

Missouri Interim Guidance on Crisis Capacity Strategies for Personal Protective Equipment For Employees Working With Patients/Clients in Congregate Living Environments or In One-on-One or Small Group Settings



Note: The situation regarding COVID-19 is rapidly changing as is our knowledge of this new disease. This guidance is based on the best information currently available and does not constitute medical advice or advocate specific treatments or approaches. Additional information regarding Personal Protective Equipment (PPE) use can be found at [CDC Strategies for PPE Optimization](#)^a.

The Missouri Department of Health and Senior Services (DHSS) is recommending appropriate use of personal protective equipment (PPE) for all individuals caring for patients/clients in congregate living environments, small group, or one-on-one settings where COVID-19 cases have been identified. The amount and type of PPE will vary depending upon degree of anticipated exposure to an infected individual. This document provides a series of strategies for optimizing the use of PPE during crisis capacity.

Engineering and Administrative Controls –

Identifying and mitigating exposures to the virus that causes COVID-19 before work begins should be an initial step taken in any facility. Engineering and administrative controls that prevent or reduce exposures must be a part of any PPE optimization strategy. Facilities should maximize use of engineering controls (such as barriers and maintained ventilation systems) and administrative controls (such as altering work practices) to minimize potential exposures and patient contacts. Consult with infection control, industrial hygiene, or a public health agency for guidance or facility-specific engineering and administrative control options.

Personal Protective Equipment (PPE) –

Limited reuse and extended use options^b – Extended use refers to the practice of wearing the same PPE for multiple encounters with several clients without removing the PPE between client encounters. **Limited reuse** refers to the practice of using the same PPE for multiple encounters with patients but doffing after each encounter. The PPE is stored between encounters to be donned prior to the next encounter with a patient. If possible, limit reuse to no more than five uses per device.

Extended use is favored because it is expected to involve less touching of the PPE and therefore less risk of contact transmission. A combination of both extended use and limited reuse, with appropriate engineering and administrative controls, may optimize PPE use during crisis capacity.

Any PPE reused must only be used by a single wearer (except properly laundered cloth isolation gowns). **No sharing.** Label containers used for storing PPE or label the PPE itself with the name of the wearer. Do not write on the mask of a respirator, as this affects the filtering efficiency, instead write on the strap.

Users should inspect PPE prior to use and discard any that is obviously damaged, soiled or any respirator if it becomes difficult to breathe through.

When using PPE optimization strategies, training on PPE use, including proper donning and doffing procedures, must be provided to staff before they carry out client care activities.^c

Contamination Control

Although extended use and limited reuse of PPE have the benefit of conserving supplies, a significant risk exists from contact transmission from touching the surface of the contaminated PPE. One study found that nurses averaged 25 touches per shift to their face, eyes, or N95 respirator during extended use.^d Contact transmission occurs through direct contact with others as well as through indirect contact by touching and contaminating surfaces that are then touched by other people.

Donning (putting on) and doffing (taking off) of any type of PPE must be done in a careful and deliberate manner, taking steps to ensure the user does not touch the outer surface of the PPE during care, removal, or replacement.^c This is especially important when donning used PPE. Since it is already contaminated, great care must be taken not to disperse the contaminants into the air or contaminate clean PPE, when donning and doffing.

FACEMASK CRISIS CAPACITY STRATEGIES^e

- Use facemasks beyond the manufacturer-designated expiration dates during patient/client care activities.
- Implement extended use and/or limited reuse practices with good contamination control.
 - Facemask removal and replacement must be done in a careful and deliberate manner taking steps to ensure the user does not touch the outer surface of the mask during care, removal, or replacement.
 - Clean hands with soap and water or an alcohol-based hand sanitizer before and after touching or adjusting the facemask.
 - Avoid touching the inside of the facemask.
 - For reuse, facemasks should be carefully folded so the outer surface is held inward against itself to reduce contact with the outer surface during storage.
 - Store the mask in a clean, sealable paper bag or breathable container.
 - May also store mask in a rigid container with the lid off to allow mask to dry out.
 - Label the strap of the facemask or the container or bag with the wearer's name. Do not write on the facemask material as it will affect its permeability.
 - Discard facemask if it becomes soiled, damaged or difficult to breathe through.
 - Facemasks that fasten via ties behind the head may not be able to be undone without tearing or breaking the ties and should be considered for extended use rather than reuse.
 - Facemasks with ear loops may be more suitable for reuse.
- If no facemasks are available, the following strategies may be considered as a last resort. These are not considered PPE.
 - A homemade, double-layer cotton mask can be used if no other mask options are available.
 - Scarves and bandanas can also be used.
 - Any homemade mask should be laundered daily using routine laundry procedures.

RESPIRATOR CRISIS CAPACITY STRATEGIES^f

- Staff wearing a tight fitting respirator must not have facial hair that would impede the seal.^g
- Prioritize use of respirators by activity type.
 - Staff conducting activities that may generate a cough, sneeze, or gag reflex should be prioritized to wear an N95 respirator.
 - Staff giving intimate care to a patient/client.
 - Staff with higher risk of contracting severe infection from COVID-19.
 - Staff in the same room as a suspected or known COVID-19 client for a prolonged period of time.
- Use beyond shelf-life^h. Any N95 can be used beyond shelf-life after visual inspection for fit and function.
- Use respirators approved under standards used in other countries that are similar to NIOSH but that may not necessarily be NIOSH-approvedⁱ.
- Implement extended use and/or limited reuse practices with good contamination control.
 - Respirator removal and replacement must be done in a careful and deliberate manner taking steps to ensure the user does not touch the outer surface of the mask during care, removal, or replacement.
 - Clean hands with soap and water or an alcohol-based hand sanitizer before and after touching or adjusting the respirator.

Important Note about Respiratory Protection:

Respirators must be used within the context of a complete respiratory protection program that includes medical clearance, fit testing, and training. Consult with infection control, industrial hygiene, or a public health agency for more information.

If staff are using respirators, ensure they are fit tested in the type of respirator they are using and ensure they are taught the proper way to don, doff, and conduct user seal checks each time they don the respirator to ensure the proper fit.

<https://www.youtube.com/watch?v=pGXiUyAoEd8>

For a sample written respiratory protection program go to OSHA's Small Entity Compliance Guide starting on page 101.

<https://www.osha.gov/Publications/3384small-entity-for-respiratory-protection-standard-rev.pdf>



- Avoid touching the inside of the respirator.
- Store the respirator in a clean, sealable paper bag or breathable container.
- May also store the respirator in a rigid container with the lid off to allow it to dry out.
- Label the strap of the respirator or the container or bag with the wearer's name. Do not write on the respirator material as it will affect its permeability.
- Perform a visual inspection for fit and function. Discard respirator if it becomes soiled, damaged or difficult to breathe through.
- Use a pair of clean gloves when donning and performing a user seal check. Doff and replace gloves.
- Perform a user seal check immediately after donning a respirator. Adjust as necessary. If you still cannot achieve a seal, do not go into the contaminated atmosphere.
- If a strap breaks during donning, attempt to tie it instead and use respirator if it still fits properly and isn't uncomfortable.
- If adequate supply exists, consider this alternative reuse method to reduce contamination^l:
 - Take four N95 masks, and number them (#1-4).
 - On day 1, use mask #1, then let it dry it out for 3-4 days.
 - On day 2, use mask #2, then let it dry out for 3-4 days.
 - Same for day 3, and day 4.
 - Use extreme care to avoid cross contamination or confusion of multiple used respirators.

Alternatives to typical N95s that may be considered:

- Elastomeric half-face respirators with splash goggles or full-face respirators with HEPA filters. These are more readily available than N95 respirators and the full face respirators provide eye protection.
- N99, N99, N100, R95, R99, R100, P95, P99, or P100 filtering facepiece respirators. These may be more readily available than N95 respirators, but are typically more costly.
- Powered air purifying respiratory assembly (PAPR) with HEPA filters with either a full face respirator or hood (a hood does not require fit testing).
- Controlled air purifying respirator (CAPR) unit, which also uses disposable HEPA filters, is readily available, quieter than a PAPR, and suited for hospital settings.

If there are no respirators left:

- Use facemasks if no respirators are available.
- Exclude staff at higher risk for severe illness from COVID-19 from contact with known or suspected COVID-19 clients.
- Have recovered COVID-19 staff, who have some protective immunity, care for clients with known or suspected COVID-19.
- Use masks not evaluated or approved by NIOSH or homemade masks as a last resort. There is no guarantee of protection with homemade masks, but they may help against large droplets from coughs and sneezes. Homemade masks are not considered PPE.

EYE PROTECTION CRISIS CAPACITY STRATEGIES^k

- Use eye protection devices beyond the manufacturer-designated shelf life
- Prioritize eye protection for activities that involve splashes and sprays from coughs, sneezes, or gags, and cases where prolonged face-to-face or close contact with a suspected or known infection with COVID-19 must occur.
- Implement extended use and/or limited reuse practices with good contamination control.
 - Use safety glasses with side extensions if goggles are not available.
 - Use a face shield.
 - Use a full-face elastomeric respirator.
 - Sanitize all protective eyewear with PPE wipes or other suitable cleaner after use.

ISOLATION GOWN CRISIS CAPACITY STRATEGIES^l

- Use expired gowns beyond the manufacturer designated shelf life.
- Use coveralls (such as Tyvek suits) if available.
- Implement extended use and/or limited reuse practices with good contamination control as long as there are no additional co-infectious diseases (such as *Clostridioides difficile*) among patients.

- Reuse cloth isolation gowns that are not visibly soiled.
- Users must be careful and deliberate about removing the gowns to ensure they do not touch the front of the gown.
- If the gown becomes visibly soiled, it must be discarded. (Or properly launder cloth isolation gowns.)
- Prioritize the use of gowns for activities and procedures that may generate cough, sneeze, or gag reflexes or may cause the individual to vomit. Also for activities that involve high-contact where the transfer of pathogens to the hands and clothing of the staff may occur such as dressing, bathing, showering, transferring, providing hygiene, changing linens, toileting activities, device care or use, wound care.
- If no gowns are available, consider using washable or disposable lab coats, washable patient gowns, or disposable aprons.

Decontamination and Sterilization

Information is available from some manufacturers or third-parties showing that respirators can be successfully decontaminated without impacting performance. Even after decontamination, these respirators should be handled carefully.

- On March 28, 2020, FDA issued an Emergency Use Authorization (EUA) permitting the Battelle Decontamination System to be authorized for use in decontaminating “compatible N95 respirators.” You can go to Battelle^m to see if this may be an option for your organization.
- Another company, Medlineⁿ, is seeking similar FDA approval for an alternative sterilization technique.
- A heat sterilization method has also been reported but some have not recommended due to the lack of information availableⁱ. However, Mask Ovens made by Darwin Chambers in St. Louis, MO, are available sale for this specific purpose^o.
- A University of Nebraska Medical Center health security training team has a well-documented decontamination process using ultraviolet light towers to irradiate high numbers of masks for reuse^p.

Note regarding PPE use by asymptomatic staff who have had an exposure to COVID-19^q

Facilities could consider allowing asymptomatic personnel who have had an exposure to a COVID-19 patient to continue to work after options to improve staffing have been exhausted and in consultation with their occupational health program and/or public health agency. These personnel should report temperature and absence of symptoms each day prior to starting work. Facilities could have exposed personnel wear a facemask while at work for the 14 days after the exposure event if there is a sufficient supply of facemasks. If personnel develop even mild symptoms consistent with COVID-19, they must cease client care activities, don a facemask (if not already wearing), and notify their supervisor or occupational health services prior to leaving work.

Sources:

- <https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/index.html>
- <https://www.cdc.gov/niosh/topics/hcwcontrols/recommendedguidanceextuse.html>
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- https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_id=12716&p_table=standards
(OSHA Respiratory Protection Standard: 29 CFR 1910.134 [g][1][i][A] and [B])
- <https://www.cdc.gov/coronavirus/2019-ncov/release-stockpiled-N95.html>
- <https://www.cdc.gov/coronavirus/2019-ncov/hcp/respirators-strategy/crisis-alternate-strategies.html>
- <https://www.sages.org/n-95-re-use-instructions/>
- <https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/eye-protection.html>
- <https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/isolation-gowns.html>
- <https://www.battelle.org/inb/battelle-critical-care-decontamination-system-for-covid19>
- <https://newsroom.medline.com/supply-chain/medline-teams-working-to-provide-ppe-to-nations-healthcare-providers>
- Email sales@darwinchambers.com or call 314-534-3111
- <https://www.nebraskamed.com/sites/default/files/documents/covid-19/n-95-decon-process.pdf>
- <https://www.cdc.gov/coronavirus/2019-ncov/hcp/guidance-risk-assesment-hcp.html>

