

## Problem

1. The coronavirus disease (COVID-19) patient surge has contributed to a worldwide shortage of eye protection.
2. WHO and CDC report that SARS-CoV-2 virus is primarily transmitted between people through respiratory droplets (1,2).
  1. Droplet transmission occurs when a person is in close contact (<1 m) with someone who has respiratory symptoms (e.g., coughing or sneezing) (1).
  2. Droplets can land in the mouths, noses, or eyes of people who are nearby or possibly be inhaled into the lungs of those within close proximity (2).
3. Eye protection that meets the ANSI/ISEA Z87.1-2015 standard is used to protect the conjunctiva of healthcare personnel (HCP) from respiratory droplets; goggles and faceshields are the most common types of eye protection used in healthcare.
4. Increased eye protection use during the COVID-19 patient surge will likely exceed the available supply, resulting in shortages at many healthcare facilities.
5. The potential consequence of this problem is HCP exposure to SARS-CoV-2 virus during the COVID-19 pandemic.

## ECRI Recommendations:

*ECRI recommends that facilities immediately:*

1. Complete a visual inspection of the following products if available in your facility. Inventory the products that passed inspection and discard products that failed inspection:
  1. Reusable goggles
  2. Disposable and reusable one-piece faceshields
  3. Disposable and reusable components of two-piece faceshields
  4. Disposable and reusable eyewear
  5. Disposable and reusable safety glasses
2. Minimize the number of individuals who need to use eye protection through the use of engineering and administrative controls, including (3,4):
  1. Reducing the number of patients going to healthcare facilities
  2. Excluding HCP not essential for patient care from entering patient care areas
  3. Reducing face-to-face HCP encounters with patients
  4. Maximizing the use of telemedicine

*For facilities that have eye protection, ECRI recommends to:*

1. Use appropriate precautions when caring for known or suspected COVID-19 patients.
  1. WHO recommends that HCP follow droplet and contact precautions during routine care of COVID-19 patients (1).
    1. HCP should use a facemask, eye protection (i.e., goggles or a face shield), isolation gown, and gloves as personal protective equipment (PPE) (2).
  2. WHO recommends that HCP follow contact and airborne precautions during aerosol-generating procedures (AGPs) (1).
    1. HCP should use a respirator, eye protection, isolation gown, and gloves as PPE (2).

*For facilities that have eye protection, ECRI recommends that Infection Prevention and Control staff:*

1. Use the CDC's [Personal Protective Equipment \(PPE\) Burn Rate Calculator](#) to determine when your facility's inventory of eye protection will be depleted (5).
2. Share the calculator findings with local, state, or federal public health officials, appropriate state agencies that are managing the overall COVID-19 emergency response, state crisis standards of care committees, or other relevant public health organizations.

3. Inquire about eye protection resupply via local, state, or federal stockpiles.

*For facilities that have eye protection, ECRI recommends that Procurement staff:*

1. Continue attempts to source eye protection, including goggles, reusable or disposable faceshields, eye wear, and safety glasses.
2. Check the FDA's Establishment Registration & Device Listing to verify that a vendor is registered with the FDA as an eye protection manufacturer (6).

*For facilities that have eye protection and have not altered routine care practices, ECRI recommends that frontline HCP:*

1. Follow the CDC's Conventional Capacity Strategies for optimizing the supply of eye protection, which include (3):
  1. Perform AGPs on known or suspected COVID-19 patients in airborne infection isolation rooms (AIIRs). Exclude visitors to these patients (4).
  2. Cohort patients: group patients together who are infected with the same organism to confine their care to one area.
  3. Cohort HCPs: designate HCPs to provide care for all patients with suspected or confirmed COVID-19 (e.g., physicians, nurses, Environmental Services staff).
  4. Use eye protection according to product labeling and local, state, and federal requirements.
  5. Adhere to the manufacturer's recommended instructions for cleaning and disinfecting reusable eye protection.

*For facilities that have eye protection and have changed routine care practices, ECRI recommends that frontline HCP:*

1. Cancel all elective, non-urgent procedures and appointments for which eye protection is typically used by HCP.
2. Refer to the CDC's Conventional and Contingency Capacity Strategies for optimizing the supply of eye protection. Contingency capacity strategies include (3):
  1. Shift eye protection supplies from disposable to reusable products (e.g., goggles and reusable face shields):
    1. Consider preferential use of full facepiece elastomeric respirators or powered air purifying respirators (PAPRs), which have built-in eye protection.
    2. If reusable eye protection is used, ensure appropriate cleaning and disinfection between users.
  2. Extended use of eye protection
    1. Extended use is the practice of wearing the same eye protection for repeated close contact encounters with several different patients, without removing eye protection between patient encounters. Extended use of eye protection can be used with disposable and reusable products.
    2. Dedicate disposable eye protection to one HCP.
    3. If eye protection becomes visibly soiled, difficult to see through, or is removed by HCP, it should be reprocessed.
      1. According to the manufacturer's cleaning and disinfection instructions, or
      2. According to CDC recommendations for products that do not have manufacturer-recommended cleaning and disinfection instructions, which states:
        1. While wearing gloves, carefully wipe the inside, followed by the outside of the eye protection using a clean cloth saturated with neutral detergent solution or cleaner wipe.
        2. Carefully wipe the outside of the eye protection using a product from EPA's [List N](#) (e.g., a disinfectant wipe or a clean cloth saturated with a SARS-CoV-2 disinfectant).
        3. Wipe the outside of eye protection with clean water or alcohol to remove residue.
        4. Fully dry.
        5. Remove gloves and perform hand hygiene.
      3. Eye protection should be discarded if damaged (e.g., product can no longer fasten securely to the provider, if visibility is obscured and reprocessing does not restore visibility).

4. HCP should take care not to touch their eye protection. If they touch or adjust their eye protection, they must immediately perform hand hygiene.
5. HCP should leave patient care area if they need to remove their eye protection.

*For facilities that have a low supply of eye protection, ECRI recommends that frontline HCP:*

1. Refer to the CDC's Conventional, Contingency, and Crisis Capacity Strategies for optimizing the supply of eye protection. Crisis capacity strategies include (3):
  1. Use eye protection products beyond the manufacturer-designated shelf life during patient care activities.
    1. If there is no date available on the eye protection device label or packaging, facilities should contact the manufacturer.
    2. Users should visually inspect the eye protection for damage prior to use. If visual inspection fails, discard the product.
  2. Prioritize eye protection for patient care activities with:
    1. Anticipated patient-generated aerosols, splashes, or sprays
    2. During activities where prolonged face-to-face or close contact with a potentially infectious patient is unavoidable
  3. Consider using reusable or disposable safety glasses that have extensions to cover the side of the eyes.

*For facilities that have zero eye protection, ECRI recommends that frontline HCP:*

1. Exclude HCP at higher risk for severe illness (i.e., those of older age, those with chronic medical conditions, or those who may be pregnant) from contact with known or suspected COVID-19 patients (3).
2. Designate convalescent HCP (i.e., those who have clinically recovered from COVID-19 and may have some protective immunity) to preferentially provide care to known or suspected COVID-19 patients (3).
3. Use an expedient patient isolation room for risk-reduction (4). For additional information, see NIOSH's report "Expedient Methods for Surge Airborne Isolation within Healthcare Settings during Response to a Natural or Manmade Epidemic" (7).
4. Use a ventilated headboard to decrease risk of HCP exposure to patient-generated aerosols (4).
5. As a last resort, use homemade eye protection.
  1. Homemade eye protection should ideally cover the entire front (that extends to the chin or below) and sides of the face to the ear.
  2. Homemade eye protection is not considered PPE because its ability to protect HCP is unknown.

## **Background:**

1. The FDA issued an Emergency Use Authorization to address the insufficient supply and availability of faceshields for use by HCP as PPE in healthcare settings during the COVID-19 pandemic (8).
2. NIOSH Eye Safety for Infection Control guidance states (9):
  1. Appropriately fitted, indirectly-vented, or non-vented goggles with a manufacturer's anti-fog coating provide the most reliable practical eye protection from splashes, sprays, and respiratory droplets.
  2. A faceshield should have crown and chin protection and wrap around the face to the point of the ear, which reduces the likelihood that a splash could go around the edge of the shield and reach the eyes. Disposable face shields for HCP made of light weight films that are attached to a surgical mask or fit loosely around the face should not be relied upon as optimal protection.
  3. Safety glasses provide impact protection but do not provide the same level of splash or droplet protection as goggles and generally should not be used for infection control purposes.
3. WHO and CDC report that SARS-CoV-2 virus is primarily transmitted between people through respiratory droplets:
  1. WHO guidance states: Respiratory infections can be transmitted through droplets of different sizes: when the droplet particles are >5-10 µm in diameter they are referred to as respiratory droplets, and when then are <5µm in diameter, they are referred to as droplet nuclei. According to current evidence, COVID-19 virus is primarily transmitted between people through respiratory droplets and contact routes (1).
  2. CDC's guidance states: Put on eye protection (i.e., goggles or a face shield that covers the front and sides of the face) upon entry to the [suspected or known COVID-19] patient room or care area. Personal eyeglasses and contact lenses are not considered eye protection. Reusable eye protection

must be cleaned and disinfected according to manufacturer's reprocessing instructions prior to reuse (2).

4. A March 27, 2020, survey of US infection preventionists conducted by APIC revealed that (10):
  1. 49.2% of respondent's facilities are almost out of or have zero faceshields
  2. 38.9% of respondent's facilities are almost out of or have zero goggles
  3. 48.3% of respondent's facilities are almost out of or have zero respirators
  4. 24.5% of respondent's facilities are almost out of or have zero isolation gowns
5. A recent JAMA article details several approaches for sourcing PPE that may be useful to facilities with dwindling PPE supply (11).

#### References & Source Documents:

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10. Association for Professionals in Infection Control and Epidemiology (APIC). Protecting Healthcare Workers During the COVID-19 Pandemic: A Survey of Infection Preventionists [online]. 2020 Mar 27 [cited 2020 Mar 31]. Available online: [Click here](#).
11. Livingston, Desai, and Berkwits. Sourcing Personal Protective Equipment During the COVID-19 Pandemic. JAMA Editorial 2020 Mar 28. Available online: [Click here](#).

#### UMDNS Term(s)

Eyewear, Safety [15697]

#### Geographic Region(s)

Worldwide

#### Suggested Distribution

Anesthesia, Cardiology/Cardiac Catheterization Laboratory, Clinical/Biomedical Engineering, Critical Care, Dialysis/Nephrology, Emergency/Outpatient Services, Infection Control, Nursery, Nursing, Obstetrics/Gynecology/Labor and Delivery, Oncology, OR/Surgery, Orthopedics, Pediatrics, Pulmonology/Respiratory Therapy, Diagnostic Imaging, Risk Management/Continuous Quality Improvement, Facilities/Building Management, Home Care, Gastroenterology, Dentistry/Oral Surgery, Ophthalmology, Phlebotomy, Internal Medicine, Dermatology, Otolaryngology, Point-of-Care Coordination, Sleep Laboratory, Vascular Laboratory, Pain Clinic, Staff Education, NICU, Behavioral Health/Psychiatry, EMS/Transport, Perfusion, Pharmacy, IV Therapy, Central Sterilization Reprocessing, Materials Management

#### Comment

- This alert is a living document and may be updated when ECRI receives additional information.