

Personal protective equipment (PPE), removal, ambulatory care

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■ Introduction

Following standard and transmission-based precautions helps prevent the spread of infection from patient to patient, patient to health care worker, and health care worker to patient.^{1 2} It also reduces the risk of infection in immunocompromised patients. Central to the success of these precautions is the selection of the proper personal protective equipment (PPE), including gowns, gloves, masks, and protective eyewear (such as goggles and face masks with eye shields), as well as the adequate training of those who use the equipment. It's important to know how to remove PPE properly to reduce the risk of exposure to and transmission of infectious pathogens.

◆ **Clinical alert:** For information on Coronavirus disease (COVID-19), please refer to the latest recommendations from the CDC, located at https://www.cdc.gov/coronavirus/2019-ncov/infection-control/control-recommendations.html?CDC_AA_refVal=https%253A%252F%252Fwww.cdc.gov%252Fcoronavirus%252F2019-ncov%252Fhpc%252Finfection-control.html, when caring for a patient with known or suspected Coronavirus disease.◆

◆ **Clinical alert:** Please refer to the latest recommendations from the Centers for Disease Control and Prevention (CDC), available at <https://www.cdc.gov/vhf/ebola/clinicians/index.html>, when caring for a patient with known or suspected Ebola virus disease.◆

■ Equipment

- Trash container
- Optional: receptacles for reusable gown and equipment

■ Implementation

- After completing patient care, prepare to leave the room by collecting items that need to be removed from the room.
- Remember that the outside surfaces of your goggles or face mask with eye shield, face mask or respirator, and barrier clothes (such as a gown) are considered contaminated.²
- Except for a respirator, remove all PPE at the patient's doorway or in the anteroom. Remove a respirator after leaving the patient's room and closing the door.²
- Remove your gloves using the appropriate technique. (See [Removing contaminated gloves.](#)) Don't touch any area of your skin with the outside of either glove.²
- Discard your gloves in the appropriate receptacle.²
- Perform hand hygiene.^{3 4 5 6 7 8}

REMOVING CONTAMINATED GLOVES

Proper removal techniques are essential for preventing the spread of pathogens from your gloves to your skin surfaces. Follow these steps carefully to remove your contaminated gloves properly.

- Grasp the palm of one glove with your opposite gloved hand and peel off the glove, turning the glove inside out as you pull it off. Hold the removed glove in your remaining gloved hand.²



- Slide the fingers of your ungloved hand under the second glove at the wrist, taking care not to touch the outer surface of the glove.²



- Peel off the second glove over the first glove, containing the one glove inside the other.²
- Discard the gloves in the appropriate receptacle.²
- Perform hand hygiene.^{3 4 5 6 7 8}



- To remove your goggles or face mask with eye shield:
 - Grasp the ear pieces or headband and remove carefully.
 - Place the equipment in the appropriate receptacle for reprocessing or discard it in the appropriate receptacle.^[2]
- To remove your gown (see [Removing your gown and gloves together](#)):
 - Untie the neck straps and then the waist ties.
 - Pull the gown away from your neck and shoulders, touching only the inside of the gown. Turn the gown inside out as you remove it, folding it or rolling it into a bundle to *help ensure containment of pathogens*. Alternatively, if using a three-armhole gown, unfasten the back of the gown and remove your left arm from the front panel opening. Turn the gown inside out as you remove it. Then slide your arms out of the gown, folding or rolling it into a bundle.^[9]
 - Discard the gown in the appropriate receptacle.^[2]



- To remove your face mask or respirator:
 - Grasp the bottom tie or elastic and lift it over your head.
 - Grasp the top tie or elastic and remove the face mask or respirator carefully. Don't touch the front of the mask *to help prevent contamination*.
 - Discard the face mask in the appropriate receptacle.²
- Perform hand hygiene immediately.^{3 4 5 6 7 8}

REMOVING YOUR GOWN AND GLOVES TOGETHER

The Centers for Disease Control and Prevention also discusses an alternative method for removing your gown and gloves. In this method, a disposable gown is used and the gown and gloves are removed together. Follow these steps to remove your gown and gloves together:

- With your gloved hands, grasp the gown in the front.¹⁰
- Pull the gown away from your body so that the ties break.¹⁰
- Fold or roll the gown inside out and into a bundle.¹⁰
- Peel off your gloves at the same time you remove the gown; touch only the inside of your gloves and gown with your bare hands.¹⁰
- Discard the gown and gloves in the appropriate receptacle.²
- Perform hand hygiene immediately.^{3 4 5 6 7 8}

Special Considerations

- Use gloves only once, and discard them in the appropriate receptacle before leaving a contaminated area. Don't wash or reuse disposable gloves.²
- Consult the CDC, World Health Organization, or Occupational Safety and Health Administration website for guidance during an outbreak of infectious disease as needed.
- Be aware that PPE loses its effectiveness when wet *because moisture permits organisms to seep through the material*. Change masks and gowns as soon as moisture is noticeable or according to the manufacturer's recommendations or your facility's guidelines.^{2 11}

■ Complications

Improper PPE use can lead to pathogen transmission and exposure to infectious organisms.

■ Documentation

No documentation is needed.

This procedure has been co-developed and reviewed by the American Academy of Ambulatory Care Nursing.



■ Related Procedures

- [Personal protective equipment \(PPE\), putting on](#)
- [Personal protective equipment \(PPE\), putting on, ambulatory care](#)
- [Personal protective equipment \(PPE\), removal](#)

■ References

[\(Rating System for the Hierarchy of Evidence for Intervention/Treatment Questions\)](#)

1. The Joint Commission. (2019). Standard IC.02.01.01. *Comprehensive accreditation manual for ambulatory care*. Oakbrook Terrace, IL: The Joint Commission. (Level VII)
2. Siegel, J. D., et al. (2007, revised 2019). "2007 guideline for isolation precautions: Preventing transmission of infectious agents in healthcare settings" [Online]. Accessed July 2019 via the Web at <https://www.cdc.gov/infectioncontrol/pdf/guidelines/isolation-guidelines-H.pdf> (Level II)
3. The Joint Commission. (2019). Standard NPSG.07.01.01. *Comprehensive accreditation manual for ambulatory care*. Oakbrook Terrace, IL: The Joint Commission. (Level VII)
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8. Accreditation Association for Hospitals and Health Systems. (2018). Standard 07.01.21. Healthcare Facilities Accreditation Program: Accreditation requirements for acute care hospitals. Chicago, IL: Accreditation Association for Hospitals and Health Systems. (Level VII)
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11. Occupational Safety and Health Administration. (2012). "Bloodborne pathogens, standard number 1910.1030" [Online]. Accessed July 2019 via the Web at https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_id=10051&p_table=STANDARDS (Level VII)

■ Additional References

- Association for Professionals in Infection Control and Epidemiology (APIC). (2013). "APIC implementation guide: Guide to infection prevention in emergency medical services" [Online]. Accessed July 2019 via the Web at https://www.ems.gov/pdf/workforce/Guide_Infection_Prevention_EMS.pdf (Level IV)

Rating System for the Hierarchy of Evidence for Intervention/Treatment Questions

The following leveling system is from *Evidence-Based Practice in Nursing and Healthcare: A Guide to Best Practice* (2nd ed.) by Bernadette Mazurek Melnyk and Ellen Fineout-Overholt.

- Level I: Evidence from a systematic review or meta-analysis of all relevant randomized controlled trials (RCTs)
- Level II: Evidence obtained from well-designed RCTs
- Level III: Evidence obtained from well-designed controlled trials without randomization
- Level IV: Evidence from well-designed case-control and cohort studies
- Level V: Evidence from systematic reviews of descriptive and qualitative studies
- Level VI: Evidence from single descriptive or qualitative studies
- Level VII: Evidence from the opinion of authorities and/or reports of expert committees

Modified from Guyatt, G. & Rennie, D. (2002). Users' Guides to the Medical Literature. Chicago, IL: American Medical Association; Harris, R.P., Helfand, M., Woolf, S.H., Lohr, K.N., Mulrow, C.D., Teutsch, S.M., et al. (2001). Current Methods of the U.S. Preventive Services Task Force: A Review of the Process. American Journal of Preventive Medicine, 20, 21-35.