Covid-19 Evidence Digest 3.18.2020
NYC Health and Hospitals Office of Population Health

[CDC: Severe Outcomes Among Patients with Coronavirus Disease 2019 (COVID-19) United States, February 12- March 16](#)
**Bottom Line:** The risk for serious disease and death in COVID-19 among persons in the United States increases with age. Persons of all ages and communities can take actions to help slow the spread of COVID-19 and protect older adults.

**Details:** This report shares early data from COVID-19 infections in the United States.  As of March 16, 2020, 4,226 COVID-19 cases were reported in 49 states.  Patients who were older were more likely to need hospitalization, more likely to need ICU care, and more likely to die from COVID-19 infection.  There have been no deaths among patients 19 and younger; the death rate for those with COVID-19 infection aged 20-44 is 0.1-0.2%, for those 45-54 is 0.5-0.8%, for those 55-64 is 1.4-2.6%, for those 65-74 is 2.7-4.9%, for those 75-84 is 4.3-10.5%, and for those 85+ is 10.4-27.3%.

**Key Takeaways:**
- Social distancing is recommended for all ages to slow the spread of the virus, protect the health care system, and help protect vulnerable older adults.

- Older adults should maintain adequate supplies of nonperishable foods and at least a 30-day supply of necessary medications, take precautions to keep space between themselves and others, stay away from those who are sick, avoid crowds as much as possible, avoid cruise travel and nonessential air travel, and stay home as much as possible to further reduce the risk of being exposed.


[Coronavirus: Why You Must Act Now](#)
**Bottom Line:** On a given day, the true number of COVID-19 cases in the community is likely at least 10 times higher than the number of officially reported cases. Because of this lag, strict social distancing must be adopted as early as possible to stem overall disease spread and decrease fatality rates.

**Details:** Officially reported cases of COVID-19 will lag the true number of cases in the community due to delays in patients seeking care and the time taken for a COVID-19 test to be completed. This causes official case numbers to lag true cases by up to 2 weeks. On a given day during the COVID-19 outbreak, true cases are likely 10 times higher than officially reported cases.

The rate of new cases in a region affects the COVID-19 mortality rate, which increases as health systems become overwhelmed. Countries that responded quickly to COVID-19 are seeing a fatality rate of 0.5% - 0.9% (S Korea, China excluding Hubei). Countries that are overwhelmed will have a fatality rate between 3% - 5%. To prevent overwhelming the health system, the most effective measure has been shown to be social distancing. Earlier and stricter social distancing measures are leading to decreased spread and lower fatality rates.

**Key takeaways**

- True cases of COVID-19 may be >10 times higher than official reports
- Official numbers of COVID-19 cases have lagged true numbers by approximately 2 weeks
- Countries that responded quickly to COVID-19 are seeing a fatality rate of 0.5% - 0.9%; countries that responded slowly have a fatality rate between 3% - 5% due to overwhelmed health systems

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## [Impact of non-pharmaceutical interventions (NPIs) to reduce COVID19 mortality and healthcare demand](#)

**Bottom Line**: The most effective way to reduce COVID-19 transmission requires a coordinated combination of multiple different public health measures intended to prevent the spread of disease. Mitigation strategies might reduce peak healthcare demand by 2/3 and deaths by half, but still likely result in hundreds of thousands of deaths and health systems being overwhelmed.  Suppression strategies are likely the preferred policy option but offer many challenges as well, because they must be sustained over many months.

**Details:** Researchers from Imperial College London's COVID-19 Response Team used simulation models to assess the implications of different public health interventions to fight COVID-19 in the US.  If nothing is done to address the epidemic, 81% of US population is predicted to be infected, and 2.2 million deaths are predicted in the US.
Two strategies in reducing COVID-19 transmission were considered:

- **Mitigation** - public health strategy to SLOW epidemic spread
    - Short-term (~3 months) policies may reduce deaths by half and reduce peak healthcare demands by two-thirds.
    - Health systems will still be overwhelmed.
    - 1.1 to 1.2 million deaths still predicted in the US.
- **Suppression** - public health strategy to STOP epidemic spread
    - Minimally requires a combination of social distancing of the entire population, home isolation of cases and either household quarantine of family members of those infected or school closures.
    - Needs to be maintained – at least intermittently - for as long as the virus is circulating in the human population, or until a vaccine becomes available.
    - There may be a resurgence of new infections when these interventions are relaxed; governments can choose to intermittently loosen and tighten restrictions based on hospital capacity.

Whatever strategy is chosen, a multilayered approach using multiple public health interventions is necessary.

**Key Takeaways:**
- The most effective mitigation strategy would still overwhelm the US health system, with estimates exceeding hospital bed capacity by 8 times the amount of critical care beds available and predicting over 1 million deaths.

- A policy for effective suppression is population-wide social distancing combined with home isolation of cases, quarantine of households where positive cases are found, and school and university closure.

- A long-term suppression strategy with intermittent loosening of regulations based on hospital capacity is likely the most effective strategy to fight COVID-19, but the ramifications of such a disruptive strategy employed for such a long period of time is unknown.

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## [Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-CoV-1](#)

**Bottom line:** COVID-19 can be transmitted through the air via aerosolized particles for hours after the virus is released to the air and can be transmitted from surfaces like plastic and stainless steel for days.

**Details:** This study compares the novel coronavirus with the virus that causes SARS. It found that novel coronavirus remains in the air via aerosolized particles and remains on different surfaces such as plastic and steel for up to 72 hours, though the amount of virus goes down over time. This is similar to how SARS spreads.

**Key Takeaways:**
- This study challenges current guidance from the CDC[1] and many NYC health systems around what is the most appropriate level of protection for health care providers to use when interacting with patients suspected of having COVID-19. Study results would support the use of N95 Masks, which protect against aerosolized particles; surgical masks would not give adequate protection against aerosolized particles.
- This study supports action towards greatly increasing the production and distribution of N95 masks to hard-hit areas such as NYC, to protect health care workers.

1. [https://www.cdc.gov/coronavirus/2019-ncov/infection-control/control-recommendations.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fhcp%2Finfection-control.html](https://www.cdc.gov/coronavirus/2019-ncov/infection-control/control-recommendations.html)

## [Substantial undocumented infection facilitates the rapid dissemination of novel coronavirus (SARS-CoV2)](#)

**Bottom Line:** This model predicts that people many people in China who had very mild or no symptoms, and therefore did not get tested for COVID-19, were still contagious, and greatly contributed to the rapid spread of COVID-19 in China before strict travel regulations and other control measures were put in place. Up to 79% of documented COVID-19 infections were caused by infections that had not been confirmed through testing.

**Details:** An "undocumented" coronavirus infection occurs in a person who has COVID-19, but does not get tested. This could be due to lack of testing availability, or due to the person having such mild symptoms that they do not notice they are sick.
 Li et al developed a model to estimate the proportion of undocumented COVID-19 cases in China from January 10, 2020 to January 23, 2020 (the time period before Wuhan was placed under lockdown and strict travel regulations were enacted). The model suggests that prior to January 23, only 14% of total COVID-19 infections in China were documented; 86% were undocumented, likely representing mild cases with little to no symptoms. **The model predicted that undocumented infections were the infection source for 79% of documented cases.** Viral shedding (which can transmit the virus person to person) may occur for 3 days before an individual develops any illness symptoms.

**Key takeaways:**

- Increased testing is needed to reduce the proportion of undocumented infections.
- Aggressive control measures that include limiting the mobility of those with mild or no symptoms (undocumented infections) are needed to slow and stop the transmission of COVID-19.