

Personal Protective Equipment: N95 Respirator



<https://www.cdc.gov/coronavirus/2019-ncov/hcp/respirators-strategy/index.html>

Personal Protective Equipment (PPE) Burn Rate Calculator <https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/burn-calculator.html>

Centers for Disease Control and Prevention (CDC) resources for clinics and healthcare facilities can be accessed at: <https://www.cdc.gov/coronavirus/2019-ncov/healthcare-facilities/index.html> Modified from Providence St Joseph Health System, Renton, Washington using CDC guidelines (20 March 2020)

Who/When to Use	<ul style="list-style-type: none"> • Staff during aerosol-generating procedures on patients with suspected or confirmed infection • Staff when caring for patients in isolation for airborne disease (measles, chickenpox, TB, etc.)
Who/When Not to Use	<ul style="list-style-type: none"> • Not for patient use • Staff engaged in patient care that does not involve aerosol-generating procedures (unless surgical/procedural masks become unavailable)
When/How to Reuse	<ul style="list-style-type: none"> • Respirators can be reused for patients with diseases known to have airborne transmission, but not contact transmission (measles, mumps, etc.) • For patients in droplet precautions, reuse is only acceptable if a full face shield is worn over the mask/respirator • Last resort/short term: Use a standard mask over an N95 respirator when face shields are not available
When/How to Extend Use	<ul style="list-style-type: none"> • Cohorted settings • Mask can remain on caregiver until it becomes damp, damaged, visibly soiled, or hard to breathe through
Strategies for Crisis Capacity of PPE <small>Assumes regular and alternate products are unavailable</small>	<ul style="list-style-type: none"> • Disposable filtering facepiece respirator decontamination and reuse may need to be considered as a crisis capacity strategy to ensure continued availability • Assign COVID-19 patients to staff that have recovered from COVID-19, and have them wear a surgical mask <p>Resources for PPE shortages: https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/decontamination-reuse-respirators.html https://med.emory.edu/departments/medicine/divisions/infectious-diseases/serious-communicable-diseases-program/covid-19-resources/conserving-ppe.html</p>
Possible Substitution	<ul style="list-style-type: none"> • Surgical mask • Elastomeric or industrial respirator • Non-surgical respirator, or any filtration capacity above 95 <p>Higher level of protection may be used based on availability</p>

The following approaches may need to be considered during periods of shortages:

- » **Beyond the manufacturers-designated shelf-life:** Refers to use of N95 respirators in U.S. stockpiles and stockpiles of healthcare facilities that continue to perform in accordance with National Institute of Occupational Safety and Health (NIOSH) performance standards
- » **Limited Reuse:** Refers to a caregiver using the same N95 respirator (with a face shield) multiple times but removing it after each encounter. The N95 respirator may be reused for a single staff member several times during the shift. It is unknown what the potential contribution of contact transmission is for SARS-CoV2, and caution is to be used if re-use of N95 respirators are used for patients with COVID-19.
- » **Extended Use:** Refers to the practice of a caregiver wearing the same N95 respirator (with a face shield) for repeated close contact encounters with several different patients without removing the respirator between patients.

Information on use beyond the manufacturer-designated shelf life, limited reuse, extended reuse, and prioritization of use by activity type can be found at:

- » <https://www.cdc.gov/coronavirus/2019-ncov/hcp/respirators-strategy/crisis-alternate-strategies.html>
- » <https://www.cdc.gov/coronavirus/2019-ncov/hcp/respirators-strategy/contingency-capacity-strategies.html>



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04/03/2020

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<https://phc.amedd.army.mil/covid19>
<https://www.coronavirus.gov/>

The Military Health System Nurse Advice Line is available 24/7:

Call 1-800-874-2273 option #1
 or visit <https://www.health.mil/1-Am-A/Media/Media-Center/NAL-Day-at-a-glance>

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Best Practices for Wearing an N95 Filtering Facepiece Respirator



Personal Protective Equipment (PPE) Burn Rate Calculator <https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/burn-calculator.html>



- Current U.S. Army guidance states use of N95 Filtering Facepiece Respirators should be reserved for medical personnel.
- Respirator use enrolls the employee in the installation Respiratory Protection Program (RPP). The employee will be evaluated for medical clearance, fit-tested, and trained in proper use.
- While wearing N95, ensure flexible nose piece (the flexible metal band at top of N95) is firmly molded against bridge of nose.
- Do NOT eat or drink while wearing an N95.
- N95 must cover nose and mouth at all times.

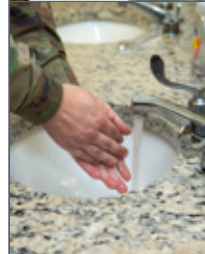
Donning N95



1. Properly wash hands or use hand sanitizer
2. Use correct size N95 from fit-test
3. Check N95 for tears and ensure bands are in good condition
4. Prior to donning, slightly bend the flexible nose piece into a broad "U" shape
5. Hold N95 against face - nose piece against bridge of nose - bottom of N95 below your chin
6. Pull the elastic bands over your head
7. Lower elastic band at the base of head, on neck
8. Upper elastic band in middle back or crown of head
9. Press flexible nose piece against your nose; ensure that it fits tight
10. Adjust N95 as needed to ensure a seal



Doffing N95



1. Consider the front of the N95 contaminated – DO NOT TOUCH!
2. Grab upper elastic band, move over head and away from face – continue to hold the band down while conducting next step
3. With other hand, grab lower elastic band; move over head
4. Pull N95 away from face
5. Dispose of N95 in proper household waste container
6. Properly wash hands with soap and water. Ensure minimum of 20 seconds of scrubbing hands, fingers, between fingers, back of hands and under nails prior to rinsing in warm water. If running water is unavailable, use hand sanitizer



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05/26/2020

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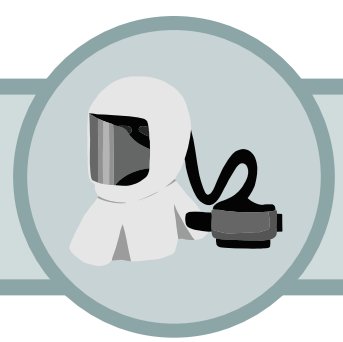
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Personal Protective Equipment: Powered Air-Purifying Respirators (PAPR)



Adapted from: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/powered-air-purifying-respirators-strategy.html>

A PAPR is an air-purifying respirator that forces air through filter cartridges or canisters into the breathing zone of the wearer. This process creates an air flow inside either a tight-fitting facepiece or loose-fitting hood or helmet, providing a higher assigned protection factor than elastomeric half facepiece and N95 respirators.

A variety of NIOSH-approved PAPR designs are available. Examples include those with tight-fitting facepieces and loose-fitting hoods or helmets, blower styles, battery types (e.g., Lithium ion, Nickel-Metal hydride, Nickel Cadmium, or over-the-counter disposable batteries), and high efficiency (HE) filters or filter cartridges. This product diversity provides flexibility to customize protection needed for healthcare staff.

Who/When to Use	<ul style="list-style-type: none"> • Staff during aerosol-generating procedures on patients with suspected or confirmed infection • Staff when caring for patients in isolation for airborne disease (measles, chickenpox, TB, etc.) • Staff must be enrolled in Respiratory Protection Program and trained on proper use, storage, maintenance, donning and doffing
Who/When Not to Use	<ul style="list-style-type: none"> • Not for patient use • Staff engaged in patient care that does not involve aerosol-generating procedures • Staff engaged in patient care that requires full use of visual field or auditory functions (PAPR may interfere with visual field and hearing)
When/How to Reuse	<ul style="list-style-type: none"> • Respirators can be reused for patients with diseases known to have airborne transmission but not contact transmission (measles, mumps, etc.) • For patients in droplet precautions, reuse is only acceptable if a full face shield is worn over the mask/respirator
When/How to Extend Use	<ul style="list-style-type: none"> • PAPRs should be cleaned and disinfected immediately after doffing per manufacturer's protocols NOTE: The providing facility must train staff to properly use, maintain, clean, and disinfect PAPRs • When possible, use an U.S. Environmental Protection Agency (EPA)-approved List N disinfectant; check the manufacturer's instructions for approved cleaning solutions and proper cleaning procedure • PAPRs require a robust maintenance program for repairing or replacing components that have become damaged during use, during cleaning and disinfection procedures and during battery management (recharged or replaced) • Competent, trained staff are required to support the PAPR maintenance program



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Personal Protective Equipment: Elastomeric Respirators



Adapted from: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/elastomeric-respirators-strategy/index.html>

Elastomeric respirators are tight-fitting respirators with full or half facepieces made of synthetic or natural rubber material. They are equipped with replaceable filter cartridges or flexible, disc or pancake-style filters, which are not housed in a cartridge body. These respirators can be cleaned, disinfected, and re-used and used as alternatives to disposable respirators, such as N95 respirators. Elastomeric respirators can provide at least equivalent protection to N95 respirators when equipped with the proper air-purification filters, cartridges, or canisters, but are not cleared by U.S. Food and Drug Administration (FDA) for fluid resistance and should not be used in surgical settings.

Who/When to Use	<ul style="list-style-type: none"> • Staff during aerosol-generating procedures on patients with suspected or confirmed infection • Staff when caring for patients in isolation for airborne disease (measles, chickenpox, TB, etc.) • Staff must be enrolled in Respiratory Protection Program and trained on proper use, storage, maintenance, donning and doffing
Who/When Not to Use	<ul style="list-style-type: none"> • Not for patient use • Staff engaged in patient care that does not involve aerosol-generating procedures (unless no other face covering available) • Staff in surgical settings due to concerns of exhaled air contaminating the surgical field
When/How to Reuse	<ul style="list-style-type: none"> • Elastomeric respirators should be cleaned and disinfected immediately after doffing • Ensure cleaning and disinfection of the respirator components such as straps, valves, and valve covers • Cleaning and disinfecting solutions and procedures must be effective for killing the COVID-19 virus but not damage the respirator or cause harm to the wearer. If possible, use an EPA-approved List N disinfectant; check the manufacturer's instructions for approved cleaning solutions and proper cleaning procedure • Should be cleaned and disinfected following manufacturer's directions, in-between shifts when feasible • Do not share respirators between staff • Wearer must inspect the respirator before use as prolonged use of disinfectants may damage or degrade respirator elastomeric components (facepiece, valves, valve covers, straps) causing components to discolor, swell, harden, and crack
Filters	<ul style="list-style-type: none"> • Any combination of N, R, or P series with 95, 99, or 100 efficiencies can be used (i.e. N-95, P-100) • Do not share filters between staff



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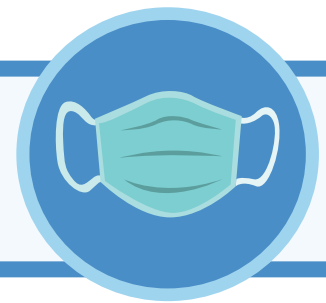


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Personal Protective Equipment: Surgical Masks



Personal Protective Equipment (PPE) Burn Rate Calculator <https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/burn-calculator.html>
Centers for Disease Control and Prevention (CDC) resources for clinics and healthcare facilities can be accessed at: <https://www.cdc.gov/coronavirus/2019-ncov/healthcare-facilities/index.html> Modified from Providence St Joseph Health System, Renton, Washington using CDC guidelines (20 March 2020)

- **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.**

Who/When to Use	<ul style="list-style-type: none"> • Staff collecting specimens • Staff caring for a patient with respiratory symptoms • Staff when there is a potential for splashes, spray, splatter, or droplets of blood or other body fluids • Patients with respiratory symptoms (to contain secretions)
Who/When Not to Use	<ul style="list-style-type: none"> • When staff is well and caring for an asymptomatic patient • Anyone who is well and wants to protect themselves from respiratory illness
When/How to Reuse	<ul style="list-style-type: none"> • Masks can be reused for patients with diseases known to have airborne transmission, not contact transmission (measles, mumps, etc.) • For patients in droplet precautions, reuse is only acceptable if a full-face shield is worn over the mask • Facemasks fastened via ties may tear with removal and should be considered only for extended use, rather than re-use; those with elastic ear hooks may be more suitable for re-use • 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
When/How to Extend Use	<ul style="list-style-type: none"> • Cohorted settings • Masks can remain on caregiver until it becomes damp, damaged, visibility soiled, or hard to breathe through • Caregiver must take care not to touch their mask. If they touch or adjust their facemask they must immediately perform hand hygiene
Strategies for Crisis Capacity of PPE	<ul style="list-style-type: none"> • Extended use • Reuse <p>Resources for PPE shortages: https://med.emory.edu/departments/medicine/divisions/infectious-diseases/serious-communicable-diseases-program/covid-19-resources/conserving-ppe.html</p>
Possible Substitution	<ul style="list-style-type: none"> • Last resort: homemade cloth masks (not considered PPE since capability to protect HCP is unknown). Ideally used in combination with a face shield.

The following approaches may need to be considered during periods of shortages:

- » **Beyond the manufacturers-designated shelf-life:** 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.
- » **Limited Reuse:** Refers to the practice of a caregiver using the same facemask for multiple encounters with different patients but removing it after each encounter. It is unknown what the potential contribution of contact transmission is for SARS-CoV2, and caution is to be used if re-use of masks are used for patients with COVID-19.
- » **Extended Use:** Refers to the practice of a caregiver wearing the same facemask for repeated close contact encounters with several different patients without removing the facemask between patient encounters.

Information on use beyond the manufacturer-designated shelf life, limited reuse, extended reuse, and prioritization of use by activity type can be found at:

- » <https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/face-masks.html>
- » <https://www.cdc.gov/coronavirus/2019-ncov/hcp/respirators-strategy/crisis-alternate-strategies.html>
- » <https://www.cdc.gov/coronavirus/2019-ncov/hcp/respirators-strategy/contingency-capacity-strategies.html>



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Facemask or Respirator Determination



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

Healthcare Provider (HCP) planned proximity to the case patient during encounter	Facemask or Respirator Determination	
	Patient masked for entire encounter (i.e., with source control)	Unmasked patient or mask needs to be removed for any period of time during the patient encounter
HCP will remain at greater than 6 feet from symptomatic patient	HCP remaining at this distance from the patient should not need to enter the patient care area; if entry required, no facemask or respirator	HCP remaining at this distance from the patient should not need to enter the patient care area; if entry required, no facemask or respirator
HCP will be within 3 to 6 feet of symptomatic patient	HCP remaining at this distance from the patient should not need to enter the patient care area; if entry required, facemask	HCP remaining at this distance from the patient should not need to enter the patient care area; if entry required, facemask
HCP will be within 3 feet of symptomatic patient, including providing direct patient care	Facemask	N95 respirator/ Elastomeric respirator/ PAPR, based on availability
HCP will be present in the room during aerosol generating procedures performed on symptomatic persons	N95 respirator/ Elastomeric respirator/ PAPR, based on availability	N95 respirator/ Elastomeric respirator/ PAPR, based on availability

*Based on availability, organizations may require and/or individuals may voluntarily choose to utilize higher levels of protection

Source: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/respirators-strategy/crisis-alternate-strategies.html>



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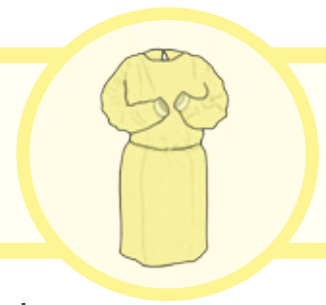
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Personal Protective Equipment: Gowns



<https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/isolation-gowns.html>

Personal Protective Equipment (PPE) Burn Rate Calculator <https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/burn-calculator.html>

CDC resources for clinics and healthcare facilities can be accessed at: <https://www.cdc.gov/coronavirus/2019-ncov/healthcare-facilities/index.html>

Modified from Providence St Joseph Health System, Renton, Washington using CDC guidelines (20 March 2020)

<p>When/How to Reuse</p>	<ul style="list-style-type: none"> • Cloth gowns can be reused if laundered, inspected/maintained, and replaced when material becomes ripped or thin • Paper gowns that become soiled during patient care should be properly disposed of
<p>When/How to Extend Use</p>	<p>Disposable or cloth gowns can be worn by caregivers for extended use when interacting with more than one patient infected with the same disease housed in the same location. This can only be considered if there are no infectious diseases transmitted by contact also housed in the same location.</p>
<p>Strategies for Crisis Capacity of PPE</p>	<ul style="list-style-type: none"> • Prioritize gowns for high touch procedures • Do not use when entering room if nothing is going to be touched <p>Resources for PPE shortages: https://med.emory.edu/departments/medicine/divisions/infectious-diseases/serious-communicable-diseases-program/covid-19-resources/conserving-ppe.html</p>
<p>Possible Substitution</p>	<ul style="list-style-type: none"> • Disposable laboratory coats • Reusable (washable) patient gowns • Paper gowns • Plastic aprons to cover critical zones • Reusable (washable) lab coat or jacket • Last resort: any physical barrier



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04/03/2020

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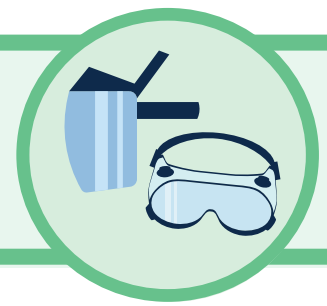
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Personal Protective Equipment: Face Shield and Goggles



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CDC resources for clinics and healthcare facilities can be accessed at: <https://www.cdc.gov/coronavirus/2019-ncov/healthcare-facilities/index.html>

Modified from Providence St Joseph Health System, Renton, Washington using CDC guidelines (20 March 2020)

Who/When to Use	<ul style="list-style-type: none"> • Staff collecting specimens for COVID-19 • Staff during aerosol-generating procedures on patients with suspected or confirmed infection • Staff when splashes, spray, splatter, or droplets of blood/other body fluids are anticipated
Who/When Not to Use	<ul style="list-style-type: none"> • Not for patient use
When/How to Reuse	<ul style="list-style-type: none"> • Wipe inside and outside with an EPA List N, hospital-approved disinfectant wipe between each use • Perform hand hygiene before and after contact
When/How to Extend Use	<ul style="list-style-type: none"> • Wipe inside and outside with an EPA List N, hospital-approved disinfectant wipe after use • Perform hand hygiene before and after contact
Strategies for Crisis Capacity of PPE	<p>Disinfect and reuse disposable eye protection – assign to each caregiver</p> <p>Resources for PPE shortages: https://med.emory.edu/departments/medicine/divisions/infectious-diseases/serious-communicable-diseases-program/covid-19-resources/conserving-ppe.html</p>
Possible Substitution	<ul style="list-style-type: none"> • Industrial face shields (for grinding metal) • Industrial goggles, safety glasses, etc.



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