HBI
Part of Clarivate

Updated Guidance on PPE Allocation and Use

PUBLISHED: APRIL 2020 ⁄ AUDIENCE: SUPPLY CHAIN

What Does It Mean?

Availability and allocation of personal protective equipment has been one area of focus during the COVID-19 pandemic, with news reports of shortages of essential PPE, like masks. Many front-line caregivers have taken to news organizations, social media platforms, and other outlets to express concerns over needed PPE supplies. A March 27 webinar hosted jointly by the American Nurses Association and the Association for Professionals in Infection Control and Epidemiology titled "Be Confident Protecting Yourself and Providing the Best Care to Your Patients During This COVID-19 Pandemic" included the results of a survey asking front-line caregivers if they were "concerned or afraid to come to work because of the COVID-19 pandemic." The results were disheartening, with only 14% of responders stating they were not concerned or afraid. Answering in the affirmative, 48% responded they were somewhat concerned or afraid and 38% stated they felt very concerned or afraid.

Public perception has mirrored this attention on PPE, with many essential businesses, like grocery stores, offering disinfectant wipes and gloves for customer use. Many hospitals report donations of PPE coming in from private businesses in their communities, and a number of grassroots campaigns have also cropped up to collect or make PPE suitable for caregiver use.

In order to conserve PPE for allocation where it is most needed, health agencies have published guidance on PPE use. This article collects those suggestions, as well as a few provider examples, for filling in the gaps in PPE supply.

CDC Guidelines

The Centers for Disease Control and Prevention has released the most thorough guidance on navigating potential PPE shortages and conserving PPE for organizations dealing with surge capacity. The agency uses three levels to define surge capacity severity, with each level offering strategies for PPE allocation:

- **Conventional capacity:** Patient care is largely provided without changes to practice. Strategies are likely already in place as part of infection control plans.
- **Contingency capacity:** Standard care practices may be altered due to expected PPE shortages. While conservation measures are put in place, changes are not expected to have a significant impact on patient care or clinician safety.
- **Crisis capacity:** New measures are needed to manage known PPE shortages. Measures are often not up to typical U.S. healthcare standards.

For each of these levels, the CDC offers strategy suggestions organizations can put in place to manage PPE. As the COVID-19 pandemic has accelerated, the CDC is now suggesting all healthcare organizations to immediately implement applicable contingency-level strategies to begin to conserve PPE supply. Organizations seeing a major surge in patients, such as those in known hot spots, should begin considering crisis level strategies as supply shortages become severe. Some strategies can be applied to overall PPE supply, while other strategies are more specific to PPE type. To help organizations determine where strategies may need to be implemented, the CDC created an online tool called the Personal Protective Equipment Burn Rate Calculator (click here), where providers can enter the amount of PPE on hand along with patient load to calculate the consumption rate for each category of PPE. General PPE strategies organizations can implement at both the contingency and crisis level include:

- **Contingency capacity:**
  - Consider canceling elective and non-emergent procedures and appointments on a case-by-case basis to preserve PPE.
  - Implement extended use of eye protection and face masks, under which clinicians can move from patient to patient without removing PPE unless it becomes visibly soiled or damaged. If PPE is touched by the clinician, immediate hand hygiene must be performed. For N95 masks, extended use can be considered, but is recommended in situations where all patients have the same infectious disease, and use is limited to 8 to 12 hours.
- **Crisis capacity:**
  - Cancel all elective and non-emergent care for which PPE is required in order to preserve as much PPE supply as possible.
  - Use eye protection and face masks beyond manufacturer-designated shelf life, as long as PPE has no visible damage or degradation upon inspection.
  - Prioritize PPE for situations where splashes and sprays are likely to occur, and for situations where face-to-face contact is expected for prolonged periods.

Further recommendations from the CDC are broken down by PPE type. Included are strategies for both contingent and crisis surge capacity.

Eye Protection PPE

- **Contingency capacity:**
  - Shift from disposable to reusable goggles and face shields. Reusable PPE must be appropriately disinfected between uses.
  - Powered air purifying respirators or full-face elastomeric respirators can also provide eye protection.
- **Crisis capacity:**
  - Expand acceptable eye protection PPE to include trauma glasses, as long as they cover the side of the eye.
  - Remove high-risk clinicians, such as those who have chronic conditions, are pregnant, or are older in age, from COVID-19 patient care.
  - Designate any clinicians who have had and recovered from COVID-19 to care for COVID-19 patients. While not confirmed, those who have recovered from the disease may have higher immunity.

Reprocessing eye protection PPE: In any case where an organization is reprocessing eye PPE for further use, they must adhere to manufacturer-provided disinfection procedures. If instructions are not available, the CDC recommends the following steps:

- Wipe inside of PPE with a neutral detergent solution.
- Do the same to outside of PPE.
- Wipe outside using an EPA-registered disinfectant.
- Wipe outside with water or alcohol.
- Either air dry or use clean towel to fully dry.

Isolation Gowns

- **Contingency capacity:**
  - Prioritize use of cloth isolation gowns, which can be laundered and reused according to routine procedure.
  - Consider using coveralls as a gown alternative.
  - Reserve gowns that are beyond manufacturer-designated shelf life for training purposes, rather than discarding.
  - Allow for use of gowns and coveralls that are in line with international standards.

- **Crisis capacity:**
  - Expand extended use rules to include isolation gowns. Clinicians may wear the same gown if they are caring for patients with the same disease in the same location.
  - If reuse of gowns without washing becomes necessary, reuse cloth gowns rather than disposable, which often break during doffing while cloth gowns remain intact. Transmission of pathogens between patients while reusing gowns is unclear; the goal would be to limit clinician exposure.

If gowns become unavailable: Consider alternatives that are not considered PPE, but may still provide coverage to clinicians, such as disposable or reusable laboratory coats, reusable patient gowns, disposable aprons, or any combination of clothing that covers the arms and torso of clinicians.

Face Masks

- **Contingency capacity:**
  - Remove face masks from visitor use and from public areas; only hand out to patients presenting with COVID-19 symptoms upon entry.
  - Reserve face masks for clinician use and instead instruct patients to use other face coverings or barriers, like tissues.
- **Crisis capacity:**
  - Consider limited reuse of face masks that have been removed between patients. Face masks using elastic ear hooks are likely more suitable for reuse than those with ties, which often break during doffing. After removal, fold the mask so the outside is folded inward against itself. Store in a breathable container until reuse.

If face masks become unavailable: The CDC recommends alternatives such as face shields that cover the entirety of the front and sides of the face if a face mask is unavailable. Homemade masks, which are not considered PPE as efficacy is unknown, can be used as a last resort. If possible, these should be paired with a full-face shield.

N95 Respirators

- **Contingency capacity:**
  - If COVID-19 patients are medically stable and have an appropriate setting for recovery, consider discharge. Identify housing options for patients who are medically stable enough to be discharged, but who do not have a reliable home environment in which to recover.
  - Delay annual fit testing for clinicians that have undergone initial testing, according to March 2020 guidance from the Occupational Health and Safety Administration.
  - Preserve expiring N95s for use wherein clinicians would not be exposed to dangerous pathogens, such as fit testing and training, rather than discarding the respirators.
- **Crisis capacity:**
  - Expand use of expired N95 respirators outside of training and fit purposes for actual care, except for surgical use. Many masks currently beyond shelf life but still residing in stockpiles will still perform according to National Institute for Occupational Safety and Health standards.
  - Source alternatives to NIOSH-approved models. Respirators that have been approved by other countries' authorizing agencies may be used as substitutes for U.S.-approved respirators.
  - Consider limited reuse of N95s, under which one clinician would use one respirator for multiple uses while removing between uses.
  - Conserve use for care activities requiring the clinician to be face-to-face with symptomatic patients or those undergoing aerosol generating procedures.

International Options Similar to NIOSH-Approved N95 Respirators

Source: CDC (2020)

Approving Country	Performance Standard	Product Classification	Can Substitute
Australia	AS/NZS 1716:2012	P2	N95
		P3	N99 or lower
Brazil	ABNT/NBR 13698:2011	PFF2	N95
		PFF3	N99 or lower
People's Republic of China	GB 2626-2006 GB 2626-2019	KN/KP95	N95
		KN/KP100	N95
Europe	EN 149-2001	P2	N95
		P3	N99 or lower
Japan	JMHLW-2000	DS/DL2	N95
		DS/DL3	N99 or lower
Korea	KMOEL-2017-64	Special 1st	N95
Mexico	NOM-116-2009	N95	N95
		R95	R95 or lower
		P95	P95 or lower
		N99	N99 or lower
		R99	R99 or lower
		P99	P99 or lower
		N100	N100 or lower
		R100	R100 or lower
		P100	P100 or lower

If both face masks and N95 respirators become unavailable: In cases where no face coverings are available, high-risk clinicians, like those with chronic conditions, and those who are pregnant, or are older in age, should be removed from COVID-19 patient care. Any clinician that has had and recovered from COVID-19 could be designated to COVID-19 patient care. Expedient isolation rooms may be set up using portable high-efficiency air filtration systems, which would reduce the exposure risk for anyone entering the room without a face covering. Similarly, ventilated headboards could be put in place.

Joint Commission Guidance

In light of concerns surrounding PPE availability, The Joint Commission issued a statement on March 31 advocating for healthcare workers' ability to source their own face masks, stating, "The Joint Commission supports allowing staff to bring their own standard face masks or respirators to wear at work when their healthcare organizations cannot routinely provide access to protective equipment that is commensurate with the risk to which they are exposed."

The statement is a response to some organizations' prohibition of staff-sourced face masks due to in-house policy restrictions, unclear efficacy, and discrepancies between staff members' ability to purchase PPE privately. However, it is The Joint Commission's stance to allow for clinician ability to enhance their safety as possible. Further, there are no existing Joint Commission standards that expressly prohibit this practice and any standard PPE, no matter how it is sourced, is preferable to the "extreme measure" of homemade masks, according to the statement.

Further clarification from The Joint Commission notes this allowance is relative to the healthcare worker's risk of exposure to COVID-19. For example, ancillary workers, like those in food service, are at relatively low risk of exposure, so it may make sense to restrict their ability to bring their own face masks. In the event of N95 mask shortage wherein an organization could not provide an N95 mask to a caregiver providing face-to-face care, it would be preferable for that worker to bring their own N95 rather than use a standard mask.

Clinician-Led Responses

One of the larger campaigns to gather PPE has been the #GetUsPPE movement (click here), which aims to collect and redistribute PPE supplies. Under the platform, clinicians can make PPE requests, people and businesses can offer donations, and those in the "maker community," like those in 3D printing, CNC manufacturing, rapid prototyping, injection molding and laser printing, and sewing and textiles can use designs on the website to make and donate PPE. As of April 13, #GetUsPPE has organized the delivery of 325,580 pieces of PPE. A survey taken by the campaign shows that a majority of surveyed organizations have less than two weeks' worth of remaining PPE supply. PPE requests and donations can be made at getusppe.org.

Other organizations, such as University of Florida Health, are looking for alternatives that could fill the gaps left by PPE shortage. An anesthesiology professor at UF Health has created a mask by repurposing the blue wrap that is used for sterilizing surgical trays. The material, Haylard H600 two-ply polypropylene is water, bacteria, and particle resistant, blocking 99.9% of particles, a 4% improvement on N95s (click here to learn more).

Have a question about this topic or another altogether? HBI's research team is here to help. Send a message to contact@hbinsights.com with your questions!

About the Analyst

Brittni Straseske Senior Analyst, Supply Chain

Brittni is a senior research analyst at HBI specializing in healthcare supply chain. She has done research on varied topics such as value analysis, clinician engagement, and end-to-end product lifecycle, as well as other supply chain-related topics. Brittni is passionate about sharing best practice information throughout the industry.

COVID-19 is an ongoing situation and organizations' processes are changing daily to adapt to various needs during this crisis. As such, this information is up-to-date as of April 14, 2020. HBI is continually monitoring the situation and updating material as we gather additional information. While HBI has attempted to ensure the accuracy of research provided in this document, the information has been obtained from numerous resources. Therefore, HBI cannot guarantee its accuracy and is not liable for any claims or losses that arise from errors or omissions within the document.