

## Personal protective equipment (PPE), putting on, home care

Revised: February 21, 2020

### ■ 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.<sup>1</sup> It also reduces the risk of infection in immunocompromised patients.<sup>2</sup> Central to the success of these precautions is the selection of the proper personal protective equipment (PPE), including gloves, gowns, goggles or face shields, and masks or respirators. PPE selection should be based on the nature of the interaction with the patient and the potential for exposure to infectious agents through contact with blood, body fluids, or respiratory secretions.<sup>1</sup> Gloves should be worn to protect the hands. When contact with blood or body fluids is anticipated, a fluid-resistant gown should be worn to protect the skin and clothing from exposure to these fluids.<sup>3</sup> Goggles or a face shield should be worn during procedures that may generate a splash or spray of blood or body fluids.<sup>3</sup> Wearing a mask or fit-tested respirator helps reduce the risk of transmission of respiratory diseases between infected and noninfected persons.<sup>4</sup> Wearing a fit-tested respirator is particularly helpful in preventing the transmission of tuberculosis.<sup>5 6</sup>

Home care nurses are responsible for recognizing the need for PPE as well as knowing the kind of PPE that is required for each clinical situation, the limitations of PPE, and the steps for properly putting on and removing PPE, handling PPE, and disposing of PPE.<sup>7</sup> PPE should be put on correctly and in the proper sequence before entering a patient's home or an immediate patient care area in the home, depending on the clinical situation.<sup>7</sup> Although the combination of PPE needed for the clinical situation affects the sequence, the general sequence for putting on PPE is a gown first, a mask or respirator second, goggles or face shield next, and gloves last.<sup>8</sup>

◆ **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%252Fhcp%252Finfection-control.html](https://www.cdc.gov/coronavirus/2019-ncov/infection-control/control-recommendations.html?CDC_AA_refVal=https%253A%252F%252Fwww.cdc.gov%252Fcoronavirus%252F2019-ncov%252Fhcp%252Finfection-control.html), when caring for a patient with known or suspected Coronavirus disease.◆

### ■ Equipment

- Fluid-resistant gown
- Mask or respirator
- Goggles or face shield
- Gloves
- Optional: hair tie or hair cover

### ■ Preparation of Equipment

Choose the appropriate PPE according to the level of precautions required. Check the integrity of the equipment before putting it on *to prevent exposure to blood, body fluids, and other secretions that can harbor potentially infectious agents.*

### ■ Implementation

- Gather and prepare the necessary equipment and supplies.
- Tie back your hair or wear a hair cover if your hair is long.<sup>9</sup>
- Remove your watch (or push it well up your arm) and rings, if required by your agency. *These actions help prevent the spread of microorganisms that these adornments may harbor.*<sup>10</sup>
- Perform hand hygiene.<sup>10 11 12 13 14</sup>

#### Gown

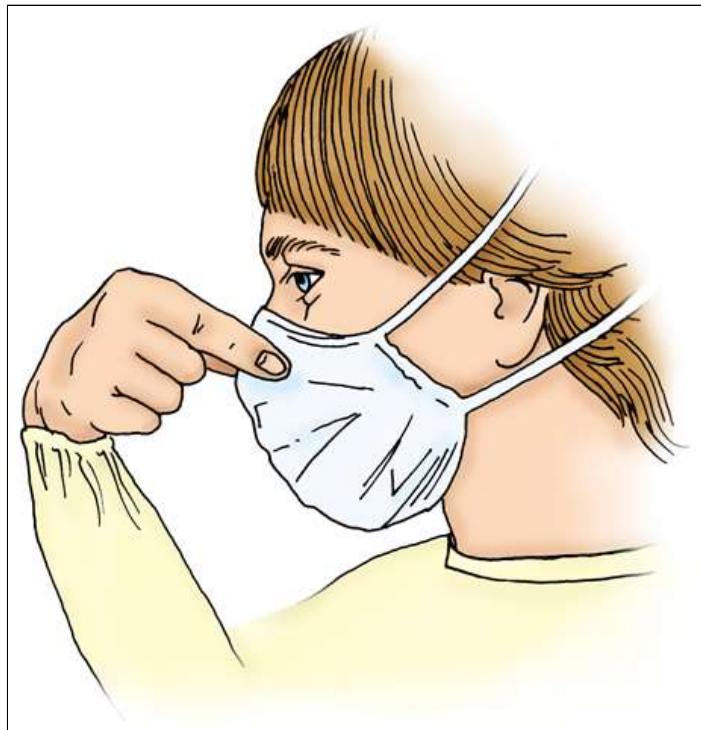
- Pick up an appropriately sized fluid-resistant gown, and allow it to unfold in front of you.<sup>7 8</sup>
- Put on the gown, ensuring that it fully covers your torso from your neck to your knees, covers your arms to the ends of your wrists, and wraps around your back.<sup>7 8</sup>
- Fasten the gown at the back of your neck first and then at your waist.<sup>7 8</sup>

#### Mask or respirator

- Place the mask or respirator snugly over your nose and mouth and below your chin.<sup>7 8</sup>
- Secure the ear loops around your ears, or tie the strings at the middle of the back of your head and neck (as shown below) *so that the mask or respirator won't slip off.*<sup>7 8</sup>



- If the mask or respirator is equipped with a metal nose strip, squeeze it to fit your nose firmly but comfortably (as shown below). [7](#) [8](#)



- If you wear eyeglasses, tuck the upper edge of the mask or respirator under the lower edge of the glasses *to minimize the likelihood of clouding the glasses*.
- If you're using a respirator, perform a seal check by inhaling and exhaling. During inhalation, the respirator should collapse; during exhalation, no air should leak from the edges of the respirator. (See [Respirator seal check](#)). [7](#) [8](#) [15](#)

## RESPIRATOR SEAL CHECK

After you put on your respirator, perform a seal check by placing your hands over the facepiece (as shown below) and then exhaling gently. The seal is considered satisfactory if a slight positive pressure builds up inside the facepiece without air leaking from the seal. Air leakage is evidenced by the fogging of your glasses, a feeling of air trickling down your uncovered face, or a lack of pressure build-up under the facepiece.



If the respirator has an exhalation valve, cover the filter surface with your hands as much as possible and then inhale. The seal is considered satisfactory if the facepiece collapses on your face and you don't feel air passing between your face and the facepiece.

## Goggles or face shield

- Choose eye protection according to your risk of exposure. Although goggles provide eye protection, when worn without a fluid-resistant mask, they don't protect the rest of the face from splashing of potentially infectious substances. Wear a face shield for any procedures that may involve spraying or splashing of blood or other body fluids.<sup>8</sup>
- If you need goggles, position them over your eyes and then place the earpieces over your ears or secure the headband to your head as appropriate. Adjust them for comfort, as needed. Goggles should feel snug but not too tight.<sup>8</sup>
- If you need a face shield, position it over your face and then secure it onto your head with the ties or headband. Make sure the face shield covers your entire face, from your forehead to below your chin, and wraps around the sides of your face.<sup>8</sup>

## Gloves

- Select the type of gloves (sterile versus clean) according to the clinical situation. Choose the correct size for your hands *to make sure that they fit securely*.
- Put on the gloves, and pull them over the cuffs of your gown so that they cover the edges of the gown's sleeves *to provide a continuous barrier*. Make sure the gloves cover your wrists if you aren't wearing a gown.<sup>7 8</sup>
- Avoid touching your face and your other PPE with your gloved hands during patient care. Also limit touching other surfaces or items to those needed for direct patient care. If your gloves become **damaged** or heavily soiled, remove them immediately, perform hand hygiene, and put on a new pair of gloves.<sup>7 8 9 16</sup>

## Special Considerations

- If a gown that's large enough to fully cover your torso isn't available, use two smaller gowns. Put on the first gown so that the opening is in the front and put on the second gown so that the opening is in the back.<sup>8</sup>
- If you require airborne precautions, wear a National Institute for Occupational Safety and Health (NIOSH)-approved N95 (or higher level) particulate respirator rather than a mask. Employees who wear respirators must initially undergo proper fit-testing and then periodically thereafter, according to federal, state, and local regulations.<sup>4 5 8 9</sup>
- Note that personal eyeglasses aren't a substitute for goggles or a face shield *because they don't provide a protective barrier against splashes or sprays of blood and other body fluids*. If you wear glasses and need face protection, place the goggles or a face mask over them.<sup>8</sup>
- Be aware that face protection that combines a fluid-resistant mask with a face shield may be used instead of wearing a separate mask and goggles or face shield.<sup>1</sup> Follow the manufacturer's instructions for use.

## 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 National Association for Home Care & Hospice.



## References

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

1. Siegel, J. D., et al. (2007, revised 2019). "2007 guideline for isolation precautions: Preventing transmission of infectious agents in healthcare settings" [Online]. Accessed January 2020 via the Web at <https://www.cdc.gov/infectioncontrol/pdf/guidelines/isolation-guidelines-H.pdf> (Level II)
2. U.S. Food and Drug Administration. (2018). "Personal protective equipment for infection control" [Online]. Accessed January 2020 via the Web at <https://www.fda.gov/medical-devices/general-hospital-devices-and-supplies/personal-protective-equipment-infection-control>
3. Occupational Safety and Health Administration. (2012). "Bloodborne pathogens, standard number 1910.1030" [Online]. Accessed January 2020 via the Web at [https://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_id=10051&p\\_table=STANDARDS](https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_id=10051&p_table=STANDARDS) (Level VII)
4. Occupational Safety and Health Administration. (2012). "Respiratory protection, standard number 1910.134" [Online]. Accessed January 2020 via the Web at <https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.134> (Level VII)
5. Centers for Disease Control and Prevention. (2005). Guidelines for preventing the transmission of *Mycobacterium tuberculosis* in health-care settings, 2005. *MMWR Recommendations and Reports*, 54(RR-17), 1–141. Accessed January 2020 via the Web at <http://www.cdc.gov/mmwr/pdf/rr/rr5417.pdf> (Level I)
6. Occupational Safety and Health Administration. (n.d.). "Protect yourself: Pandemic flu respiratory protection" [Online]. Accessed January 2020 via the Web at <https://www.osha.gov/Publications/protect-yourself-pandemic-respiratory.html> (Level VII)
7. McGoldrick, M. (2015). Personal protective equipment. *Home Healthcare Now*, 33, 112–113.
8. Centers for Disease Control and Prevention. (n.d.). "Guidance for the selection and use of personal protective equipment (PPE) in healthcare settings" [Online]. Accessed January 2020 via the Web at <http://www.cdc.gov/HAI/pdfs/ppe/PPEslides6-29-04.pdf> (Level VII)
9. Pang, V. (2014). How to use personal protective equipment. *Nursing Times*, 110(51), 14–16.
10. Centers for Disease Control and Prevention. (2002). Guideline for hand hygiene in health-care settings: Recommendations of the Healthcare Infection Control Practices Advisory Committee and the HICPAC/SHEA/APIC/IDSA

Hand Hygiene Task Force. *MMWR Recommendations and Reports*, 51(RR-16), 1–45. Accessed January 2020 via the Web at <https://www.cdc.gov/mmwr/pdf/rr/rr5116.pdf> (Level II)

11. Accreditation Commission for Health Care. (2019). Standard HH7-1A. *ACHC accreditation standards*. Cary, NC: Accreditation Commission for Health Care. (Level VII)
12. Community Health Accreditation Partner. (2018, updated 2019). Standard IPC.3.I.M1. *Home health standards of excellence*. Washington, DC: The Community Health Accreditation Program, Inc. (Level VII)
13. The Joint Commission. (2020). Standard NPSG.07.01.01. *Comprehensive accreditation manual for home care*. Oakbrook Terrace, IL: The Joint Commission. (Level VII)
14. World Health Organization. (2009). "WHO guidelines on hand hygiene in health care: First global patient safety challenge, clean care is safer care" [Online]. Accessed January 2020 via the Web at [https://apps.who.int/iris/bitstream/handle/10665/44102/9789241597906\\_eng.pdf?sequence=1](https://apps.who.int/iris/bitstream/handle/10665/44102/9789241597906_eng.pdf?sequence=1) (Level IV)
15. Centers for Disease Control and Prevention. (n.d.). "How to properly put on and take off a disposable respirator" [Online]. Accessed January 2020 via the Web at <https://www.cdc.gov/niosh/docs/2010-133/pdfs/2010-133.pdf>
16. World Health Organization. (2009). "Glove use information leaflet" [Online]. Accessed January 2020 via the Web at [http://www.who.int/gpsc/5may/Glove\\_Use\\_Information\\_Leaflet.pdf](http://www.who.int/gpsc/5may/Glove_Use_Information_Leaflet.pdf) (Level VII)

## ■ Additional References

- Agbonifo, N., et al. (2017). Occupational exposures of home healthcare workers. *Home Healthcare Now*, 35, 150–159.
- Elmashae, R. B. Y., et al. (2017). Performance of two respiratory protective devices used by home-attending health care workers (a pilot study). *Journal of Occupational and Environmental Hygiene*, 14(9), D145–D149.
- McGoldrick, M. (2019). Personal protective equipment: Protecting the eyes. *Home Healthcare Now*, 37, 234–235.

### 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* (2<sup>nd</sup> 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.*