Centers for Disease Control and Prevention

Coronavirus Disease 2019 (COVID-19)

Strategies to Optimize the Supply of PPE and Equipment

Personal protective equipment (PPE) is used every day by healthcare personnel (HCP) to protect themselves, patients, and others when providing care. PPE helps protect HCP from potentially infectious patients and materials, toxic medications, and other potentially dangerous substances used in healthcare delivery.

PPE shortages are currently posing a tremendous challenge to the US healthcare system because of the COVID-19 pandemic. Healthcare facilities are having difficulty accessing the needed PPE and are having to identify alternate ways to provide patient care.

CDC's optimization strategies for PPE offer options for use when PPE supplies are stressed, running low, or absent. Contingency strategies can help stretch PPE supplies when shortages are anticipated, for example if facilities have sufficient supplies now but are likely to run out soon. Crisis strategies can be considered during severe PPE shortages and should be used with the contingency options to help stretch available supplies for the most critical needs. As PPE availability returns to normal, healthcare facilities should promptly resume standard practices.

- Eye Protection
- Isolation Gowns
- Gloves
- Facemasks
- N95 Respirators
- Powered Air Purifying Respirators
- Elastomeric Respirators
- Ventilators

Key Concepts

HCP and facilities—along with their healthcare coalitions, local and state health departments, and local and state partners—will have to work together to develop strategies that identify and extend PPE supplies, so that recommended PPE will be available when needed most. When using PPE optimization strategies, training on PPE use, including proper donning and doffing procedures, must be provided to HCP before they carry out patient care activities.

- **All U.S. healthcare facilities should begin using PPE contingency strategies now.**
  - Maximize use of engineering controls, such as barriers and maintained ventilation systems, and administrative controls, such as altering work practices to minimize patient contacts.
  - Cancel elective and non-urgent procedures/appointments.
  - Reserve PPE for HCP and replace PPE normally used for source control with other barrier precautions such as tissues.
  - Use re-usable PPE that can be reprocessed.
  - Use PPE beyond the manufacturer-designated shelf life for training.
  - Consider allowing HCP to extend use of respirators, facemasks, and eye protection, beyond a single patient contact.
- **U.S. healthcare facilities experiencing PPE shortages may need to consider crisis capacity strategies, which must be carefully planned before implementation.** The effectiveness of crisis strategies is uncertain and they may pose a risk for transmission between HCP and patients.
  - Consider using intact PPE that is beyond the manufacturer-designated shelf life for patient care activities.

    - Carefully prioritize PPE use for selected care activities. This could include reserving sterile gowns and gloves for urgent sterile patient procedures, such as surgery, and reserving respirators for aerosol-generating procedures and patient care with airborne transmitted disease risks, like tuberculosis, measles, and varicella.
    - If no commercial PPE is available, carefully consider if alternative approaches will reduce the risk of HCP exposure and are safe for patient care.
- **As PPE becomes available, healthcare facilities should promptly resume standard practices.**

Guidance

Stockpiled N95 Respirators

Decontamination and Reuse of Filtering Facepiece Respirators

Factors to Consider When Planning to Purchase Respirators from Another Country

Personal Protective Equipment Burn Rate Calculator

Using PPE

More Resources

NIOSH Science Blog: Imported Respirators

NIOSH Hospital Respiratory Protection Program Toolkit

NIOSH Healthcare Respiratory Protection Resources

Emergency Use Authorization (EUA) of Respiratory Protective Devices

On February 4, 2020, the HHS Secretary declared that circumstances exist to justify the authorization of emergency use of additional respiratory protective devices in healthcare settings during the COVID-19 outbreak. The FDA is providing frequent updates for manufacturers, facilities, and local/state jurisdictions about Emergency Use Authorizations (EUA) for respirators and other types of personal protective equipment. The FDA has issued EUAs to authorize all NIOSH approved particulate-filtering air purifying respirators (APRs) to be used in healthcare settings, including all NIOSH approved filtering facepiece respirators, elastomeric APRs, powered air purifying respirators, expired NIOSH-approved filtering facepiece respirators, and respirators that have been decontaminated pursuant to the terms and conditions of an authorized decontamination system. The authorized decontamination systems are listed on the FDA EUA website. In addition, non-NIOSH-approved disposable filtering facepiece respirators within the context of the posted EUA are permitted for use as well.

Page last reviewed: May 5, 2020