

# Personal Protective Equipment (PPE): Purchasing and Capacity Building

June 10, 2020

## **Mary Foote, MD, MPH**

Senior Health Security Specialist  
Bureau of Healthcare System Readiness  
NYC Department of Health and Mental Hygiene

## **David Starr**

Assistant Commissioner  
Emergency Field Operations  
NYC Department of Health and Mental Hygiene

## **Jay Gormley**

Chief Strategy Officer  
MJHS Health System

## **Jennie Sutcliffe**

Senior Healthcare Policy Analyst  
Bureau of Equitable Health Systems  
NYC Department of Health and Mental Hygiene

# Webinar Objectives

- ▶ Provide a refresher on the use of PPE included in the updated guidance on outpatient PPE
- ▶ Inform agencies and providers how to calculate a burn rate
- ▶ Share considerations and best practices for purchasing PPE
- ▶ Offer a list of medical suppliers
- ▶ Intended audience: Agencies and providers with limited experience purchasing PPE and health care workers (HCWs) on staff who require PPE for interactions with clients, patients or residents

# Outline



COVID-19 and PPE



Forward Planning



Calculating a Burn Rate



Purchasing PPE: Tips and Best Practices



Questions and Discussion

# Face Coverings vs. PPE

4

Jennie Sutcliffe  
Senior Healthcare Policy Analyst  
NYC Department of Health

# Face Coverings

- ▶ A face covering can help prevent the spread of COVID-19. You must wear one when you leave home and cannot maintain at least 6 feet of distance from others.
- ▶ A face covering can include anything that covers your nose and mouth, such as a dust mask, scarf or bandana.
- ▶ When wearing a face covering, practice healthy hand hygiene and physically distance yourself at least 6 feet from others when possible.
- ▶ Face coverings do not protect the wearer and are not considered PPE.

# Face Coverings

- ▶ If you are a small business and would like to get free face coverings for your employees, go to **nyc.gov** and search for **free facing coverings**.
- ▶ If you are a community-based organization (CBO) contracted with the City, contact the agency you work with to get face coverings.
- ▶ If you are a faith-based institution or CBO not contracted with the City, contact Kate Chance of the Community Affairs Unit at **kchance@cau.nyc.gov**.

# Reporting Price Gouging

- ▶ On March 16, the NYC Department of Consumer and Worker Protection announced an emergency rule under the City's Consumer Protection Law.
- ▶ Report price gouging at NYC 311 → [Overcharged Due to Coronavirus](#)
- ▶ The rule, effective immediately, makes price gouging illegal for any personal or household good or any service that is needed to prevent or limit the spread of or treat the new coronavirus (COVID-19).
  - Cleaning products
  - Diagnostic products and services
  - Disinfectants (wipes, liquids, sprays)
  - Face masks
  - Gloves
  - Hand sanitizer

# COVID-19 and PPE: Recommendations and Rationale

Dr. Mary Foote  
Senior Health Security Specialist  
NYC Department of Health



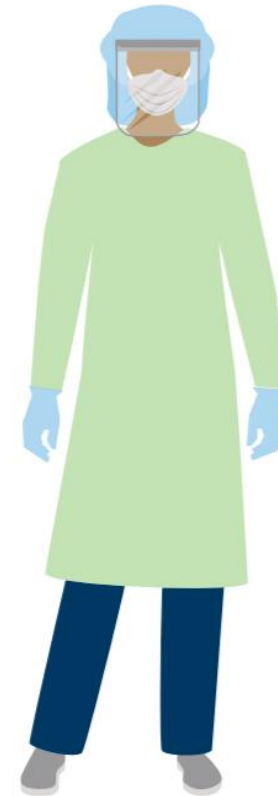
# COVID-19: Transmission and PPE

- ▶ Droplets are still considered to be the primary mode of transmission. Wear:
  - ▶ Face masks
  - ▶ Eye protection (face shield or goggles)
- ▶ Opportunistic aerosol is possible during aerosol-generating procedures.
  - ▶ Wear a fit-tested N95 respirator or higher level of protection.
- ▶ Contact/fomite transmission possible, especially in health care environments.
  - ▶ Wear gowns and gloves when in direct physical contact with others.
  - ▶ Use environmental cleaning and disinfecting products.

# Outpatient PPE Guidance

When caring for possible or confirmed cases of COVID-19, PPE should include:

- ▶ Face mask (surgical or procedural) or fit-tested N95 for aerosol-generating procedures
- ▶ Eye protection (goggles or face shield)
- ▶ Isolation gown (if in direct contact with patient)
- ▶ Gloves
- ▶ Patient should wear a face mask or face covering



- Gown
- Facemask *or*
- N95 Respirator for aerosol-generating procedures and ICU care
- Eye protection  
Goggles or face shield
- One pair of gloves
- Hair cover (optional)

# Outpatient PPE Guidance

When caring for patients without COVID-19 symptoms, PPE should include:

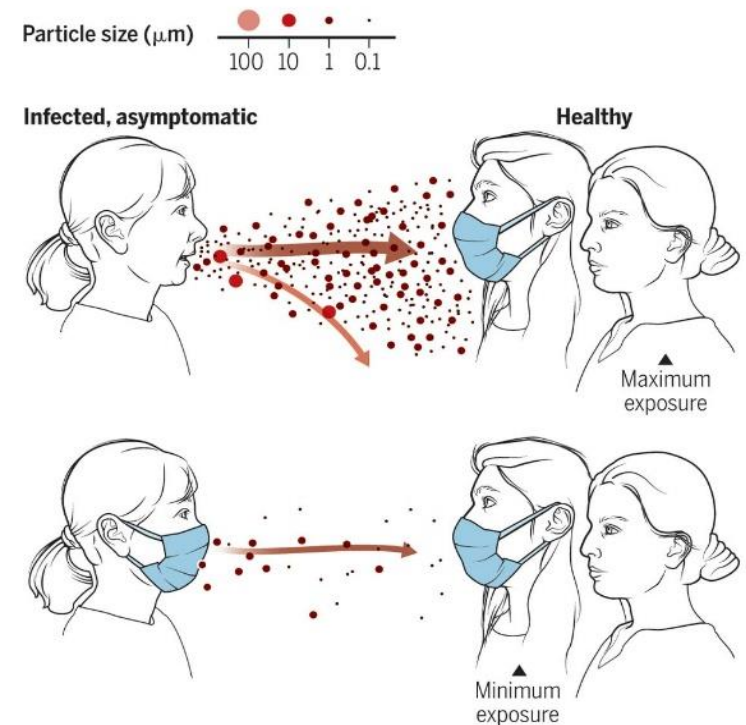
- ▶ Face mask
- ▶ Eye protection (goggles or face shield)
- ▶ Patient should wear a face mask or cloth face covering

Throughout the facility:

- ▶ Practice universal source control
  - ▶ Face masks for staff
  - ▶ Face masks or cloth face coverings for others

## Masks reduce airborne transmission

Infectious aerosol particles can be released during breathing and speaking by asymptomatic infected individuals. No masking maximizes exposure, whereas universal masking results in the least exposure.



# PPE Guidance Rationale

- ▶ N95 shortages continue to persist. It is important to save them for high risk procedures.
- ▶ Use of eye protection and masks for all patient encounters + universal patient source control = protection from inadvertent asymptomatic exposures
- ▶ The World Health Organization's (WHO) infection control guidance for COVID-19 endorses droplet precautions for most COVID care and airborne precautions for aerosol generating procedures.
  - ▶ Canada, the United Kingdom and Australia also follow these standards.

# PPE Guidance Rationale

- ▶ The Infectious Diseases Society of America's (ISDA) infection control guidance recommends using surgical masks or N95s for routine care of patients with COVID-19 and N95s for aerosol-generating procedures.
- ▶ The Centers for Disease Control and Prevention's (CDC) guidance on assessing HCW exposure risk says:
  - ▶ If an HCW wears a face mask and eye protection during an encounter with a patient who has COVID-19, it is not considered an **exposure** to COVID regardless if the patient was wearing a mask.
    - ▶ This does not apply to aerosol generating procedures

# When Do You Need an N95?

- ▶ When performing aerosol-generating procedures and caring for patients who are critically ill
- ▶ Commonly performed medical procedures that are often considered Aerosol Generating Procedures or create uncontrolled respiratory secretions include (according to the CDC):

Open suctioning of airway

Sputum induction

Cardiopulmonary resuscitation (CPR)

Endotracheal intubation and extubation

Non-invasive ventilation (BiPAP/CPAP)

Bronchoscopy

Manual ventilation

\*Based on limited available data, **nebulizer administration** and **high flow oxygen** delivery may also produce infectious aerosols.

# Other Infection Control Interventions

PPE is not the only solution. It is one part of an overall program that also includes:

- ▶ Rapid identification of symptomatic patients
  - ▶ Triage
  - ▶ Masking and separation
- ▶ Source control
- ▶ Strict adherence to respiratory and hand hygiene practices
- ▶ Training staff on the correct use of PPE
- ▶ Rigorous environmental cleaning and disinfection of surfaces and equipment

**Source:** COVID-19 Outpatient Infection Control Quick Guide. New York City Department of Health and Mental Hygiene website. Updated May 23, 2020. <https://www1.nyc.gov/assets/doh/downloads/pdf/imm/covid-19-infection-control-outpatient.pdf>.



# COVID-19 Infection Control Training

- ▶ All staff should receive job- or task-specific education and training on preventing the spread of COVID-19.
- ▶ Train HCWs how to use PPE, including safe donning and doffing procedures
  - ▶ Demonstrate competency

## **Risk Factors for MERS-CoV Infection Among Health Care Personnel (Alraddadi, 2016)**

- Evaluated risk factors for infection among 258 health care workers exposed to MERS-CoV
- Analyses showed participation in **infection control training had a significant protective effect** in both face mask and N95 wearing cohorts  
RR = 0.28 (CI 0.1-0.8) and 0.33 (CI 0.12-0.9) respectively



# Engineering Controls

- ▶ Interventions that can minimize patient and staff exposure to COVID-19 include:
  - ▶ Physical barriers (for example, plexiglass) at registration and triage
  - ▶ Physical barriers or partitions to guide patients through triage areas
  - ▶ Optimizing air-handling systems with appropriate directionality, filtration and exchange rate
  - ▶ Installation of portable high-efficiency particulate air (HEPA) filters to create negative pressure rooms

# PPE Conservation Strategies

- ▶ Provide training on transmission-based precautions and indications for PPE
- ▶ Screen patients for symptoms before their appointment
- ▶ Optimize telehealth to evaluate acute respiratory illness
- ▶ Limit the amount of staff entering the rooms of patients with potential or confirmed cases COVID-19
- ▶ Have teams dedicated to COVID-19 care and designated hours for sick visits
  - ▶ Can reduce the amount of staff who need to use PPE
- ▶ Implement measures to secure and control PPE supplies



# Contingency and Crisis Strategies

There are three general levels used to describe surge capacity and prioritize measures to conserve PPE supplies alongside the continuum of care

- ▶ **Conventional capacity:** Procedures and supplies are in line with daily standard practices
- ▶ **Contingency capacity:** Procedures and supplies are not consistent with daily standard practices but are functionally equivalent and may not have significant impact on HCWs' safety
- ▶ **Crisis capacity:** Adaptive procedures and supplies that are not commensurate with conventional U.S. standards of care but provide sufficiency of care in the context of a catastrophic disaster

# Extended Use of PPE

Extended use is wearing the same PPE for repeated encounters with patients without removing it.

- ▶ Eye protection, face masks and N95s are appropriate for extended use.
  - ▶ Avoid touching PPE in case of contamination
- ▶ Gowns can be considered for extended use if seeing a cohort of possible or confirmed patients with COVID-19
- ▶ N95s are generally preferred for extended use over reuse.
  - ▶ Reduce the risk of self-contamination from repeated donning (wearing) and doffing (removal)
  - ▶ Fit can become compromised with multiple uses (generally more than 5 times)
- ▶ Gloves are not recommended for extended use or reuse.

# Reuse of PPE

Reuse of PPE is to use the same PPE for multiple encounters with patients but doffing between encounters.

- ▶ Eye protection (goggles or face shields)
  - ▶ Easy to disinfect and reuse
  - ▶ Recommend alcohol-based disinfecting product (for example, PDI wipes)
- ▶ Face masks
  - ▶ Reusable if not visibly soiled, damaged, wet or hard to breathe through
- ▶ N95 respirators
  - ▶ Don and doff with care, and perform a seal check
  - ▶ Store in a clean, breathable container (for example, a paper bag) between uses
- ▶ Gowns
  - ▶ Consider reusable cloth gowns

**Source:** Strategies for Reuse and Extended Use of Personal Protective Equipment (PPE) During COVID-19 Outbreak. Updated April 6, 2020.  
<https://www1.nyc.gov/assets/doh/downloads/pdf/imm/covid-19-surge-clothing.pdf>.

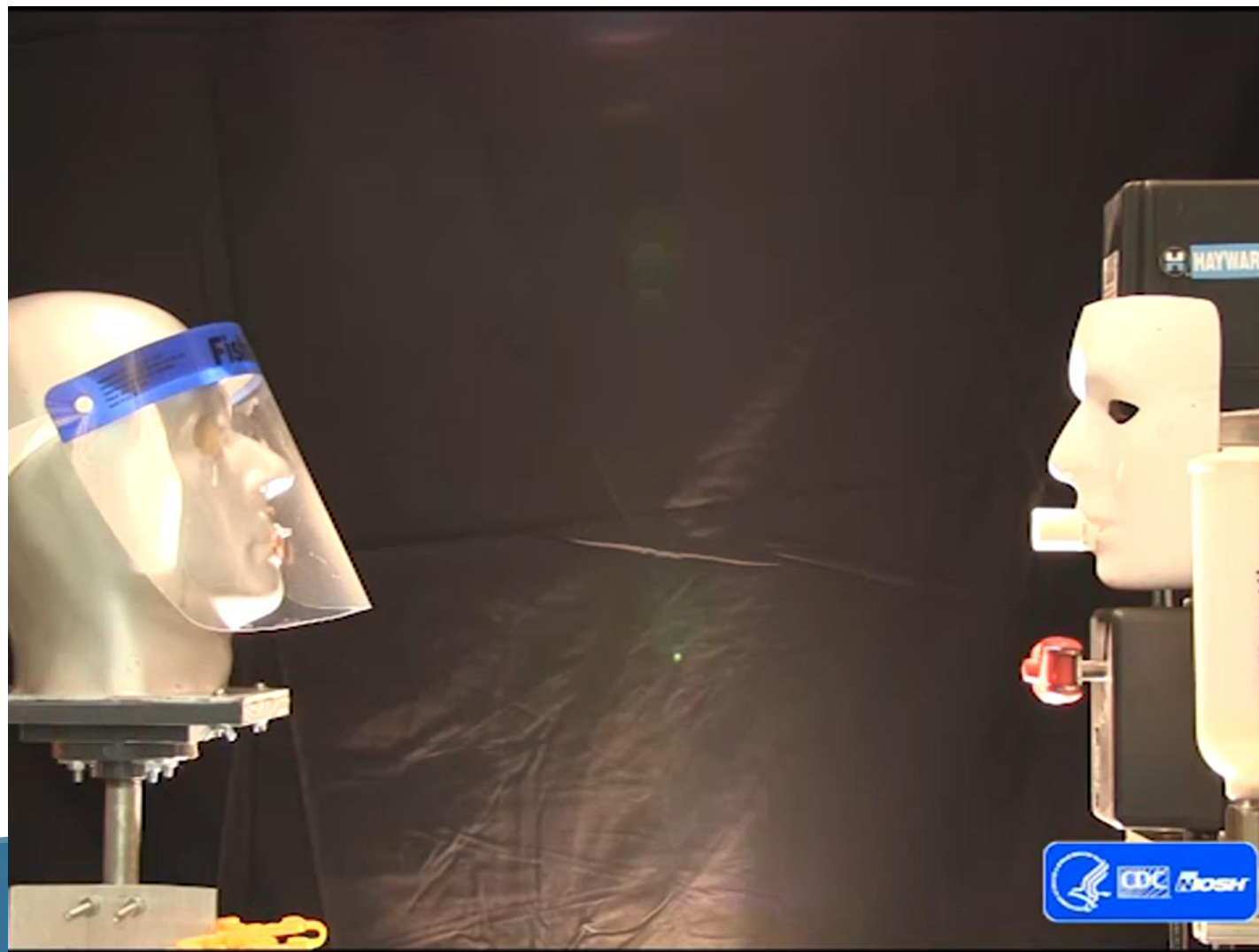
# Substitutes for Common PPE

- ▶ N95 alternatives:
  - ▶ Elastomeric respirators
  - ▶ Powered air-purifying respirators (PAPR)
  - ▶ Imported respirators, including KN95s
- ▶ Isolation gown alternatives:
  - ▶ Reusable cloth gowns
  - ▶ Aprons
  - ▶ Disposable lab coats
- ▶ Face mask alternatives (if no supplies are available):
  - ▶ Cloth face coverings with a face shield



New York Times, 5/27/2020





Aerosols being expelled into a face shield from 18 inches away.  
Video by Lindsley et al, 2014/NIOSH

# Use of Imported Respirators

- ▶ On March 24, 2020, the FDA released a statement approving the use of certain imported disposable respirators
  - ▶ Emergency use authorization (EUA) valid for the duration of the federal Public Health Emergency
- ▶ EUA includes imported non-NIOSH-approved respirators that are:
  - ▶ [Manufactured in China](#) (KN95s)
  - ▶ [Manufactured in other countries with NIOSH-equivalent standards](#)
- ▶ List of approved devices is periodically updated so check current lists on the [FDA's FAQ on imported respirators](#) before purchasing
- ▶ *All the respirators included in the EUA require fit testing*



# Forward Planning

- ▶ Potential reopening surge
  - ▶ Increase in visits due to deferred or delayed care
- ▶ Potential future waves of COVID-19
  - ▶ Mass gatherings
  - ▶ Easing of mitigation measures
  - ▶ Fall and winter
- ▶ Influenza/respiratory viral season
  - ▶ The difficulty differentiating between COVID-19 and other respiratory viruses will increase

# Resources

- ▶ COVID-19 Outpatient Infection Control Quick Guide. New York City Department of Health and Mental Hygiene website. Updated May 23, 2020.  
<https://www1.nyc.gov/assets/doh/downloads/pdf/imm/covid-19-infection-control-outpatient.pdf>.
- ▶ How to Make a Temporary Negative Pressure Room. Minnesota Department of Health website. Updated September 2019.  
<https://www.health.state.mn.us/diseases/hcid/negpressure.pdf>.
- ▶ Strategies for Reuse and Extended Use of Personal Protective Equipment (PPE) During COVID-19 Outbreak. New York City Department of Health and Mental Hygiene website. Updated April 6, 2020. <https://www1.nyc.gov/assets/doh/downloads/pdf/imm/strategies-for-the-conservation-of-respiratory-ppe.pdf>.

# Resources

- ▶ Strategies for Reuse and Extended Use of Personal Protective Equipment (PPE) During COVID-19 Outbreak. New York City Department of Health and Mental Hygiene website. Updated April 6, 2020. <https://www1.nyc.gov/assets/doh/downloads/pdf/imm/strategies-for-the-conservation-of-respiratory-ppe.pdf>.
- ▶ Strategies to Optimize the Supply of PPE and Equipment. Centers for Disease Control and Prevention website. Updated May 18, 2020. <https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/index.html>.
- ▶ Surge Capacity and Health Care Worker Protective Clothing During COVID-19 Care. New York City Department of Health and Mental Hygiene website. Updated May 24, 2020. <https://www1.nyc.gov/assets/doh/downloads/pdf/imm/covid-19-surge-clothing.pdf>.

# Calculating a Burn Rate

Jay Gormley  
Chief Strategy Officer  
MJHS Health Systems

# PPE Burn Rates

- Considerations on calculating a burn rate
- Accommodating changes in staffing ratios, and patient ratios and needs
- CDC Burn Rate Calculator:  
<https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/burn-calculator.html>

# Considerations for Purchasing PPE: Tips and Best Practices

Dave Starr  
Medical Materiel Branch  
NYC Department of Health

# PPE Supply Chains

- ▶ **Manufacturers:**
  - ▶ Depending on item, the majority of PPE is produced overseas in countries such as China, Turkey and Malaysia.
  - ▶ Limited manufacturing in the U.S.
  - ▶ Even if PPE is manufactured in the U.S., it can be affected by disaster
    - ▶ The B. Braun Medical Inc. factory in Puerto Rico was crippled by Hurricane Maria

# PPE Supply Chains

- ▶ Largest Distributors:
  - ▶ The largest distributors of PPE are Owens & Minor, Cardinal, Medline, McKesson, Henry Schein, Concordance and others
  - ▶ Some (such as Owens & Minor) own manufacturing lines
- ▶ Smaller Distributors
  - ▶ May purchase or distribute items from distributors or directly from manufacturers



# Purchasing as a Small Entity

- ▶ Large-scale entities can purchase directly from manufacturers or in large group purchasing organizations (GPOs).
- ▶ Most smaller entities do not have access to these opportunities.
- ▶ Associations may be able to assist with the development of GPOs. The Health Department cannot due to liabilities and other concerns.
- ▶ The Health Department has tried to assemble information and resources for small providers having difficulty.
  - ▶ There is a list of suppliers posted on **nyc.gov**. It is not exclusive nor inclusive.
  - ▶ Vaccine suppliers can also supply some PPE supplies.
  - ▶ The Medical Society of the State of New York (MSSNY) has arranged for PPE to be available for purchase by members.

# Purchasing as a Small Entity

- ▶ In times of scarcity, distributors and sellers place existing customers on **allocation**. These customers are only permitted to order a percentage of the PPE they ordered the year before, regardless of their actual need.
  - ▶ Can go far below 100%
  - ▶ Thousands of PPE items were placed on allocation as early as February
  - ▶ More recently, allocations have been removed for hundreds of items every week as supply chains recover
- ▶ In times of scarcity, distributors and sellers rarely, if ever, accept orders from new customers, particularly if existing customers are on allocation

# Advice for Purchasing as a Small Entity

- ▶ Establish purchasing relationships with as many suppliers as possible in the non-emergency world—be a customer of many
  - ▶ The more purchasing relationships you have with suppliers, the more likely you will be able to source during an emergency
- ▶ Join purchasing agreements with other providers
  - ▶ Form your own informal GPO, which is effective when minimum orders are required
- ▶ Source creatively
  - ▶ Amazon, eBay and other online retailers are always an option, though pricing and quality can be issues
- ▶ Open discussion
  - ▶ Your colleagues may have useful ideas or suggestions

# Questions?

- ▶ Please type your questions into the chat box.