

# UNDERSTANDING COVID-19

A graphic guide to understanding the disease

Last Updated: 10 April 2020



goinvo

[understandingcoronavirus.org](https://understandingcoronavirus.org)

Licensed under Creative Commons Attribution 4.0 license

# OVERVIEW

## What is COVID-19?

The 2019 Novel Coronavirus, also known as **SARS-CoV-2**, caused an outbreak of respiratory illness called **COVID-19**, in Wuhan, China. Coronaviruses are a family of viruses that infect birds and mammals (this includes humans!). Typically, they cause mild respiratory symptoms similar to the common cold, but can lead to severe symptoms and even death, often in those who are already immunocompromised.

### SARS

2002

In 8 mo

8,000

confirmed cases

9.6%

death rate

### MERS

2012

In 36 mo

2,484

confirmed cases

34.4%

death rate

### COVID-19

2019-March 2020

In 4 mo

782,365

confirmed cases

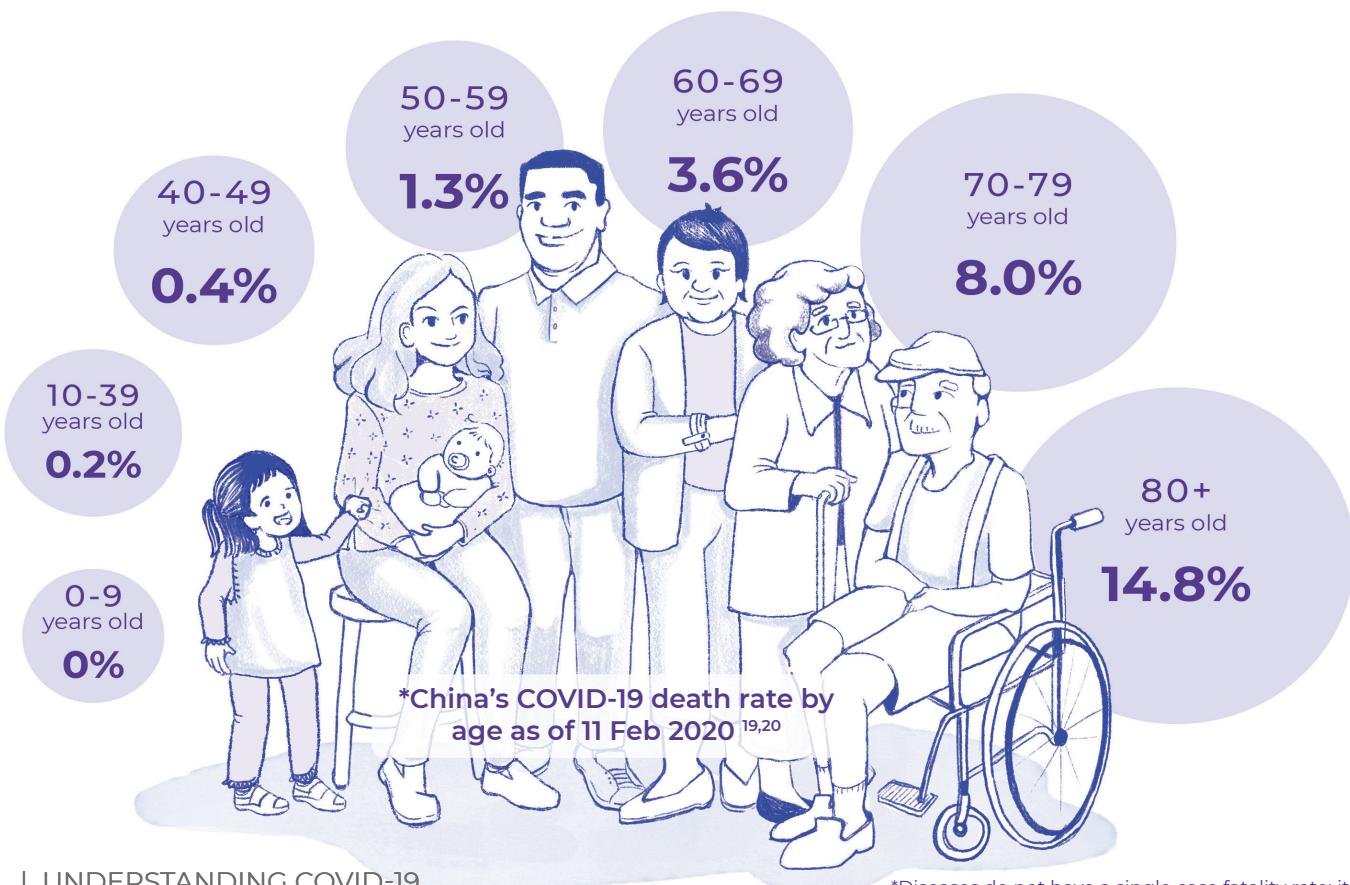
4.8%

death rate

## How deadly is COVID-19?

While COVID-19 is much more infectious, it appears to be less deadly than SARS or MERS right now.

However, it is more deadly than the annual flu, which has a death rate of less than 1%. This is why it is even more important that if you experience mild symptoms, you should seek medical care right away, and practice hygienic habits to slow the spread of germs and COVID-19 to the people around you.



## Key Events: The first months of COVID-19

**1 Dec 2019**

First patient is confirmed in Wuhan, China



**31 Dec 2019**

China sends urgent notice to WHO of unknown respiratory illness cause

**11 Jan 2020**

First death is announced in China



**BREAKING NEWS**

**21 Jan 2020**

US confirms first case; Snohomish County, WA

**30 Jan 2020**

WHO declares COVID-19 a global public health emergency (PHE)

The United States reports the first confirmed instance of person-to-person spread



**31 Jan 2020**

HHS Secretary declares a PHE for the US

President Trump enforces a 14-day quarantine preceding the entry of travelers from mainland China into the US

**25 Feb 2020**

CDC warns community to prepare for the spread of COVID-19 in the US

**29 Feb 2020**

First death in the US in King County, WA

**1 Mar 2020**

UN releases \$15 million USD from the Central Emergency Response Fund (CERF) to fund global efforts to contain the virus

**11 Mar 2020**

WHO announces COVID-19 is a global pandemic

**13 Mar 2020**

President Trump declares a National Emergency, allowing those in charge to act faster in response to an emergency

### What happens now?

COVID-19 has spread from Asia to North America, South America, Europe, Oceania, and Africa. The world continues to work towards treating the sick and containing the disease as we learn more about it. For now, the public is encouraged to practice social distancing and hygienic practices.

## How is it spreading?<sup>4</sup>

### Human-to-human transmission is possible

The virus first came from an animal source, but it is now able to spread from human to human.

#### It travels through droplets in the air

It can infect humans through...

**...close contact** of 6 feet or less, which includes **touching** and **shaking hands**



**...and by touching an object or surface contaminated by the virus, then touching one's mouth, nose, or eyes**

**...the air by coughing and sneezing.** People nearby may inhale droplets from coughs and sneezes into their lungs



### Incubation Period<sup>5</sup>

It takes 5.2-12.5 days for COVID-19 to cause symptoms. To be safe, make sure to monitor your health for 14 days after coming into contact with someone who is confirmed to have, or is suspected of having COVID-19. If you experience the COVID-19 symptoms (see Close Contact section), call your doctor ahead of your visit.

# YOUR PART

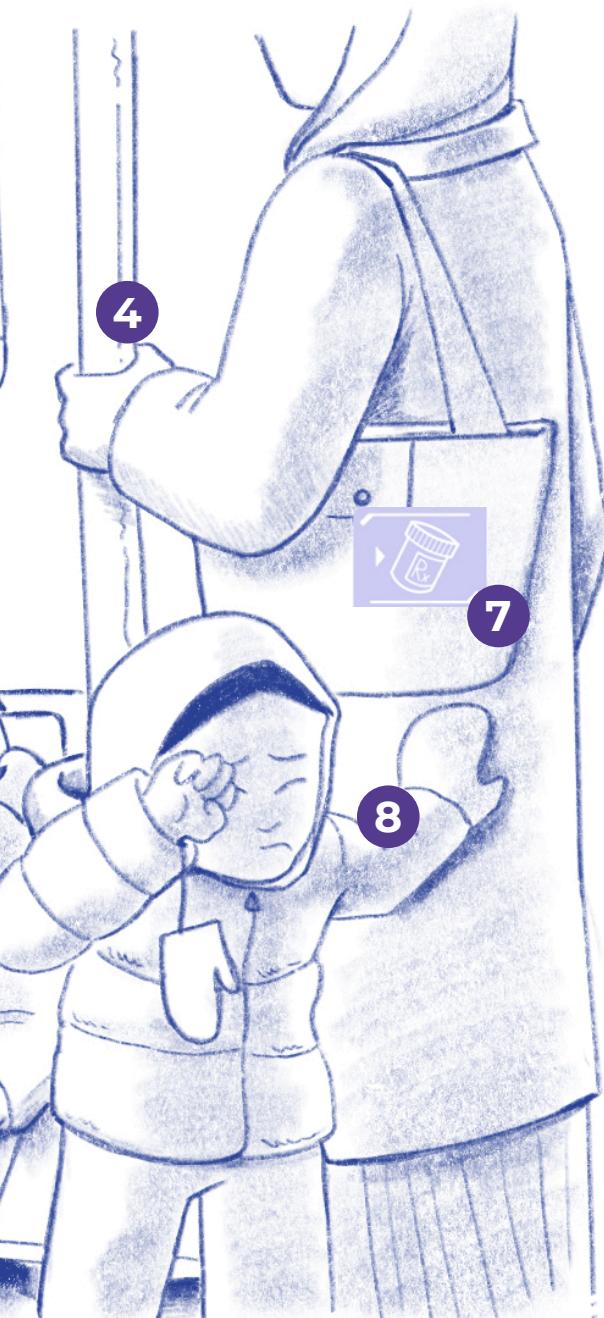
Outbreaks at this scale can be scary, but besides staying up to date on the news, there are still a lot of things that you can do to stay healthy and help stop the spread of disease!

## Prevention<sup>6</sup>





Here's what you can do to prevent COVID-19 from spreading:



- 1 Stay home** when you are sick.
- 2 Wash your hands** often with soap and water. If unable to wash your hands, use alcohol-based hand sanitizer.
- 3 Avoid close contact** with people who are sick.
- 4 Clean and disinfect frequently touched objects** and surfaces.
- 5 Cover coughs and sneezes** with your elbow or a tissue. Throw tissues in the trash.
- 6 Get your annual flu vaccine**
- 7 Take flu antivirals** if prescribed
- 8 Avoid touching your eyes, nose, and mouth** with unwashed hands
- 9 Check CDC's COVID-19 travel health notices often** and **avoid nonessential travel**

## Close Contact<sup>7</sup>

If you come into close contact with someone who is confirmed to have COVID-19, **here's what you can do to stay well:**

- **Monitor your health** for at least **14 days** after your last contact with the infected person
- Watch for signs and symptoms; **contact your healthcare provider right away if you notice these signs:**

- 1** Fever
- 2** Coughing
- 3** Shortness of breath



If you feel unwell within 14 days of close contact, call your doctor ahead of time to tell them...

...you've had **close contact** with someone confirmed to have COVID-19  
...to call the **local or state health department**

This helps your provider prevent other people from being infected



### STAY CALM, TAKE CARE

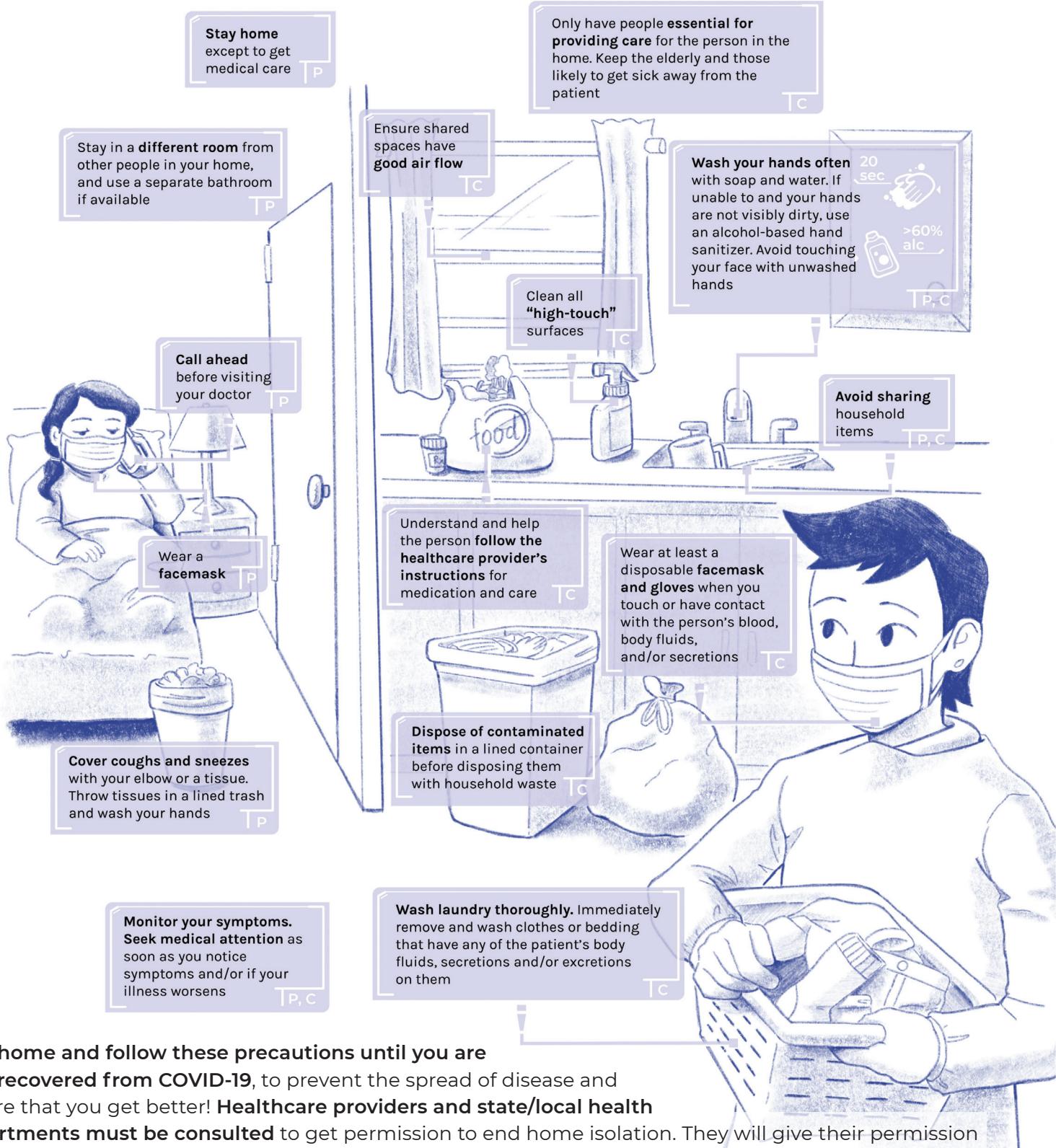
Remember, **don't panic!**

For now, take care of yourself **just like you would during the annual flu season.**

**Stay on top of the news** and other credible sources to keep updated on if you need to do anything different.

## Patient Care<sup>8</sup>

If you or someone you know becomes sick with COVID-19 and does not require hospitalization or is told they are medically stable to go home, **here's what you can do to take care and prevent further spread of the disease** for patients (P) and for caregivers (C).



**Stay home and follow these precautions until you are fully recovered from COVID-19**, to prevent the spread of disease and ensure that you get better! **Healthcare providers and state/local health departments must be consulted** to get permission to end home isolation. They will give their permission when the patient's risk of spreading COVID-19 to others is low; the timing differs from patient-to-patient. **Contact your state or local health department** if you still have any questions.

## END THE PREJUDICE!<sup>6</sup>

**Asian people are not at a higher risk** than other people from becoming sick with COVID-19.

Only people who have traveled to **high-risk areas**, or **been in contact** with someone

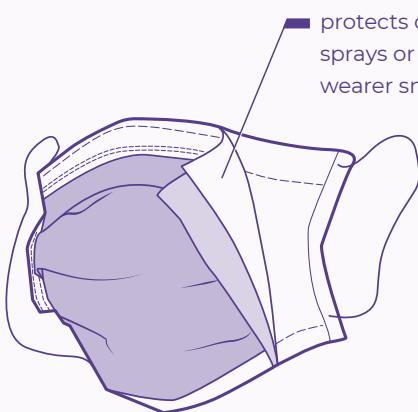
confirmed or suspected to have COVID-19 in the last 14 days are at a higher risk of being infected.

**Just because someone is of Asian descent does not mean that they have COVID-19!**

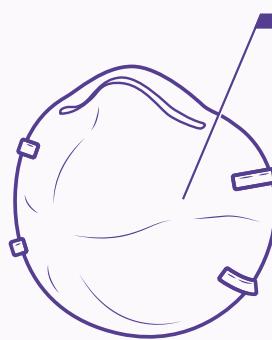
## HOSPITALS DESPERATELY NEED MASKS, SAVE THE MASKS FOR THOSE WHO NEED THEM!<sup>9</sup>

In light of the outbreak, two kinds of facemasks have been flying off American shelves:

### Surgical mask



### N95 Respirator



- ✓ Will help **prevent the spread** of COVID-19 if you are sick
- ✗ **Does not effectively prevent catching** COVID-19

- ✓ Will help **prevent against catching and spreading** COVID-19
- ✗ If it has a breathing valve, does not effectively prevent the spread of COVID-19 if you are sick

For now, the CDC recommends only healthcare providers to wear surgical grade masks and N95 respirators, but this equipment is in short supply.

In order to maintain supply for the people who need it most, please do not hoard masks.

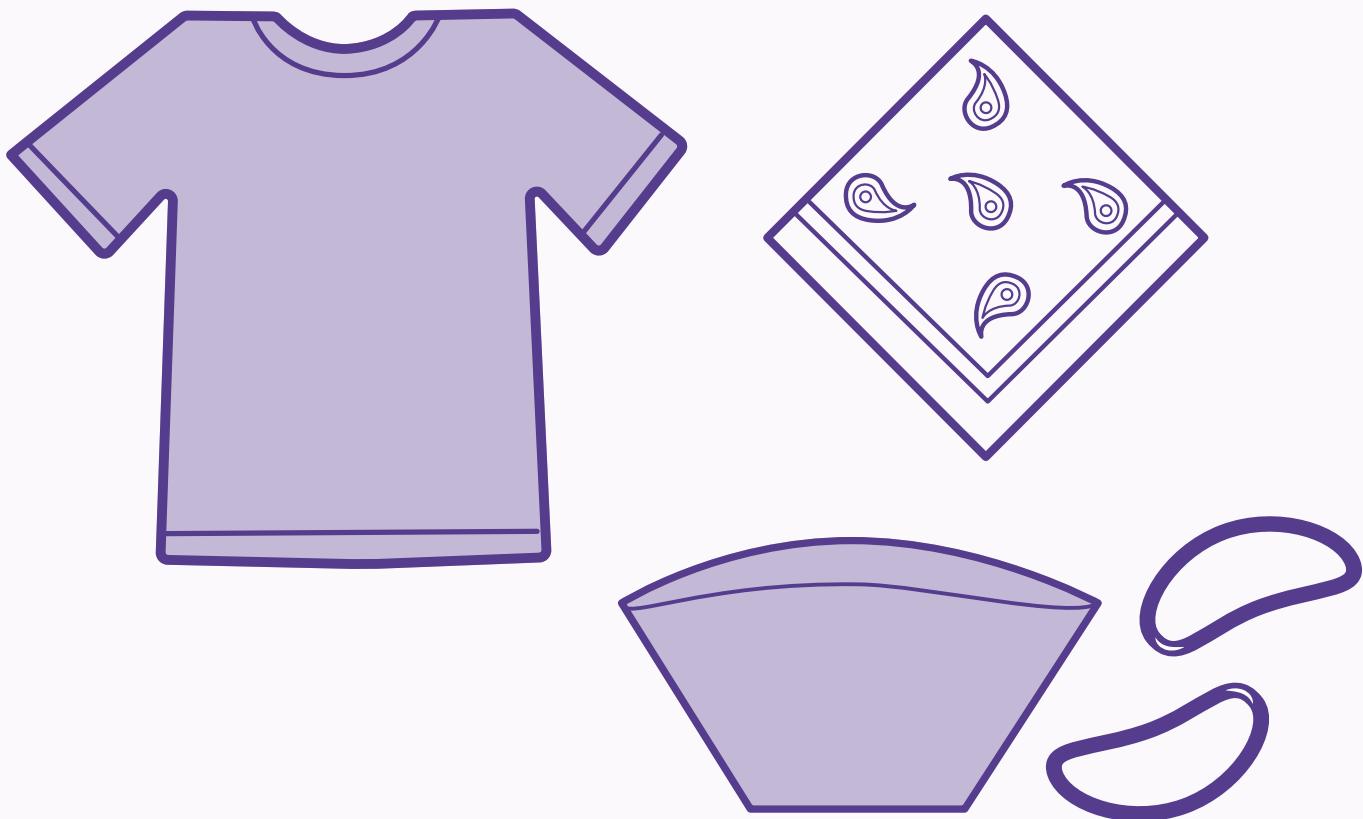
If you do not already have surgical masks or respirators, **do not buy them**.

For now, the CDC recommends **only healthcare providers taking care of patients** known to be infected with COVID-19 to wear a N95 respirator.

Instead, the CDC recommends the **public** to make their own **cloth masks** at home as an alternative to these masks to prevent the spread of germs.

## STAY SAFE STAY WELL, MAKING YOUR OWN MASK TO WEAR IN PUBLIC!<sup>21</sup>

If you **need to go out** in public, the CDC recommends wearing a **cloth face covering** which can be easily made with household items like t-shirts, bandanas, rubber bands, and coffee filters.



For instructions on how to make different variations of the masks—including options that need sewing and others that do not—check the CDC website.

## MAKING MASKS THAT WORK<sup>21</sup>

When making these coverings, keep in mind that they must...

1. ...fit snugly but comfortably against the side of the face
2. ...be secured with **ties or ear loops**
3. ...include **multiple layers** of fabric
4. ...allow for **breathing without restriction**
5. ... be **machine washable and dryable** without damage or change to shape



For safety reasons, cloth face coverings **should not be used** by children **under age 2**, people with **trouble breathing**, or others that may not be able to take off the covering **without assistance**.

Make sure you **wash these face coverings thoroughly and often** after use, and when you remove them from your face, you **do not touch your eyes, mouth, or face**, with your hands.

# ACTION PLAN

A pandemic in the world is pretty scary. But the good news is that we have a plan on how to deal with situations like these.

## The World Health Organization (WHO)<sup>10</sup>

Their primary role is to direct international health and provide global leadership and guidance on how to manage. Its headquarters are located in Geneva, Switzerland.

### Each country has a Regional WHO Office

The US Regional Office is in Washington, DC. Here, teams can communicate with the WHO headquarters and get up-to-date information about the emerging situation and consequently manage the outbreak response.

### WHO uses its international network of collaborating centers to collect information

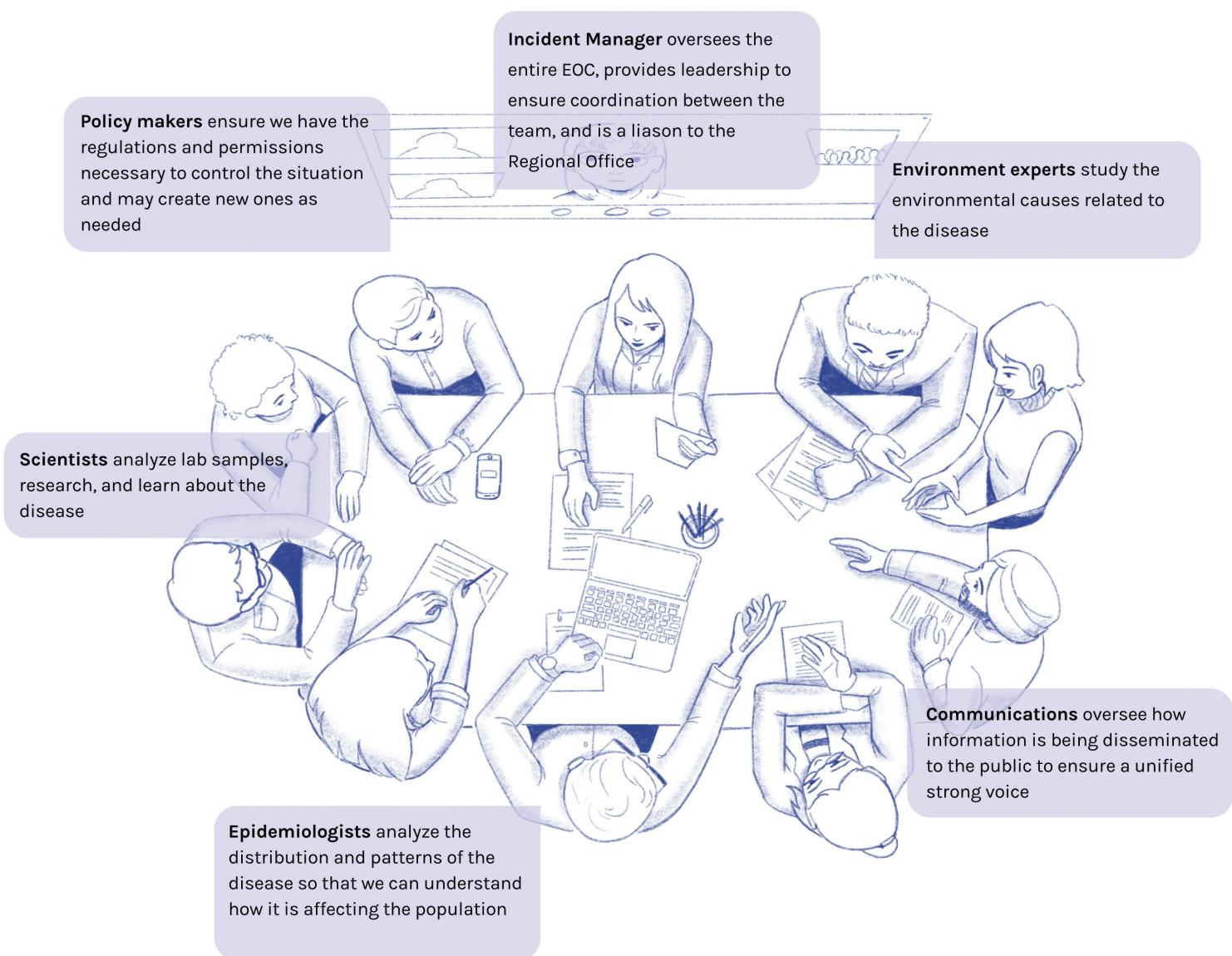
In the US, the Centers for Disease and Control (CDC) in Atlanta, Georgia collects international and national data, analyzes that data, and synthesizes recommendations.

### Our world is more connected than ever

This means that there are plenty of ways for diseases to spread to other people and places. There is a fine balance between protecting borders by quarantine and overreactions (that cause panic).

## Local Emergency Operations Centers<sup>10</sup>

Day-to-day operations are managed by a local ground team. These centers have a set of experts that work together to control the local situation.



# So what does this look like in practice?

## At the national level, our first line of defense is monitoring ports-of-entry<sup>11,12</sup>

Since the virus outbreak began outside of the US, the first line of defense is to manage places where the disease could enter. The CDC has ordered airlines to find out which passengers have traveled to China in the last 14 days and for major international airports to screen all incoming travelers.

The three-part process begins with Customs and Border Protection agents questioning travelers. Next, those at-risk are sent to a secondary screening by health workers where their temperature is taken. Then, those showing symptoms are evaluated and monitored by the CDC—which may involve a 14-day quarantine. Travelers who have been to China in the last 14 days are advised to stay home and monitor their symptoms.

### HOW DO WE PROTECT OUR AIRPORTS AND BORDERS?

SINCE THE VIRUS OUTBREAK STARTED OUTSIDE OF THE US, THE FIRST LINE OF DEFENSE IS TO MANAGE PLACES WHERE THE VIRUS COULD ENTER.



**STEP 1:**  
DETERMINING WHO IS AT RISK

IF ANY RISK IS DETERMINED, A SECONDARY SCREENING IS CONDUCTED TO EVALUATE THEIR SYMPTOMS.



**STEP 2:**  
CHECKING SYMPTOMS

THEY ARE THEN EVALUATED AND MONITORED BY THE CDC WHICH MAY INVOLVE A 14-DAY QUARANTINE.



**STEP 3:**  
TAKE ACTION

## ACTION PLAN: HOW THE WORLD RESPONDS

### If the virus enters a state, hospitals need to be prepared to respond<sup>13,14,15</sup>

If there is a suspected case of COVID-19 in the region, hospitals and local clinics should be trained in how to deal with the virus.

Massachusetts General Hospital (MGH) is 1 of 10

CDC designated “regional ebola and special pathogen treatment centers” in the US—meaning that they have expert knowledge in how to deal with something like an outbreak. Many other hospitals have turned to MGH as they update their emergency plans.

### HOW DOES A HOSPITAL RESPOND TO A QUARANTINE?



## If a city shuts down, what happens?<sup>17, 18</sup>

In the US, it is very unlikely that the CDC would mandate an entire city be quarantined. US policy is actually to avoid location-based mass quarantines. Many experts have noted that the effectiveness of a mass quarantine for disease may not be worth the significant psychological and economic costs. However, in the case that a mass quarantine is ordered, cities have a plan to manage the situation.

However, more extreme measures like enforcing a mass quarantine have not been required yet to deal with COVID-19 in the US.

### HOW DOES A CITY RESPOND TO QUARANTINE?



\*IT IS VERY UNLIKELY THIS WOULD HAPPEN IN AMERICA; U.S. POLICIES ACTUALLY ACT AGAINST ENACTING LOCATION-BASED MASS QUARANTINES.

For now, **keep calm**, follow **regular flu season preventative measures**, and **keep up to date** on the news for updates on protocols and treatment development.

**While you may not see it, a lot of people are working hard to contain this virus so you can stay well.**



# IMPORTANT RESOURCES



**World Health Organization**

## World Health Organization

Information and guidance for the general public

Live updates:

<https://www.who.int/emergencies/diseases/novel-coronavirus-2019>



## Centers for Disease Control and Prevention

Information and guidance for the general public and healthcare professionals

Live updates:

<https://www.cdc.gov/coronavirus/2019-nCoV/>



## National Institute of Allergy and Infectious Diseases

<https://www.niaid.nih.gov/diseases-conditions/coronaviruses>



## US Food and Drug Administration

<https://www.fda.gov/emergency-preparedness-and-response/mcm-issues/novel-coronavirus-2019-ncov>

# ABOUT

**This is open source.**  
Use it, share it, make it better.

Licensed under Creative Commons Attribution 4.0 license

<https://github.com/goinvo/COVID19>

## Designing the future of healthcare



We deliver beautiful and useful experiences for patients, clinicians, clinics, companies, and governments.

Send feedback at [coronavirus@goinvo.com](mailto:coronavirus@goinvo.com)

### Authors

Patricia Nguyen  
Colleen Tang Poy  
Parsuree Vatasirisuk  
Craig McGinley  
Jen Patel Sobus

### Contributors

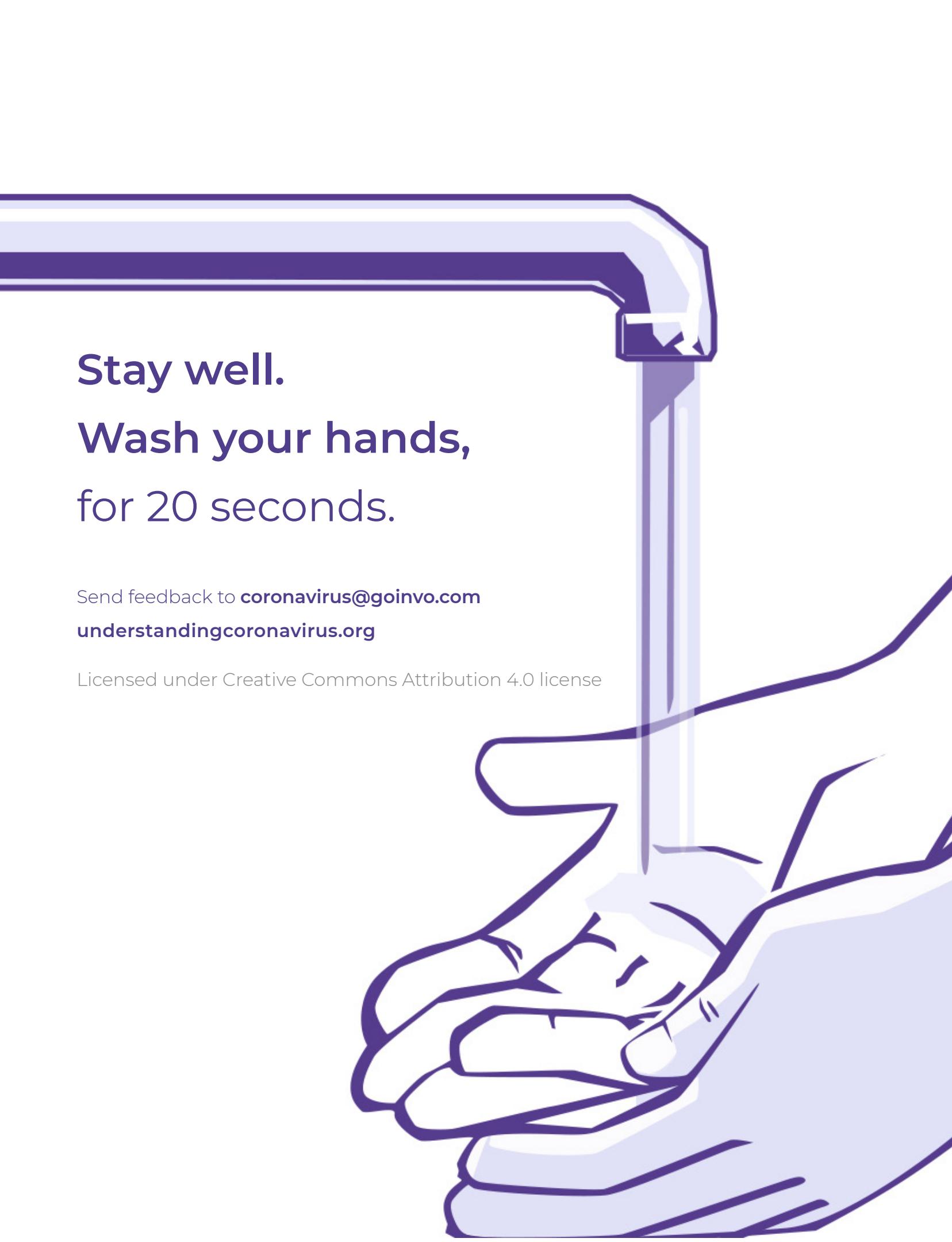
Meghana Karande  
Juhan Sonin

### Special thanks

Jan Benway, Grace Cordovano, Dorian Freeman, Eric Moreno, Joey Nichols, Martin Pitt, Corinne Pritchard, James Rini, Ernst-Jan van Woerden

# REFERENCES

1. World Health Organization. (2020, January 23). Middle East respiratory syndrome coronavirus (MERS-CoV). Retrieved January 31, 2020, from <https://www.who.int/emergencies/mers-cov/en/>
2. Johns Hopkins CSSE. (2020 February 6). Coronavirus 2019-nCoV Global Cases by Johns Hopkins CSSE, from <https://gisanddata.maps.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd40299423467b48e9ecf6>
3. Centers for Disease Control and Prevention. (2020, February 13). Coronavirus Disease 2019 (COVID-19) Situation Summary. Retrieved February 14, 2020, from [https://www.cdc.gov/coronavirus/2019-ncov/summary.html?CDC\\_AA\\_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fabout%2Fwhat-you-should-do.html#anchor\\_1580064337377](https://www.cdc.gov/coronavirus/2019-nCoV/summary.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fabout%2Fwhat-you-should-do.html#anchor_1580064337377)
4. Centers for Disease Control and Prevention. (2020, January 29). How 2019-nCoV Spreads. Retrieved February 6 2020, from <https://www.cdc.gov/coronavirus/2019-ncov/about/transmission.html>
5. Li, Q., Zhu, N., Munster, V. J., Phan, L. T., & Chinese Center for Disease Control and Prevention. (2020, January 24). Early Transmission Dynamics in Wuhan, China, of Novel Coronavirus–Infected Pneumonia: NEJM. Retrieved January 31, 2020, from [http://www.nejm.org/doi/full/10.1056/NEJMoa2001316?query=featured\\_home](http://www.nejm.org/doi/full/10.1056/NEJMoa2001316?query=featured_home)
6. Centers for Disease Control and Prevention. (2020, January 28). What to do if you are sick with 2019 Novel Coronavirus (2019-nCoV). Retrieved January 31, 2020, from <https://www.cdc.gov/coronavirus/2019-ncov/about/steps-when-sick.html>
7. Centers for Disease Control and Prevention. (2020, January 29). Prevention, Treatment of Novel Coronavirus (2019-nCoV). Retrieved February 5, 2020, from <https://www.cdc.gov/coronavirus/2019-ncov/about/prevention-treatment.html>
8. Centers for Disease Control and Prevention. (2020, January 29). Preventing 2019-nCoV from Spreading to Others. Retrieved January 31, 2020, from <https://www.cdc.gov/coronavirus/2019-ncov/hcp/guidance-prevent-spread.html#steps-for-caregivers>
9. Andrew, S. (2020, January 28). There's been a run of surgical masks in the US because of the coronavirus scare. You don't need them, physicians say. Retrieved January 28, 2020, from <https://www.cnn.com/2020/01/28/health/coronavirus-us-masks-prevention-trnd/index.html>
10. World Health Organization. (2017). Emergency Response Framework (2nd ed.). Geneva. Licence: CC BY-NC-SA 3.0 IGO.
11. Pappas, S. (2020, February 4). Will airport screenings be enough to stop coronavirus in the US? Retrieved February 6, 2020, from <https://www.livescience.com/can-airport-screening-stop-coronavirus.html>
12. Tate, C. (2020, February 10). U.S. has screened 17,000 passengers for coronavirus at 11 airports since Sunday. Retrieved February 11, 2020, from <https://www.usatoday.com/story/travel/2020/02/07/coronavirus-u-s-passenger-screenings-11-airports/4693589002/>
13. Bruce, M. (2020, January 31). 2019 Novel Coronavirus Response at the Brigham: 5 Things to Know. Retrieved from <https://bwhbulletin.org/2020/01/30/2019-novel-coronavirus-response-at-the-brigham-5-things-to-know/>
14. Shenoy, E. (2020, January 24). Monitoring coronavirus. Retrieved February 1, 2020, from <https://www.massgeneral.org/news/hotline/HTL012420/monitoring-coronavirus>
15. Thielking, M., Loose, Y., Chu, J., Adam, Adsm, & Reach, J. (2020, February 7). U.S. hospitals call all hands on deck to brace for more coronavirus cases. Retrieved February 10, 2020, from <https://www.statnews.com/2020/02/07/hospitals-harnessing-resources-brace-spike-coronavirus-cases/>
16. Steinmetz, K. (2020, February 10). The U.S. Government Is Quarantining More Than 800 Americans. Here's Why That Very Rarely Happens. Retrieved February 11, 2020, from <https://time.com/5780049/coronavirus-quarantines-united-states/>
17. New Hampshire CDC. State of New Hampshire Interim Severe Acute Respiratory Syndrome (SARS) Epidemic Preparedness Plan, State of New Hampshire Interim Severe Acute Respiratory Syndrome (SARS) Epidemic Preparedness Plan (2004). Retrieved from <https://www.dhhs.nh.gov/dphs/cdcs/sars/documents/sarsplan.pdf>
18. Day, T., Park, A., Madras, N., Gumel, A., & Wu, J. (2006). When Is Quarantine a Useful Control Strategy for Emerging Infectious Diseases? *American Journal of Epidemiology*, 163(5), 479–485. doi: 10.1093/aje/kwj056
19. The Novel Coronavirus Pneumonia Emergency Response Epidemiology Team. The Epidemiological Characteristics of an Outbreak of 2019 Novel Coronavirus Diseases (COVID-19) — China, 2020. *China CDC Weekly*, 2020, 2(8):113-122.
20. World Health Organization. (2020). Report of the Who-China Joint Mission on Coronavirus Disease 2019 (Covid-19) . Retrieved from <https://www.who.int/docs/default-source/coronaviruse/who-china-joint-mission-on-covid-19-final-report.pdf>
21. Centers for Disease and Control (2020, April 4). Use cloth face coverings to help slow the spread of COVID-19. Retrieved from <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/diy-cloth-face-coverings.html>



**Stay well.**  
**Wash your hands,**  
for 20 seconds.

Send feedback to [coronavirus@goinvo.com](mailto:coronavirus@goinvo.com)  
[understandingcoronavirus.org](http://understandingcoronavirus.org)

Licensed under Creative Commons Attribution 4.0 license