Personal Protective Equipment Removal: Preventing Self-Contamination
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Personal protective equipment (PPE) (e.g., gown, mask, gloves) is intended to protect home care and hospice clinicians from occupationally acquiring a potentially pathogenic organism and prevent its transfer. The Centers for Disease Control and Prevention (CDC) recommends the use of PPE when implementing standard and transmission-based isolation precautions (Siegel et al., 2007). Standard precautions allow home care and hospice clinicians to select the PPE based on the anticipated exposure risk; whereas, transmission-based precautions are more prescriptive and require the use of specific PPE based on the infectious disease or organism, and its risk for, and mode of, transmission. To prevent disease transmission, PPE must be used correctly and consistently. When the clinician does not remove PPE properly, the clinician’s clothing and skin can become contaminated from the potentially pathogenic organisms present on the outer surfaces of the PPE, contributing to its spread and placing the clinician and others at-risk.

Self-contamination of the skin and clothes during removal (i.e., doffing) of contaminated PPE, especially gloves or gowns, is a frequent problem (Tomas et al., 2015). The most common doffing problems are related to the technique of removing the PPE and the sequence in which it is removed. Simulation studies in which the PPE of healthcare workers were contaminated with pathogen surrogates have shown that failure to follow donning and doffing procedures properly resulted in contamination of the healthcare workers’ skin and clothing (Mulvey et al., 2019; Phan et al., 2019a; Phan et al., 2019b; Okamoto et al., 2019). Okamoto et al. (2019) observed that 39.2% of healthcare workers made multiple doffing errors and were more likely to have contaminated clothes following an interaction with a patient with a multidrug-resistant organism (MDRO). Alhmidi et al. (2019) conducted simulations of contaminated glove removal and found contamination of the hands and wrists with the fluorescent tracer occurring in 37% of the simulations.

Examples of doffing errors observed while on home visits include:

- Not tying the gown around the neck and allowing it to drape down, leaving the upper chest area uncovered
- Not tying the gown around the back and leaving it open
- Not pulling a face mask under the chin
- Not placing a gown thumb loop under the gloves

Perform hand hygiene immediately after removing and disposing of all PPE and any time hands become contaminated during PPE removal.

Perform hand hygiene immediately after removing and disposing of all PPE and any time hands become contaminated during PPE removal. For the sequence of donning and options for doffing PPE, go to https://www.cdc.gov/hai/pdfs/ppe/ppe-sequence.pdf. Home care and hospice clinicians who are larger in size also need to have access to PPE that will cover their clothing and fit their hands as required by the Occupation Health and Safety Administration’s Bloodborne Pathogen standard (OSHA, 1991).
The Occupational Safety and Health Administration (OSHA) Bloodborne Pathogen standard requires that each home care and hospice clinician be trained on hire and annually on the “types, proper use, limitations, selection, location, removal, handling, decontamination, and disposal of personal protective clothing and equipment.”

Another problem associated with the removal of PPE that can result in contamination is overflowing trash cans. During visits to the home and hospice inpatient unit (IPU), trash cans have been observed overflowing with used gowns and other used PPE. Contamination may occur when clinicians touch the lid (if there is no foot pedal) or push down on the PPE inside of an open top trash can to compress its contents. Encourage the frequent emptying of trash cans and in a hospice IPU, select a larger trash can that does not require hand contact with a lid to reduce the risk. In the home, a large plastic bag may be designated for used PPE disposal. Be aware that the opening of the plastic bag may have become contaminated in between the clinician use in the home. During setup for patient care in the home, open the bag and store it in a manner (if possible) where the used PPE can be removed and placed in the bag without touching the sides and opening.

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By improving the competency of the staff’s donning and doffing of PPE practices, the risk of the clinician’s clothing and skin becoming contaminated and placing the clinician and others at-risk is reduced. 

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DOI:10.1097/NHH.0000000000000879

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