

Coronavirus: What You Need to Know

SCOTT CURRY, MD

CASSANDRA SALGADO, MD, MS, FIDSA, FSHEA

MEDICAL UNIVERSITY OF SOUTH CAROLINA

Disclosure

Scott Curry, MD

Research Grant with Cepheid

Consultant with Ferring Pharmaceuticals

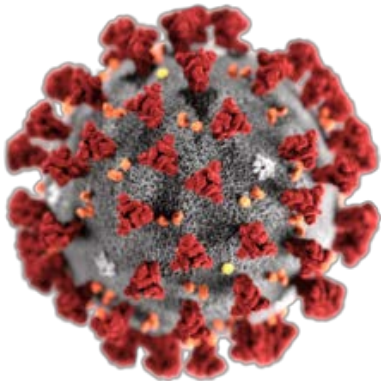
Cassandra Salgado, MD, MS, FIDSA, FSHEA

No relevant financial relationships to disclose

We love acronyms. Don't get lost:

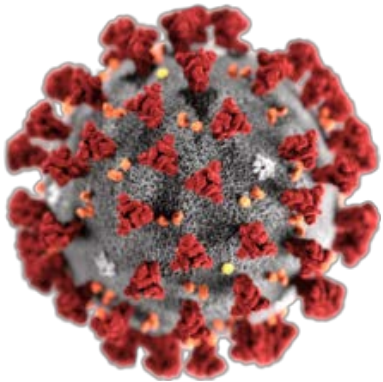
What I say	What I mean
AIIR	Airborne infection isolation room
PUI	Patient under investigation
COVID-19	Disease caused by novel coronavirus
ILI	Influenza-like illness
SARS-CoV-2	New name for the virus that causes COVID-19
PPE	Personal protective equipment

Background



- ▶ An outbreak of respiratory disease caused by a novel (new) coronavirus that was first detected in Wuhan City, Hubei Province, China
 - ▶ The virus has been named “**SARS-CoV-2**” and the disease it causes has been named “coronavirus disease 2019” (abbreviated “**COVID-19**”)
- ▶ On January 30, 2020, the International Health Regulations Emergency Committee of the World Health Organization declared the outbreak a **public health emergency of international concern**. On January 31, 2020, Health and Human Services Secretary Alex M. Azar II declared a public health emergency for the United States

Source and Spread



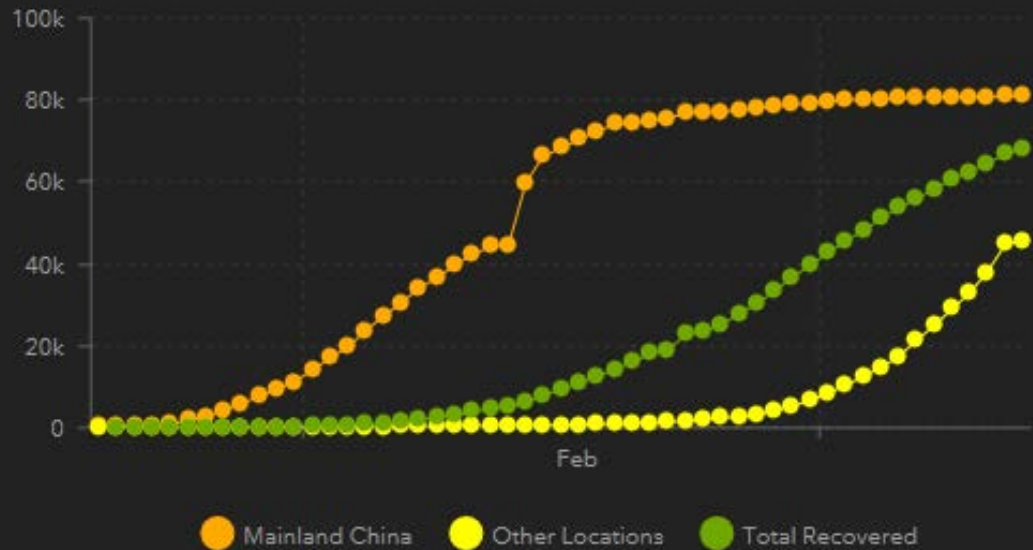
- ▶ Coronaviruses are a large family of viruses that are common in many different species of animals, including camels, cattle, cats, and bats. Rarely, animal coronaviruses can infect people and then spread between people
 - ▶ SARS-CoV, MERS-CoV, **SARS-CoV-2**
- ▶ Early on, many of the patients in the COVID-19 outbreak in Wuhan, China had a link to a large seafood and live animal market, suggesting **animal-to-person spread**. Later, a growing number of patients reportedly did not have exposure to animal markets, indicating **person-to-person spread**
- ▶ Person-to-person spread has been reported outside China, including in the United States. **Sustained person-to-person spread** in the community is occurring in China and **apparent community spread** is occurring in other countries
 - ▶ Some people have been infected who are not sure how or where they became infected

Global Situation

Total Confirmed
126,660

Total Deaths
4,641

Total Recovered
68,305



Situation in United States

Total Confirmed
1,321

Total Deaths

38

30 deaths
Washington US

4 deaths
California US

2 deaths
Florida US

1 deaths
New Jersey US

1 deaths
South Dakota US

Total Recovered

8

2 recovered
California US

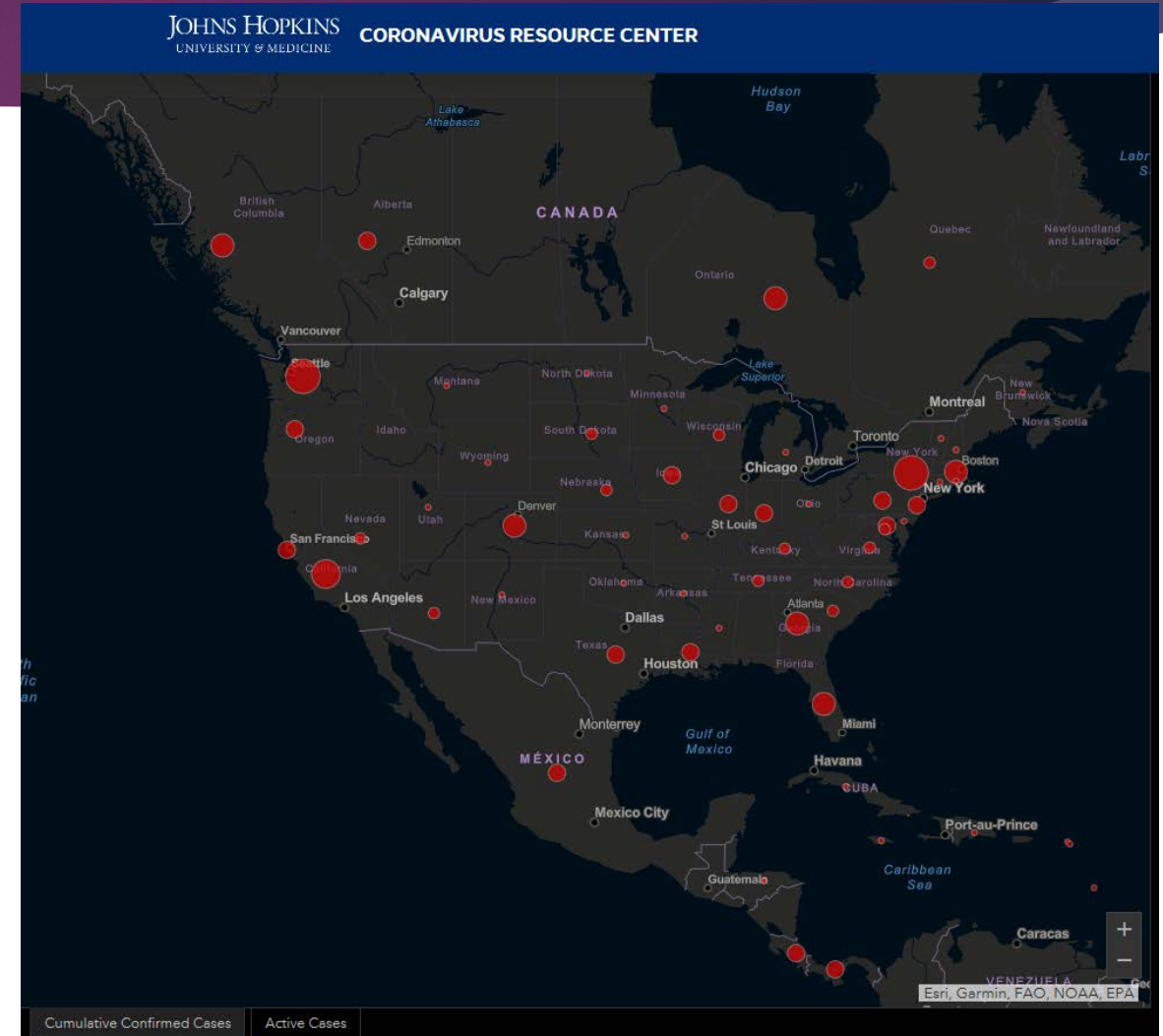
2 recovered
Illinois US

1 recovered
Arizona US

1 recovered
Massachusetts US

1 recovered
Washington US

1 recovered
Wisconsin US



Situation at MUSC

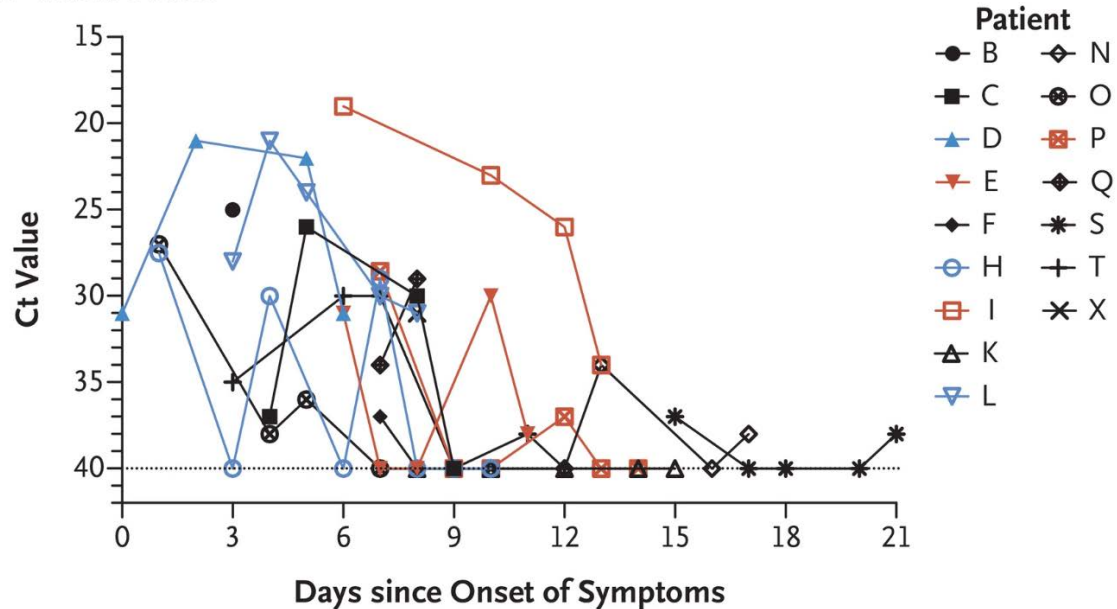
- ▶ 10 COVID-19 cases in South Carolina
- ▶ On March 6th, a confirmed case of COVID-19 was identified at MUSC. The patient had relevant travel history
 - ▶ The patient was evaluated promptly for symptoms and testing specimens were obtained. There was initially a delay in approval for running the test but this was ultimately approved when the CDC broadened its PUI definition
 - ▶ The patient has been compliant with self-quarantine and has been in regular communications with public health authorities
 - ▶ Potential contacts, including healthcare workers, are being identified and informed of further instructions as directed by public health
- ▶ MUSC has admitted 5 patients where COVID-19 was being considered, all have been tested, 2 were negative, 2 are pending, and one is being sent to DHEC PHL

How Coronavirus Spreads

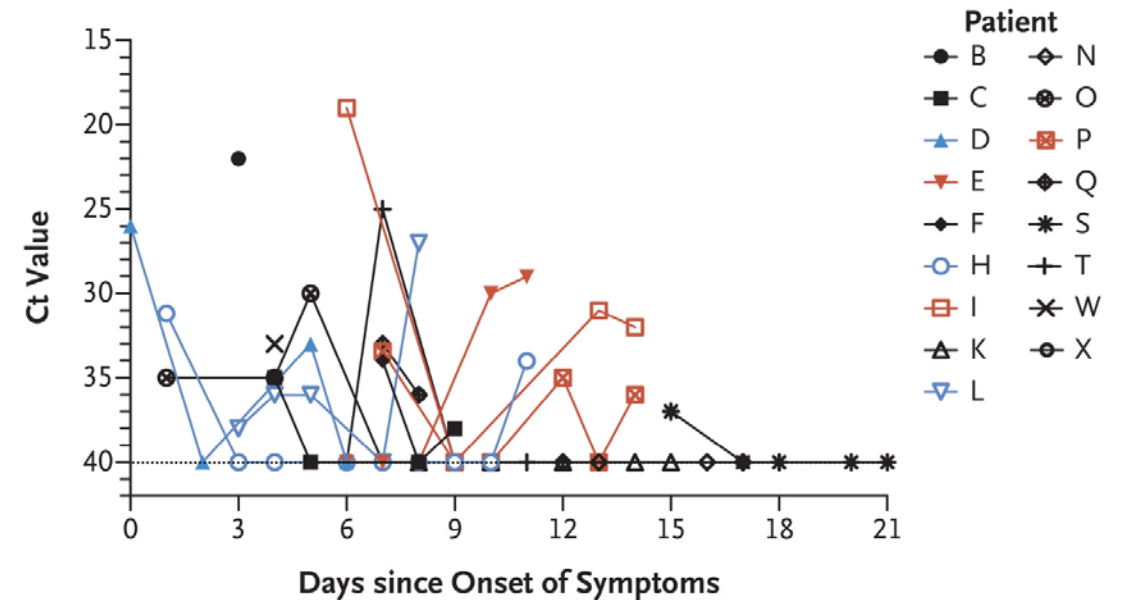
- ▶ Current understanding about how SARS-CoV-2 spreads is largely based on what is known about similar coronaviruses
- ▶ The virus is thought to spread **mainly from person-to-person**
 - ▶ Between people who are in **close contact** with one another (within about 6 feet)
 - ▶ Through **respiratory droplets** produced when an infected person coughs or sneezes (droplets are inhaled)
- ▶ The virus may spread from **contact with infected surfaces or objects** (touching own mouth, nose, or eyes), but this is not thought to be the main way the virus spreads
- ▶ Can someone spread the virus without being sick?
 - ▶ People are thought to be **most contagious when they are most symptomatic**
 - ▶ Some spread might be possible before people show symptoms; but this is not thought to be the main way the virus spreads
- ▶ How easily does the virus spread?
 - ▶ SARS-CoV-2 seems to be **spreading easily and sustainably in the community** ("community spread") in affected geographic areas

Viral load detected in nasal and throat swabs from 14 COVID-19 patients in Guangdong Province, China

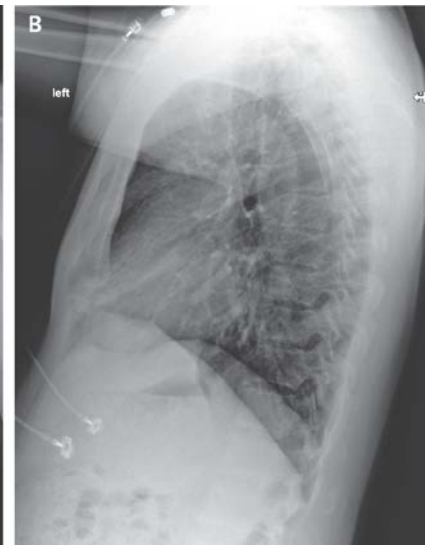
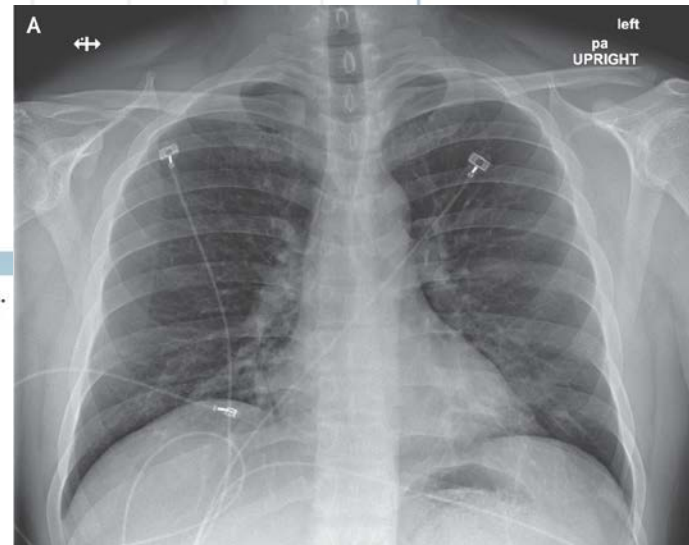
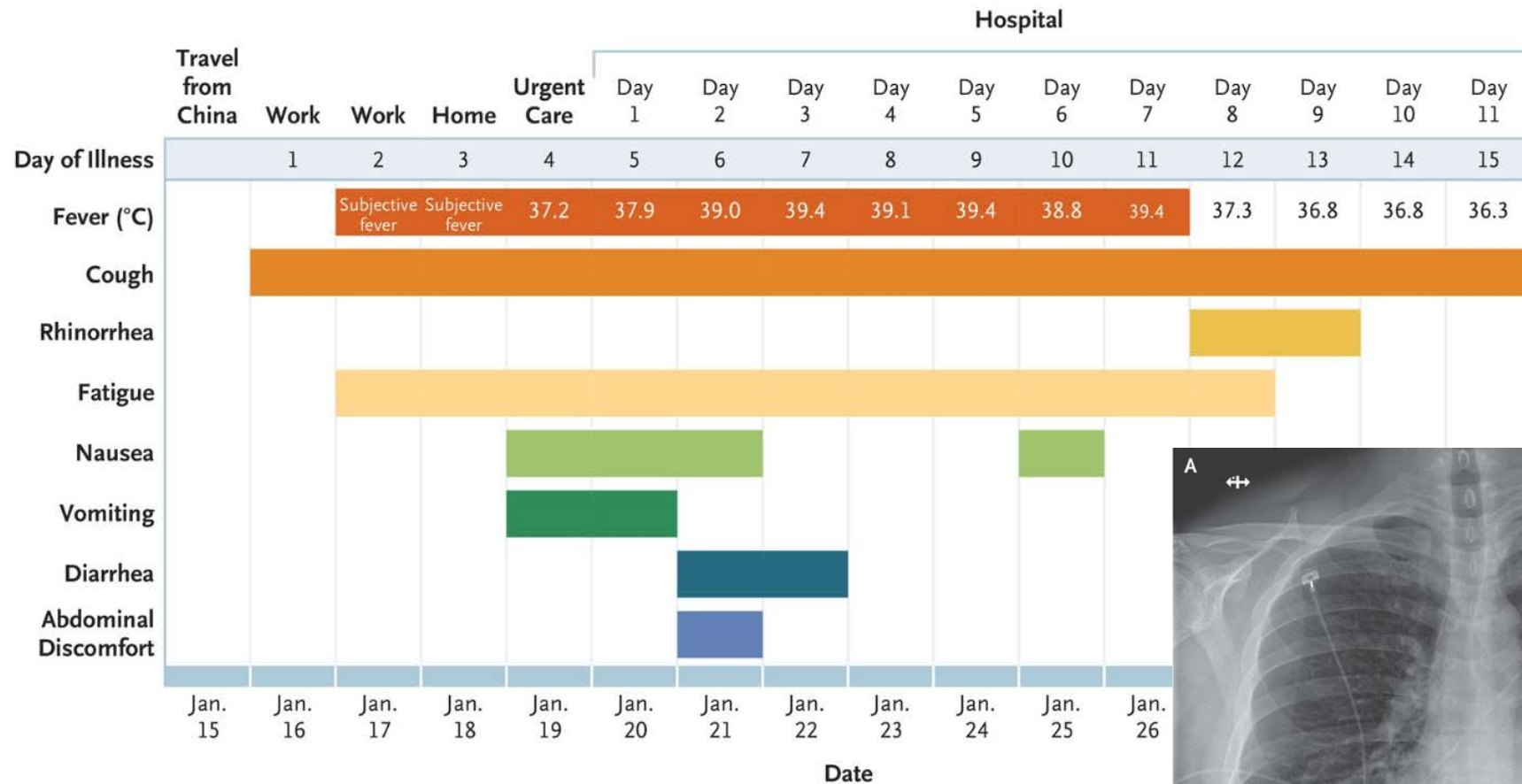
A Nasal Swabs



B Throat Swabs

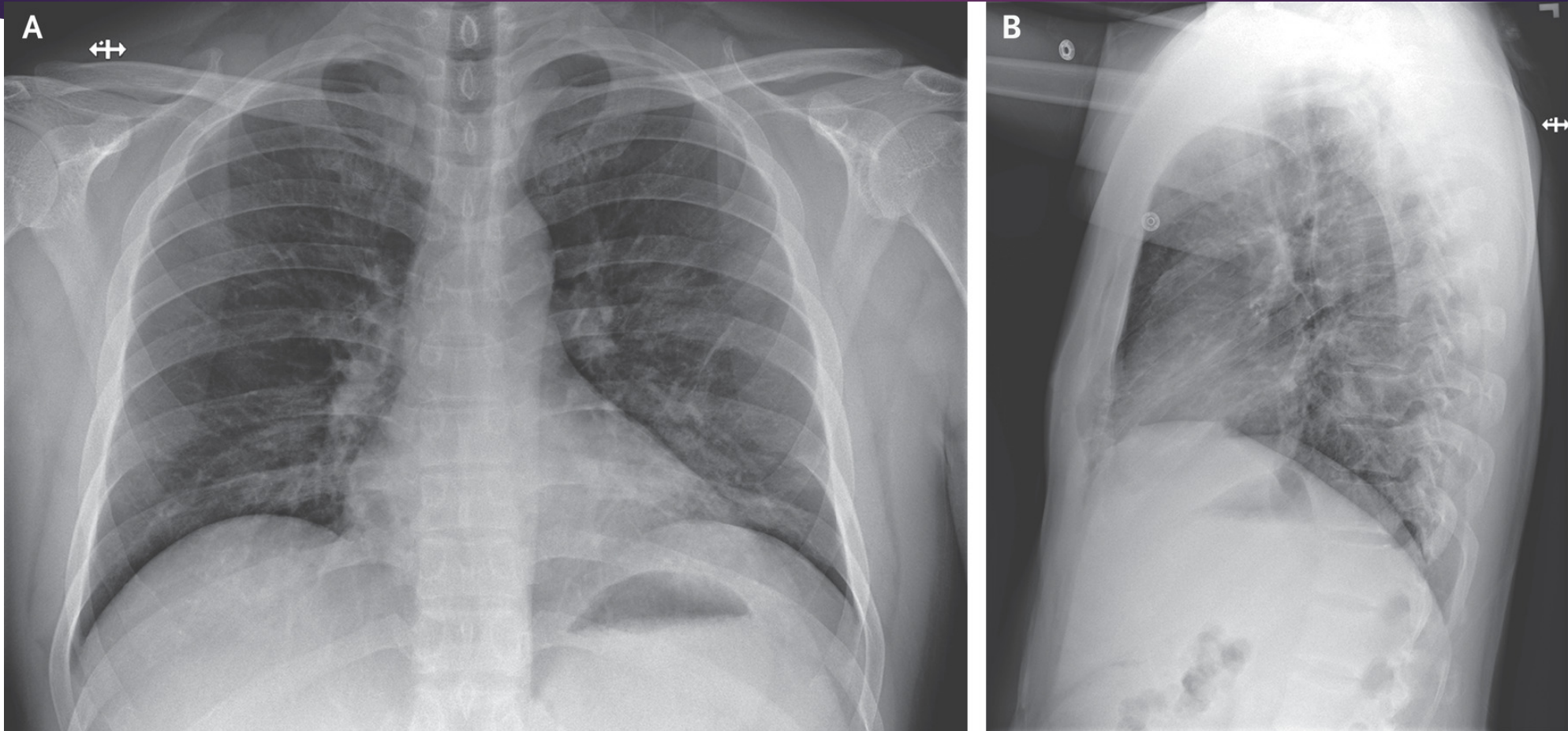


First case of COVID-19 in US



Holshue M, DeBolt C, Lindquist S, et al. First Case of 2019 Novel Coronavirus in the United States. *N Engl J Med*. January 31, 2020.

First case of COVID-19 in US: Illness day 10, Hospital Day 6



First case of COVID-19 in US

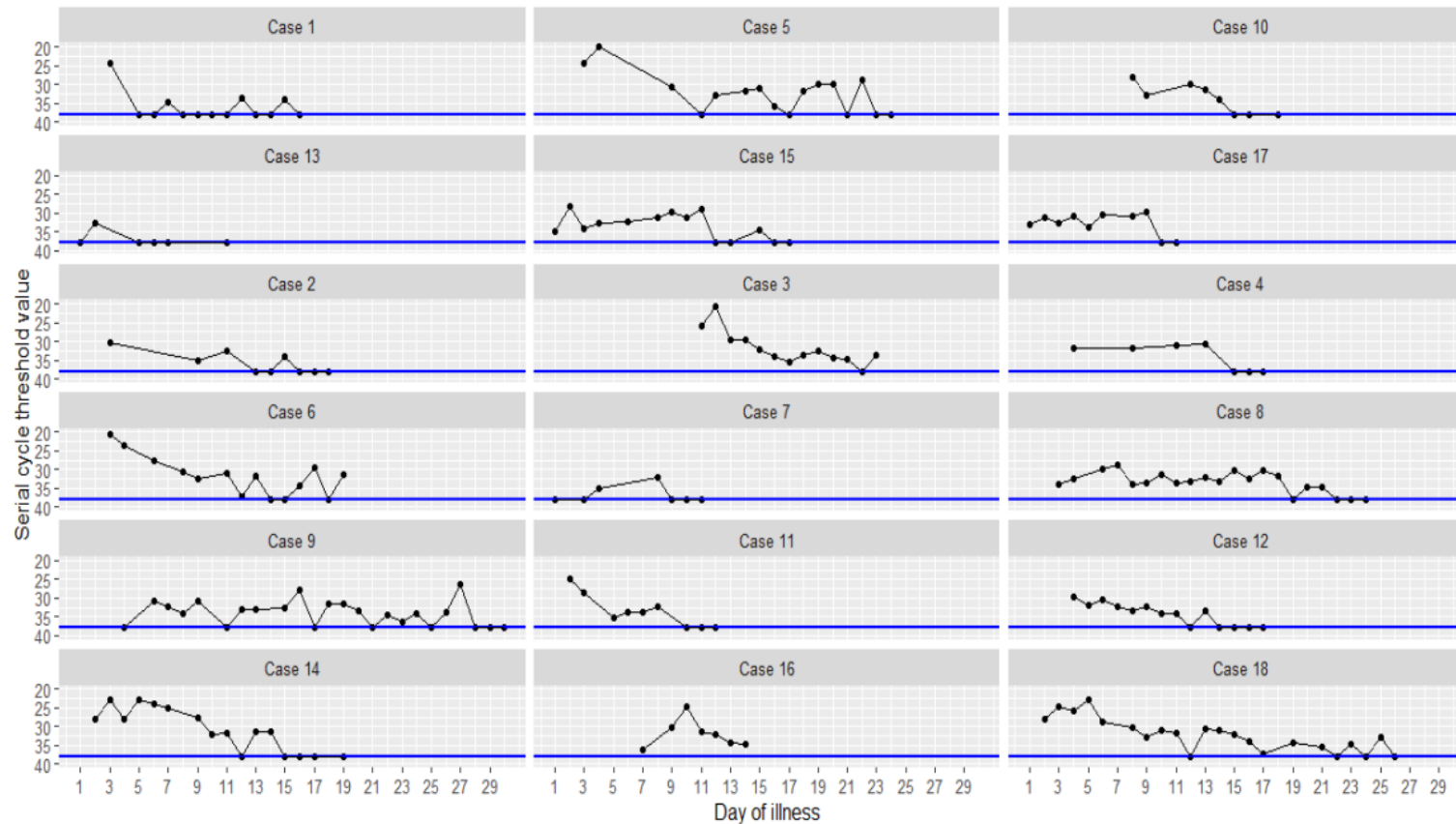
Table 2. Results of Real-Time Reverse-Transcriptase–Polymerase-Chain-Reaction Testing for the 2019 Novel Coronavirus (2019-nCoV).*

Specimen	Illness Day 4	Illness Day 7	Illness Day 11	Illness Day 12
Nasopharyngeal swab	Positive (Ct, 18–20)	Positive (Ct, 23–24)	Positive (Ct, 33–34)	Positive (Ct, 37–40)
Oropharyngeal swab	Positive (Ct, 21–22)	Positive (Ct, 32–33)	Positive (Ct, 36–40)	Negative
Serum	Negative	Negative	Pending	Pending
Urine	NT	Negative	NT	NT
Stool	NT	Positive (Ct, 36–38)	NT	NT

* Lower cycle threshold (Ct) values indicate higher viral loads. NT denotes not tested.

Case series of 18 patients diagnosed in Singapore: Duration of Shedding

eFigure 3A. Individual Plot of Serial Cycle Threshold (Ct) Values by Day of Illness for Each Patient



4/8 patients
tested (50%) had
detectable virus
in stool, too

Young BE, Ong SWX, Kalimuddin S et al. Epidemiologic Features and Clinical Course of Patients Infected With SARS-CoV-2 in Singapore. *JAMA*. 2020 Mar 3.

Six patients (Case 1, 5, 10, 13, 15 and 17) required supplemental oxygen, while the other 12 patients did not require supplemental oxygen. Cases 1, 5, 10, 15 and 15 also received lopinavir-ritonavir. Negative PCR results (target not detected) are graphed as a Ct value of 38 for ease of viewing and interpretation (blue horizontal blue line). Cycle Threshold Value corresponds with the number of copies of the virus in a biological sample, in an inversely proportional and exponential manner.

Air, Surface Environmental, and Personal Protective Equipment Contamination by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) From a Symptomatic Patient

Table 1. Sampling Time Points in Relation to Patient Illness and Clinical Cycle Threshold Values

Patient	Days of illness when samples were collected	Presence of symptoms during sampling	Symptoms	Disease severity ^a	Before/after routine cleaning	Cycle threshold value from clinical samples ^b
A	4, 10	Yes, both days	Cough, fever, shortness of breath	Moderate	After	31.31 (day 3); 35.33 (day 9)
B	8, 11	Yes on day 8; asymptomatic on day 11	Cough, fever, sputum production	Moderate	After	32.22 (day 8); not detected (day 11)
C	5	Yes	Cough	Mild	Before	25.69 (day 4)

^a Disease severity was considered moderate if there was lung involvement (opacities on chest radiograph) and severe if patient required supplemental oxygen therapy.

^b Clinical samples were either nasopharyngeal swabs or sputum samples if patient could produce sputum. The most recent result prior to the

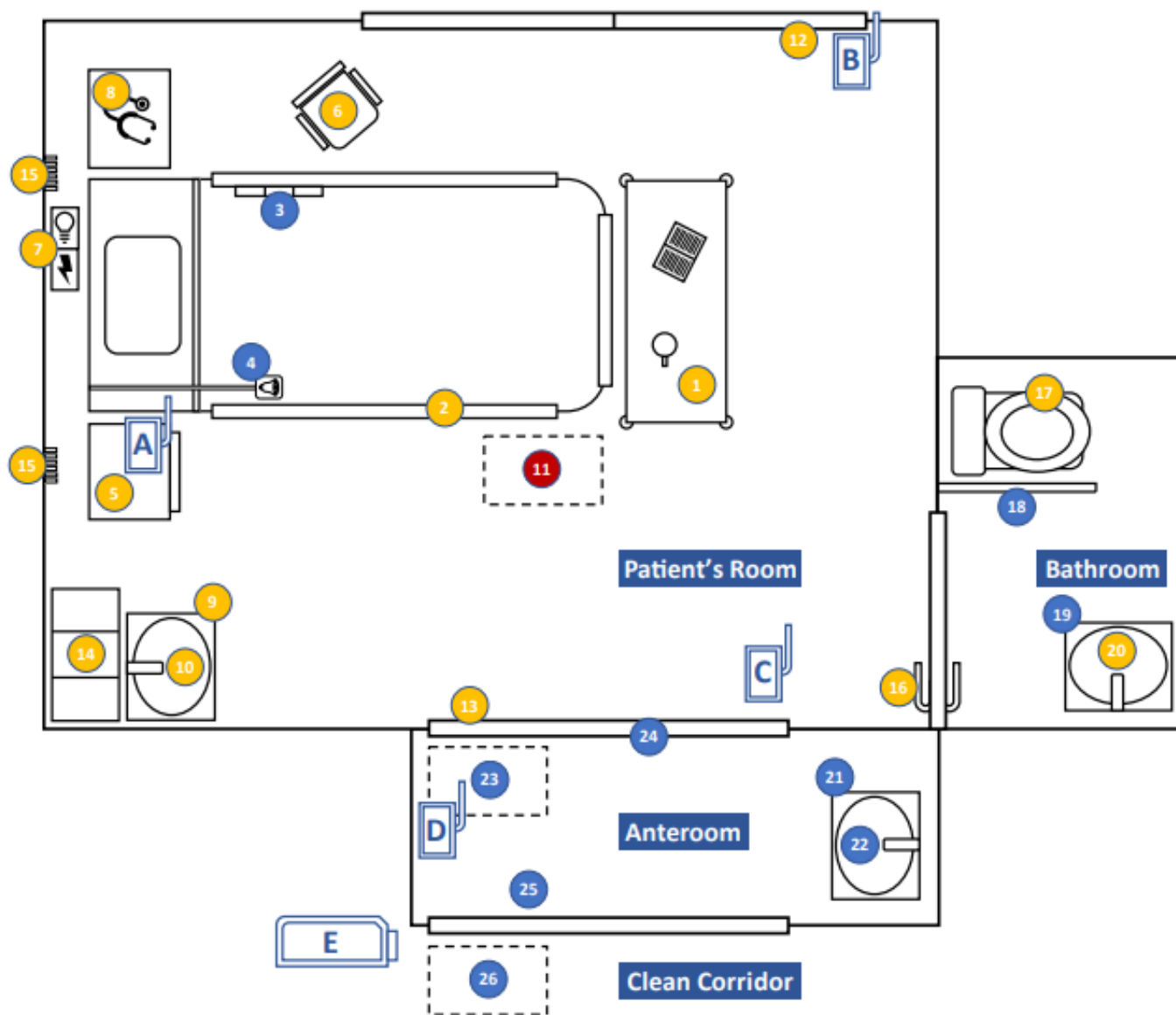
environmental sampling was recorded. Cycle threshold refers to the number of cycles required for the fluorescent signal to cross the threshold in reverse transcriptase–polymerase chain reaction; a lower cycle threshold value indicates a higher viral load.

Air sampling: 4 hours at 5L/min in room and anteroom
1 room sampled before, 2 after cleaning with 5000 ppm sodium dichloroisocyanurate

Air, Surface Environmental, and Personal Protective Equipment Contamination by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) From a Symptomatic Patient

Staff PPE sites		
Upper front part of gown	0/2	
Lower front part of gown	0/2	
Front surface of face visor mask	0/2	
Front surface of N95 mask	0/2	
Surface of front of shoes	1/2	38.96

All air sampling was NEGATIVE inside and outside room
All post-terminal clean samples NEGATIVE



Sites ^a	Positive samples (patient C; before routine cleaning) ^b	Cycle threshold value ^c
Environmental sites^d		
Patient's room		
1. Cardiac table, including handle	1/1	35.44
2. Entire length of bed rail	1/1	37.95
3. Control panel on bed	0/1	
4. Call bell attached to bed	0/1	
5. Locker with hand slot	1/1	36.21
6. Chair	1/1	37.07
7. Light switches behind bed	1/1	37.54
8. Stethoscope	1/1	38.24
9. Sink, external rim	1/1	35.54
10. Sink, internal bowl	1/1	36.79
11. Floor	1/1	30.64
12. Glass window in room	1/1	35.79
13. Glass door interior	1/1	35.71
14. PPE storage area over sink	1/1	34.89
15. Air outlet fan	2/3	32.96, 37.94
Toilet area		
16. Door handle	1/1	35.83
17. Toilet bowl, surface	1/1	37.75
18. Hand rail	0/1	
19. Sink, external rim	0/1	
20. Sink, internal bowl	1/1	37.11
Anteroom		
21. Sink, external rim	0/1	
22. Sink, internal bowl	0/1	
23. Floor	0/1	
24. Glass door, room side	0/1	
25. Glass door, corridor side	0/1	
Corridor outside room		
26. Floor	0/1	
Total, No. (%)	17/28 (61)	

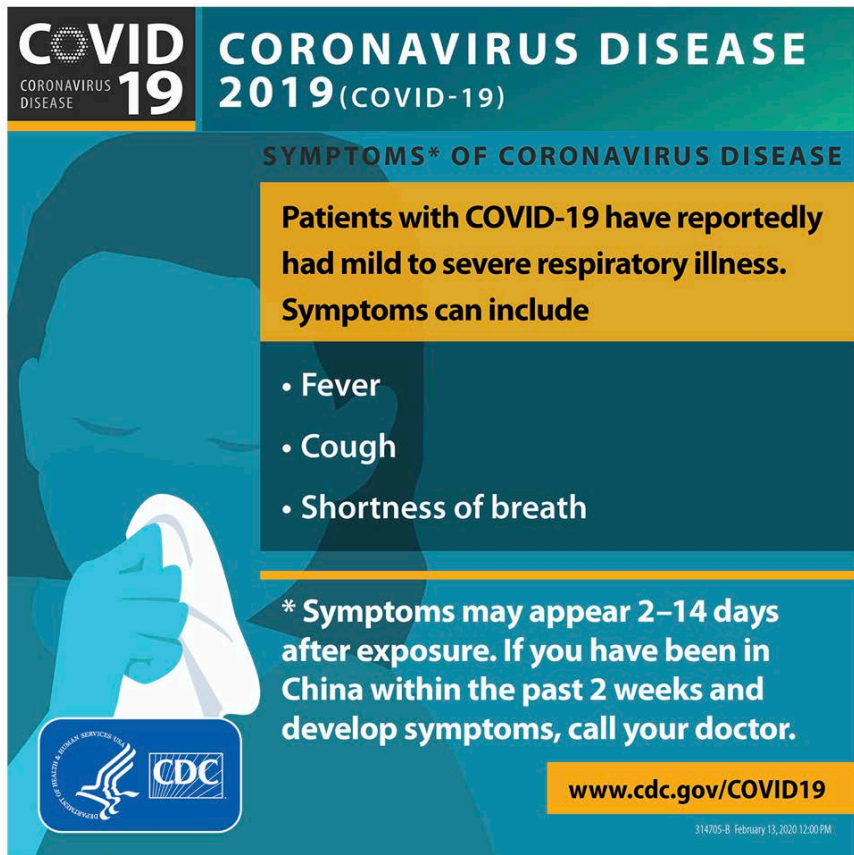
Preliminary conclusions from viral dynamics and field studies

- ▶ COVID-19 is not likely spread by airborne route *strictu sensu*
- ▶ Surface contamination related to aerosols, droplets and stool = widespread in patient rooms
- ▶ NP swabs are superior to throat swabs and saliva for clinical diagnostics
- ▶ Like other + ssRNA enveloped viruses, SARS-CoV-2 is readily inactivated by most disinfectants used in hospitals and ethanol hand sanitizer
- ▶ Risk to HCWs is probably more from:
 - ▶ fomite contamination
 - ▶ errors in doffing
 - ▶ inoculation of mucus membranes (eye protection)
 - ▶ And NOT from inhalation of infectious virions more than 6 feet from patients
- ▶ The significance of prolonged RNA shedding detectable by PCR after recovery = unknown (common in other RNA viruses like influenza)

How Infectious is Coronavirus?

- ▶ R_0 describes the **average number of new infections that an infectious person can generate** in a population that was not previously exposed to the virus
 - ▶ R_0 estimates, however, can vary depending on numerous biologic, social behavioral, and environmental factors, and must be interpreted with caution
- ▶ WHO estimates the global R_0 associated with **Coronavirus at 1.4 to 2.5**
 - ▶ Some studies for the virus in China have suggested R_0 ranges from 1.4 to 6.49, an average of 3.28 and a median of 2.79
- ▶ WHO estimates the annual epidemic R_0 for **Influenza is 1.3**
- ▶ WHO estimates MERS-CoV R_0 ranges from 0.45 (Saudi Arabia) to 8.1 (South Korea)
- ▶ WHO estimates SARS-Co-V R_0 ranged from 2.0 to 4.0

Illness and Severity



COVID 19
CORONAVIRUS DISEASE


CORONAVIRUS DISEASE 2019 (COVID-19)

SYMPTOMS* OF CORONAVIRUS DISEASE

Patients with COVID-19 have reportedly had mild to severe respiratory illness. Symptoms can include

- Fever
- Cough
- Shortness of breath

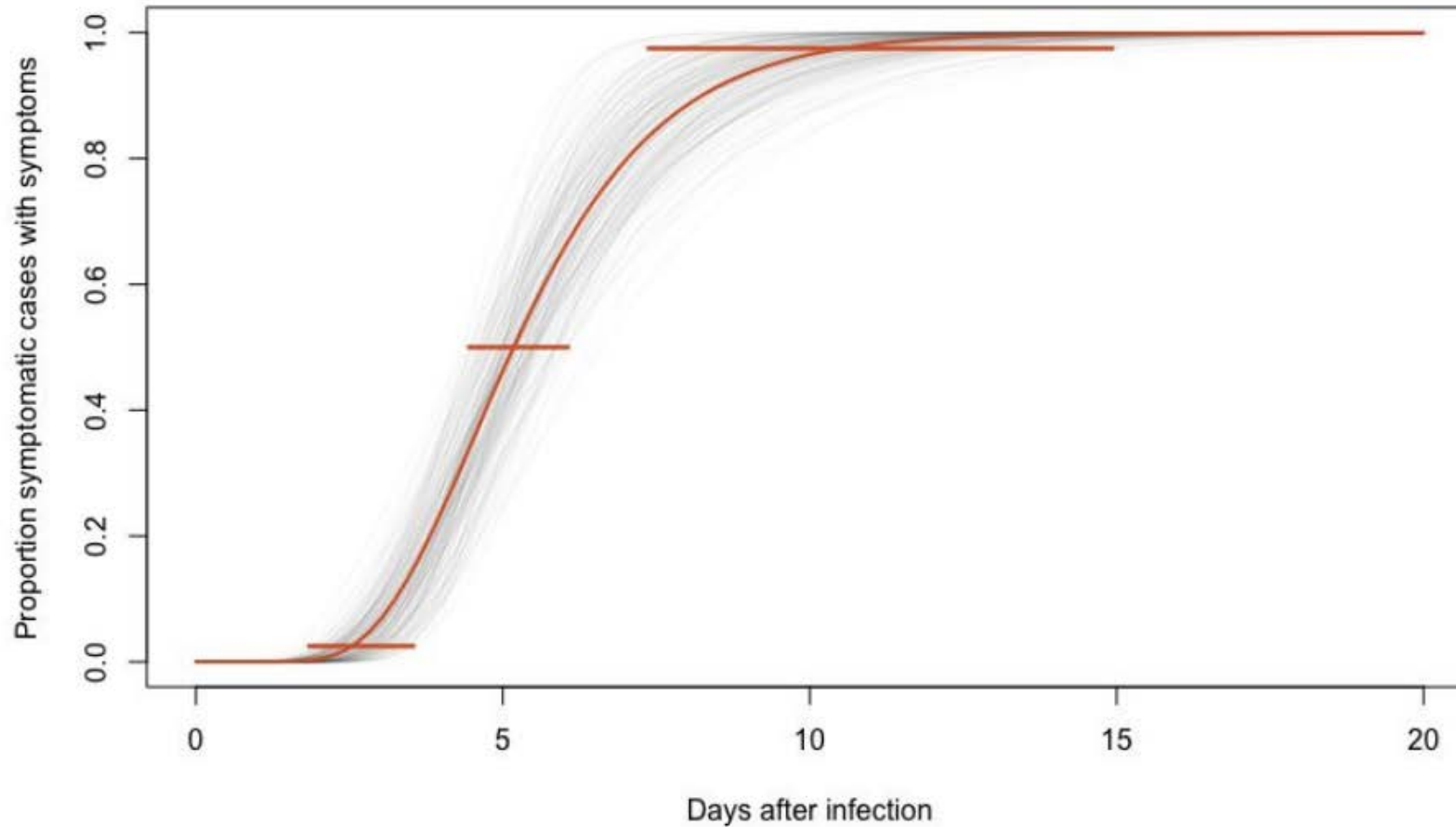
* Symptoms may appear 2–14 days after exposure. If you have been in China within the past 2 weeks and develop symptoms, call your doctor.

 www.cdc.gov/COVID19

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- ▶ The complete clinical picture with regard to COVID-19 is not fully understood
- ▶ **Median Incubation period remains short** (3 to 5 days) but symptoms may appear 2 to 14 days after exposure
- ▶ Illness has ranged from mild (80%) to severe, including illness resulting in death
 - ▶ **Mortality rate for COVID-19 has been 2.0% to 3.0%**, with higher risks among the elderly and those with chronic medical conditions
 - ▶ MERS-CoV mortality 30%, SARS-CoV mortality 10%, Influenza mortality <1%

Incubation period: 5.2 days (95% CI:4.4, 6.0)



Absence of fever in COVID-19 is not uncommon

Clinical Characteristics of 1099 COVID-19 patients in 552 hospitals in 30 provinces in mainland China through Jan 29, 2020

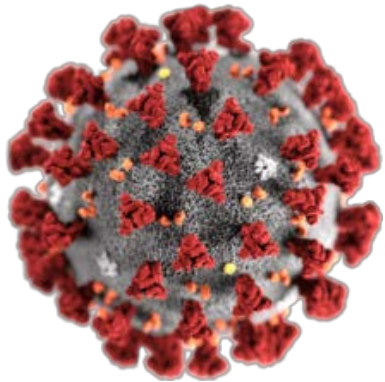
Characteristic	All patients n=1099	Death, ICU admission or mechanical ventilation N=67
Age (median, IQR)	47.0 (35.0-58.0)	63.0 (53.0-71.0)
Current smoker	108/913 (11.8 %)	17/66 (25.8 %)
Fever on admission	975/1099 (88.7%)	59/67 (88.1%)
Median highest temperature	38.3 (37.8-38.9)	38.5 (38.0-39.0)
<37.5 °C	92/926 (9.9%)	3/54 (5.6%)
37.5-38.0 °C	286/926 (30.9%)	20/54 (37%)
38.1-39.0 °C	434/926 (46.9%)	21/54 (39%)
>39.0 °C	114/926 (12.3%)	10/54 (19%)

Influenza-like illness vs just another URI?

Presenting symptoms of 1099 COVID-19 patients in 552 hospitals in 30 provinces in mainland China through Jan 29, 2020

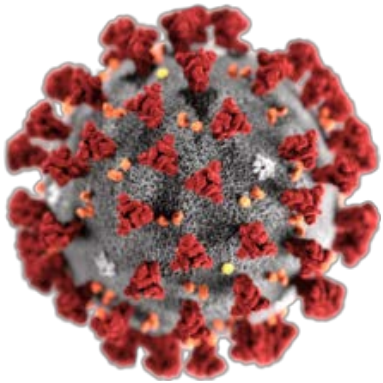
Symptoms	All patients n=1099	Death, ICU admission or mechanical ventilation N=67
Conjunctivitis	9 (0.8%)	0
Rhinorrhea	53 (4.8%)	2 (3%)
Headache	150 (13.6%)	8 (12%)
Cough	745 (67.8%)	46 (69%)
Sore throat	153 (13.9%)	6 (9.0%)
Sputum production	370 (33.7%)	20 (30%)
Fatigue	419 (38.1%)	22 (33%)
Hemoptysis	10 (0.9%)	2 (3%)
Shortness of breath	205 (18.7%)	36 (54%)
Nausea or vomiting	55 (5.0%)	3 (5%)
Diarrhea	42 (3.8%)	4 (6%)
Myalgia or arthralgia	164 (14.9%)	6 (9%)

Lethality of COVID-19 (China CDC)



Baseline characteristics	Confirmed cases, N (%)	Deaths, N (%)	Case fatality rate, %
Overall	44,672	1,023	2.3
Age, years			
0–9	416 (0.9)	–	–
10–19	549 (1.2)	1 (0.1)	0.2
20–29	3,619 (8.1)	7 (0.7)	0.2
30–39	7,600 (17.0)	18 (1.8)	0.2
40–49	8,571 (19.2)	38 (3.7)	0.4
50–59	10,008 (22.4)	130 (12.7)	1.3
60–69	8,583 (19.2)	309 (30.2)	3.6
70–79	3,918 (8.8)	312 (30.5)	8.0
>80	1,408 (3.2)	208 (20.3)	14.8

What Might Happen



- ▶ *"More cases are likely to be identified in the coming days, including more cases in the United States. It's also likely that person-to-person spread will continue to occur, including in the United States. Widespread transmission of COVID-19 in the United States would translate into large numbers of people needing medical care at the same time. Schools, childcare centers, workplaces, and other places for mass gatherings may experience more absenteeism. Public health and healthcare systems may become overloaded, with elevated rates of hospitalizations and deaths. Other critical infrastructure, such as law enforcement, emergency medical services, and transportation industry may also be affected. Health care providers and hospitals may be overwhelmed. At this time, there is no vaccine to protect against COVID-19 and no medications approved to treat it."* – **Centers for Disease Control and Prevention**

MUSC Response

- ▶ MUSC has been actively preparing for several weeks to evaluate and care for patients with COVID-19
 - ▶ Three-times-weekly operational meetings are held with leadership and representation from key departments and areas
- ▶ Policies in place to guide preparation, numerous communications, training modules, and educational materials
- ▶ MUSC offering free virtual health screening for COVID-19. All patients, employees, and students who are symptomatic should visit the MUSC Health Virtual Urgent Care for screening and medical advice
 - ▶ Will allow patients to receive care without exposing themselves or others
 - ▶ Referral for testing for those at high risk, based on CDC recommendations, or those sick enough to need inpatient care will be determined based on the consultation
- ▶ MUSC is testing off-site individuals deemed at risk for COVID-19
 - ▶ Designed for mildly-ill patients who do not require medical assessment or care in the ED but are deemed at risk for COVID-19
 - ▶ Will profoundly prevent unnecessary exposure to others, including health care workers and other patients
 - ▶ Will relieve the ED of high patient volumes
 - ▶ Will allow us to preserve our limited supply of PPE
 - ▶ As a reminder, the state lab still only has the capacity to run about 100 COVID-19 tests a day

Patient Assessment

- ▶ Process for the evaluation of a patient under consideration for testing for COVID-19:



Updated February 14, 2020

COVID-19 PPE: Donning and Doffing



Items Required

- Gown – standard isolation
- N95 Respirator
- Eye protection - Face shield or goggles
- Gloves

Hand Hygiene



Donning Order

1. Hand Hygiene
2. Gown
3. Respirator
4. Eye Protection
5. Gloves

Hand Hygiene



Doffing Order 1

1. Hand Hygiene
2. Gown with Gloves
3. Hand Hygiene
4. Eye Protection
5. Hand Hygiene
6. N95
7. Hand Hygiene

Doffing Order 2

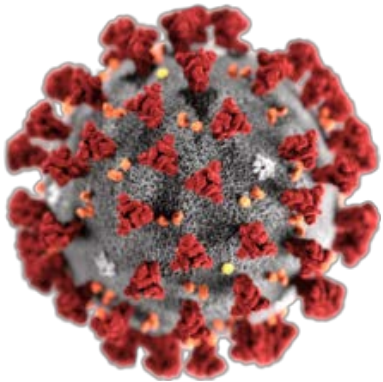
1. Hand Hygiene
2. Gown
3. Gloves
4. Hand Hygiene
5. Eye Protection
6. Hand Hygiene
7. N95
8. Hand Hygiene

- ▶ The physician must notify MUSC Infection Prevention on Call of the intent to test with the patient's identifying information
- ▶ The physician must document the history and screening, including the travel history if applicable, using the .COVID-19 SmartPhrase in EPIC
- ▶ For inpatients, an Infectious Diseases consult must be requested
- ▶ The ordering physician must establish that a safe space (AIIR) for RVP testing is available using appropriate PPE (including an N95 respirator on a fit tested collector). RVP must be collected along with other indicated testing
- ▶ The ordering physician must call the DHEC on-call phone number (843-441-1091) to request a COVID-19 test
- ▶ Patients must be advised that testing means they will be considered a PUI and will be required to isolate at home (if not hospitalized) until results return. DHEC will contact them to collect information about possible exposures

MUSC Response

- ▶ We have a diminishing supply of N95 respirators. MUSC will follow updated WHO guidance regarding the care of patients with suspected or confirmed COVID-19. This includes use of appropriate PPE (gowns, gloves, eye protection) with a surgical mask for routine care, reserving the use of N95 respirators for aerosol generating procedures
 - ▶ Policies regarding N95 respirator fit testing, wearing of beards by frontline personnel, and use of PAPRs are currently under review. Meanwhile, the CDC has released a guide to facial hair styles that are N95-compatible (and incompatible)
 - ▶ MUSC is identifying a group of high risk frontline providers who will be fit tested for N95 respirators. Our supply of N95 respirators will be centralized and monitored closely. To further conserve our supply of N95 respirators, PAPRs will be available for use for patients on airborne isolation for tuberculosis. This is because the PAPR styles currently available at MUSC are ideal for use among patients with suspicion of or diagnosis of tuberculosis but not suitable for use among patients in precautions for COVID-19
- ▶ In order to conserve our supply of PPE, we ask care teams to comply with the following principles:
 - ▶ Limit the number of providers who enter the room to those who are essential
 - ▶ Wear a surgical mask instead of an N95 respirator for routine care of a suspected or confirmed COVID-19 patient
 - ▶ It is not recommended that you don an N95 respirator in non-airborne isolation areas of the hospital or in the community, and certainly, please do not take PPE supplies out of the hospital for home use
- ▶ A COVID-19-specific SmartPhrase (.COVID19) has been devised in the MUSC Epic electronic health record and is now available system-wide for use by frontline providers
- ▶ Due to the high risk to healthcare workers, we have begun to require training of the front-line MUSC workforce in proper donning and doffing of PPE. A MyQuest module has been created.

MUSC Response



MUSC Interim COVID-19 Travel Policies

Effective March 10, 2020

International Travel

All MUSC-sponsored international travel is prohibited until further notice. This guidance now includes all university faculty and staff and all MUSC Health employees, in addition to students, residents, and fellows.

Domestic Travel

All MUSC-sponsored out-of-state travel is strongly discouraged. We strongly encourage you to consider alternative methods to communicate and hold meetings, such as teleconferencing.

Visitors to Campus

MUSC strongly discourages any non-essential visitors from traveling to campus, especially those who have recently traveled from overseas or from an area in the United States with widespread transmission.

Campus Events & Conferences

MUSC is suspending all group events whose audiences or attendees include high-risk or vulnerable populations to COVID-19.

CDC Travel Alerts

Widespread sustained (ongoing) transmission and restrictions on entry to the United States

CDC recommends that travelers avoid all nonessential travel to the following destinations. Entry of foreign nationals from these destinations has been suspended.

- China ([Level 3 Travel Health Notice](#))
- Iran ([Level 3 Travel Health Notice](#))

Widespread sustained (ongoing) transmission

CDC recommends that travelers avoid all nonessential travel to the following destinations:

- South Korea ([Level 3 Travel Health Notice](#))
- Italy ([Level 3 Travel Health Notice](#))

Sustained (ongoing) community transmission

CDC recommends that older adults or those who have chronic medical conditions consider postponing travel to the following destinations:

- Japan ([Level 2 Travel Health Notice](#))

Risk of limited community transmission

Travelers should practice usual precautions at the following destination:

- Hong Kong ([Level 1 Travel Health Notice](#))

COVID-19 and Cruise Ship Travel

Key Points

- CDC recommends travelers, particularly those with underlying health issues, defer all cruise ship travel worldwide.
- Sustained community spread of respiratory illness caused by COVID-19 has been reported in many countries.
- Cruise ship passengers are at increased risk of person-to-person spread of infectious diseases, including COVID-19.
- Older adults and travelers with underlying health issues should avoid situations that put them at increased risk for more severe disease. This entails avoiding crowded places, avoiding non-essential travel such as long plane trips, and especially avoiding embarking on cruise ships.



What You Can Do to Prevent Illness and Spread

Take steps to protect yourself



Clean your hands often

- **Wash your hands** often with soap and water for at least 20 seconds especially after you have been in a public place, or after blowing your nose, coughing, or sneezing.
- If soap and water are not readily available, **use a hand sanitizer that contains at least 60% alcohol**. Cover all surfaces of your hands and rub them together until they feel dry.
- **Avoid touching your eyes, nose, and mouth** with unwashed hands.



Avoid close contact

- **Avoid close contact** with people who are sick
- Put **distance between yourself and other people** if COVID-19 is spreading in your community. This is especially important for [people who are at higher risk of getting very sick](#).

Take steps to protect others



Stay home if you're sick

- **Stay home** if you are sick, except to get medical care. Learn [what to do if you are sick](#).



Cover coughs and sneezes

- **Cover your mouth and nose** with a tissue when you cough or sneeze or use the inside of your elbow.
- **Throw used tissues** in the trash.
- Immediately **wash your hands** with soap and water for at least 20 seconds. If soap and water are not readily available, clean your hands with a hand sanitizer that contains at least 60% alcohol.



Wear a facemask if you are sick

- **If you are sick:** You should wear a facemask when you are around other people (e.g., sharing a room or vehicle) and before you enter a healthcare provider's office. If you are not able to wear a facemask (for example, because it causes trouble breathing), then you should do your best to cover your coughs and sneezes, and people who are caring for you should wear a facemask if they enter your room. [Learn what to do if you are sick](#).
- **If you are NOT sick:** You do not need to wear a facemask unless you are caring for someone who is sick (and they are not able to wear a facemask). Facemasks may be in short supply and they should be saved for caregivers.



Clean and disinfect

- **Clean AND disinfect frequently touched surfaces daily.** This includes tables, doorknobs, light switches, countertops, handles, desks, phones, keyboards, toilets, faucets, and sinks.
- **If surfaces are dirty, clean them:** Use detergent or soap and water prior to disinfection.

To disinfect:

Most common EPA-registered household disinfectants will work. Use disinfectants appropriate for the surface.

CDC Recommendation: Social Distancing

- ▶ The course of an epidemic is defined by a series of key factors (some not known for COVID-19)
 - ▶ R_0 : If current estimate of R_0 holds true, without mitigation, COVID-19 would affect 60% of population
 - ▶ Speed of spread (time it takes for an infected person to pass on infection to others): for COVID-19 is 4.4 to 7.5 days, seems more like SARS than flu (few days)
 - ▶ Case fatality rate: denominator not fully known
 - ▶ How infectious is COVID-19 before symptoms develop: incubation period is 5 to 6 days. Taking into account the speed of spread, there might be considerable pre-symptomatic spread (1.4 days?)
 - ▶ How many asymptomatic cases are there of COVID-19?
 - ▶ How long is the duration of the infectious period for COVID-19?
- ▶ Social distancing measures reduce R_0 ~60%
 - ▶ Avoiding large gatherings will reduce instances of super-spreading events
 - ▶ Will flatten the epidemic curve

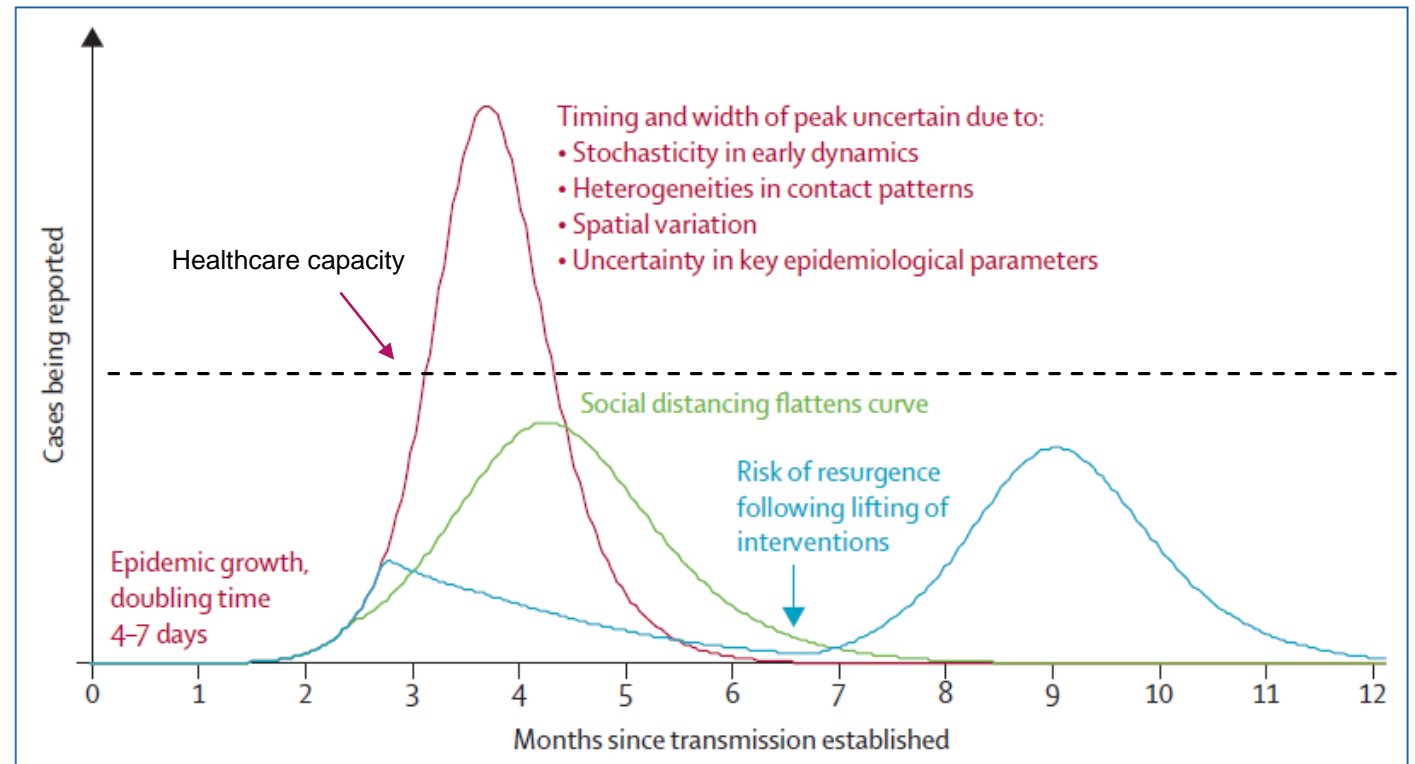


Figure: Illustrative simulations of a transmission model of COVID-19

A baseline simulation with case isolation only (red); a simulation with social distancing in place throughout the epidemic, flattening the curve (green), and a simulation with more effective social distancing in place for a limited period only, typically followed by a resurgent epidemic when social distancing is halted (blue). These are not quantitative predictions but robust qualitative illustrations for a range of model choices.

Exposed Healthcare Workers

Epidemiologic risk factors	Exposure category	Recommended Monitoring for COVID-19 (until 14 days after last potential exposure)	Work Restrictions for Asymptomatic HCP
Prolonged close contact with a COVID-19 patient who was wearing a facemask (i.e., source control)			
HCP PPE: None	Medium	Active	Exclude from work for 14 days after last exposure
HCP PPE: Not wearing a facemask or respirator	Medium	Active	Exclude from work for 14 days after last exposure
HCP PPE: Not wearing eye protection	Low	Self with delegated supervision	None
HCP PPE: Not wearing gown or gloves ^a	Low	Self with delegated supervision	None
HCP PPE: Wearing all recommended PPE (except wearing a facemask instead of a respirator)	Low	Self with delegated supervision	None
Prolonged close contact with a COVID-19 patient who was not wearing a facemask (i.e., no source control)			
HCP PPE: None	High	Active	Exclude from work for 14 days after last exposure
HCP PPE: Not wearing a facemask or respirator	High	Active	Exclude from work for 14 days after last exposure
HCP PPE: Not wearing eye protection ^b	Medium	Active	Exclude from work for 14 days after last exposure
HCP PPE: Not wearing gown or gloves ^{a,b}	Low	Self with delegated supervision	None
HCP PPE: Wearing all recommended PPE (except wearing a facemask instead of a respirator) ^c	Low	Self with delegated supervision	None

For Patients with COVID-19 Under In-Home Isolation:

- The decision to discontinue in-home isolation for patients with COVID-19 should be made on a case-by-case basis in consultation with clinicians and public health officials. This decision should consider disease severity, illness signs and symptoms, and results of laboratory testing for COVID-19 in respiratory specimens. Guidance for discontinuation of in-home isolation precautions is the same as that to discontinue Transmission-Based Precautions for hospitalized patients with COVID-19. Considerations to discontinue in-home isolation include all of the following:
 - Resolution of fever, without use of antipyretic medication
 - Improvement in illness signs and symptoms
 - Negative results of an FDA Emergency Use Authorized molecular assay for COVID-19 from at least two consecutive sets of paired nasopharyngeal and throat swabs specimens collected ≥ 24 hours apart* (total of four negative specimens—two nasopharyngeal and two throat). See [Interim Guidelines for Collecting, Handling, and Testing Clinical Specimens from Patients Under Investigation \(PUIs\) for 2019 Novel Coronavirus \(2019-nCoV\)](#) for specimen collection guidance.

Footnote

*Initial guidance is based upon limited information and is subject to change as more information becomes available. In persons with a persistent productive cough, SARS-CoV-2-RNA might be detected for longer periods in sputum specimens than in upper respiratory tract (nasopharyngeal swab and throat swab) specimens.

Questions

- ▶ We can't promise we will know all the answers
- ▶ Maybe you can help

