Personal Protective Equipment: Protecting the Eyes

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Standard precautions are considered an essential component in preventing the exposure of home care clinicians to potentially infectious body fluids and secretions from patients. This includes the use of gloves, gowns, masks, and eye protection, although eye protection is infrequently used. Respiratory droplets are projected when a person coughs, sneezes, or talks, and during some patient care procedures, such as open suctioning of the respiratory tract (when not using an in-line suction catheter). Studies have shown that the nasal mucosa, conjunctivae and less frequently the mouth, are susceptible portals of entry for respiratory viruses. Transmission may occur when respiratory droplets carrying infectious pathogens travel directly from the respiratory tract of the patient and are deposited in the susceptible mucosal surfaces of the eye. Transmission may also occur via the direct and indirect contact routes (Siegel et al., 2018). Respiratory droplets may travel to, and survive on, horizontal surfaces in close proximity of the patient. Home care clinicians may have direct hand contact with these contaminated surfaces in the home that contain infectious respiratory secretions and self-inoculate themselves with the infectious pathogen by touching their eye(s) (or nasal mucosa, mouth, or nonintact facial skin) with contaminated hands.

A virus may be introduced directly into respiratory tract via the nasolacrimal duct or after replication in the nasolacrimal sac, duct, and/or ocular tissues, although based on the evidence-to-date, rigorous investigation of ocular inoculation of respiratory viruses leading to respiratory tract infection is limited (Mermel, 2018). Examples of infectious agents that are transmitted via the droplet route include *Bordetella pertussis* (whooping cough), influenza virus, rhinovirus, *Mycoplasma pneumoniae*, *Neisseria meningitidis*, and respiratory syncytial virus (Siegel et al., 2018).

The International Safety Center collects occupational mucocutaneous exposure incidents data for blood and body fluid splashes and splatters through the Exposure Prevention Information Network (EPINet). According to aggregate data submitted via the EPINet network, in the past 5 years, eye exposures often exceeded 60% of all other mucocutaneous exposures reported to employee health and made up the largest percent of any other reported nonsharp blood and/or body fluid exposure (Mitchell, 2019). The most recent data show that 48% of the exposure incidents were eye exposure (conjunctiva) incidents, with only 3% of the healthcare workers wearing eye protection at the time of the exposure incident (International Safety Center, 2018). Russell et al. (2018) conducted a study analyzing home health care nurses’ self-reported compliance behaviors with infection control practices. The nurses completed a survey questionnaire and self-reported lower compliance for infection control practices involving wearing goggles or eye shields when exposed to bodily fluids (69.6%) and wearing a disposable face mask whenever there was a
possibility of splash or splatter (81.9%) (Russell et al.).

To prevent an occupational exposure incident, the Occupational Safety and Health Administration (OSHA) bloodborne pathogen regulations require that masks, eye protection, and face shields be worn whenever splashes, sprays, or droplets of blood or other potentially infectious materials may be generated, and when eye, nose, or mouth contamination can be reasonably anticipated (OSHA, 1991). The Centers for Disease Control and Prevention recommends the use of personal protection equipment (i.e., mask, eye protection, face shield) to protect the mucous membranes of the eyes, nose, and mouth during procedures and patient-care activities that are likely to generate splashes or sprays of blood, body fluids, secretions, and excretions. When performing aerosol-generating procedures on patients who are not suspected or confirmed of being infected with an agent requiring airborne precautions (e.g., *M. tuberculosis*, hemorrhagic fever viruses), the use of a face shield that fully covers the front and sides of the face, a mask with attached shield, or a mask and goggles (in addition to gloves and gown) is recommended (Siegel et al., 2018). Even if Droplet Precautions are not recommended for a specific respiratory tract pathogen, protection for the eyes, nose, and mouth by using a mask and goggles, or face shield alone is necessary when it is likely that there will be a splash or spray of any respiratory secretions or other body fluids (as defined in Standard Precautions), such as when draining pleural fluid collected in the active drainage bottle into the toilet in the home.

Staff making home visits should have eye protection in their possession in the event that it is needed (McGoldrick, 2016). Eye protection may include either a face shield that fully covers the front and sides of the face, a face mask with an attached shield (Figure 1), or a face mask and goggles. The inside of the nursing bag is “prime real estate” and space inside the bag is at a premium. Therefore, it is suggested that the type of eye protection selected be of a single-use, flat eye protection that includes a face mask with an attached shield or disposable eye protection that can be stored flat and assembled at the point-of-care, such as TIDIShield® Flip ‘n Go™ Eye Shields (Figure 2).

As a best practice prevention strategy, educate the staff to add eye protection when a mask is put on for the purpose of preventing an occupational exposure to infectious pathogens. In some instances, a mask is donned to protect the patient, and eye protection for the staff would not be needed, such as when donning a mask prior to performing a dressing change on a central venous access device. In addition, educate the staff not to consciously touch their eyes (nose or mouth) unless hand hygiene is immediately performed prior. To prevent droplet and fomite transmission of respiratory pathogens, especially during seasonal outbreaks of viral respiratory tract infections (e.g., seasonal influenza), educate the patient/caregiver on respiratory hygiene/cough etiquette, hand hygiene, and frequent horizontal surface cleaning in the home. By following these simple strategies, occupational eye exposure incidents may be reduced, staff safety improved, and the risk for the ocular surface serving as a portal of entry reduced when caring for a patient with a suspected or confirmed viral respiratory infection. 

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DOI:10.1097/NHH.0000000000000804

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July/August 2019

Home Healthcare Now 235

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