Respirator

4. Hand Hygiene
Key Points of Doffing

- Consider contaminated:
  - Outside of gown and sleeves
  - Outside of gloves
  - Goggles or face shield
  - Front of mask or respirator

- Perform hand hygiene between removal steps if hands become contaminated.

- Design of PPE may affect choice of removal procedure.

- After removal, observe for any visible contamination.
Removing Gloves

1. Pinch and hold the outside of the glove near the wrist area.
2. Peel downwards, away from the wrist, turning the glove inside-out.
3. Pull the glove away until it is removed from the hand, holding the inside-out glove with the gloved hand.
4. With your un-gloved hand, slide your fingers under the wrist of the remaining glove. Do not touch the outer surface of the glove.
5. Peel downwards, away from the wrist, turning the glove inside out.
6. Continue to pull the glove down and over the inside-out glove, being held in your gloved hand.

Hand Hygiene!
Removing Goggles or Face Shield

• Grasp ear or head piece and lift away from face.
• Do not grab front of goggles or face shield.
Removing Gown

• Break or unfasten neck ties and bring gown down.
• Touch inside of the gown only.
• Roll contaminated, outside of the gown toward the inside.
Removing Gown and Gloves Together

**Step 1**: Grasp gown in the front and pull away from your body so that ties break.

**Step 2**: While removing the gown, fold or roll the gown inside-out into a bundle.

**Step 3**: Peel off gloves while removing the gown, only touching the inside of the gloves and gown with bare hands.
Removing a Mask

• Untie the bottom, then the top.
• Remove at ear loops.
• Do not touch front of mask.
Removing a Respirator

• Should be removed last.
• Should be removed outside patient room or in an anteroom.
• Lift bottom elastics first then lift top elastic.
PPE Competency Validation

Why Evaluate Competency?

• To address regulatory compliance laws
• To promote patient safety
• To reveal gaps in performance
• To determine where to focus education
• To ensure staff can safely perform their job
Methods for Assessing Competency

- Performance improvement monitors
- Competency skills fairs
- Self-Assessment
- Return demonstration

"The best way to know if a learner can apply what he or she has learned when psychomotor skills are involved is to watch them try to do it."

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Personal Protective Equipment (PPE) Competency Validation

**Donning PPE**

- Type of validation: Return demonstration
- Employee Name: [blank]
- Job Title: [blank]

1. Perform Hand Hygiene
2. Don Gown: Fully covering torso from neck to knees, arms to end of wrists
3. Tie/Tape in back of neck and waist
4. Don Mask/Respirator: Secure ties/elastic bands at middle of head & neck
5. Fit snug to face and below chin (Fit-check respirator if applicable)
6. Don Goggles or Face Shield: Place over face and eyes, adjust to fit
7. Don Gloves: Extend to cover wrist of gown

**Doffing PPE**

- Type of validation: Return demonstration
- Employee Name: [blank]
- Job Title: [blank]

9. Remove Gloves: Grasp outside of glove with opposite gloved hand, peel off
10. Hold removed glove in gloved hand
11. Slide fingers of ungloved hand under remaining glove at wrist
12. Peel glove off over first glove
13. Discard gloves in waste container
14. Remove Goggles or Face Shield: Handle by head band or ear pieces
15. Discard in designated receptacle if re-processed or in waste container
16. Remove Gown: Unlatch ties/lower
17. Pull away from neck and shoulders, touching inside of gown only
18. Turn gown inside out
19. Fold or roll into bundle and discard
20. Remove Mask/Respirator (respirator removed after exit room/closed door): Gown bottom, then top ties or elastic and remove
21. Discard in waste container
22. Perform Hand Hygiene
Part 3:

PPE Use in Standard Precautions

8
Defining Standard Precautions

“Minimum infection prevention practices that apply to all persons, regardless of suspected or confirmed infection status, in all healthcare settings.” -CDC
What’s Included?

• Hand Hygiene
• **PPE**
• Respiratory etiquette
• Sharps safety
• Device sterilization and disinfection
• Environmental Cleaning
# RECOMMENDATIONS FOR APPLICATION OF STANDARD PRECAUTIONS FOR THE CARE OF ALL PATIENTS IN ALL HEALTHCARE SETTINGS

<table>
<thead>
<tr>
<th>Component</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hand Hygiene</td>
<td>After touching blood, body fluids, secretions, excretions, contaminated items; immediately after removing gloves; between patient contacts.</td>
</tr>
<tr>
<td>Personal Protective Equipment (PPE)</td>
<td></td>
</tr>
<tr>
<td>• Gloves</td>
<td>For touching blood, body fluids, secretions, excretions contaminated items; for touching mucous membranes and nonintact skin</td>
</tr>
<tr>
<td>• Gown</td>
<td>During procedures and patient-care activities when contact of clothing/exposed skin with blood/body fluids, secretions, and excretions is anticipated.</td>
</tr>
<tr>
<td>• Mask, eye protection (goggles), face shield*</td>
<td>During procedures and patient-care activities likely to generate splashes or sprays of blood, body fluids, secretions, especially suctioning, endotracheal intubation. During aerosol-generating procedures on patients with suspected or proven infections transmitted by respiratory aerosols (e.g., SARS, influenza), wear a fit-tested N95 or higher respirator in addition to gloves, gown, and face/eye protection.</td>
</tr>
<tr>
<td>Soiled patient care equipment</td>
<td>Handle in a manner that prevents transfer of microorganisms to others and to the environment; wear gloves if visibly contaminated; perform hand hygiene.</td>
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<tr>
<td>Environmental control</td>
<td>Develop procedures for routine care, cleaning, and disinfection of environmental surfaces, especially frequently touched surfaces in patient-care areas.</td>
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<tr>
<td>Textiles and laundry</td>
<td>Handle in a manner that prevents transfer of microorganisms to others and to the environment</td>
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<tr>
<td>Safe injection practices</td>
<td>Do not recap, bend, break, or hand-manipulate used needles; if recapping is required, use a one-handed scoop technique only; use safety features when available; place used sharps in puncture-resistant container</td>
</tr>
<tr>
<td>Patient resuscitation</td>
<td>Use mouthpiece, resuscitation bag, other ventilation devices to prevent contact with mouth and oral secretions</td>
</tr>
</tbody>
</table>

What type of PPE would **YOU** wear?

PPE should be used as a part of standard precautions when exposure to blood or bodily fluid is anticipated.

- Cleaning an incontinent patient?
  - Gloves w/wo gown
- Responding to an emergency where blood is spurting?
  - Gloves, fluid-resistant gown, mask with face shield
- Taking vital signs?
  - Usually none
- Checking blood glucose
  - Gloves
- Suctioning oral secretions?
  - Gloves, mask with face shield, fluid-resistant gown
- Transporting a patient in a wheelchair?
  - Usually none
- Changing a wound dressing?
  - Gloves
References

2. CDC Guidelines for Isolations Precautions - https://www.cdc.gov/infectioncontrol/guidelines/isolation/recommendations.html
3. CDC PPE donning and doffing return demonstration training - https://www.cdc.gov/hai/prevent/ppe_train.html