DISCLAIMER

- Our understanding of the novel coronavirus and this pandemic is evolving rapidly
- This presentation is based on our knowledge as of March 18, 2020, 10:00AM
OUTLINE

• WHERE WE ARE
• BACKGROUND
• STATUS OF OUTBREAK
• CLINICAL FEATURES
• HEALTHCARE GUIDANCE
• MITIGATING COMMUNITY TRANSMISSION IN THE U.S.
• GUIDANCE FOR THIS PANDEMIC
• ADDITIONAL RESOURCES
WHERE WE ARE
WHERE WE ARE

• We are in the midst of a global COVID-19 pandemic
• There is widespread community transmission in New York City
• Over the next few months, a large proportion of New Yorkers will get sick with COVID-19
• Our healthcare system will be tested as it never has before
• Together we can and must slow the spread and protect those at higher risk of severe illness and our healthcare workers from getting sick
GOALS OF COMMUNITY MITIGATION

- Pandemic outbreak: no intervention
- Slow acceleration of number of cases
- Reduce peak number of cases and related demands on hospitals and infrastructure
- Reduce number of overall cases and health effects
- Pandemic outbreak: with intervention

Daily number of cases vs. Number of days since first case
BACKGROUND
BACKGROUND

- Outbreak of respiratory illness of unknown etiology identified in Wuhan, Hubei Province, China, December 2019
  - ~40 cases with history of exposure to live animal market, suggesting animal to human transmission
  - Scientists rapidly identified a novel coronavirus

- Naming the new virus:
  - SARS-CoV-2: Coronavirus Study Group of the International Committee on Taxonomy of Viruses name for virus (formerly 2019-nCoV)
  - COVID-2019: World Health Organization name for clinical syndrome
  - SARS-CoV-2 causes COVID-2019
BACKGROUND: FAMILY OF CORONAVIRUSES (CoV)

• **Animal** – Numerous coronaviruses cause disease in animals

• **Human** – Four types commonly circulate among humans, causing mild to moderate upper-respiratory-tract illnesses (229E, NL63, OC43, and HKU1)

• **Zoonotic** – Three animal coronaviruses have jumped to humans, and have transmitted from person to person
  - **SARS-CoV** – emerged 2003, caused >8000 cases; no cases since 2004
  - **MERS-CoV** – emerged 2012, caused >2400 cases; continues to infect humans
  - **SARS-CoV-2** – emerged 2019, outbreak ongoing
STATUS OF OUTBREAK
STATUS OF GLOBAL OUTBREAK

• Widespread human-to-human transmission
  – >200,000 reported cases
  – >8000 deaths
  – >150 countries/territories reporting cases

• Sustained community transmission in several countries, including South Korea, Japan, Italy, Iran, Spain, Germany, France, and the U.S., including NYC

*Source: Johns Hopkins University (Accessed 3/18/2020, 9:00AM)
https://www.arcgis.com/apps/opsdashboard/index.html#bda7594740fd40299423467b48e9ecf6
STATUS OF OUTBREAK IN U.S.

- All 50 states with confirmed cases; > 5,800, 107 deaths*
- Community transmission, including in California, Oregon, Washington, and New York
- 814 confirmed cases in NYC (as of 3/17/2020, 2:30PM)
- 730 confirmed cases elsewhere in NYS (as of 3/17/2020, 1:19PM)
- Many people with COVID-19 related illness have not been tested and are not reflected in the data

*Source: NY Times, 3/18/2020
**NYC 2019 COVID-19 SUMMARY**

- Reflects data through March 17, 2020, 10:02AM
- Includes cases in NYC residents and foreign residents treated in NYC facilities

<table>
<thead>
<tr>
<th>Category</th>
<th>New Cases</th>
<th>Total Cases</th>
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</thead>
<tbody>
<tr>
<td>Total</td>
<td>350</td>
<td>814</td>
</tr>
<tr>
<td>Median Age (Range)</td>
<td>50 (0-102)</td>
<td>48 (0-102)</td>
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<tr>
<td>Age Group</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- 0 to 4</td>
<td>6 (2%)</td>
<td>6 (1%)</td>
</tr>
<tr>
<td>- 5 to 17</td>
<td>5 (1%)</td>
<td>23 (3%)</td>
</tr>
<tr>
<td>- 18 to 49</td>
<td>161 (46%)</td>
<td>394 (48%)</td>
</tr>
<tr>
<td>- 50 to 64</td>
<td>84 (24%)</td>
<td>179 (22%)</td>
</tr>
<tr>
<td>- 65 and over</td>
<td>94 (27%)</td>
<td>212 (26%)</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Female</td>
<td>150 (43%)</td>
<td>342 (42%)</td>
</tr>
<tr>
<td>- Male</td>
<td>199 (57%)</td>
<td>465 (58%)</td>
</tr>
<tr>
<td>Borough</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Bronx</td>
<td>46</td>
<td>96</td>
</tr>
<tr>
<td>- Brooklyn</td>
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<td>157</td>
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<td>- Manhattan</td>
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<td>- Queens</td>
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<td>248</td>
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<td>- Staten Island</td>
<td>12</td>
<td>35</td>
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<tr>
<td>- Unknown</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Ever Hospitalized</td>
<td></td>
<td>161</td>
</tr>
<tr>
<td>- Underlying illness</td>
<td></td>
<td>67</td>
</tr>
<tr>
<td>- Discharged</td>
<td></td>
<td>36</td>
</tr>
<tr>
<td>- Admitted to ICU</td>
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<td>73</td>
</tr>
<tr>
<td>Currently Hospitalized</td>
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<td>124</td>
</tr>
<tr>
<td>- Admitted to ICU</td>
<td></td>
<td>60</td>
</tr>
<tr>
<td>Deaths</td>
<td>0</td>
<td>6</td>
</tr>
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CLINICAL FEATURES
CLINICAL FEATURES

• Incubation period: mean = 5.2 days (range: 2 - 14 days)
• Median patient age reported in China: between 49 - 56 years
• Nonspecific initial symptoms
  – Most common: fever and dry cough
  – Less frequent: myalgias, headache, sore throat, diarrhea
• Transmission
  – Mainly via respiratory droplets
  – Direct or indirect contact
  – No evidence of airborne transmission to date
  – Fecal oral?

https://jamanetwork.com/journals/jama/fullarticle/2760782
CLINICAL FEATURES

• Risk groups for severe COVID-19 include
  – Age ≥50
  – Chronic medical conditions: CVD, DM, chronic lung disease, etc.

• Severity of early laboratory-confirmed cases in China
  – ~80% mild to moderate
  – 14% severe (dyspnea, hypoxia, tachypnea, lung infiltrates)
  – 6% critical (respiratory failure, shock, multiple organ dysfunction)

• Case fatality = 2.3% in China
  – Range 0.6->3%
CLINICAL FEATURES (CONT’D)

• Laboratory findings
  - Lymphopenia (70%)
  - Prolonged prothrombin time (58%)
  - Elevated lactate dehydrogenase (40%)

• Radiologic features
  - CXR with bilateral patchy infiltrates
  - Chest CT show ground-glass infiltrates

Sources:
CHARACTERISTICS OF HOSPITALIZED CASES IN CHINA (N=138)

- 54% male
- Median age: 56 years (range 22-92)
- Hospital-associated transmission suspected:
  - 40 healthcare workers
  - 17 patients
- Chest computed tomographic (CT) scan
  - 100% bilateral ground glass opacities
- Among 36 transferred to ICU:
  - Acute respiratory distress syndrome (ARDS): 61%
  - Median age: 66 years
  - 72% had underlying comorbidities

<table>
<thead>
<tr>
<th>Signs and symptoms</th>
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</thead>
<tbody>
<tr>
<td>Fever</td>
<td>99%</td>
</tr>
<tr>
<td>Dry cough</td>
<td>59%</td>
</tr>
<tr>
<td>Fatigue</td>
<td>70%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Laboratory findings</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Lymphopenia</td>
<td>70%</td>
</tr>
<tr>
<td>Prolonged prothrombin time</td>
<td>58%</td>
</tr>
<tr>
<td>Elevated lactate dehydrogenase</td>
<td>40%</td>
</tr>
</tbody>
</table>

CHARACTERISTICS OF HOSPITALIZED CASES IN CHINA (N=1,099)

- 1,099 lab confirmed hospitalized cases
  - 552 hospitals, 30 provinces
- Median age = 47 years
- 42% Female
- Outcomes
  - 5% admitted to ICU
  - 2.3% mechanical ventilation
  - 1.4% mortality

<table>
<thead>
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</tr>
</thead>
<tbody>
<tr>
<td>Fever</td>
<td>44% (admit) 89% (inpt)</td>
</tr>
<tr>
<td>Cough</td>
<td>68%</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>4%</td>
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<table>
<thead>
<tr>
<th>Radiographic findings</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Ground glass opacity (CT)</td>
<td>56%</td>
</tr>
<tr>
<td>No changes</td>
<td></td>
</tr>
</tbody>
</table>
  - Non-severe disease        | 18%      |
  - Severe disease            | 3%       |
TREATMENT

- Vaccines and treatments under development in U.S., China, and elsewhere
- Currently medical care is supportive
- Most important recommendation – avoid corticosteroids unless indicated for other reasons (e.g., COPD exacerbation, septic shock)
- Remdesivir is being studied as one experimental treatment
  - Criteria for compassionate use from manufacturer Gilead are confirmed SARS-CoV-2 infection, pneumonia, and hypoxia (O2 saturation <=94% on room air)
  - Exclusion criteria are creatinine clearance <30 ml/min, LFTs >5x normal
  - Clinicians can directly reach out to NIH or Gilead directly

NYC HEALTH DEPARTMENT SUPPORT FOR HEALTHCARE PROVIDERS

- Webpage with updated information, posters and other clinical resources: [https://www1.nyc.gov/site/doh/providers/health-topics/novel-respiratory-viruses.page](https://www1.nyc.gov/site/doh/providers/health-topics/novel-respiratory-viruses.page)
- Consultation via the 24/7 Provider Access Line (866-692-3641)
- Updated guidance via Dear Provider letters and the Health Advisory Network
- Webinars
NYC HEALTH ADVISORY NETWORK (HAN)

- Health Alert #6: COVID-19 Updates for New York City (March 15, 2019)

To access and subscribe: https://www1.nyc.gov/site/doh/providers/resources/health-alert-network.page
GENERAL FACILITY PREPAREDNESS

• Maintain awareness
  – Regularly inform staff regarding current status of outbreak
  – Disseminate NYC Health Department’s Health Alerts and Advisories

• Tell people with mild to moderate disease consistent with COVID-19 to stay home and not go to the healthcare facility

• ER must be reserved for only the severely ill

• Implement and adhere to policies and practices to minimize exposures to respiratory pathogens including SARS-CoV-2

• Maintain a continuum of infection control measures before and throughout the patient’s visit and until room cleaned and disinfected

• Protect those at increased risk for adverse outcomes from COVID-19
PILLARS OF COVID-19 PREPAREDNESS

• IDENTIFY
• ISOLATE
• INFORM
IDENTIFY PEOPLE WITH POTENTIAL COVID-19

• Ask patients with COVID-19 like illness to call ahead when possible so that you can prepare for their arrival

• Place signage and greeters at entry points to screen
  – Identify persons with COVID-19 like illness
  – Triage personnel should have facemasks and tissues

• Source control – put facemask on symptomatic patient

• In the future, cohorting of symptomatic individual may be necessary if face masks are in short supply
ISOLATE

• Evaluate patient in private examination room with the door closed
  – *An airborne infection isolation room (AIIR) is NO longer required* unless patient undergoing aerosol generating procedure (collection of a NP or OP swab is NOT an aerosol generating procedure)

• If private exam room not available:
  – Identify space where patient can be separated from others by ≥6 feet and with easy access to respiratory hygiene supplies
  – In some settings, have patient wait in their personal vehicle or outside facility and call their cell phone when you are ready to attend to them

• Patient rooms do not need to be left empty after patient leaves unless aerosol generating procedures were performed
PERSONAL PROTECTIVE EQUIPMENT

- Protecting healthcare workers is a top priority for the NYC Health Department
- Per new CDC guidelines, patient can now be managed with droplet precautions
- Facilities must conserve N95s and must be aligned by messaging to their staff this critical change in PPE – protect your supply!
- Use standard, contact, and droplet precautions with eye protection when caring for patients with possible or confirmed COVID-19
PERSONAL PROTECTIVE EQUIPMENT

- PPE should include a facemask (procedure or surgical mask) AND gown AND gloves AND eye protection (goggles or face shield)
  - Healthcare workers do not need a fit tested N95 respirator or Powered Air Purifying Respirator (PAPR) for routine (non-aerosol generating) care of a COVID-19 patient
- A fit tested N95 or Powered Air Purifying Respirator (PAPR) is still recommended when performing aerosol generating procedures (e.g., intubation, suctioning, certain high flow oxygenation strategies) and caring for critically ill patients with COVID-19

For detailed infection control guidance, visit the CDC website: https://www.cdc.gov/coronavirus/2019-ncov/hcp/infection-control.html.
INFORM

• The NYC Health Department receives positive COVID-19 test results directly from laboratories

• Report people who are part of **cluster of 3 or more possible or confirmed COVID-19 in a residential congregate setting** that serves at risk populations (e.g., assisted living facility, group home, homeless shelter, or correctional settings)
  
  – Call the NYC Health Department’s Provider Access Line **(866-692-3641)**
TESTING FOR SARS-CoV-2

• Molecular assay rRT-PCR
  – Commercial laboratories
  – Hospital-based laboratories
  – NYC Public Health Laboratory
WHO **NOT TO TEST**

- Tell your patients: If they are sick stay home for 7 days following symptom onset OR 72 hours after being consistently afebrile without use of antipyretics AND respiratory symptoms are resolving, whichever is longer

- Do NOT test people with mild to moderate illness who can be safely managed at home unless diagnosis may impact patient management

- Avoiding unnecessary tests:
  - Minimizes possible exposures to healthcare workers, patients, and public
  - Reduces demand for PPE

- When possible, test patients for common causes of respiratory illness (e.g., influenza, RSV) **before** testing for COVID-19
WHO TO TEST

• Testing should be reserved for:
  – Individuals sick enough to be admitted to the hospital
  – People for whom the provider believes testing will change care management

• An individual presenting with fever and cough during this pandemic who has a negative COVID-19 test should still be considered a COVID-19 patient and given appropriate counseling
HOW TO TEST

- Commercial and hospital-based laboratories – Refer to their guidance

- For the NYC Public Health Laboratory (PHL):
  - Only testing specimens for hospitalized patients presenting with severe acute lower respiratory illness (e.g., pneumonia)
  - Requires pre-approval and an eOrder account
  - Call Coronavirus Testing Call Center at (866) 692-3641 for approval
  - If you do not already have an eOrder account, visit the PHL website
ORDERING TESTS FROM PHL

• If approved, send specimens to hospital’s central laboratory with the PHL assigned unique identification number
  – The central lab should submit requisition via eOrder
  – Call back Testing Call Center for transport if needed
• Ordering provider responsible for giving patients’ results
• Collect one NP and one OP swab packaged in the SAME viral transport medium collection tube
  – One lower respiratory track specimen (e.g., sputum) can also be submitted if it can be easily collected (e.g., bronchial or tracheal aspirate in patients on ventilator support)

Detailed laboratory guidance can be found online at: https://www1.nyc.gov/assets/doh/downloads/pdf/labs/guidance-lab-2019-ncov-specimen-testing.pdf
Patients with confirmed or possible COVID-19 who are being discharged should be told to self-isolate

- Applies to patients being discharged from the emergency or inpatient department or being sent home from an outpatient healthcare facility
- Household contacts should be reminded to self-monitor

The NYC Health Department DOES NOT require a negative COVID-19 test to release a patient from a healthcare facility.

Tell patients: Stay home and self isolate for at least seven days after symptoms started AND fever-free for three days without the use of fever-reducing drugs
GUIDANCE FOR HEALTHCARE WORKER (HCW) SELF-MONITORING

- HCWs currently furloughed may return to work if asymptomatic
- All healthcare workers are at risk for unrecognized exposures
- ALL HCWs should self-monitor for illness consistent with COVID-19
  - Take temperature twice daily and evaluate for COVID-19 like illness which include new onset of any of the following:
    - Measured temperature >100.00F (38.0C) or subjective fever, cough, shortness of breath, sore throat
    - If known high-risk exposure to a patient(s) with confirmed COVID-19, also check for muscle aches, malaise, runny nose, stuffiness, or congestion
GUIDANCE FOR HCW SELF-MONITORING

• If HCWs develop mild illness, they must stay home and self-isolate for 7 days following symptom onset OR 72 hours after being consistently afebrile without use of antipyretics AND respiratory symptoms are resolving, whichever is longer.

• Employers may require staff to report temperature and symptoms daily (i.e., active monitoring) and may have additional guidance for specific employees caring for high-risk populations such as older adults or immune compromised.

• NYC DOHMH does not require HCWs to undergo quarantine or to have a negative test for COVID-19 to return to work.
  – However, at the completion of isolation, HCWs should check with their employer before returning to work.
GUIDANCE FOR HCW SELF-MONITORING

- CDC advised healthcare facilities to consider allowing asymptomatic HCWs with exposure to a confirmed COVID-19 patient to work while wearing a surgical mask
  - However, DOHMH again stresses ALL providers should be self-monitoring and if sick, stay home
  - Given limited availability of PPE, use of surgical masks by asymptomatic exposed providers at work should be limited to those who have had known high-risk exposures or are involved in care of vulnerable patients (e.g., age ≥50, chronic lung disease (e.g., asthma, COPD), heart disease, diabetes immunocompromised)

ENVIRONMENTAL CLEANING

• Clean and disinfect room before returning to routine use
  – Use EPA-registered, hospital-grade disinfectants effective against coronaviruses in accordance with manufacturer’s instructions
  – Clean all areas, with focus on high-touch surfaces
  – Treat contaminated waste as routinely regulated medical waste
  – Follow standard operating procedures for containing and reprocessing used linens
ANTICIPATE SUPPLY SHORTAGES

• Supplies of PPE must be reserved for high risk procedures due to potential supply chain constraints
  – Decrease in PPE imports and increased demand
• Now utilizing existing stockpiles
  – Local, State, Federal
  – Check with trade associations or healthcare coalitions for requests
• Medications and other medical supplies
• Hospital beds, healthcare personnel, ventilators
• Plan now for contingency and crisis care in setting of limited resources

For additional information on how to manage diminished PPE supplies: https://www.cdc.gov/coronavirus/2019-ncov/hcp/healthcare-supply-ppe-index.html
MITIGATING COMMUNITY TRANSMISSION IN THE U.S.
RESPONSE TO COVID-19

Initial strategy: containment

- Quarantine of travelers from high-risk countries
- Identify cases and contacts; isolate them
- Handwashing, routine influenza precautions

But at this point containment is impossible...
RESPONSE SHIFTS TO MITIGATION

• **Goal** – minimize spread, mitigate impact

• **Measures to decrease population-wide impact**
  – Individual – cough etiquette, hand washing
  – Community – Social distancing
    ▪ Work from home/telework; stagger work hours
    ▪ Closed schools and stopped unnecessary services
    ▪ Limit use of healthcare by worried well/mildly ill
    ▪ Ban on most gatherings >50 people
  – Environmental – enhanced cleaning procedures in schools, mass transit
DETECTING COMMUNITY TRANSMISSION IN NYC

- There is widespread community transmission in NYC
- Syndromic surveillance
  - Emergency department visits are monitored electronically for respiratory syndrome visits to detect new trends or clusters
COVID-19 Cases in New York City by Week of Diagnosis
Influenza-like illness (ILI) emergency department (ED) visits (defined as presence of fever AND cough or sore throat OR mention of influenza). The lines show the proportion of daily ED visits for ILI comparing four influenza seasons. The recent increase in ILI visits (highlighted in the circle) is unusual for this time of year.

**Caution:** Do not over interpret the downturn as this does not mean the pandemic has peaked. Day of the week variation occurs in ED visits where lower numbers are seen on weekends.
Ratio of Pneumonia to Total ED Visits, NYC
GUIDANCE FOR THIS PANDEMIC
GUIDANCE NOW REFLECTS WIDESPREAD COMMUNITY TRANSMISSION

• All New Yorkers – especially healthcare workers – must act as if they have been potentially exposed to COVID-19

• Anyone with confirmed and possible COVID-19 must stay at home and self-isolate

• EVERYONE told to self-monitor daily

• Emphasis on social distancing

• Continue individual measures
  – Hand hygiene
  – Cover your cough
  – Self-isolation at home if sick
SOCIAL DISTANCING, SELF-ISOLATION, AND SELF-MONITORING

• All New Yorkers should practice social distancing – stay at home to the extent possible and only leave for essential tasks.

• All New Yorkers should consider themselves as possibly exposed and should self-monitor for COVID-19 symptoms
  – Especially healthcare workers and people who have had close contact with a person with possible or confirmed COVID-19

• People with possible or confirmed COVID-19 should be instructed to self-isolate in a private residence
  – Continue for 7 days following symptom onset OR 72 hours after being consistently afebrile without use of antipyretics AND respiratory symptoms are resolving, whichever is longer
STEPS TO TAKE NOW

• Priority: prevent nosocomial outbreaks
• Review NYC Health Department guidance (updated regularly)
• Educate and train staff (e.g., Just in time trainings for infection control and PPE)
• Take stock of PPE and environmental supplies
• Create and disseminate risk communication to patients, staff, families/visitors
STEPS TO TAKE NOW

- Implement plans NOW for:
  - Patients surge
  - Healthcare staff self-monitoring and incentivizing staff to stay home if sick
  - Visitor management
  - Handling staff shortages – contingency staffing, cross training
  - Altered crisis standards of care
  - Environment protocols
STEPS TO TAKE NOW

• Implement triage protocols
  – Options to evaluate patients remotely
  – Screen at entry for symptoms
  – Set up alternate sites for COVID-19 triage
  – Triage of ICU beds and ventilators
• Cancel elective admissions and procedures
• Implement telemedicine services
CHECK GUIDANCE AND RESOURCES OFTEN

- NYC Health Department Provider Webpage
  https://www1.nyc.gov/site/doh/providers/health-topics/novel-respiratory-viruses.page

- CDC Novel Coronavirus Webpage

- Daily updated case count and maps, Johns Hopkins University
  https://gisanddata.maps.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd40299423467b48e9ecf6
WHO TO CALL

In New York City:
Call the NYC Health Department’s Provider Access Line (PAL)
866-NYC-DOH1 or 866-692-3641
Available 24/7

In New York State:
Notify your County Health Department
Use link to find your County’s phone number:
https://www.health.ny.gov/contact/contact_information/
THANK YOU!