



# ABSA INTERNATIONAL

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## COVID-19 FAQs PPE Use

### 1. Can disposable gloves be reused?

Waterproof gloves such as nitrile or non-powdered latex must be worn when handling specimens in the laboratory. Per the OSHA Bloodborne Pathogen Standard, disposable gloves cannot be reused. Remember that all gloves will develop pinholes over time. Change gloves if they become torn or visibly contaminated with blood or body fluids. Gloves should be changed frequently during the day, even if not visibly contaminated, and you should wash your hands with soap and water after removing the gloves.

After removing PPE, always wash hands with soap and water for at least 20 seconds, if available. Ensure that hand hygiene facilities (e.g., sink or alcohol-based hand rub) are readily available at the point of use (e.g., at or adjacent to the PPE removal area).

If you are using heavy rubber or other non-disposable gloves, you can clean and reuse these. Follow manufacturers recommendations for cleaning.

### 2. Can disposable gloves be disinfected safely?

Chemicals like alcohol (hand sanitizer) and bleach can affect the porosity of gloves, causing them to become more porous and/or sticky. This can mean that chemicals, or potentially infectious agents, you are working with can reach the skin. Typically, nitrile gloves are more chemical resistant than latex gloves. Each manufacturer should post a chemical resistance chart to show what gloves can be used with different chemicals—refer to these published charts for the chemical you are using and the gloves that you will be wearing.

However, in the case of extreme glove shortages, CDC has produced guidance on glove disinfection: CDC, *Strategies for Optimizing the Supply of Disposable Medical Gloves*: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/gloves.html> (last updated April 30, 2020).

CDC **does not recommend disinfection of disposable medical gloves as standard practice**. This practice is inconsistent with general disposable glove usage, but, in times of extreme disposable medical glove shortages, this option may need to be considered.

### **Alcohol-based hand sanitizer (ABHS)**

ABHS is the preferred method for performing hand hygiene of gloved hands in healthcare settings when the gloves are not visibly soiled. Research has shown multiple disposable latex and nitrile glove brands maintained their integrity when treated with ABHS.[1-2] Disposable medical gloves can be disinfected for up to six (6) applications of ABHS or until the gloves become otherwise contaminated or ineffective (for one or more of the reasons stated in extended use guidance above). Follow [hand hygiene guidance](#) for proper application of ABHS.

### **Soap and water**

If ABHS is not available, soap and water can be used to clean donned disposable medical gloves between tasks or patients. HCP planning to wash gloves with soap and water should wear long-cuffed surgical gloves; as washing may be impractical for short cuffed gloves where water may become trapped inside the worn gloves. Disposable medical gloves can be cleaned with soap and water up to 10 times or until the gloves become otherwise contaminated or ineffective (for one or more of the reasons stated in extended use guidance above). Follow [hand hygiene guidance](#) for proper soap and water hand hygiene procedures.

### **Diluted bleach solution as a disinfectant**

Limited data<sup>1</sup> show that when nitrile gloves were tested in accordance with ASTM F739-12: “Standard Test Method for Permeation of Liquids and Gases Through Protective Clothing Materials Under Conditions of Continuous Contact” using a 10-13% bleach solution, no permeation was observed. Therefore, disinfection of disposable gloves using diluted bleach may be considered as outlined below.

1. Check gloves for signs of damage (e.g., holes, rips, tearing) or degradation (e.g., brittle, stiff, discoloration, tackiness). If damage or degradation is observed, discard the gloves and do not disinfect.
2. While gloves are donned, dip gloved hands into a [dilute bleach solution](#) for five (5) seconds to ensure complete coverage. Solution should not touch the skin.
3. Allow the dilute bleach solution to remain on the donned gloves for one minute (starting after removing gloved hands from the solution) to ensure adequate decontamination. Leave hands in a downward position to reduce the risk of the bleach solution dripping onto arms.
4. Rinse dilute bleach solution off gloved hands using water.
5. Wipe gloves dry with a clean, absorbent material.

6. Check gloves again for signs of damage (e.g., holes, rips, tearing) or degradation (e.g., brittle, stiff, discoloration, tackiness). If damage or degradation is observed, discontinue use and discard the gloves.

Instructions for making an appropriate dilute bleach solution can be found on the [CDC website](#).

Although a diluted bleach solution has been shown to be effective for disinfecting disposable medical gloves, the odor and potential for respiratory irritation, potential for inadvertent spills, and potential staining of clothing are reasons this should be the last option for disinfection. If disinfection using the diluted bleach method is conducted, it should be done in a well-ventilated area. Diluted bleach solution must be mixed fresh at least daily, and any time the solution becomes soiled with organic material, which can reduce the effectiveness of the bleach. Available permeation data suggests that disposable medical gloves may continue to provide protection when disinfected with diluted bleach solution up to 10 times or until the gloves become otherwise contaminated or ineffective (for one or more of the reasons stated in extended use guidance above).

If you are working in a laboratory or animal handling facility, remember that you can use less expensive/more easily available gloves, such as food handler or polyethylene, vinyl, synthetic vinyl, synthetic poly hybrids for cleaning and disinfecting tasks, pouring gels, under cut resistant gloves, etc. Consider any chemicals that may be used for these tasks when selecting a glove to use.

CDC infographic for glove removal: <https://www.cdc.gov/vhf/ebola/pdf/poster-how-to-remove-gloves.pdf>

There is an alternate method for doffing gloves called the “beak” method:

[https://www.youtube.com/watch?v=BOAb\\_cy3HxM&feature=youtu.be](https://www.youtube.com/watch?v=BOAb_cy3HxM&feature=youtu.be)

### **3. What is the donning and doffing sequence?**

WHO has a new infographic for donning and doffing PPE: [https://www.who.int/csr/resources/publications/ppe\\_en.pdf?ua=1](https://www.who.int/csr/resources/publications/ppe_en.pdf?ua=1)

CDC has an infographic for donning and doffing PPE: <https://www.cdc.gov/HAI/pdfs/ppe/ppeposter148.pdf>.

If only one pair of gloves is worn, sanitize hands (wash with soap and water/use hand sanitizer) between each step and wash hands as the last step.

For research laboratories, wearing 2 pairs of gloves simplifies the PPE doffing procedure: remove the outer, contaminated pair of gloves after work, waste disposal and disinfection have been completed, then use the inner (uncontaminated) gloves to remove all PPE, removing the inner gloves as the last step, followed by hand washing.

The Association for Professionals in Infection Control and Epidemiology (APIC) has a good summary for wearing PPE:

<http://professionals.site.apic.org/infographic/ppe-dos-and-donts/>

The idea is not to contaminate your clothing or skin by touching clean areas with contaminated gloves – always consider your gloves to be contaminated after leaving the work area. Always wash hands with soap and water after removing gloves and other PPE. HYPERLINK

"<https://www.nejm.org/doi/full/10.1056/NEJMc2004973>"

#### **4. How should I don and doff an N-95 respirator?**

##### **Do:**

- WASH YOUR HANDS THOROUGHLY BEFORE PUTTING ON AND TAKING OFF THE RESPIRATOR.
- If you have used a respirator before that fit you, use the same make, model and size.
- Inspect the respirator for damage. If your respirator appears damaged, DO NOT USE IT. Replace it with a new one.
- Do not allow facial hair, hair, jewelry, glasses, clothing, or anything else to prevent proper placement or come between your face and the respirator.
- Request fit testing if there have been events affecting the seal check of the N-95 respirator, for example surgery or gain/loss weight
- Do the seal check before use: <https://www.cdc.gov/niosh/docs/2018-130/pdfs/2018-130.pdf?id=10.26616/NIOSH PUB2018130>

##### **Don't:**

- Remove the respirator by pinching or grabbing the front of the respirator, this area may be contaminated, and if you have to reuse the respirator, you may damage the filter matrix.
- Snap the respirator straps, as this may create an aerosol.
- Wear a brand and type of N-95 respirator for which you have not been fit tested within the last year.

NIOSH infographic for donning, testing and doffing an N-95 respirator: <https://www.cdc.gov/niosh/docs/2010-133/pdfs/2010-133.pdf>

#### **5. What can be done about the shortage of N-95 respirators?**

N-95 respirators should generally be discarded after use. In the event of a serious PPE shortage, such as with the SARS-CoV-2 outbreak, N-95s are being worn for much longer periods and in a hospital, may be worn for multiple patients.

The first step in addressing the shortage is to consider ways to optimize the use of respirators for where they are most effective, these strategies include:

- minimizing the number of individuals who need to use respiratory protection through the preferential use of engineering and administrative controls,
- using expired N-95s for training purposes
- limiting the use of N-95s to front line healthcare workers who are performing aerosol-inducing procedures on patients, (in a university setting)
- switching BSL-3 workers to PAPRs (powered air purifying respirators) instead of N-95s
- using half or full-face respirators for some applications, etc.

If respirators are going to be reused or worn for extended periods, they must only be reused by the same individual:

- Discard or decontaminate N95 respirators following use during aerosol generating procedures.
- Discard N95 respirators contaminated with blood, respiratory or nasal secretions, or other bodily fluids from patients.
- Discard or decontaminate N95 respirators following close contact with, or exit from, the care area of any patient co-infected with an infectious disease requiring contact precautions.
- Consider use of a cleanable face shield (preferred) over an N95 respirator and/or other steps (e.g., masking patients, use of engineering controls) to reduce surface contamination.
- Perform hand hygiene with soap and water or an alcohol-based hand sanitizer before and after touching or adjusting the respirator (if necessary for comfort or to maintain fit).
- Discard any respirator that is obviously damaged or becomes hard to breathe through.

Obviously, the decision to reuse respirators is critical and requires written justification, new policies, and training for all those involved. Consult the guidance provided by CDC, NIOSH and the FDA.

CDC *Strategies to Optimize the Supply of PPE and Equipment* : <https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/index.html>

CDC Checklist, *Strategies for Optimizing the Supply of N95 Respirators during the COVID-19 Response*: [https://www.cdc.gov/coronavirus/2019-ncov/novel-coronavirus-2019-SupplyChecklist\\_of-N95-Respirators\\_COVID-19\\_4\\_6\\_20\\_num.pdf](https://www.cdc.gov/coronavirus/2019-ncov/novel-coronavirus-2019-SupplyChecklist_of-N95-Respirators_COVID-19_4_6_20_num.pdf)

NIOSH *Recommended Guidance for Extended Use and Limited Reuse of N95 Filtering Facepiece Respirators in Healthcare Settings*: <https://www.cdc.gov/niosh/topics/hcwcontrols/recommendedguidanceextuse.html>

Information on foreign N-95s: *Understanding the Use of Imported Non-NIOSH-Approved Respirators*: <https://blogs.cdc.gov/niosh-science-blog/2020/04/23/imported-respirators/>

OSHA, April 2, 2020: *Enforcement Guidance for Use of Respiratory Protection Equipment Certified under Standards of Other Countries or Jurisdictions During the Coronavirus Disease 2019 (COVID-19) Pandemic*: <https://www.osha.gov/memos/2020-04-03/enforcement-guidance-use-respiratory-protection-equipment-certified-under>

FDA, 28 March 2020: *Imported, Non-NIOSH-Approved Disposable Filtering Facepiece Respirators*: <https://www.fda.gov/media/136403/download>

NIOSH information on N-95s that do not meet NIOSH standards: <https://www.cdc.gov/niosh/npptl/respirators/testing/NonNIOSHresults.html>

#### **6. Are there proven methods to decontaminate and reuse N-95 respirators?**

The FDA has given an emergency use authorization (EUA) for decontamination for certain N-95s via a vaporized hydrogen peroxide procedure: <https://www.fda.gov/media/136530/download>

An Ultraviolet Germicidal Irradiation (UVGI) process has also been shown to be effective: <https://www.nebraskamed.com/sites/default/files/documents/covid-19/n-95-decon-process.pdf>

Various methods of N-95 decontamination are summarized here: <https://www.n95decon.org/publications>

Other methods of N-95 decontamination, such as dry heat and moist heat, are currently being studied.