Health system and personal protective equipment preparedness (PPE)

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CDC COVID-19 Response

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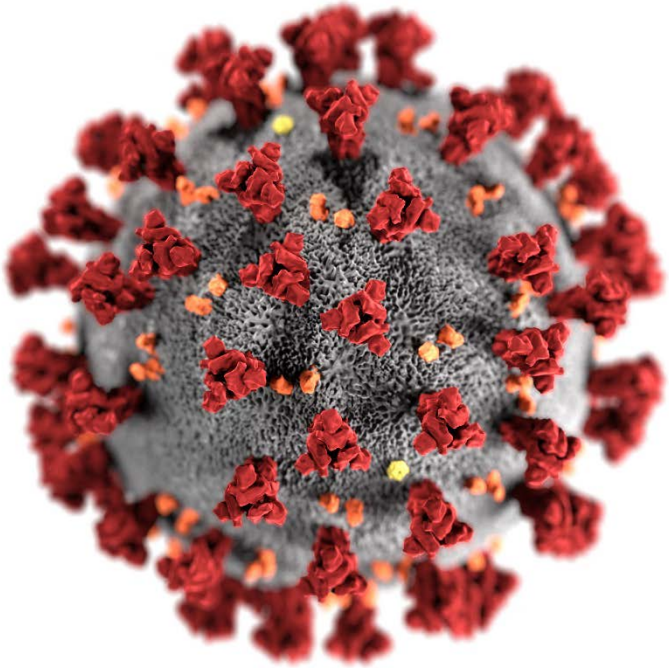


February 14, 2020

For more information: **www.cdc.gov/COVID19**

Coronavirus Disease 2019 Update

Coronavirus Disease 2019 (COVID-19)

- Much is unknown about COVID-19
- 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 COVID-19 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.
- 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.

CDC Response

- CDC established a COVID-19 Incident Management System on January 7, 2020.
- Through in-country teams and coordination with WHO, CDC is monitoring and engaged in international efforts of this response.
  - Assisting international partners with response effort
  - Coordinating the return of Americans overseas
- CDC is coordinating closely with state and local partners on identifying cases early, conducting case investigations, and learning about the virology, transmission, and clinical spectrum for this disease.

CDC Response

- Over the coming days and weeks, state and local public health departments will begin to test for COVID-19 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.
- CDC has developed, released and is socializing guidance in various areas for healthcare, public health and the public.
  - This includes topics such as how to care of patients, patient monitor and movement, hospital, community, schools, and business preparedness and response.
- Refining, socializing, and implementing mitigation strategies for the public and communities to meet response needs

CDC Response: Medical Care and Countermeasures

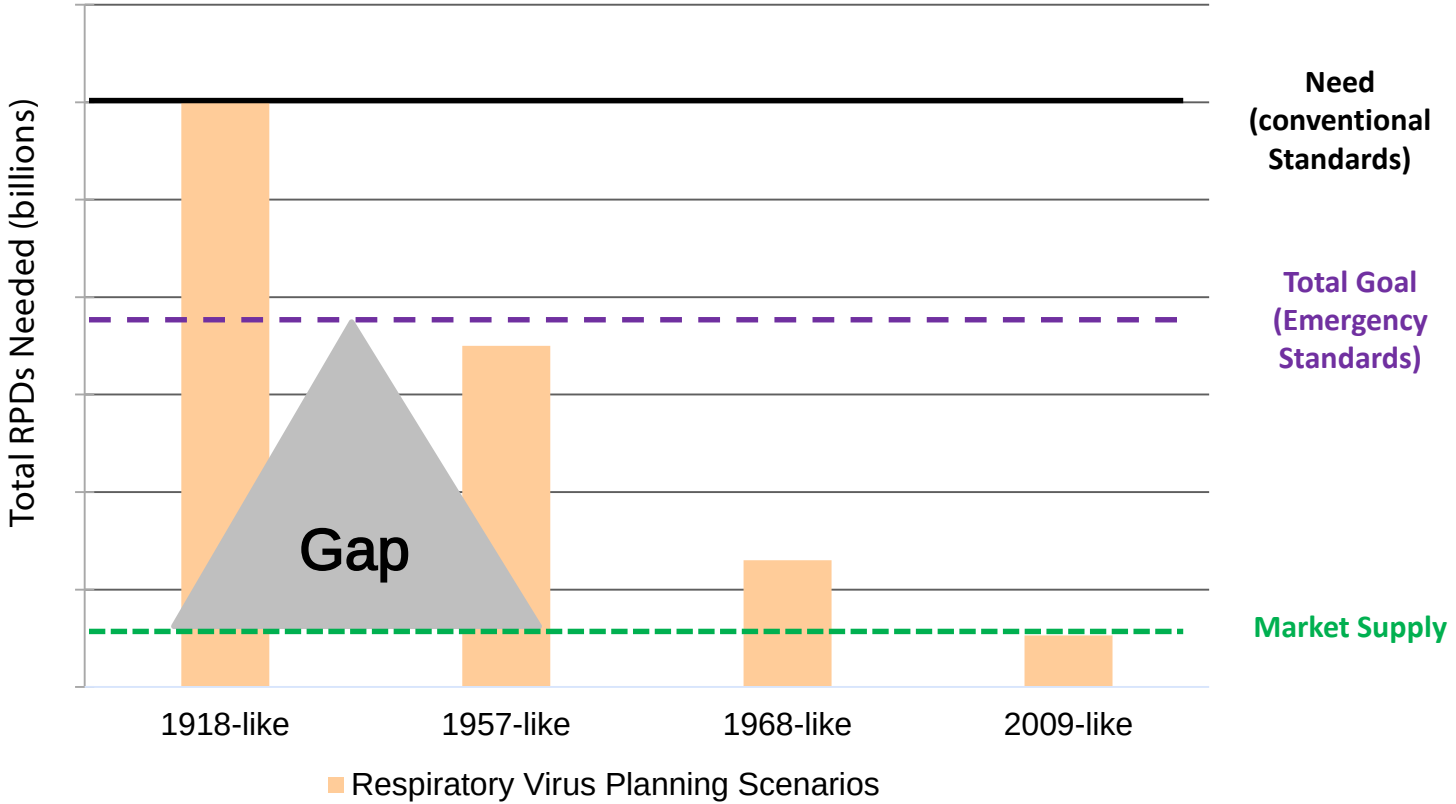
- Working closely with healthcare system (hospitals, clinics, pharmacies, telehealth) to develop solutions for surge to meet potential wider spread of disease.
- Developing infection control guidance with considerations for the appropriate use of PPE
  - Includes conservation strategies for PPE use
  - Shifts in standards of care
- Monitoring supply chain through partnerships with healthcare systems, distributor and manufacturers
- Clinical consultation of care of US patients
- Assisting SLTT and federal partners with monitoring high risk contacts through text platforms

Update on PPE Supply Chain

Number of respiratory protective devices needed exceeds most planning scenarios; need to address the gap–can't buy our way out

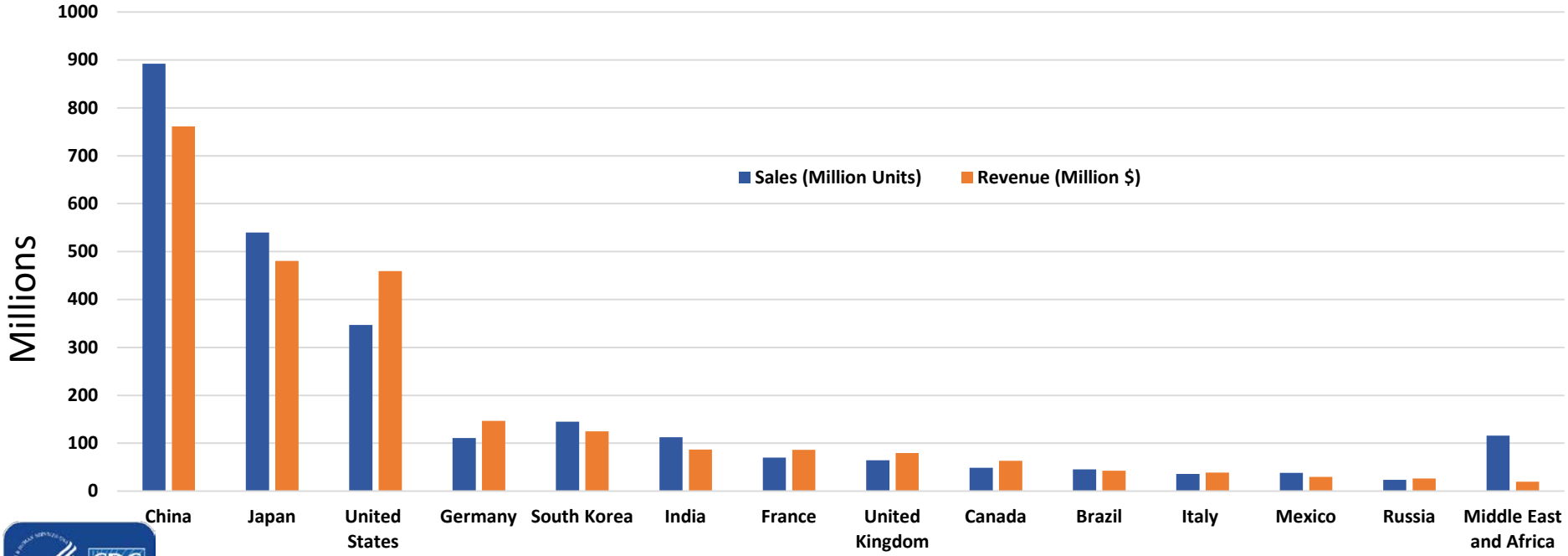
2019 Market:
- N95s: 346M
- Facemask: 540M

Planning Estimates:
- N95s: 3,506 M
- Facemask: 438 M
- Reusable RPDs: 1.62 M



China, Japan, andU.S.are the largest markets

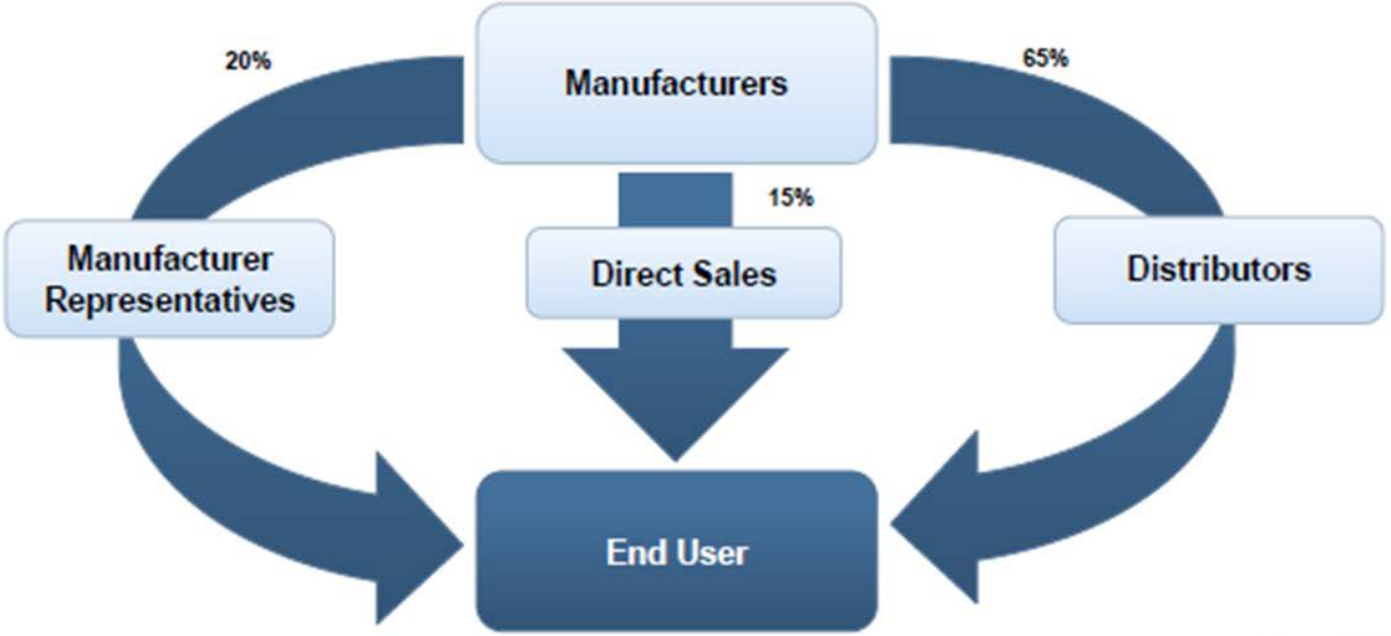
Respirator Sales (Million Units) and Revenue (Million $) by Country, 2019*



*Global Infor Research, 2020

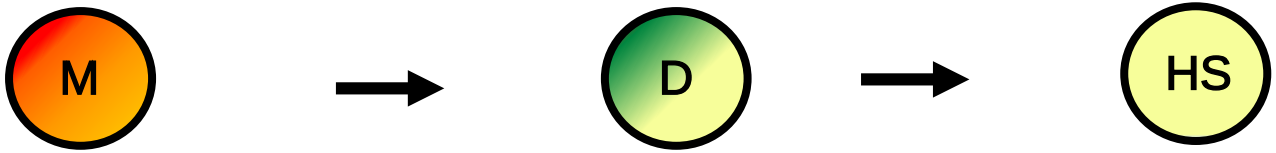
Disposable Respirator Market Product Distribution is Complex

Total Respiratory Protection Market: Distribution Channel Analysis, North America, 2017



Source: Frost & Sullivan

Estimated N95 Supply Status: As of 02/10/2020*



Reports from Manufacturers (+60%)	Reports from Distributors (+70%)	Healthcare Systems

• Increase in orders
• Most are surging (lines, staffing); ramp up time needed, surge planning underway
• Allocation strategies to fill global orders
• Global market:
  ▪ Raw materials
  ▪ Manufacturing in countries with limited/restricted exports
	• Increase in orders
	• Allocation strategies
	  • % of customer orders (80%-120%)
	  • Limiting sales to atypical buyers and non- healthcare customers
		Major hospital systems reporting:
		• Increase in orders
		• Accelerated burn due to fit testing
		• Not receiving full orders, stockpiling
		• Able to maintain operations, supply is tight
		• Estimated 2-16 week supply in stockpiles
		Urgent Care (non-system)
		• Increase in orders
		Pharmacies
		• +60% of large chains unable to meet store level demands
		• Stockouts, delays in resupply

*Aggregate qualitative assessment

Healthcare Supply Chain information now posted on CDC website

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

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

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.

CDC Strategies (examples)

Moving towards contingency/crisis standards

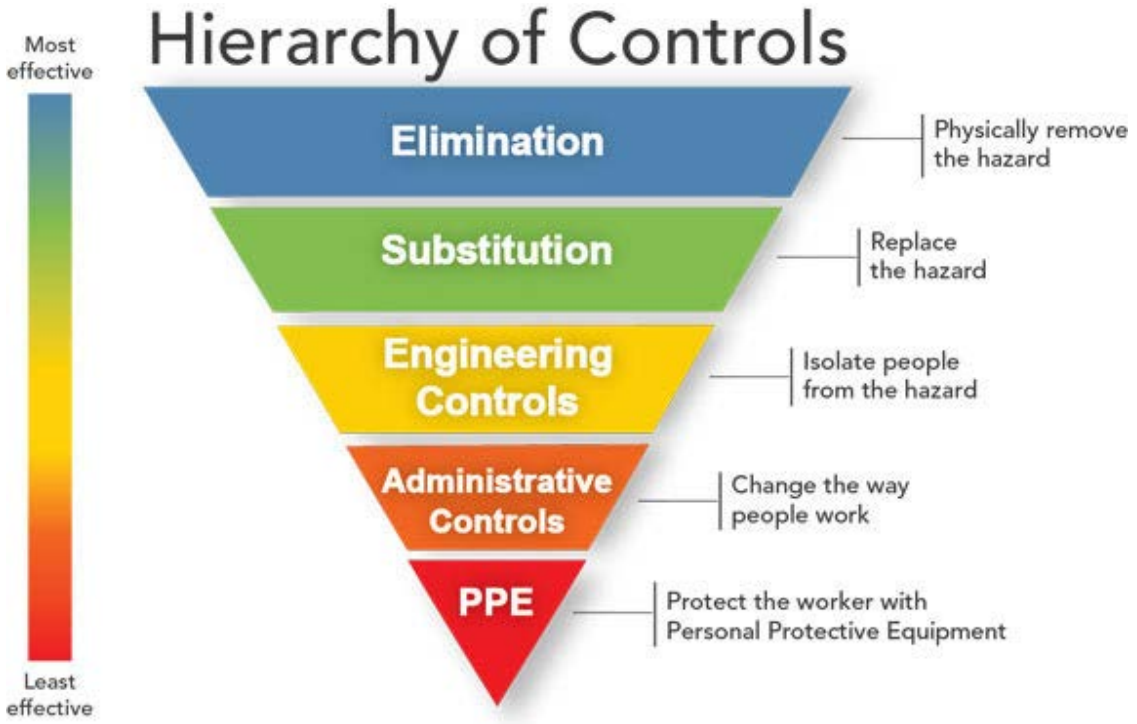
Limit people entering system	• Limit number of visitors in patient room • Home guidance • Monitoring and movement guidance	• Self-assessment tools • Telemedicine for triage	
Limit exposures once in system	• Engineering controls (physical barriers) • Exclude non-essential HCP • Monitoring and movement guidance	• Cohorting patients • Assigning designated providers • Limit HCP/patient interactions (e.g., video when feasible)	
Reduce demand for RPDs	• Limiting respirators during training and fit testing • Clarify products needed • Communications	• Alternative product use • Extended use and/or limited reuse • Staffing strategies (identifying specific care teams)	• Prioritize use based on exposure risk

How Health Systems Can Prepare

Actions and Strategies to Stop Spread of COVID-19

- The U.S. healthcare system responds to infectious disease threats every day.
- CDC's recommended actions and strategies to stop the spread of COVID-19 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.

Foundation of Healthcare Infection Control



Strategies to Conserve N95 Supply

Strategies for Optimizing the Supply of N95 Respirators

On This Page

Engineering Controls

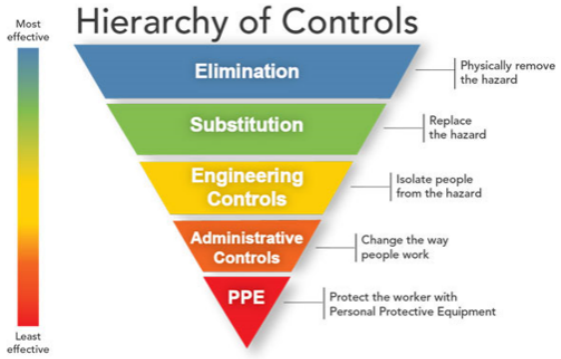
Administrative Controls

Personal Protective Equipment and Respiratory Protection

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)

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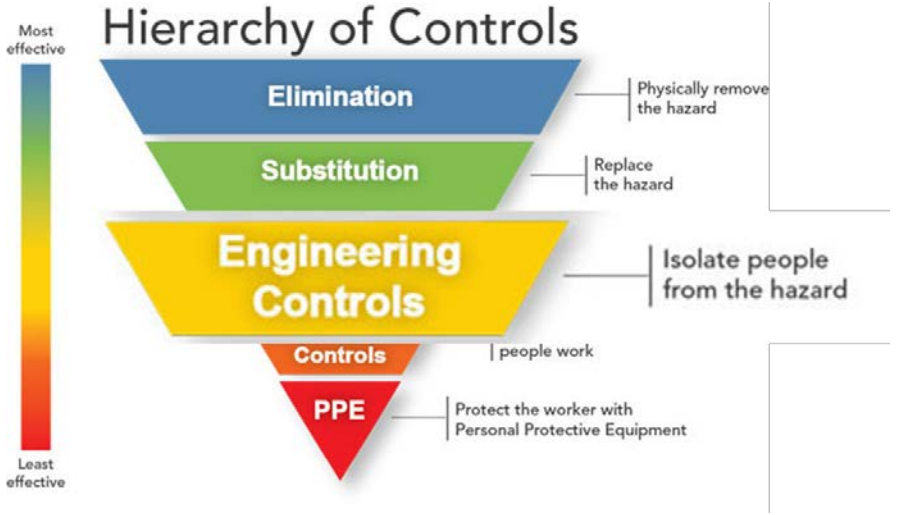
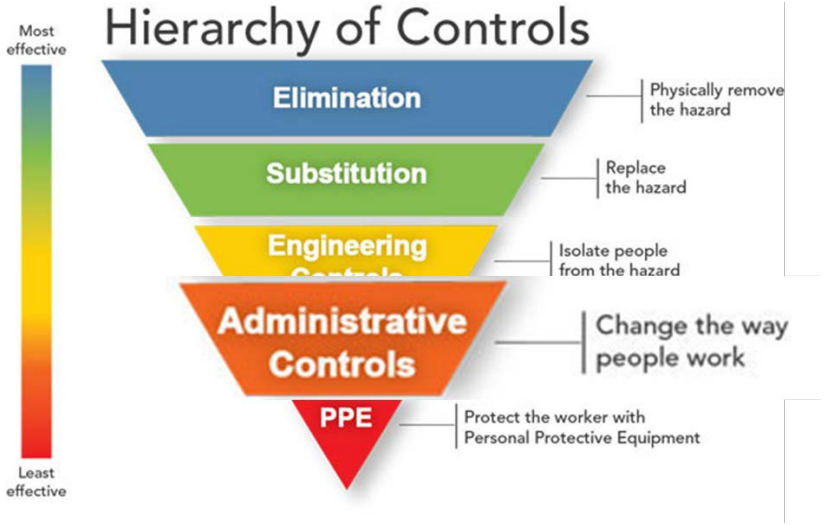


Administrative Controls

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

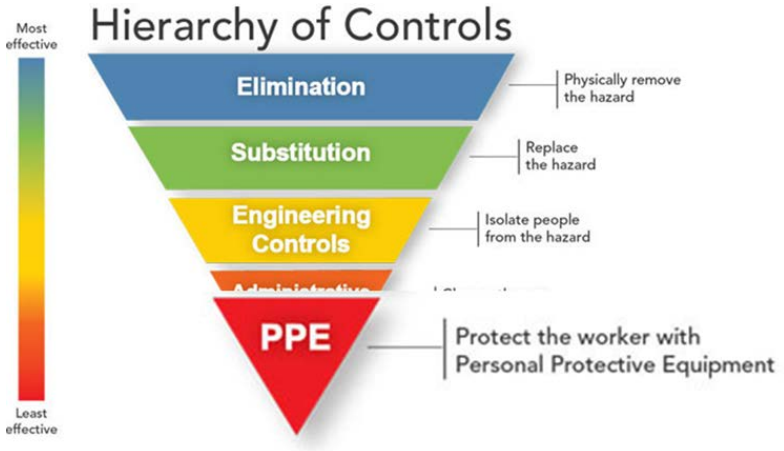


Interim Infection Prevention and Control Recommendations for Patients with Confirmed 2019 Novel Coronavirus (2019-nCoV) or Persons Under Investigation for 2019-nCoV in Healthcare Settings

Updated February 3, 2020

Personal Protective Equipment (PPE)

- Define use of N95 respirators (e.g. surgical, extended use, risk based)
- Use of respirators that provide equivalent or higher protection



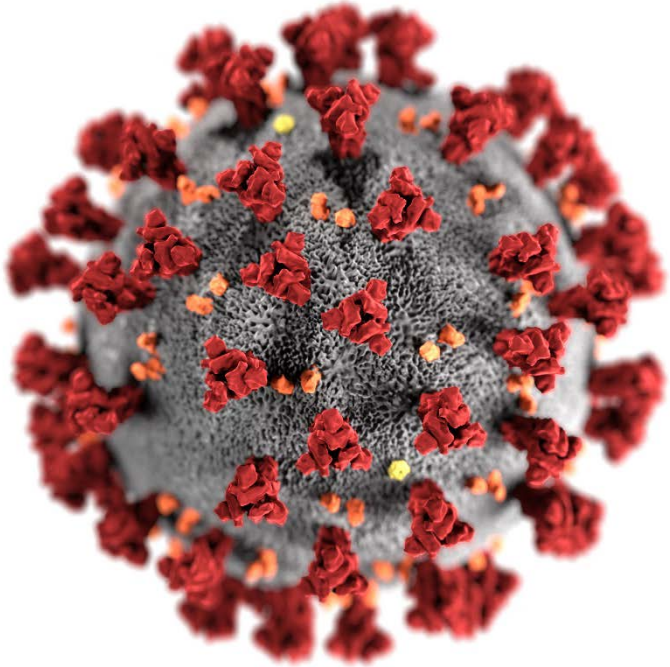
N95 DAY 2017

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	?†	
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 Coronavirus Disease 2019 (COVID-19) or Persons Under Investigation for COVID-19 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)



For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 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.