Emerging Practices to Combat Coronavirus Disease (COVID-19): 
Managing critical supplies

COVID-19 Clinical Knowledge Transfer from Vizient members and industry resources 
Updated: April 9, 2020

Vizient is committed to ongoing research of Vizient members’ emerging practices and other related updates to federal and regulatory guidelines in support of efforts to combat the COVID-19 pandemic. The purpose of this document is to assist our members with critical information to supplement this work. As new information surfaces, updates will be provided.

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Practice trends

Appropriate personal protective equipment (PPE) utilization and conservation strategies continue to be a significant concern for members responding to COVID-19. There is an increased focus on universal face masking in all patient care areas while promoting extended use of existing resources. On April 3, the FDA issued guidelines on the use of non-NIOSH approved PPE. In addition, the FDA has authorized the emergency use of ventilators, anesthesia gas machines and positive pressure breathing devices modified for use as ventilators. The AARC is providing video training presentations for the Strategic National Stockpile Ventilators.
Supply shortages, alternate source suppliers and national emergency stockpile

Monitoring supply list for shortages

GHX has provided an updated cross reference list for managing critical supplies including alternatives. Supplies to monitor and prepare for shortages:

- Ventilators (critical care and transport), BIPAPs, CPAPs, vent filters, enteral pumps and feeding
- Thermometers
- Portable critical care monitors
- IV Pumps
- IV solutions, IV pump cassette sets, IV standard tubing, IV start kits, IV flushes
- MDI (metered dose inhalers)
- ET tubes
- All respiratory-related consumables (nasal cannulas, tubing, O2 face masks)
- Beds
- Morgue operations and body bags
- Nitrile gloves

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Alternate Source Suppliers

Vet alternate source suppliers claiming to have N95 masks or other PPE. Request they show the Establishment Registration Number or Firm Registration Number and a copy of the device listing along with the Regulation Number of the specific device.

The FBI issued its White Notice LIR 200323006 “Criminals Exploiting COVID-19 Outbreak for Financial Gain through Procurement and Consumer Fraud.” The notice includes details on markings and where model numbers should be located on the mask.

Additional information:

- Options for organizations to report fraud or scams
- FBI field office information to report fraud
- FBI fraud submission site

Added 3/30/2020

National Emergency Stockpile

The AARC has released this National Stockpile Ventilator Training video. AARC encourages respiratory therapists to be prepared to operate the stockpile ventilators, should the need arise.

To obtain products not available through your distributor or contracted supplier, make a request through your state. Be sure to develop a “case for need” for those supplies once they arrive at the state level. Include how many cases you currently have, how many you anticipate needing, how many are currently under investigation and use rate.

- ASTHO Authorization Toolkit
- HHS Strategic National Stockpile

Updated 4/9/2020

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Facial protection (N95, face shields, procedure and surgical masks)

Facial protection protocols

Multiple members have either recently implemented or are implementing universal masking for staff. This is typically combined with an extended use policy, controlled release of masks and patient cohorting strategy. N95 and masking extended use policies are frequently for a “one shift” duration after which staff turn in equipment for reprocessing at designated recycling centers. The “one shift” duration may vary based on role of the healthcare worker – for instance, an environmental staff member with intermittent interaction with confirmed or suspected patients may reuse the same mask for a longer period of time.

University of Washington Medicine Extended-Use Masking Policy

Added 4/9/2020

Shortages on surgical masks and gowns

The FDA issued an FAQ related to the use during the COVID-19 pandemic of KN95 respirators manufactured outside the U.S. While the FDA has issued emergency use authorizations (EUAs) for KN95s manufactured in some countries, the FDA guidance states that for the duration of the pandemic, when FDA-cleared or NIOSH-approved N95 respirators are not available, the FDA generally would not object to the importation and use of respirators without an EUA, including KN95 respirators, if they are on the Centers for Disease Control and Prevention (CDC) list of respirator alternatives during the COVID-19 pandemic.

Added 4/9/2020

Universal masking

Multiple members have either recently implemented or are implementing universal masking for staff. This is typically combined with an extended use policy and controlled release of masks.

University of Washington Medicine Extended-Use Masking Policy

Added 4/9/2020

Sterilization and reprocessing strategies

The FDA has issued guidance to expand the availability and capability of sterilizers, disinfectant devices and air purifiers. Members should immediately collaborate with infection prevention and clinical teams to establish policies and resources to support reuse and sterilization of items to minimally include: respirators, masks, face shields and isolation gowns. Members should plan ahead for senior leadership support and a physical presence in patient care areas to ensure the collection of equipment from staff for reprocessing.

PPE sterilization resources:

- FDA Emergency Use Authorization for Battelle Decontamination System
- UMass researchers find medical-grade masks can be sterilized, reused
- University of Nebraska provider resources
- Guidelines from Journal of Patient Safety
- ClorDiSys decontamination
- 3M statement
Self-manufacturing of face shields

Many hospitals are 3D printing or using laser cutting techniques to produce face shields. FDA has issued guidance and an FAQ related to these practices. The University of Wisconsin-Madison has posted resources related to face shield production on their website. Members are deploying aggressive strategies to disinfect and reuse face shields as well as eye protection.

Updated 4/9/2020

Non-NIOSH approved equipment

The FDA issued a PPE Letter of Authorization on April 3, which “authorizes disposable respirators manufactured in China, which are not NIOSH-approved, pursuant to certain criteria, including additional validation and review by FDA to confirm the respirator’s authenticity…” Manufacturers of such equipment will be required to confirm the respirator’s authenticity through one of the following criteria:

- It is manufactured by an entity that holds one or more NIOSH approvals for other models of filtering-facepiece respirators (FFRs) produced in accordance with the applicable standards of authorization in other countries that can be verified by FDA.
- It has a regulatory authorization under a jurisdiction other than China that can be authenticated and verified by FDA.
- It demonstrates acceptable performance to applicable testing standards as documented by test reports from a recognized independent test laboratory that can be verified by FDA.

Once a manufacturer of such equipment is authorized by the FDA for distribution, the respirators will be included in Appendix A under the Emergency Use Authorization, which provides authorization for the respirators to be distributed and used in health care settings when used in accordance with CDC’s recommendations under this EUA.

Based on available scientific evidence, the FDA has concluded that certain imported disposable FFRs that are not NIOSH-approved are appropriate to protect the public health or safety.

Added 4/9/2020

Homemade masks, partnering with local manufacturers and product donations

A number of provider organizations are accepting homemade masks, while others are still restricting sourcing through their standard manufacturing channels. Some organizations are making their own, working with local manufacturers or accepting donated homemade masks.

- CDC: Updated Guidelines for Crisis Alternate Strategies for N95 Respirators
- Kaiser NCAL Covid-19 Playbook
- The Joint Commission Statement on Shortage of PPE
- The Joint Commission Statement on the use of Face Masks from Home

Updated 4/9/2020
PPE for Sterile Compounding

The USP Statement discourages the reuse of disposal PPE outside of their best practice standards (i.e. the reuse of a disposable gown for one shift/day) due to the contamination risk; however, USP is not an enforcement agency.

- Due to COVID-19 pandemic shortages, sterile compounding personnel are faced with the option of reused PPE for product protection or none at all.
- Some state boards of Pharmacy (one of the enforcers of USP standard/related state laws) have provided guidance regarding sterile compounding compliance under conditions related to COVID-19 and resultant shortages that allow for USP non-compliant PPE conservation strategies during this pandemic.

Prior to the USP statement, Vizient’s USP compliance expert, Katrina Harper provided recommendations for member pharmacy teams (member log-in required).

Added 3/30/2020

Update memorandum of understanding (MOU) with suppliers

The CDC recommends that hospitals review any memorandum of understanding (MOU) information between hospital and local stores/community businesses for emergency supplies. Also consider establishing an infrastructure for local product donations to your organization.

Added 3/23/2020

Critical capital and ventilators

Infusion Pumps

COVID-19 patients may require continuous infusion of medications, nutrition or other fluids. To ensure adequate supply of infusion pumps and accessories, the FDA has issued guidance to help expand the availability and remote capabilities of these supplies during the COVID-19 pandemic. This document notes the FDA will not object to limited modifications to the indications, functionality, hardware, software, design or materials of devices used to support patients requiring continuous infusion therapy.

Added 4/9/2020

Ventilators

Many organizations are discussing and/or already sharing ventilators to mitigate shortages and improve access to this necessary equipment.

Statements from the American Association for Respiratory Care (AARC), Society of Critical Care Medicine (SCCM), American Society of Anesthesiologists (ASA), Anesthesia Patient Safety Foundation (APSF), American Association of Critical-Care Nurses (AACN) and American College of Chest Physicians (CHEST) were released March 27, against the use of ventilator sharing.

They argue that this should only be done in a “last-ditch effort” after careful consideration and in consultation with the Ethics committee/Institutional Review Board, and recommend other options in the AARC statement and guidance document.

The FDA recommendations for mitigation strategies were released on March 22, while HHS issued guidance for optimizing ventilator supply and usage on March 31.
Many members are repurposing anesthesia machines, CPAP and BiPAP devices as ventilators; however, these efforts require direct collaboration with anesthesiologists and respiratory therapists for extensive advanced planning and ongoing execution.

**Added 4/9/2020**

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**ECMO**

ECMO may be offered for patients with refractory hypoxemic respiratory failure/acute respiratory distress syndrome (ARDS) due to COVID-19. The WHO has established guidelines for utilizing ECMO when COVID-19 is suspected. Organizations should consider:

- **How** to prioritize and allocate ECMO resources.
- **When** the organization’s response strategy should include use of ECMO.
- **What** personnel and equipment will be needed.
- **How** to mitigate shortages of ECMO since alternatives are more limited.

See newly published literature from The Lancet on Planning and provision of ECMO services for severe ARDS during the COVID-19 pandemic and other outbreaks of emerging infectious diseases and from JAMA Network on Preparing for the Most Critically Ill Patients With COVID-19: The Potential Role of Extracorporeal Membrane Oxygenation.

**Added 3/31/2020**

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**PPE conservation and utilization strategies**

**Remote monitoring to preserve PPE**

Use remote interaction with patients in isolation as appropriate to conserve PPE:

- Remote tele-monitoring equipment if available.
- Utilize phone or two-way intercom.
- Video conferencing or baby monitors.
- Some organizations are moving IV pumps and vent screens outside the door into the hallway and running IV tube extension sets to the patients to reduce the amount of PPE used.

**Added 3/31/2020**

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**PPE burn rate**

Know your **PPE burn rate**. COVID-19 patients will significantly increase the normal rate; however, be aware these analyses are highly-contingent on clinical protocols and conservation strategies which vary widely across provider organizations.

- CDC Template for Calculating PPE Burn Rate
- HHS Template for Calculating PPE Burn Rate

Consider patient categories and cohorts to project total daily use per patient, for instance, by supply category:

- Category 1: ICU patient or aerosolizing procedure/case: X caregivers per patient * Y PPE exchanges per day
- Category 2: Non-ICU patients: X caregivers per patient * (Y-Z) PPE exchanges per day

**Added 4/9/2020**
PPE conservation and utilization strategies

- **Create firm guidelines** for N95 use and assess for appropriate use. Some members are limiting the use of N95s to caregivers for COVID+ ICU patients and aerosolizing procedures. Other alternative strategies may include having Pharmacy convert to PAPRS for USP 800 and ½ masks to reduce use of N95 masks.

- **Extend** the useful life by allowing the provider and clinician to **reuse the same mask or respirator** as long as it is not visibly soiled or damaged. CDC: Recommended Guidance for Extended Use and Limited Reuse of N95 Filtering Facepiece Respirators in Healthcare Settings. At some organizations, clinical staff **retain** their N95 masks in paper bags identified with the staff member’s name for reuse.

- **Reprocess** N95s and other items through sterilization techniques:
  - FDA has issued **guidance** to provide a policy to help expand the availability and capability of sterilizers, disinfectant devices and air purifiers.
  - N95 Decontamination from N95DECON

- Adapt practice based on CMS guidance of March 10, “Guidance for Use of Certain Industrial Respirators by Health Care Personnel.” This document addresses acceptable **temporary alternatives and practices** when the supply chain of respirators cannot meet the demand.

- **Cohort patients** in a way that allows for longer use of a single N95 mask. For instance, some organizations are **repurposing** operating rooms as multi-bed ICUs for “COVID-19 core” wards where staff remain garbed in PPE.

- Many hospitals are adapting protocols for **conserving** PPE through “tent” spaces outside the ED. Some of the common protocol components include:
  - Patients who are directed to tents receive a mask at triage.
  - General staff wear surgical masks consistent with droplet precautions and face shields.

- Some members are covering N95 respirators with surgical masks or face shields for **droplet protection**.

- **Reuse googles, face shields and visors** for the same patient when possible by disinfecting with an EPA-approved disinfectant.

*Added 4/9/2020*

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**Hand sanitizer**

FDA Policy for Temporary Compounding of Certain Alcohol-Based Hand Sanitizer Products During the Public Health Emergency

Practices shared by Vizient members for **hand sanitizer conservation**:

- Redistribute from non-clinical areas to clinical areas.
- Pull product from non-clinical areas that are now working from home.
- Remove product from non-clinical areas that are still working on campus but leave one full bottle for every three or four staff/desks.

*Added 3/30/2020*
Blood products

Prepare for possible reduction in blood supply due to reduced blood drives.

- Recommend that elective surgeries be cancelled.
- Adhere and enforce transfusion guidelines by communicating short supply.
- Remind clinicians to test pre and post transfusion to ensure the transfusion is clinically indicated.
- Cell salvage is recommended except where there are contraindications.

Added 3/30/2020

Additional resources

- Vizient Masks and Respirators Clinical Resource Guide
- JAMA: N95 Respirators vs Medical Masks for Preventing Influenza Among Health Care Personnel
- WHO: Rational Use of Personal Protective Equipment for Coronavirus
- CDC: Checklist for Healthcare Facilities: Strategies for Optimizing the Supply of N95 Respirators during the COVID-19 Response

Additional emerging practices

Access resource documents on other topics.

- Emerging clinical practices and evidence
- Surge capacity
- Staff impact
- Testing
- Visitation