

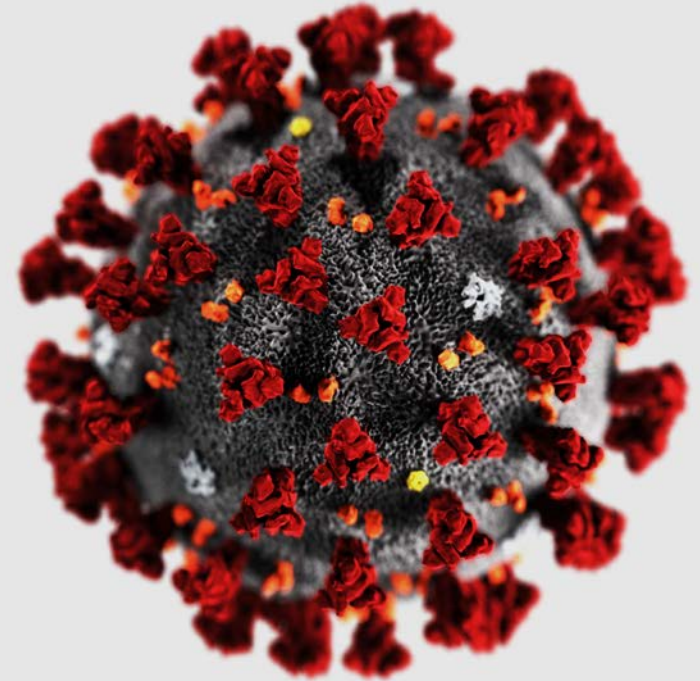
## Strategies for Ensuring Healthcare Systems Preparedness and Optimizing N95 Supplies

Dr. Anita Patel, PharmD, MS

Dr. Mike Bell, MD

Dr. Marie De Perio, MD

February 11, 2020



For more information: [www.cdc.gov/nCoV](http://www.cdc.gov/nCoV)

# 2019 Novel Coronavirus Overview

Dr. Anita Patel, PharmD



# 2019 Novel Coronavirus

- Much is unknown about 2019-nCoV
- Spreads from person-to-person and causes severe disease and death
  - Respiratory droplets by coughing or sneezing
  - Close personal contact, such as touching or shaking hands



# Situation Overview

- To date, 27 international locations (in addition to the U.S.) have reported confirmed cases of 2019-nCoV infection.
- Two instances of person-to-person spread with this virus in the U.S. have been detected.
  - Both cases after close, prolonged contact with a returned traveler from Wuhan.
- CDC established a 2019-nCoV Incident Management System on January 7, 2020.



# CDC Response

- Over the coming days and weeks, state and local public health departments will begin to test for 2019-nCoV in their laboratories.
  - Test results will be validated at CDC for a period of time, after which states will perform their own testing and report results to CDC.
  - CDC will continue to report case counts in aggregate.
- While the immediate risk of this new virus to the American public is believed to be low at this time, everyone can do their part to help us respond to this emerging public health threat.



# 2019-nCoV: How Health Systems Can Prepare

Dr. Mike Bell, MD



# Actions and Strategies to Stop Spread of 2019-nCoV

- The U.S. healthcare system responds to infectious disease threats every day.
- CDC's recommended actions and strategies to stop the spread of 2019-nCoV are **not new**. They work and most are not reliant on PPE.
  - Established infection control strategies, consistent with standard precautions.
- CDC's goal—provide sound infection prevention control recommendations that protect healthcare workers AND are feasible and acceptable to implement.



# Strategies for Optimizing N95 Supply

Dr. Marie De Perio, MD





# Interim Infection Prevention and Control Recommendations for Patients with Confirmed 2019 Novel Coronavirus (2019-nCoV) or Persons Under Investigation for 2019-nCoV in Healthcare Settings

Updated February 3, 2020

## 2019 Novel Coronavirus

CDC > 2019 Novel Coronavirus Home > Healthcare Professionals



### 2019 Novel Coronavirus Home

2019-nCoV Situation Summary +

About 2019-nCoV +

Information for Travelers +

Information for Businesses

**Healthcare Professionals** -

Evaluating and Reporting PUI +

Interim Guidance for EMS

Infection Control

Clinical Care

Healthcare Personnel with Potential Exposure to 2019-nCoV

Disposition of Patients with 2019-nCoV

Preparedness Checklists +

Implementing Home Care +

## Healthcare Supply of Personal Protective Equipment

CDC continues to monitor the 2019-nCoV situation in the United States and around the world. CDC has taken early and aggressive actions to prevent the spread of 2019-nCoV in the United States, through a [combination of proven public health actions](#). At the same time, CDC is preparing for the possibility that the 2019-nCoV situation in the US could become more serious, with sustained community transmission, and is taking steps to make sure there are enough supplies and appropriate guidance to prevent spread of disease, especially among healthcare personnel caring for patients with 2019-nCoV.

Healthcare personnel can protect themselves when caring for patients by adhering to infection prevention and control practices, which includes the appropriate use of engineering controls, administrative controls, and personal protective equipment (PPE). CDC has issued [guidance](#) recommending the use of PPE for healthcare personnel caring for patients with confirmed or possible 2019-nCoV infection. Employers and healthcare personnel are reminded that PPE is only one aspect of safe care of patients with 2019-nCoV. For the general public, CDC does not recommend the use of facemasks or respirators. CDC guidance is based on what we know about 2019-nCoV and what we know about similar coronaviruses, like SARS and MERS.

CDC also understands the importance of providing guidance that healthcare facilities can implement, given supplies of PPE available. CDC communicates regularly with healthcare industry partners, as well as PPE manufacturers and distributors, to assess availability of PPE. At this time, some partners are reporting higher than usual demand for select N95 respirators and facemasks. If information about market availability changes, updates will be posted on this page.

Based on the current 2019-nCoV situation and availability of PPE, CDC has specific recommendations, summarized below. As we learn more about 2019-nCoV and as the needs of the response or availability of PPE within U.S. healthcare facilities changes, we will update our guidance.

### On This Page

[Who needs PPE](#)

[Who does not need PPE](#)

[Manufacturers and Distributors](#)

[Strategies for Optimizing Supply of N95 Respirators](#)

[Frequently Asked Questions About Respirators and Their Use](#)



# Strategies for Optimizing the Supply of N95 Respirators

## On This Page

[Engineering Controls](#)

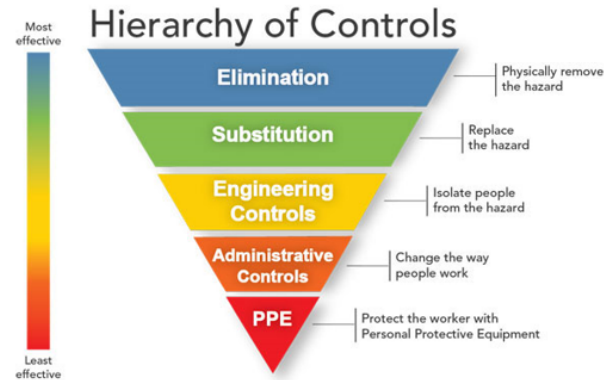
[Personal Protective Equipment and Respiratory Protection](#)

[Administrative Controls](#)

This document offers guidance on how to optimize supplies of N95 filtering facepiece respirators (commonly called “N95 respirators”) in healthcare settings in the face of potential ongoing 2019 Novel Coronavirus (2019-nCoV) transmission in the United States. The recommendations are intended for use by professionals who manage respiratory protection programs, occupational health services, and infection prevention programs in healthcare institutions to protect healthcare personnel (HCP) from job-related risks of exposure to infectious respiratory illnesses.

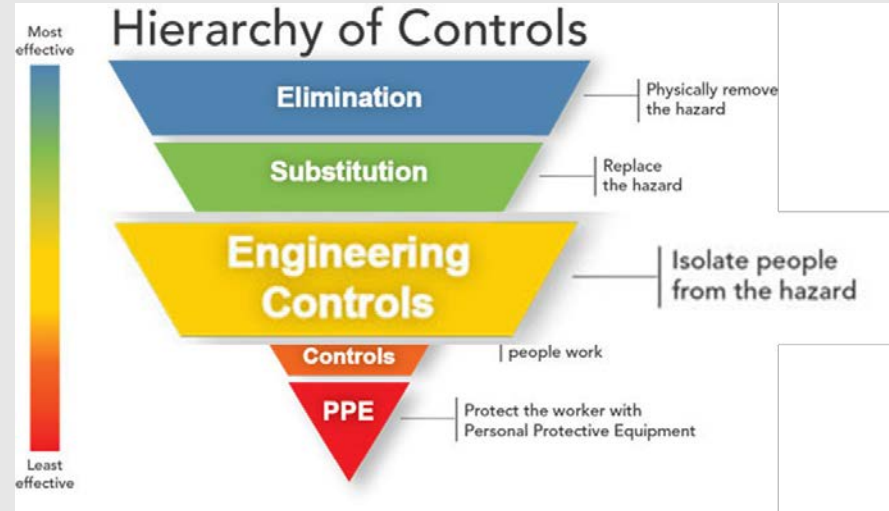
Controlling exposures to occupational hazards is a fundamental way to protect personnel. Traditionally, a [hierarchy of controls](#) approach has been used to achieve feasible and effective control. Some of the control measures may fall into multiple categories. It should also be emphasized that multiple control strategies can be implemented concurrently and or sequentially. This hierarchy can be represented as follows:

- Elimination
- Substitution
- Engineering controls
- Administrative controls
- Personal protective equipment (PPE)



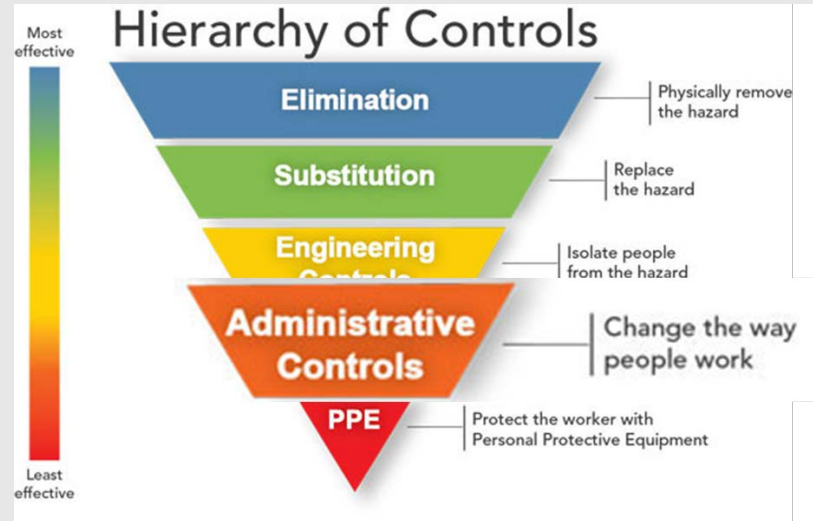
# Engineering Controls

- Use of airborne infection isolation rooms (AIIR)
- Physical barriers such as glass/plastic windows
- Ventilation systems (clean-to-contamination flow direction)



# Administrative Controls

- Exclude HCP not directly involved in patient care
- Exclude visitors
- Source control
- Cohorting patients
- Cohorting HCP
- Just in time fit testing



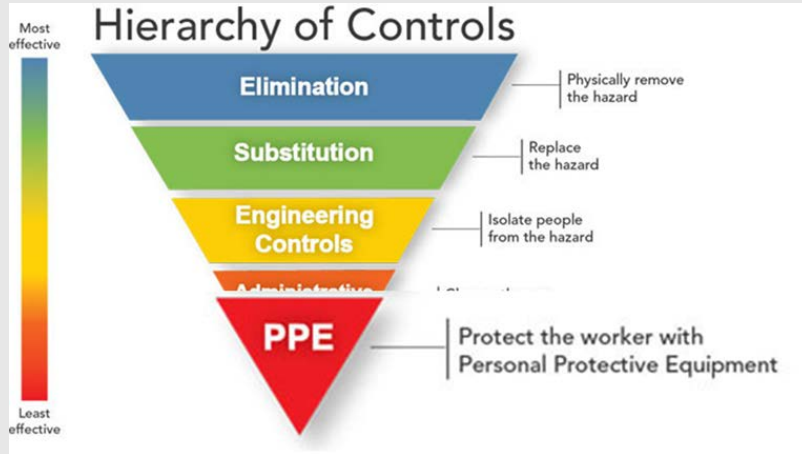
Interim Infection Prevention and Control Recommendations for Patients with Confirmed 2019 Novel Coronavirus (2019-nCoV) or Persons Under Investigation for 2019-nCoV in Healthcare Settings

Updated February 3, 2020



# Personal Protective Equipment (PPE)

- Define use of surgical N95 respirators
- Use of respirators that provide equivalent or higher protection



**N95 DAY 2017**

**CONSIDERATIONS FOR RESPIRATOR SELECTION IN HEALTHCARE\***

	N95 FFR	Surgical N95 FFR	Loose-Fitting PAPR	Elastomeric
Complies with OSHA 1910.134 (RPP Standard)	X	X	X	X
Requires Hazard Evaluation	X	X	X	X
Requires Proper Use Training	X	X	X	X
Requires Fit Testing	X	X		X
Can be used with Sterile Field		X	? <sup>†</sup>	
Can be used for High-Risk Aerosol-Generating Procedures (additional PPE may be required)		X	X	X
Can be used with Facial Hair (that comes in contact with the sealing surface)			X	
Designed for Reuse (can be cleaned/maintained)			X	X
Can be used for Airborne Precautions	X	X	X	X



# CDC Resources

- Interim Infection Prevention and Control Recommendations for Patients with Confirmed 2019 Novel Coronavirus (2019-nCoV) or Persons Under Investigation for 2019-nCoV in Healthcare Settings
  - <https://go.usa.gov/xd9dY>
- Healthcare Supply of Personal Protective Equipment
  - <https://go.usa.gov/xd9pf>
- Strategies for Optimizing the Supply of N95 Respirators
  - <https://go.usa.gov/xd9pA>
- Considerations for Selection of Respirators in Healthcare
  - <https://go.usa.gov/xd9pU>



National Healthcare  
Organization  
Readiness Activities

# National Healthcare Organization Readiness Activities

- Working collaborative with the CDC's Health Pulse Program (key ED indicators)
- Clinical guidance distributed for Labor & Delivery and Maternal & Child Health screening workflows
- Patient management guidance provided for Home Health Care providers
- Training created for Medical Office Building strike teams
- HealthConnect (Epic) set up with patient screening questions
- Safety guidance distributed such as visitor and patient respiratory protection, airborne isolation precautions and disinfection procedures for rooms, equipment and PPE
- National Supply Chain Command Center active with twice daily calls
  - Monitoring all commercial manufacturing production
  - Supply conservation efforts implemented



# National Healthcare Organization Readiness Activities

- Exercises conducted to confirm facility readiness
- Prioritized early fit testing & training program distributed
- Partnering with waste management providers for safe handling of biohazardous and general waste
- New CoV information cascaded to all employees with reassurance to be concerned, but not panic
- Q&A distributed to all Member Service Contact Centers and Appointment and Advice Call Centers
- Expedited responses sent to all employer group inquiries
- Monitoring and responding to social media posts
- National HR policy published for potential employee exposure to coronavirus

# Strategies for Ensuring Healthcare Systems Preparedness and Optimizing N95 supplies

February 2020

- Patient arrived at Providence Regional Medical Center in Everett, WA on 1/20/20
- “BEST” (Bio-containment Evaluation and Specialty Treatment) Team Initiated



## Initial Response

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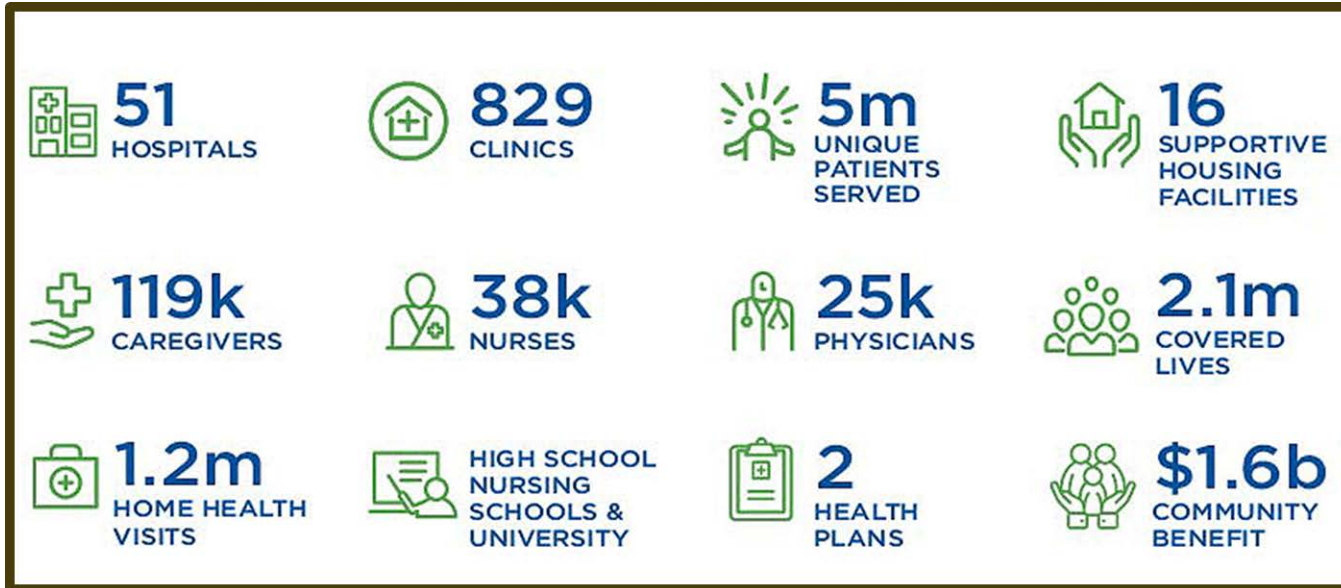
- Initial PPE included:
  - CAPR
  - Impervious boot covers
  - AAMI 4 level gown
  - Double gloves (extended cuff)
  - Hospital scrubs and shoes

## “Right-Sized” Response

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- AAMI 2 level gown
- Double gloves (regular)
- CAPR
  
- Usage estimates:
  - 6 sets per shift when patient was feeling relatively well
  - 20 sets per shift when patient was more symptomatic

How do we ensure appropriate response across different care settings?

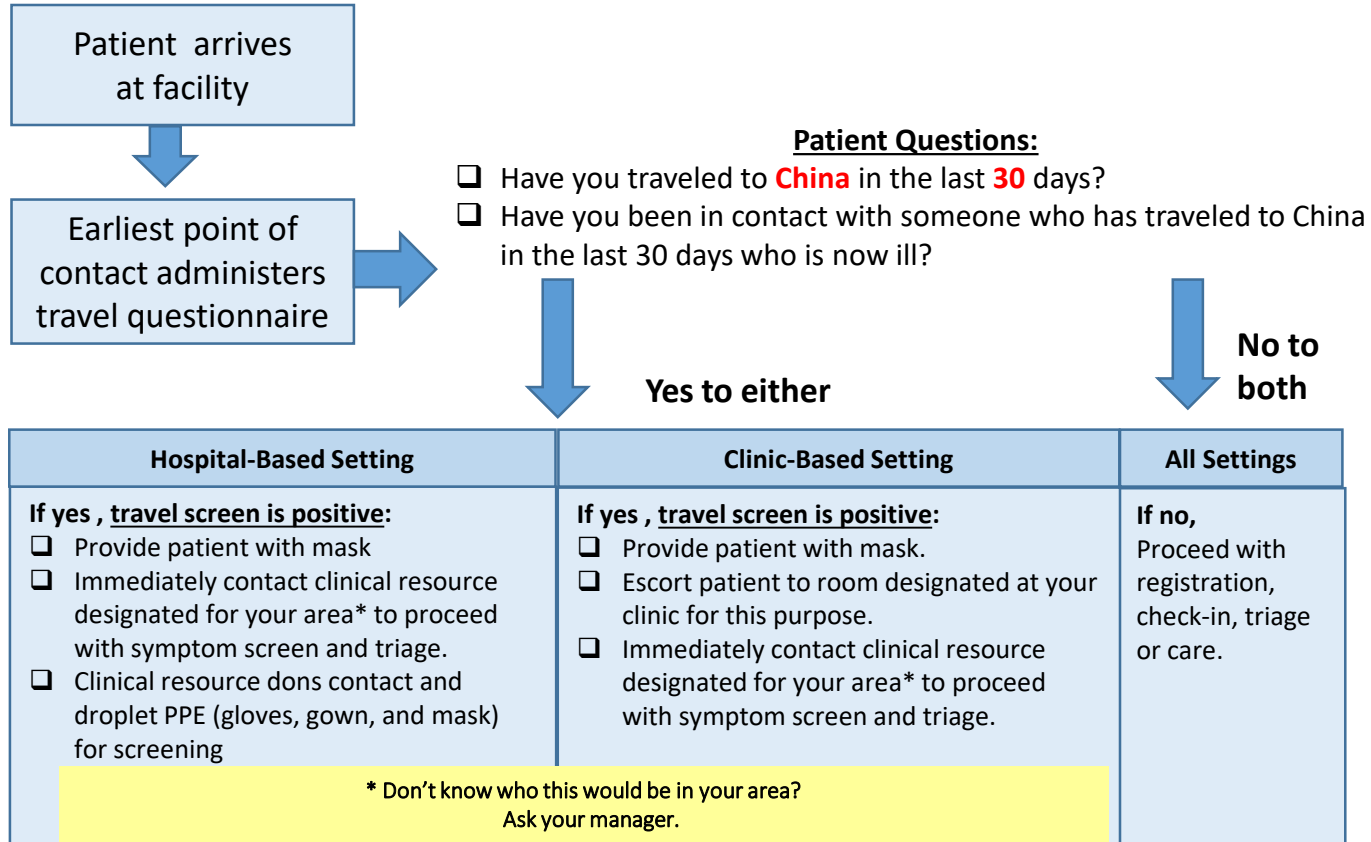


## Risk Assessment

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- Coronavirus is primarily spread via droplet and contact routes
- Travel screen is in place:
  - At all points of entry, allowing for early identification and isolation
  - At scheduling, allowing patients to be directed to facilities that are prepared to respond
- In ambulatory care settings:
  - Patients are identified and then transferred. No aerosol-generating procedures or testing is performed
  - Most ambulatory care settings do not have access to respirators
- Various health jurisdictions oversee the areas in which we provide care, each with different capacity and response time
- PPE is limited and anticipated to become more so
- CDC guidance for optimizing the supply of N95 respirators “Prioritize the use of N95 respirators for those HCP at the highest risk of acquiring infection”

# Step 1: Travel Screen





# Step 2: Symptom Screen

If positive travel screen, designated clinical resource dons PPE and escorts patient to isolation room to conduct symptom screen



Does patient complain of or cite any of the following:

- Fever above 100.4 F
- Cough, shortness of breath, or other lower respiratory symptoms



**Yes to any**



**No to all**

Hospital-Based Setting	Clinic-Based Setting	Hospital-Based Settings	Clinic-Based Settings
<ul style="list-style-type: none"> <li><input type="checkbox"/> Use contact and airborne PPE and eye protection in addition to standard precautions</li> <li><input type="checkbox"/> If not there already, move the patient to a negative pressure isolation room. If none available, use private room.</li> <li><input type="checkbox"/> Notify Nursing Supervisor immediately and ask that they reach Infection Control personnel.</li> <li><input type="checkbox"/> Notify local health authority.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Use contact and droplet PPE in addition to standard precautions.</li> <li><input type="checkbox"/> Place patient in a private room with door closed (use negative pressure room if available)</li> <li><input type="checkbox"/> Notify local health authority and regional lead.</li> <li><input type="checkbox"/> Do not conduct testing or aerosol-generating procedures on this patient without the express instruction of the local health department.</li> </ul>	<p><b>If no symptoms identified, primary physician should consult with infection prevention and infectious disease to determine appropriate plan</b></p>	<p><b>If no,</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Proceed with registration, check-in, triage or care.</li> <li><input type="checkbox"/> Provide patient with educational materials regarding symptoms of coronavirus and instructions on whom to contact if they become symptomatic</li> </ul>

Type of Control	Option	Comments
Engineering Controls	Immediately place patient in private room, preferably an AIIR	
	Use glass partitions at intake desks and triage stations	
Administrative Controls	Limit number of patients going to hospitals	Use techniques with all isolation patients, not just PUI or confirmed coronavirus cases
	Exclude HCP not directly involved in patient care	
	Limit face-to-face HCP encounters with patient	
	Exclude visitors	
	Provide facemasks for patient with symptoms	
	Cohort patients	In the event of surge
	Cohort healthcare personnel	
	Just-in-time fit testing	
	Telemedicine	
	Limiting respirators during training	

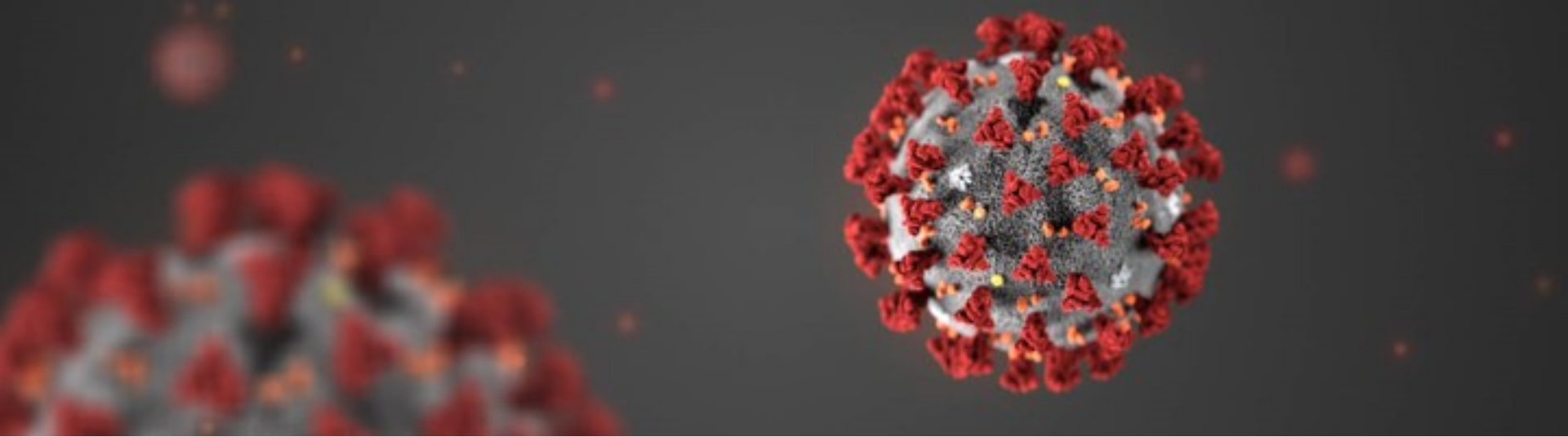
Type of Control	Option	Comments
PPE Control	Use respirators after their intended shelf life	Will hold onto expired respirators
	Extend use: wearing the same N95 for repeated close contact encounters with several different patients, without removing the respirator between patient encounters. Extended use may be implemented when multiple patients are infected with the same respiratory pathogen and patients are placed together in dedicated waiting rooms or hospital wards	Could consider during surge
	Reuse: refers to the practice of using the same N95 respirator by one HCP for multiple encounters with different patients but removing it after each encounter. Only appropriate for diseases in which contact spread is not a concern.	Not an option for this pathogen, but could use for TB patients

# Questions?

Email:

[eocevent218@cdc.gov](mailto:eocevent218@cdc.gov)





For more information, contact CDC  
1-800-CDC-INFO (232-4636)  
TTY: 1-888-232-6348 [www.cdc.gov](http://www.cdc.gov)

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

