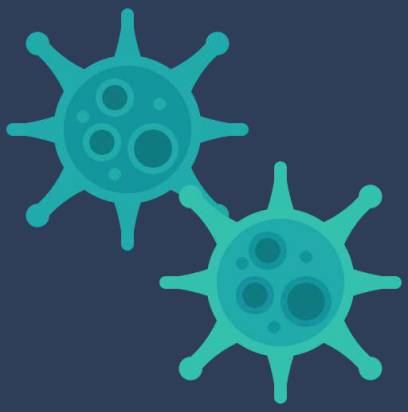
GUIDANCE FOR PROVIDERS: PERSONAL PROTECTIVE EQUIPMENT

Guidance from the Division of Public Health (DPH), the Centers for Disease Control and Prevention (CDC), on the use and conservation of Personal Protective Equipment (PPE) by healthcare personnel (HCP) during the COVID-19 pandemic outbreak aggregated by the Division of Substance Abuse & Mental Health (DSAMH).



PPE is used every day by healthcare personnel (HCP) to protect themselves, patients, and others when providing care. PPE helps protect HCP from potentially infectious patients and materials, toxic medications, and other potentially dangerous substances used in healthcare delivery. This document provides guidance on the proper use of PPE.

PPE shortages are currently posing a tremendous challenge to the US healthcare system because of the COVID-19 pandemic. Healthcare facilities are having difficulty accessing the needed PPE and are having to identify alternate ways to provide patient care. This document provides optimization strategies for use when PPE supplies are stressed, running low, or absent.

This guidance is based on information provided by the Delaware Division of Public Health and the Centers for Disease Control and Prevention.

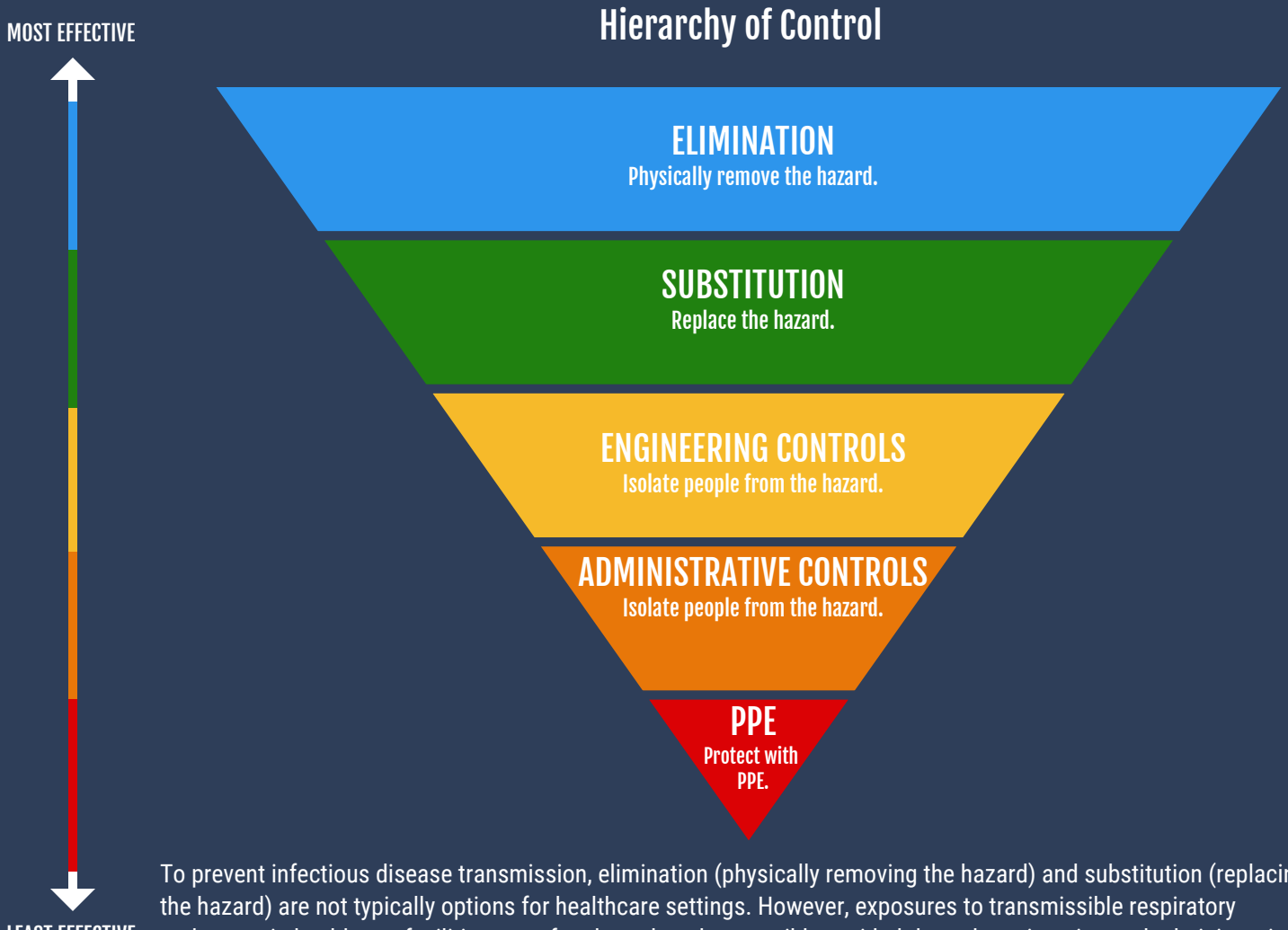
COVID-19 Icons Courtesy of iconfinder.com

DELAWARE HEALTH AND SOCIAL SERVICES
Division of Substance Abuse & Mental Health

PROTECTING BEHAVIORAL HEALTHCARE PROVIDERS

Controlling exposures to occupational hazards is a fundamental way to protect personnel. Conventionally, a hierarchy has been used to achieve feasible and effective controls. Multiple control strategies can be implemented concurrently and or sequentially.

HIERARCHY OF CONTROLS

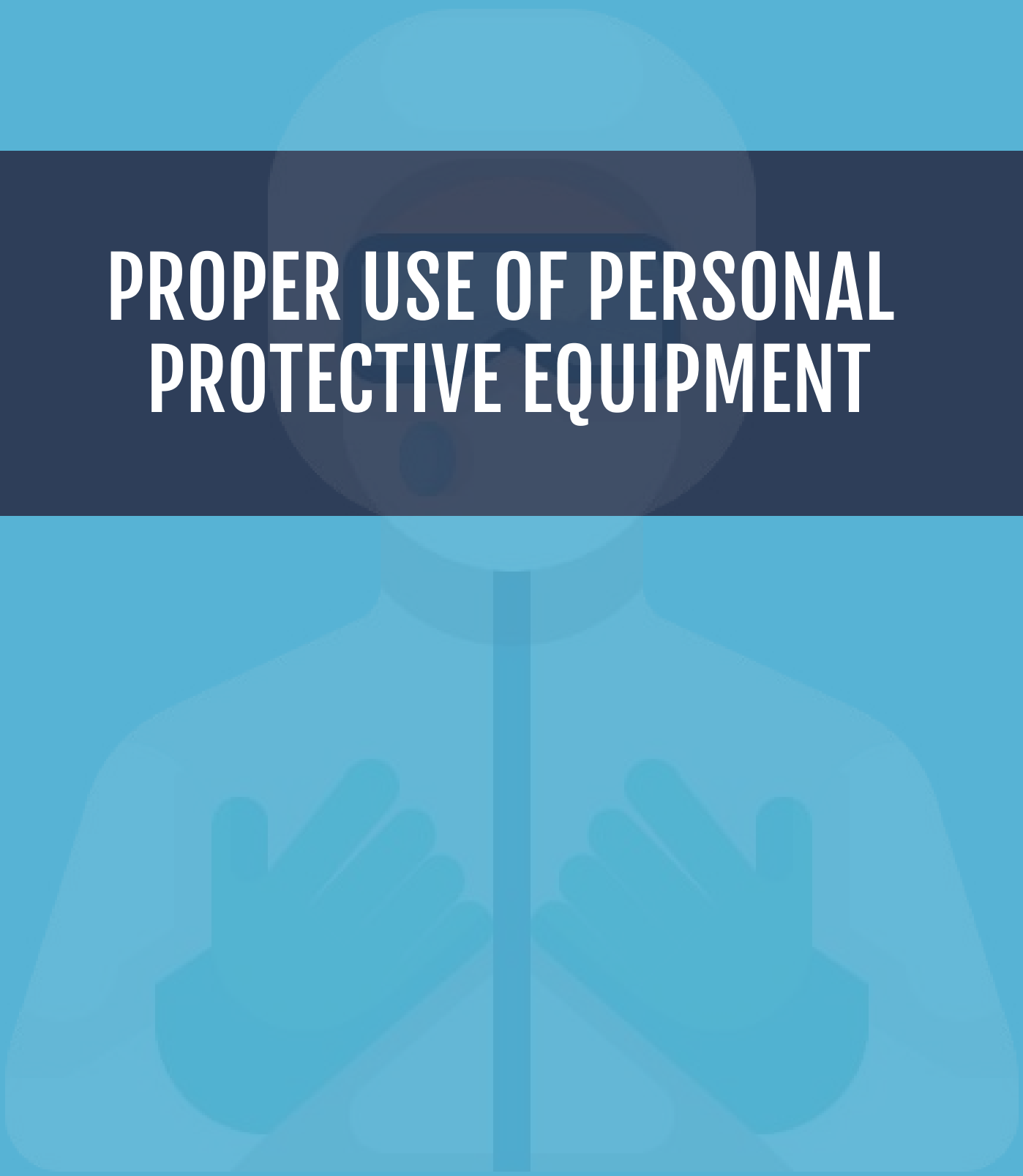


To prevent infectious disease transmission, elimination (physically removing the hazard) and substitution (replacing the hazard) are not typically options for healthcare settings. However, exposures to transmissible respiratory pathogens in healthcare facilities can often be reduced or possibly avoided through engineering and administrative controls and PPE. Prompt detection and effective triage and isolation of potentially infectious patients are essential to prevent unnecessary exposures among patients, healthcare personnel (HCP), and visitors at the facility.

PPE are often used to control exposures to infections transmitted via the airborne route, though their effectiveness is highly dependent upon proper fit and use. The optimal way to prevent transmission is to use a combination of interventions from across the hierarchy of controls, not just PPE alone. Applying a combination of controls can provide an additional degree of protection, even if one intervention fails or is not available.

This information provided by the CDC at https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/index.html

PROPER USE OF PERSONAL PROTECTIVE EQUIPMENT



Use Personal Protective Equipment (PPE) When Caring for Patients with Confirmed or Suspected COVID-19

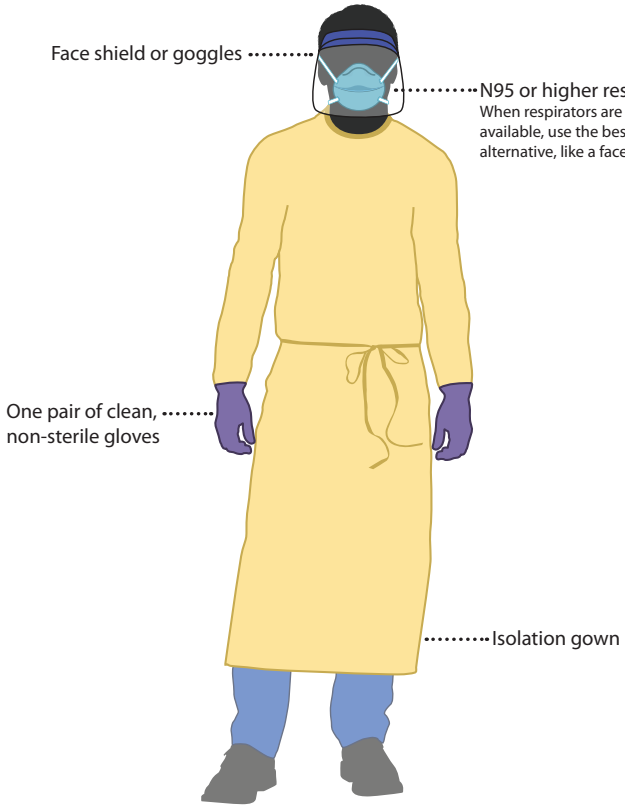
Before caring for patients with confirmed or suspected COVID-19, healthcare personnel (HCP) must:

- **Receive comprehensive training** on when and what PPE is necessary, how to don (put on) and doff (take off) PPE, limitations of PPE, and proper care, maintenance, and disposal of PPE.
- **Demonstrate competency** in performing appropriate infection control practices and procedures.

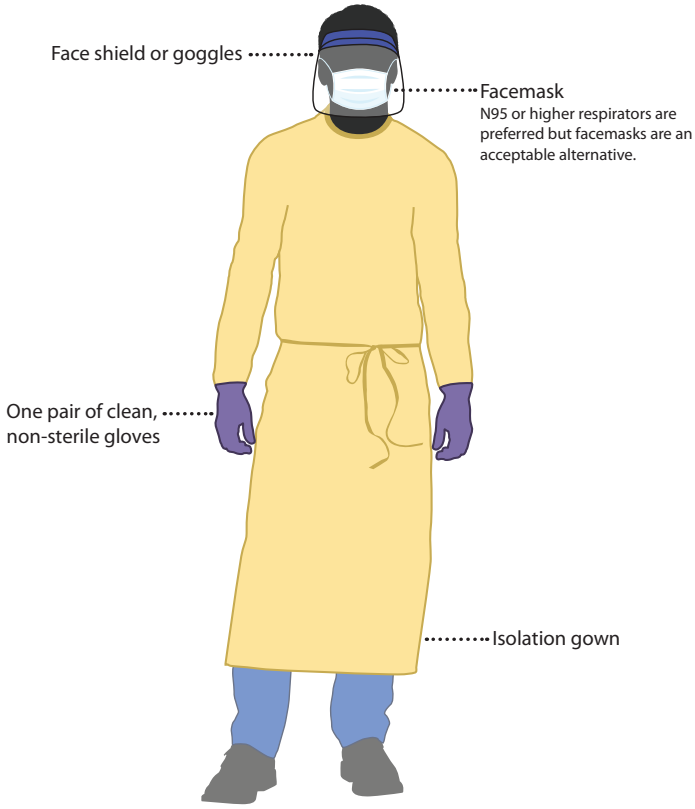
Remember:

- PPE must be donned correctly before entering the patient area (e.g., isolation room, unit if cohorting).
- PPE must remain in place and be worn correctly for the duration of work in potentially contaminated areas. PPE should not be adjusted (e.g., retying gown, adjusting respirator/facemask) during patient care.
- PPE must be removed slowly and deliberately in a sequence that prevents self-contamination. A step-by-step process should be developed and used during training and patient care.

Preferred PPE – Use N95 or Higher Respirator



Acceptable Alternative PPE – Use Facemask



DEPARTMENT OF HEALTH & HUMAN SERVICES USA
CDC

www.cdc.gov/coronavirus

CS 316124-A 03/30/2020

Donning (putting on the gear):

More than one donning method may be acceptable. Training and practice using your healthcare facility's procedure is critical. Below is one example of donning.

1. **Identify and gather the proper PPE to don.** Ensure choice of gown size is correct (based on training).
2. **Perform hand hygiene using hand sanitizer.**
3. **Put on isolation gown.** Tie all of the ties on the gown. Assistance may be needed by another HCP.
4. **Put on NIOSH-approved N95 filtering facepiece respirator or higher (use a facemask if a respirator is not available).** If the respirator has a nosepiece, it should be fitted to the nose with both hands, not bent or tented. Do not pinch the nosepiece with one hand. Respirator/facemask should be extended under chin. Both your mouth and nose should be protected. Do not wear respirator/facemask under your chin or store in scrubs pocket between patients.*
   - » **Respirator:** Respirator straps should be placed on crown of head (top strap) and base of neck (bottom strap). Perform a user seal check each time you put on the respirator.
   - » **Facemask:** Mask ties should be secured on crown of head (top tie) and base of neck (bottom tie). If mask has loops, hook them appropriately around your ears.
5. **Put on face shield or goggles.** Face shields provide full face coverage. Goggles also provide excellent protection for eyes, but fogging is common.
6. **Perform hand hygiene before putting on gloves.** Gloves should cover the cuff (wrist) of gown.
7. **HCP may now enter patient room.**

Doffing (taking off the gear):

More than one doffing method may be acceptable. Training and practice using your healthcare facility's procedure is critical. Below is one example of doffing.

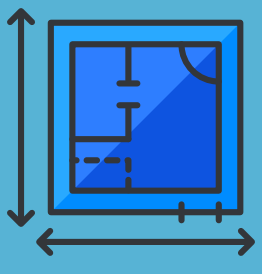
1. **Remove gloves.** Ensure glove removal does not cause additional contamination of hands. Gloves can be removed using more than one technique (e.g., glove-in-glove or bird beak).
2. **Remove gown.** Untie all ties (or unsnap all buttons). Some gown ties can be broken rather than untied. Do so in gentle manner, avoiding a forceful movement. Reach up to the shoulders and carefully pull gown down and away from the body. Rolling the gown down is an acceptable approach. Dispose in trash receptacle.*
3. **HCP may now exit patient room.**
4. **Perform hand hygiene.**
5. **Remove face shield or goggles.** Carefully remove face shield or goggles by grabbing the strap and pulling upwards and away from head. Do not touch the front of face shield or goggles.
6. **Remove and discard respirator (or facemask if used instead of respirator).*** Do not touch the front of the respirator or facemask.
   - » **Respirator:** Remove the bottom strap by touching only the strap and bring it carefully over the head. Grasp the top strap and bring it carefully over the head, and then pull the respirator away from the face without touching the front of the respirator.
   - » **Facemask:** Carefully untie (or unhook from the ears) and pull away from face without touching the front.
7. **Perform hand hygiene after removing the respirator/facemask** and before putting it on again if your workplace is practicing reuse.

****Facilities implementing reuse or extended use of PPE will need to adjust their donning and doffing procedures to accommodate those practices.***

CONSERVING PERSONAL PROTECTIVE EQUIPMENT

STRATEGIES

Information provided by the CDC at https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/index.html



There are different optimization strategies for use when PPE supplies are normal, stressed, running low, or absent.

Contingency strategies can help stretch PPE supplies when shortages are anticipated, for example if facilities have sufficient supplies now but are likely to run out soon.

Crisis strategies can be considered during severe PPE shortages and should be used with the contingency options to help stretch available supplies for the most critical needs.

Conventional strategies can be used as PPE availability returns to normal, and include use according to product labeling and local, state, and federal requirements.

CONTINGENCY STRATEGIES

All facilities should be using contingency strategies immediately if they have not done so already. Contingency strategies include:

- Maximizing use of engineering controls such as barriers and maintained ventilation systems.
- Maximizing use of administrative controls such as altering work practices to minimize patient contacts.
- Canceling elective and non-urgent appointments.
- Reserving PPE for HCP and replace PPE normally used for source control with other barrier precautions such as tissues.
- Using re-usable PPE that can be reprocessed.
- Using PPE beyond the manufacturer-designated shelf life for training.
- Consider allowing HCP to extend use of respirators, facemasks, and eye protection, beyond a single patient contact.

CRISIS STRATEGIES

Facilities experiencing PPE shortages may need to consider crisis strategies, which must be carefully planned before implementation. The effectiveness of crisis strategies is uncertain and they may pose a risk for transmission between HCP and patients. Crisis strategies include:

- Using intact PPE that is beyond the manufacturer-designated shelf life for patient care activities.
- Consider prioritizing PPE use for selected care activities. This could include reserving sterile gowns and gloves for urgent sterile patient procedures.
- If no commercial PPE is available, carefully consider alternative approaches will reduce the risk of HCP exposure and are safe for patient care.

EYE PROTECTION

Information provided by DPH Health Alert Network #424 at https://dhss.delaware.gov/dhss/dph/php/alerts/dhan424.html

CONTINGENCY CAPCITY STRATEGIES

Shift eye protection supplies from disposable to reusable devices (i.e., goggles and reusable face shields).

- Consider preferential use of powered air purifying respirators (PAPRs) or full-face elastomeric respirators which have built-in eye protection.
- Ensure appropriate cleaning and disinfection between users if goggles or reusable face shields are used.

Implement extended use of eye protection.

Extended use of eye protection 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. This can be applied to disposable and reusable devices.

- Eye protection should be removed and reprocessed if it becomes visibly soiled or difficult to see through.
- If a disposable face shield is reprocessed, it should be dedicated to one HCP and reprocessed whenever it is visibly soiled or removed (e.g., when leaving the isolation area) prior to putting it back on. See protocol for removing and reprocessing eye protection below.
- Eye protection should be discarded if damaged (e.g., face shield can no longer fasten securely to the provider, if visibility is obscured and reprocessing does not restore visibility).
- HCP should take care not to touch their eye protection and must immediately perform hand hygiene if they do
- HCP should leave patient care area if they need to remove their eye protection.

CRISIS CAPACITY STRATEGIES

Use eye protection devices beyond the manufacturer-designated shelf life during patient care activities.

If there is no date available on the eye protection device label or packaging, facilities should contact the manufacturer. The user should visually inspect the product prior to use and, if there are concerns (such as degraded materials), discard the product.

Prioritize eye protection for selected activities such as:

- During care activities where splashes and sprays are anticipated, which typically includes aerosol generating procedures.
- During activities where prolonged face-to-face or close contact with a potentially infectious patient is unavoidable.

Consider using safety glasses (e.g., trauma glasses) that have extensions to cover the side of the eyes.

Exclude HCP at higher risk for severe illness from COVID-19 from contact with known or suspected COVID-19 patients.

During severe resource limitations, consider excluding HCP who may be at higher risk for severe illness from COVID-19, such as those of older age, those with chronic medical conditions, or those who may be pregnant, from caring for patients with confirmed or suspected COVID-19 infection.

Designate convalescent HCP for provision of care to known or suspected COVID-19 patients.

It may be possible to designate HCP who have clinically recovered from COVID-19 to preferentially provide care for additional patients with COVID-19. Individuals who have recovered from COVID-19 infection may have developed some protective immunity, but this has not yet been confirmed.

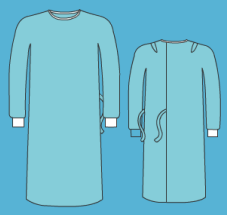
REPROCESSING EYE PROTECTION

Adhere to recommended manufacturer instructions for cleaning and disinfection.

When manufacturer instructions for cleaning and disinfection are unavailable, such as for single use disposable face shields, use the following procedure:

1. While wearing gloves, carefully wipe the inside, followed by the outside of the face shield or goggles using a clean cloth saturated with neutral detergent solution or cleaner wipe.
2. Carefully wipe the outside of the face shield or goggles using a wipe or clean cloth saturated with EPA-registered hospital disinfectant solution.
3. Wipe the outside of face shield or goggles with clean water or alcohol to remove residue.
4. Fully dry (air dry or use clean absorbent towels).
5. Remove gloves and perform hand hygiene.

ISOLATION GOWNS



Information provided by DPH Health Alert Network #425 at https://dhss.delaware.gov/dhss/dph/php/alerts/dhan425.html

CONVENTIONAL CAPCITY STRATEGIES

Several fluid-resistant and impermeable protective clothing options are available in the marketplace for HCP. These include isolation gowns and surgical gowns. When selecting the most appropriate protective clothing, employers should consider all of the available information on recommended protective clothing, including the potential limitations. Non-sterile, disposable patient isolation gowns, which are used for routine patient care in healthcare settings, are appropriate for use by HCP when caring for patients with suspected or confirmed COVID-19. In times of gown shortages, surgical gowns should be prioritized for surgical and other sterile procedures. Current U.S. guidelines do not require use of gowns that conform to any standards.

CONTINGENCY CAPCITY STRATEGIES

Shift gown use towards cloth isolation gowns.

Reusable (i.e., washable) gowns are typically made of polyester or polyester-cotton fabrics. Gowns made of these fabrics can be safely laundered according to routine procedures and reused. Care should be taken to ensure that HCP do not touch outer surfaces of the gown during care.

- Laundry operations and personnel may need to be augmented to facilitate additional washing loads and cycles
- Systems are established to routinely inspect, maintain (e.g., mend a small hole in a gown, replace missing fastening ties), and replace reusable gowns when needed (e.g., when they are thin or ripped)

Consider the use of coveralls.

Use expired gowns beyond the manufacturer-designated shelf life for training.

The majority of isolation gowns do not have a manufacturer-designated shelf life. However, consideration can be made to using gowns that do and are past their manufacturer-designated shelf life.

Use gowns or coveralls conforming to international standards.

Current guidelines do not require use of gowns that conform to any standards. In times of shortages, healthcare facilities can consider using international gowns and coveralls. Gowns and coveralls that conform to international standards, including with EN 13795 and EN14126, could be reserved for activities that may involve moderate to high amounts of body fluids.

CRISIS CAPACITY STRATEGIES

Extend use of isolation gowns.

Extend the use of isolation gowns (disposable or cloth) so that the same gown is worn by the same HCP when interacting with more than one patient known to be infected with the same infectious disease when these patients housed in the same location. If the gown becomes visibly soiled, it must be removed and discarded as per usual practices

Reuse cloth isolation gowns.

Disposable gowns are not typically amenable to being doffed and reused because the ties and fasteners typically break during doffing. Cloth isolation gowns could potentially be untied and retied and could be considered for re-use without laundering in between.

In a situation where the gown is being used as part of standard precautions to protect HCP from a splash, the risk of re-using a non-visibly soiled cloth isolation gown may be lower.

However, for care of patients with suspected or confirmed COVID-19, HCP risk from re-use of cloth isolation gowns without laundering among single HCP caring for multiple patients using one gown or among multiple HCP sharing one gown is unclear. The goal of this strategy is to minimize exposures to HCP and not necessarily prevent transmission between patients. Any gown that becomes visibly soiled during patient care should be disposed of and cleaned.

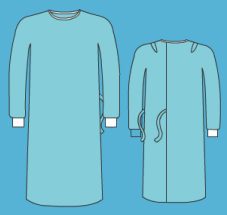
Prioritize gowns.

Gowns should be prioritized for the following activities:

- During care activities where splashes and sprays are anticipated, which typically includes aerosol generating procedures
- During the following high-contact patient care activities that provide opportunities for transfer of pathogens to the hands and clothing of healthcare providers, such as: Dressing, bathing/showering, transferring, providing hygiene, changing linens, changing briefs or assisting with toileting, device care or use, wound care

Surgical gowns should be prioritized for sterile procedures.

NO AVAILABLE ISOLATION GOWNS



Information provided by DPH Health Alert Network #425 at https://dhss.delaware.gov/dhss/dph/php/alerts/dhan425.html

SOLUTIONS

Consider using gown alternatives that have not been evaluated as effective.

In situation of severely limited or no available isolation gowns, the following pieces of clothing can be considered as a last resort for care of COVID-19 patients as single use. However, none of these options can be considered PPE, since their capability to protect HCP is unknown. Preferable features include long sleeves and closures (snaps, buttons) that can be fastened and secured.

Alternatives

- Disposable laboratory coats
- Reusable (washable) patient gowns
- Reusable (washable) laboratory coats
- Disposable aprons

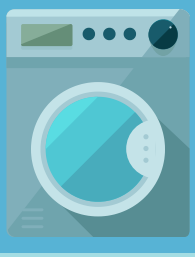
Combinations of clothing

Combinations of pieces of clothing can be considered for activities that may involve body fluids and when there are no gowns available:

- Long sleeve aprons in combination with long sleeve patient gowns or laboratory coats
- Open back gowns with long sleeve patient gowns or laboratory coats
- Sleeve covers in combination with aprons and long sleeve patient gowns or laboratory coats

LAUNDERING

Consideration for safely laundering patient gown and lab coats.



LAUNDERING GUIDANCE

Augment laundry operations

Laundry operations and personnel may need to be augmented to facilitate additional washing loads and cycles

Create maintenance procedures

Systems should be established to routinely inspect, maintain (e.g., mend a small hole in a gown, replace missing fastening ties) and replace reusable gowns when needed (e.g., when they are thin or ripped)

FACEMASKS

Information provided by DPH Health Alert Network #426 at https://dhss.delaware.gov/dhss/dph/php/alerts/dhan426.html

CONVENTIONAL CAPCITY STRATEGIES

Use facemasks according to product labeling and local, state, and federal requirements.

- FDA-cleared surgical masks are designed to protect against splashes and sprays and are prioritized for use when such exposures are anticipated, including surgical procedures.
- Facemasks that are not regulated by FDA, such as some procedure masks, which are typically used for isolation purposes, may not provide protection against splashes and sprays.

CONTINGENCY CAPCITY STRATEGIES

Remove facemasks for visitors in public areas.

Healthcare facilities can consider removing all facemasks from public areas. Facemasks can be available to provide to symptomatic patients upon check in at entry points. All facemasks should be placed in a secure and monitored site. This is especially important in high-traffic areas like emergency departments.

Implement extended use of facemasks.

Extended use of facemasks is the practice of wearing the same facemask for repeated close contact encounters with several different patients, without removing the facemask between patient encounters.

- The facemask should be removed and discarded if soiled, damaged, or hard to breathe through.
- HCP must take care not to touch their facemask. If they touch or adjust their facemask they must immediately perform hand hygiene.
- HCP should leave the patient care area if they need to remove the facemask.

Restrict facemasks to use by HCP, rather than patients for source control.

Have patients with symptoms of respiratory infection use tissues or other barriers to cover their mouth and nose.

CRISIS CAPACITY STRATEGIES

Use facemasks beyond the manufacturer-designated shelf life during patient care activities.

If there is no date available on the facemask label or packaging, facilities should contact the manufacturer. The user should visually inspect the product prior to use and, if there are concerns (such as degraded materials or visible tears), discard the product.

Implement limited re-use of facemasks.

Limited re-use of facemasks is the practice of using the same facemask by one HCP for multiple encounters with different patients but removing it after each encounter. As it is unknown what the potential contribution of contact transmission is for SARS-CoV-2, care should be taken to ensure that HCP do not touch outer surfaces of the mask during care, and that mask removal and replacement be done in a careful and deliberate manner.

- The facemask should be removed and discarded if soiled, damaged, or hard to breathe through.
- Not all facemasks can be reused. Facemasks that fasten to the provider via ties may not be able to be undone without tearing and should be considered only for extended use, rather than re-use. Facemasks with elastic ear hooks may be more suitable for reuse.
- HCP should leave patient care area if they need to remove the facemask. Facemasks should be carefully folded so that the outer surface is held inward and against itself to reduce contact with the outer surface during storage. The folded mask can be stored between uses in a clean sealable paper bag or breathable container.

Prioritize facemasks for selected activities such as:

- For provision of essential procedures
- During care activities where splashes and sprays are anticipated
- During activities where prolonged face-to-face or close contact with a potentially infectious patient is unavoidable
- For performing aerosol generating procedures, if respirators are no longer available

NO AVAILABLE FACEMASKS

Information provided by DPH Health Alert Network #426 at https://dhss.delaware.gov/dhss/dph/php/alerts/dhan426.html

EXCLUDE HIGH RISK HCP

Exclude HCP at higher risk for severe illness from COVID-19 from contact with known or suspected COVID-19 patients.
During severe resource limitations, consider excluding HCP who may be at higher risk for severe illness from COVID-19, such as those of older age, those with chronic medical conditions, or those who may be pregnant, from caring for patients with confirmed or suspected COVID-19 infection.

DESIGNATE EXPOSED HCP TO CARE

Designate convalescent HCP for provision of care to known or suspected COVID-19 patients.
It may be possible to designate HCP who have clinically recovered from COVID-19 to preferentially provide care for additional patients with COVID-19. Individuals who have recovered from COVID-19 infection may have developed some protective immunity, but this has not yet been confirmed.

ALTERNATIVE FACE SHIELDS

Use a face shield that covers the entire front (that extends to the chin or below) and sides of the face with no facemask.

MITIGATE AIRBORNE RISK

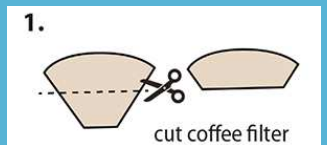
Consider use of expedient patient isolation rooms for risk reduction.
Portable fan devices with high-efficiency particulate air (HEPA) filtration that are carefully placed can increase the effective air changes per hour of clean air to the patient room, reducing risk to individuals entering the room without respiratory protection. NIOSH has developed guidance for using portable HEPA filtration systems to create expedient patient isolation rooms. The expedient patient isolation room approach involves establishing a high-ventilation-rate, negative pressure, inner isolation zone that sits within a "clean" larger ventilated zone.

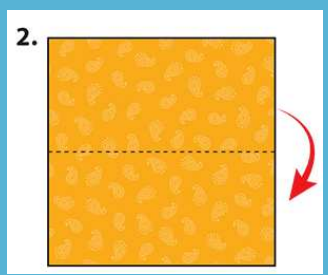
HOMEMADE MASKS

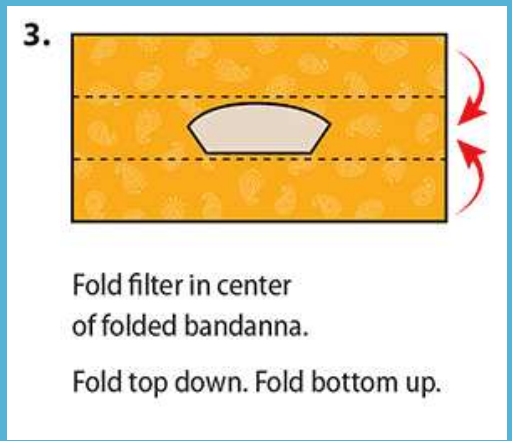
Consider the use of homemade masks.
In settings where facemasks are not available, HCP might use homemade masks (e.g., bandana, scarf) for care of patients with COVID-19 as a last resort. However, homemade masks are not considered PPE, since their capability to protect HCP is unknown. Caution should be exercised when considering this option. Homemade masks should ideally be used in combination with a face shield that covers the entire front (that extends to the chin or below) and sides of the face.

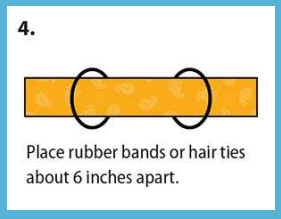
MAKING A MASK

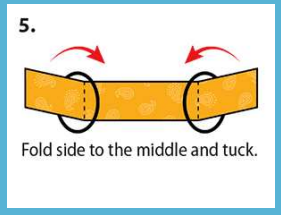
Information provided by the CDC at:
https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/diy-cloth-face-coverings.html

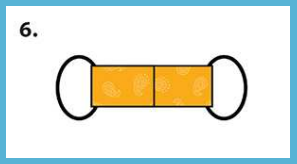


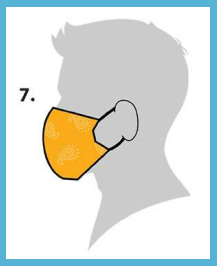












RESPIRATORY PROTECTION

RESPIRATORY PROTECTION

Information provided by the CDC at https://www.cdc.gov/coronavirus/2019-ncov/hcp/respirators-strategy/index.html

Proper use of respiratory protection by HCP requires a comprehensive program (including medical clearance, training, and fit testing) as well as a high level of HCP involvement and commitment.

The program should also include provisions for the cleaning, disinfecting, inspection, repair, and storage of respirators used by HCP on the job according to manufacturer's instructions.

Proper storage conditions can maximize shelf life of respirators.

N95 RESPIRATORS

Information provided by the CDC at https://www.cdc.gov/coronavirus/2019-ncov/hcp/respirators-strategy/index.html

N95 respirators include standard and surgical N95 respirators. In the United States, all N95 respirators used in occupational settings are approved by the National Institute for Occupational Safety and Health (NIOSH) and used in accordance with OSHA standards.

A surgical N95 respirator is a NIOSH-approved N95 respirator that has also been cleared by the FDA as a surgical mask. Surgical N95 respirators (sometimes called medical respirators) are recommended only for use by HCP who need protection from both airborne and fluid hazards, such as splashes or sprays.

In times of shortage, only HCP who are working in a sterile field or who may be exposed to high-velocity splashes, sprays, or splatters of blood or body fluids should be provided these respirators. Other HCP can use standard N95 respirators.

If surgical N95 respirators are not available, and there is a risk that the worker may be exposed to high velocity splashes, sprays, or splatters of blood or body fluids, then a faceshield should be worn over the standard N95 respirator.

N95 RESPIRATORS

CONVENTIONAL CAPACITY STRATEGIES

Information provided by DPH Health Alert Network #427 at https://dhss.delaware.gov/dhss/dph/php/alerts/dhan427.html

ENGINEERING CONTROLS

Engineering controls reduce exposures for HCP by placing a barrier between the hazard and the HCP. Engineering controls can be very effective as part of a suite of strategies to protect HCP without placing primary responsibility of implementation on them (i.e., they function without HCP having to take an action).

Use physical barriers.

Barriers such as glass or plastic windows can be an effective solution for reducing exposures among HCP to potentially infectious patients. This approach can be effective in reception areas where patients may first report upon arrival to a healthcare facility. Other examples include the use of curtains between patients in shared areas and closed suctioning systems for airway suctioning for intubated patients.

Properly maintain ventilation systems.

Another cornerstone of engineering controls are ventilation systems that provide air movement from a clean (HCP workstation or area) to contaminated (sick patient) flow direction (along with appropriate filtration, exchange rate) that are installed and properly maintained.

ADMINISTRATIVE CONTROLS

Administrative controls are employer-dictated work practices and policies that reduce or prevent hazardous exposures. Their effectiveness depends on employer commitment and HCP acceptance and consistent use of the strategies.

Limit number of patients physically presenting.

Develop mechanisms to screen patients for acute respiratory illness prior to their healthcare visits, such as through the appointment reminder system. Postpone and reschedule those with signs and symptoms presenting for non-acute visits.

Telemedicine

Nurse advice lines and telemedicine can screen and manage patients with suspected COVID-19 without the need for a face-to-face visit. Promoting the use of these technologies and referral networks can help triage persons to the appropriate level of care, potentially reducing the influx of patients to healthcare facilities and reserving personal protective equipment for when it is needed.

Exclude all HCP not involved in patient care.

CDC guidance recommends that, for COVID-19, only essential personnel enter the patient care area, and that facilities consider caring for these patients with dedicated HCP. Further limiting the numbers of healthcare personnel and patient contacts to those that are medically essential (e.g., excluding dietary personnel, environmental services) could limit the number of respirators used. The medically essential personnel would assume food delivery and environmental services.

Limit face-to-face HCP encounters with patients.

Measures can be explored to limit face-to-face contact encounters between HCP and patients with confirmed or suspected COVID-19. HCP may consider bundling care activities to minimize room entries, and bundling may occur across HCP types (e.g., food trays are delivered by HCP performing other care). Alternative mechanisms for HCP and patient interactions include telephones, video monitoring, and video-call applications on cell phones or tablets.

Exclude visitors

Restrict visitors from entering. Alternative mechanisms for patient and visitor interactions, such as video-call applications on cell phones or tablets should be explored. If visitors must enter the room of a known or suspected COVID-19 patient, facilities should provide instruction, before visitors enter patients' rooms on use of PPE according to current facility policy while in the patient's room.

Source control

Identify and assess patients who may be ill with or who may have been exposed to a person with known COVID-19. Patients with symptoms of suspected COVID-19 or other respiratory infection (e.g., fever, cough) presenting for care should use facemasks for source control until they can be placed in a private room. Instructions should include how to use facemasks. Patients with these symptoms should not wear N95 respirators. If these patients need to leave their room for services in other areas they should also wear facemasks for source control.

Cohort patients

Cohorting is the practice of grouping together patients who are infected with the same organism to confine their care to one area and prevent contact with other patients. When single patient rooms are not available, patients with **confirmed** COVID-19 may be placed in the same room. Cohorting patients could minimize respirator use when extended wear of respirators is implemented.

N95 RESPIRATORS

CONVENTIONAL CAPACITY STRATEGIES

Information provided by DPH Health Alert Network #427 at https://dhss.delaware.gov/dhss/dph/php/alerts/dhan427.html

ADMINISTRATIVE CONTROLS (CONTINUED)

Cohorting HCP

Assigning designated teams of HCP to provide care for all patients with suspected or confirmed COVID-19 could minimize respirator use when extended wear of respirators is implemented. This strategy can also limit the number of exposed HCP who need to be fit tested.

Train on indications for use of N95 respirators.

It is important that HCP be trained on indications for use of N95 respirators. The OSHA Respiratory Protection standard requires employers to provide respirator training to an employee prior to use in the workplace. For example, HCP should be educated on the use of N95 respirators when caring for patients managed with airborne precautions, and other instances for respirator use, such as the performance of aerosol generating procedures.

Train on using N95 respirators properly.

Training employees on the proper use of respirators, including putting on and removing them, limitations on their use, and maintenance is essential for effective use of respiratory protection. HCP should be thoroughly trained before they are fit tested to ensure they are comfortable donning the respirator and know how to conduct a user seal check. HCP should be trained on the respirator they are expecting to use at work.

Just-in-time fit testing

Just-in-time fit testing refers to the capacity of healthcare facilities to do larger scale evaluation, training, and fit testing of employees when necessary during a pandemic. Facilities may adopt a plan to use the "just-in-time" method for fit testing, which has been incorporated into pandemic plans for many facilities. For large facilities, it may not be feasible to fit test all employees, especially if their job does not typically place them at risk for exposure to airborne infectious diseases such as tuberculosis. If healthcare facilities are expecting to receive COVID-19 patients, they should begin training and start to plan for fit testing now. It is essential to have HCP trained and fit tested prior to receiving patients.

Limiting respirators during training

In order to conserve the supply of N95 respirators, healthcare facilities should understand which of their HCP need to be in a respiratory protection program and thus medically evaluated, trained, and fit tested. If training and fit testing are conducted during two separate steps, it is possible to allow limited re-use of N95 respirators used by individual HCP during training and then fit testing. Employees should be fit tested after they are comfortable donning the respirator and have passed a user seal check. The respirator might also be saved and then used for patient care.

Qualitative fit testing

A qualitative fit test is a pass/fail test to assess the adequacy of respirator fit that relies on the individual's sensory detection of a test agent. In March 2020, OSHA recommended healthcare employers consider changing from a quantitative fit testing method to a qualitative fit testing method. Qualitative fit methods may also allow for rapid fit testing of larger numbers of HCP.

N95 RESPIRATORS

CAPACITY STRATEGIES

Information provided by DPH Health Alert Network #427 at https://dhss.delaware.gov/dhss/dph/php/alerts/dhan427.html

CONTINGENCY CAPACITY STRATEGIES

Extended use

Extended use refers to the practice of wearing the same N95 respirator for repeated close contact encounters with several different patients, without removing the respirator between patient encounters. Extended use has been recommended and widely used as an option for conserving respirators during previous respiratory pathogen outbreaks and pandemics.

Extended use is well suited to situations wherein multiple patients with the same infectious disease diagnosis, whose care requires use of a respirator, are cohorted (e.g., housed on the same hospital unit).

When practicing extended use of N95 respirators, the maximum recommended extended use period is 8–12 hours. Respirators should not be worn for multiple work shifts and should not be reused after extended use. N95 respirators should be removed (doffed) and discarded before activities such as meals and restroom breaks.

Use expired masks for training and fit-testing

In times of shortage, consideration can be made to use N95 respirators beyond the manufacturer-designated shelf life. However, expired respirators might not perform to the requirements for which they were certified. Over time, components such as the strap and material may degrade, which can affect the quality of the fit and seal. Because of this, use of expired respirators could be prioritized for situations where HCP are NOT exposed to pathogens, such as training and fit testing. As expired respirators can still serve an important purpose, healthcare facilities should retain and reserve all N95 respirators during the pandemic.

CRISIS CAPACITY STRATEGIES

Use expired masks

Consideration can be made to use N95 respirators beyond the manufacturer-designated shelf life. However, respirators beyond the manufacturer-designated shelf life may not perform to the requirements for which they were certified AS Over time, components such as the straps and nose bridge material may degrade, which can affect the quality of the fit and seal. Many models found in U.S. stockpiles and stockpiles of healthcare facilities have been found to continue to meet performance standards. It is particularly important that HCP perform the expected seal check, prior to entering a patient care area.

Use similar masks approved by foreign entities

Other countries approve respirators for occupational use according to country-specific standards. These products are evaluated using some methods that are similar to those used by NIOSH. Some methods are different but are expected to provide protection similar to NIOSH-approved filtering facepiece and elastomeric respirators. Devices supplied by current NIOSH-approval holders producing respirators under the standards authorized in the listed countries are expected to provide the protection indicated, given that a proper fit is achieved. Therefore, they are considered to be suitable alternatives to provide protection during the COVID-19 response when supplies are short.

Limited reuse of N95 respirators

Re-use refers to the practice of using the same N95 respirator by one HCP for multiple encounters with different patients but removing it (i.e. doffing) after each encounter. This practice is often referred to as “limited reuse” because restrictions are in place to limit the number of times the same respirator is reused. It is important to consult with the respirator manufacturer regarding the maximum number of donnings or uses they recommend for the N95 respirator model. If no manufacturer guidance is available, data suggest limiting the number of reuses to no more than five uses per device to ensure an adequate safety margin. N95 and other disposable respirators should not be shared by multiple HCP.

Limited re-use of N95 respirators when caring for patients with COVID-19 might also become necessary. However, it is unknown what the potential contribution of contact transmission is for SARS-CoV-2, and caution should be used. Re-use should be implemented according to CDC guidance. Re-use has been recommended as an option for conserving respirators during previous respiratory pathogen outbreaks and pandemics.

Respirators grossly contaminated with blood, respiratory or nasal secretions, or other bodily fluids from patients should be discarded. HCP can consider using a face shield or facemask over the respirator to reduce/prevent contamination of the N95 respirator. HCP re-using an N95 respirators should use a clean pair of gloves when donning or adjusting a previously worn N95 respirator. It is important to discard gloves and perform hand hygiene after the N95 respirator is donned or adjusted.

N95 RESPIRATORS
CAPACITY STRATEGIES

Information provided by DPH Health Alert Network #427 at https://dhss.delaware.gov/dhss/dph/php/alerts/dhan427.html

CRISIS CAPACITY STRATEGIES (CONTINUED)

Limited reuse of N95 respirators (CONTINUED)

The surfaces of a properly donned and functioning NIOSH-approved N95 respirator will become contaminated with pathogens while filtering the inhalation air of the wearer during exposures to pathogen laden aerosols. The pathogens on the filter materials of the respirator may be transferred to the wearer upon contact with the respirator during activities such as adjusting the respirator, improper doffing of the respirator, or when performing a user-seal check when redonnIng a previously worn respirator.

One effective strategy to mitigate the contact transfer of pathogens from the respirator to the wearer could be to issue each HCP who may be exposed to COVID-19 patients a minimum of five respirators. Each respirator will be used on a particular day and stored in a breathable paper bag until the next week. This will result in each worker requiring a minimum of five N95 respirators if they put on, take off, care for them, and store them properly each day. This amount of time in between uses should exceed the 72 hour expected survival time for SARS-CoV2 (the virus that caused COVID-19).3 HCP should still treat the respirator as though it is still contaminated and follow the precautions outlined in CDC's re-use recommendations.

Respirator manufacturers may provide guidance for respirator decontamination. At present, there are no generally approved methods for N95 and other disposable respirator decontamination prior to reuse.

Prioritize N95 use by activity

The number of infectious particles required to cause an infection (infectious dose) is often uncertain or unknown for respiratory pathogens. Further, there is often uncertainty about the influence of factors such as exposure duration and nature of clinical symptoms on the likelihood of infection transmission from person-to-person. When facemasks must be used by HCP entering a patient care area, source control (i.e. masking of symptomatic patients) and maintaining distance from the patient are particularly important to reduce the risk of transmission.

This prioritization approach to conservation is intended to be used when N95 respirators are so limited that routinely practiced standards of care for all HCP wearing N95 respirators when caring for a COVID-19 patient are no longer possible. N95 respirators beyond their manufacture-designated shelf life, when available, are preferable to use of facemasks. The use of N95s or elastomeric respirators or PAPRs should be prioritized for HCP with the highest potential exposures including being present in the room during aerosol generating procedures performed on symptomatic persons.

PRIORITIZATION CHART

Suggested facemask or respirator use, based upon distance from a patient with suspected or known COVID-19 and use of source control.

HCP Proximity to Patient During Encounter	Facemask or Respirator Determination	
	Patient Masked for Entire Encounter	Unmasked at Any Point
HCP will remain at greater than 6 feet from symptomatic patient	If HCP must enter the patient care area: no facemask or respirator. However, HCP should consider not entering the patient care area.	If HCP must enter the patient care area: no facemask or respirator. However, HCP should consider not entering the patient care area.
HCP will be within 6 feet of symptomatic patient, including providing direct patient care	Facemask	Any NIOSH-approved N95 respirator/ elastomeric /PAPR, based on availability or facemask if respirator unavailable
HCP will be present in the room during aerosol generating procedures performed on symptomatic persons	Any NIOSH-approved N95 respirator/ elastomeric /PAPR, based on availability	Any NIOSH-approved N95 respirator/ elastomeric /PAPR, based on availability