



**Special Communication to City of Burlington  
Emergency Operations Center and Mayor  
Regarding COVID-19**

**To:** Brian Lowe, Luke McGowan

**From:** Kayla Donohue

**RE:** Strategies for Optimizing PPE Supply

**Date:** March 19, 2020, 6:10pm

*Updated: March 30, 2020, 5:52pm*

---

**Key Messages:**

- Utilize engineering and administrative controls to reduce the risk of exposures for HCP without the need for PPE at the appropriate level of capacity (conventional, contingency, and crisis) for each healthcare facility. Cancel all elective and non-urgent procedures and appointments for which PPE is typically used by HCP.
- If there is a shortage of PPE, they should be prioritized for aerosol-generating procedures, care activities where splashes and sprays are anticipated, and high-contact patient care activities that provide opportunities for transfer of pathogens to the hands and clothing of HCP
- Exclude HCP at higher risk for severe illness from COVID-19 from contact with known or suspected COVID-19 patients when supplies of PPE are limited. During PPE shortages, designate convalescent HCP for provision of care to known or suspected COVID-19 patients
- According to this guidance, in times of increased demand and decreased supply, expired N95's may be used past their manufacturer-specified shelf-life when following CDC guidance on how to optimize the supply. These should be prioritized for HCP that have highest risk of exposure, and facemasks can be used when there is a shortage for HCP at lower exposure risk.
- When gowns, eye protection and gloves are in shortage, they should be prioritized for HCP and procedures with greatest risk of exposure. In extreme cases, expired and cloth gowns and coveralls can be used, supplies can be cleaned and reused according to cleaning specifications (i.e. face shields), or convalescent HCP can treat known or suspected COVID-19 patients.
- **The Health Department has developed a web-based COVID-19 specific resource request form.** If you anticipate depletion of any COVID-19 specific resource stocks within the next 7 days, please use the following web link to submit a resource request:  
<https://www.surveygizmo.com/s3/5504100/COVID-Resource-Request-Form>

**Important Note Regarding this Document:** *The coronavirus pandemic, and local, state and federal guidance/orders regarding this pandemic, are rapidly evolving. Information contained in this memo is presumed to be accurate and reflective of the situation as of the date and time noted above. Information in this memo is offered as review of actions, events, case studies, and data based on specific requests of and research by the Analytics Team. The original audience for this document was the Mayor and members of the City's Emergency Operations Center. These resources are being made available in the event that they may be informative for other Vermont communities.*

## Key Resources

- [CDC's Strategies for Optimizing the Supply of PPE](#)
- [CDC's Checklist for Healthcare Facilities: Strategies for Optimizing the Supply of N95 Respirators during the COVID-19 Response](#)
- [VDH: HAN: Personal Protective Equipment \(PPE\) Conservation measures Contingency Operations](#)
- [FDA: Surgical Mask and Gown Conservation Strategies – Letter to Healthcare Providers](#)
- [FDA: Medical Glove Conservation Strategies – Letter to Healthcare Providers](#)
- [FDA: FAQs on 3D Printing of Medical Devices, Accessories, Components, and Parts During the COVID-19 Pandemic](#)
- [JAMA: Conserving Supply of Personal Protective Equipment – A Call for Ideas](#)

## Summary of **CDC Guidance on Optimizing PPE**

### Respirators (N95) & Face Masks

- Facemasks are an acceptable alternative when the supply chain of respirators cannot meet demand, particularly for lower exposure risk to HCP
- Ensure healthcare facilities have a respiratory protection program
- Increased emphasis on early identification and implementation of source control (i.e., putting a face masks on patients presenting with symptoms of respiratory infection)
- In time of increased demand and decreased supply, the N95s: 3M 1860, 3M 1870, 3M 8210, 3M9010, 3M 8000, Gerson 1730, Medline/Alpha Protech NON27501, Moldex 1512, and Moldex 2201, may be used past their manufacturer-designated shelf life when responding to COVID-19 according to preliminary information from the NIOSH study. When using N95s that have exceeded their manufacturer-designated shelf life, the CDC recommends following the [Strategies for Optimizing the Supply of N95 Respirators](#)
- At contingency capacity for face masks, remove facemasks for visitors in public places (these can be provided as needed when patients are symptomatic), implement extended use of facemasks, and restrict facemasks to use by HCP, rather than patients for source control
- At crisis capacity, use facemasks beyond the manufacturer-designated shelf life during patient care activities, implement limited re-use of facemasks, use homemade face shields and homemade masks (i.e. bandanas or scarfs, clear vinyl sheets, marine-grade vinyl, industrial tape, foam and elastic), and consider use of ventilated headboards

### Eye Protection, Gowns, & Gloves

- Eye protection, gowns, and gloves continue to be recommended for HCP treating a suspected or confirmed COVID-19 patient
- If there is a shortage of eye protection, gowns, or gloves they should be prioritized for aerosol-generating procedures, care activities where splashes and sprays are anticipated, and high-contact patient care activities that provide opportunities for transfer of pathogens to the hands and clothing of HCP

**Important Note Regarding this Document:** The coronavirus pandemic, and local, state and federal guidance/orders regarding this pandemic, are rapidly evolving. Information contained in this memo is presumed to be accurate and reflective of the situation as of the date and time noted above. Information in this memo is offered as review of actions, events, case studies, and data based on specific requests of and research by the Analytics Team. The original audience for this document was the Mayor and members of the City's Emergency Operations Center. These resources are being made available in the event that they may be informative for other Vermont communities.

- Adhere to recommended manufacturer instructions for cleaning and disinfection, or guidelines produced by the CDC when there are not any from the manufacturer (such as for single use disposable face shields) to reprocess them safely during shortages
- At contingency capacity for isolation gowns, shift towards cloth isolation gowns (these are reusable), consider the use of coveralls, consider the use of expired gowns beyond the manufacturer-designated shelf life for training
- At crisis capacity for isolation gowns, consider extended use of isolation gowns, re-use of cloth isolation gowns, and gown alternatives (i.e. disposable laboratory coats, reusable patient gowns, reusable laboratory coats, disposable aprons, and combinations of these clothing)

## Summary of Creative Methods of Obtaining PPE

### Generating and Reallocating Available PPE

- Other industries that may be able to donate PPE:
  - Dentist offices, veterinary clinics, outpatient clinics (primary care) can donate them (Oregon Gov. Made a public ask)
  - HHS officials talked about the idea of modifying masks used in the automotive or industrial paint industry to meet medical needs
  - Airport
  - Construction companies
  - Universities, private laboratories, and restaurants to create a back-up supply of gown alternatives as a last resort option

### Non-traditional methods for creating PPE

- In Burlington, MA, volunteers are sewing surgical masks with textile company partnership to get materials; the masks are then washed at hospitals before use to ensure they're sterile.
- In Seattle, Providence St. Joseph Health worked with Home Depot and local craft stores to buy supplies to home make face shields out of marine-grade vinyl, industrial tape, foam and elastic. About 20 administrative staff members from the health system's corporate headquarters volunteered to work and assembly line in a large conference room to put together 500 home-spun face shields for the hospital in Seattle. They working on a prototype facemask, made from a surgical wrap material that typically lines surgical trays – this is being tested to see if it meets quality standards.
- One California hospital company ordered protective equipment from a company that supplies goggle and masks to construction workers
- [3D printing of facemasks](#) by a UK-based company is set to test out the masks at the University of Leicester soon
- [Copper3D](#) is organizing a global campaign to 3D print antimicrobial masks on a global scale
  - [This article](#) has a link has with the Open Source design
- The FDA produced a FAQ on 3D printing for N95s and other PPE, including things to be aware of and measure to take to ensure safety and efficacy of 3D printed masks and filters

**Important Note Regarding this Document:** The coronavirus pandemic, and local, state and federal guidance/orders regarding this pandemic, are rapidly evolving. Information contained in this memo is presumed to be accurate and reflective of the situation as of the date and time noted above. Information in this memo is offered as review of actions, events, case studies, and data based on specific requests of and research by the Analytics Team. The original audience for this document was the Mayor and members of the City's Emergency Operations Center. These resources are being made available in the event that they may be informative for other Vermont communities.

- Polar Shades in Henderson, NV turned their window shade facility into a plant producing masks, gowns and other PPE for Las Vegas-area health care professionals and first responders fighting the COVID-19 pandemic. They're running low on materials though and are asking for help from 3M and others.
- JAMA created a call for idea and is publishing and researching the efficacy of a number of creative PPE solutions. This will be an evolving source of creative ideas.

### Federal Efforts

- Alex Azar, secretary of HHS, told Congress last month that the stockpile contains 30 million surgical masks and 12 million of the more protective N95 masks. He said there were an additional 5 million N95 masks that may have passed their expiration date.
- Mike Pence asked construction companies to donate their inventory of N95 masks to local hospitals and forgo additional orders of those industrial masks
- Dept. Of Defense says it will provide 5 million N95 masks, 1 million of them made immediately available, along with 2,000 ventilators
- Recently enacted CARES Act includes new provisions related to the creation, storage and distribution of PPE including:
  - \$16 billion for the Strategic National Stockpile (thru Biomedical Advanced Research and Development Authority (BARDA)) for critical medical supplies, personal protective equipment, and life-saving medicine;
  - \$1.5 billion to support States, locals, territories, and tribes in their efforts to conduct public health activities, including the purchase of personal protective equipment (thru CDC)
  - \$178 million for the Department of Homeland Security to ensure front line federal employees have personal protective equipment.
  - \$100 million for personal protective equipment for our nation's first responders.
  - \$10 million for the National Institute for Innovation in Manufacturing Biopharmaceuticals to support the development and manufacture of new medical countermeasures and biomedical supplies to combat the coronavirus.

### Sources

- [Release of Stockpiled N95 Filtering Facepiece Respirators Beyond the Manufacturer-Designated Shelf Life: Considerations for the COVID-19 Response](#)
- [CDC's Interim Infection Prevention and Control Recommendations for Patients with Suspected or Confirmed Coronavirus Disease 2019 \(COVID-19\) in Healthcare Settings](#)
- [FDA: FAQs on Shortages of Surgical Masks and Gowns](#)
- [The Joint Commission: What should an organization do if they are facing critical shortages of PPE and are unable to obtain PPE commercially](#)
- [Buzzfeed: A Top Cancer Hospital Faces Mask Shortages As COVID-19 Cases Show Up In Staff and Patients](#)
- [Infection Control Today: Survey: US Hospitals Brace for Severe PPE Shortage](#)
- [The Hill: Feds must increase production of personal protective equipment and COVID-19 test kits](#)

**Important Note Regarding this Document:** *The coronavirus pandemic, and local, state and federal guidance/orders regarding this pandemic, are rapidly evolving. Information contained in this memo is presumed to be accurate and reflective of the situation as of the date and time noted above. Information in this memo is offered as review of actions, events, case studies, and data based on specific requests of and research by the Analytics Team. The original audience for this document was the Mayor and members of the City's Emergency Operations Center. These resources are being made available in the event that they may be informative for other Vermont communities.*

- [ONS Voice: How to Manage PPE Supply Shortages Related to COVID-19](#)
- [Bloomberg: Hospital Workers Make Masks From Office Supplies Amid US Shortage](#)
- [WCAX: Vermont faces shortage of critical protective equipment](#)
- [State of Vermont Office of Professional Regulation Board of Pharmacy COVID-19 Emergency Guidance](#)
- [OPB: Fear Grows as Protective Equipment Supplies Dwindle For Oregon Health Care Workers](#)
- [ABC News: Medical providers, fearing equipment shortages, tap into secret national supply network](#)
- [Coronavirus: Surgical Masks Project Seeks Volunteers to Sew Masks](#)
- [NEJM: Fair Allocation of Scarce Medical Resources in the Time of COVID-19](#)
- [H.R. 748 The Coronavirus Aid, Relief, and Economic Security Act: Title-By-Title Summary Prepared By The Office Of Vice Chairman Leahy \(D-Vt.\)](#)
- [How a Henderson company went from making window shades to surgical masks](#)
- [COVID-19 Clearinghouse: Project N95 is matching hospitals with PPE supplier](#)

**Important Note Regarding this Document:** *The coronavirus pandemic, and local, state and federal guidance/orders regarding this pandemic, are rapidly evolving. Information contained in this memo is presumed to be accurate and reflective of the situation as of the date and time noted above. Information in this memo is offered as review of actions, events, case studies, and data based on specific requests of and research by the Analytics Team. The original audience for this document was the Mayor and members of the City's Emergency Operations Center. These resources are being made available in the event that they may be informative for other Vermont communities.*