

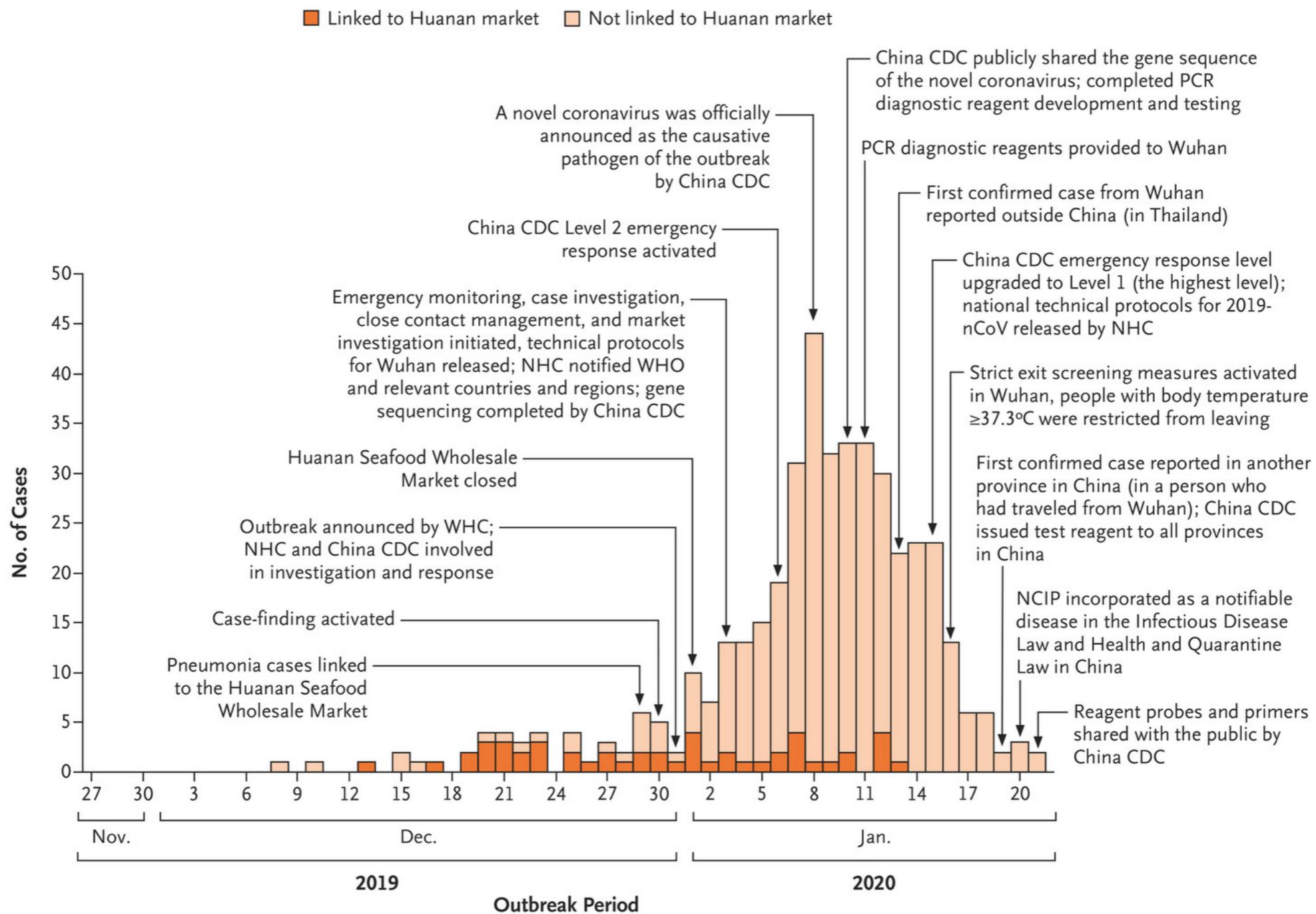
2019-Novel Coronavirus update

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Information in this was correct on the date of publication and much may have changed since it was published on March 9, 2020

The story so far...

- Since Dec 31, 2019, the Chinese city of Wuhan has reported an outbreak of pneumonia due to unknown cause. The outbreak was linked to Huanan seafood market due to shared history of exposure of many patients.
- An epidemiological alert was released by the local health authority on Dec 31, 2019, and the market was shut down on Jan 1, 2020



- January 13, 2020 -WHO reported a case in Thailand, the first outside of China, a woman who had arrived from Wuhan
- Jan 19, 2020- First case of 2019-nCoV reported in US in Snohomish County, Washington of a man who had returned from Wuhan.
- January 23, 2020-Chinese authorities suspended travel in and out of Wuhan.¹⁰ Similar travel bans followed in other cities in Hubei Province, and in total close to 50 million people have been quarantined (unprecedented).
- Case count started to rise exponentially over the following days in China and new cases were reported from across the globe.
- Many countries have responded by suspending travel to and from China and establishing screening at airports that have flights from China.
- January 30-The WHO declared the outbreak a Public Health Emergency of International Concern[PHEIC]. US followed in declaring public health emergency on January 31.
- Feb 2- First death outside China in Philippines.
- US count of confirmed infections so far at 12 on Feb 5(2 are spouses of returning travelers)

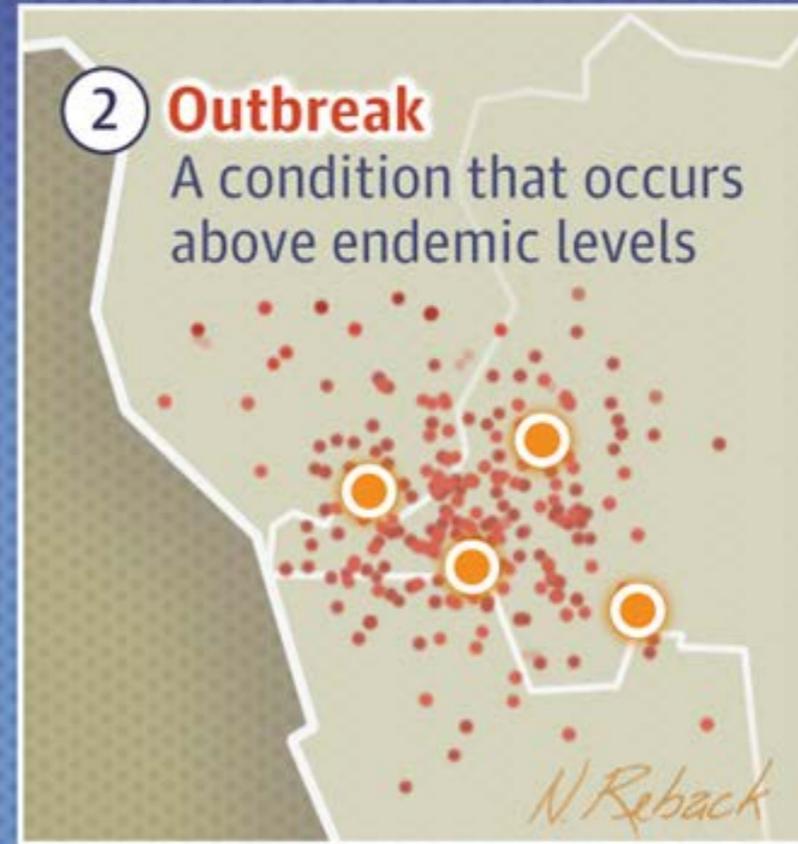
The Spread of a Health Condition

- 1 **Endemic**
A health condition that occurs at a steady rate among a population



● = predicted occurrence

- 2 **Outbreak**
A condition that occurs above endemic levels



- 3 **Epidemic**
An outbreak that has spread to a larger geographic area



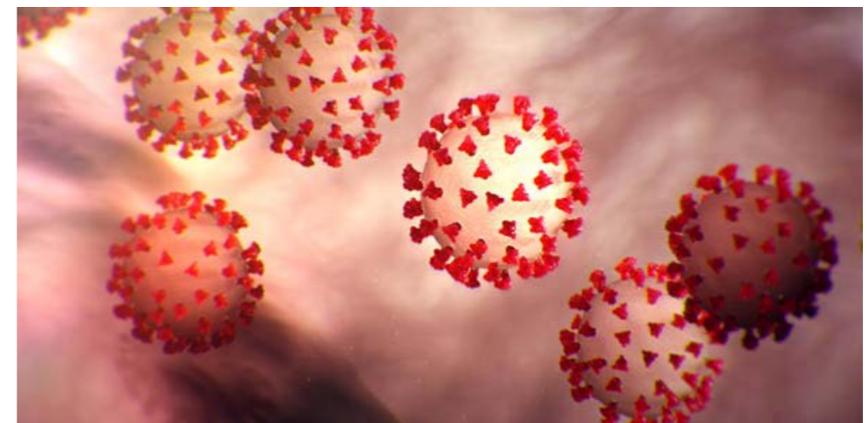
- 4 **Pandemic**
A health condition that has spread globally

Corona viruses

- Coronaviruses (spikes with “crowns”) are broadly distributed in humans and other mammals with the greatest variety seen in bats.
- Human coronaviruses (HCoVs) have long been considered inconsequential pathogens, causing the “common cold” in otherwise healthy people.
- **However**, in the 21st century, 2 highly pathogenic HCoVs—severe acute respiratory syndrome coronavirus (SARS-CoV) in 2002-2004 and Middle East respiratory syndrome coronavirus (MERS-CoV) in 2012—emerged from animal reservoirs to cause global epidemics.
- SARS-CoV and MERS-CoV have caused more than 10 000 cumulative cases in the past two decades, with mortality rates of 10% for SARS-CoV and 37% for MERS-CoV.

What is the novel Corona Virus?

- A novel Coronavirus (nCoV) is a new corona virus first identified in Wuhan, Hubei Province, China. The 2019 novel coronavirus (2019-nCoV), is not that same as the coronaviruses that commonly circulate among humans and cause mild illness, like the common cold.



What is the source of this nCoV?

- Bats are probably the primary hosts. Domestic mammals may serve as intermediate hosts - Palm civets[SARS-CoV] and Camels[MERS-CoV]. Source of this Corona virus is still not definitively known.

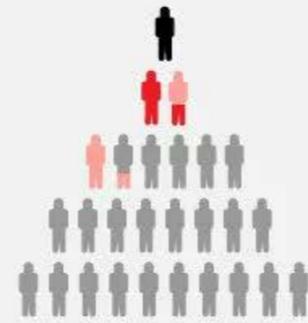


How does the virus spread?

- This virus probably originally emerged from an animal source but now seems to be spreading from person-to-person
- The current thinking is that it spreads via the respiratory route via droplets generated when a person, for example, coughs or sneezes, or through droplets of saliva or discharge from the nose. Some research indicates potential for feco-oral spread.
- Spread from asymptomatic contacts?

How contagious is a disease?

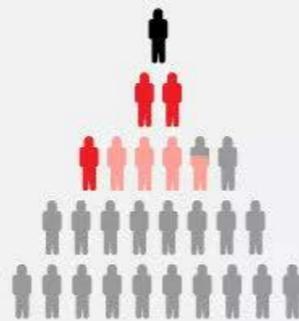
Scientists use "R naught," or R_0 , to estimate how many other people one sick person is likely to infect



2019-nCoV

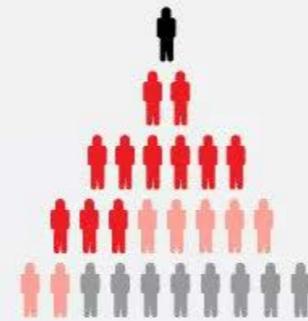
1.4-3.3

*This estimate is preliminary and likely to change



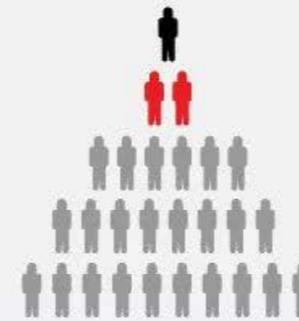
Zika

3-6.6



Measles

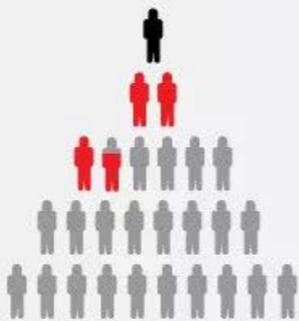
11-18



Ebola

2

*An early estimate based on the Colombia outbreak in 2015



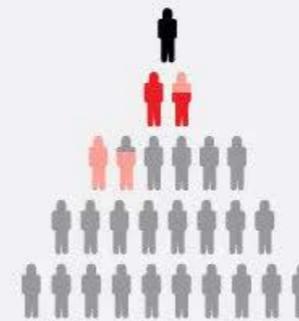
HIV

3.6-3.7



Seasonal flu

1.3



Norovirus

1.6-3.7

*An estimate based on Réunion Island in 2006

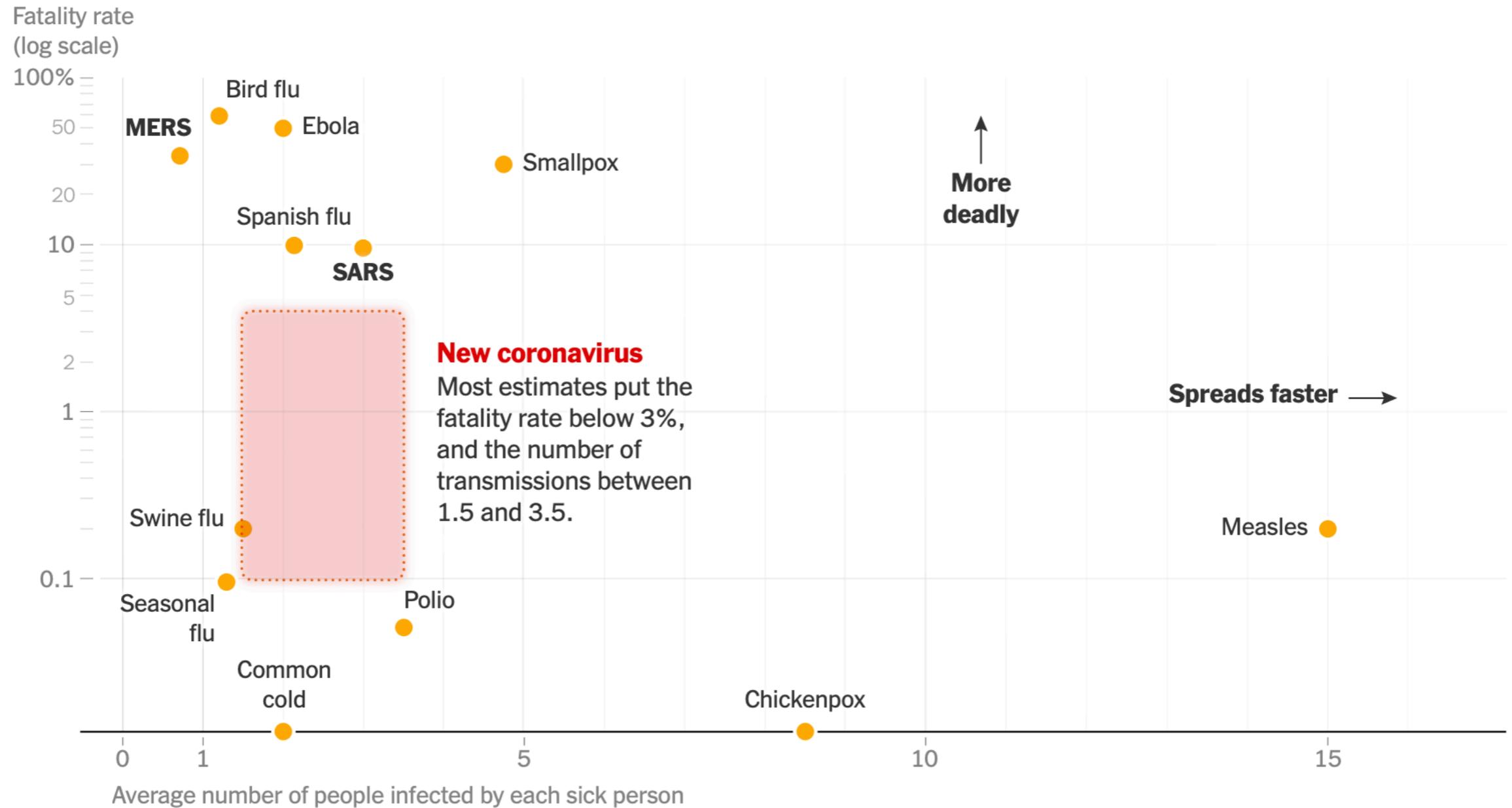
SOURCES: Travel Medicine, PLOS One, JAMA Pediatrics, MDPI, NCBI, New England Journal of Medicine, "The Spread and Control of Norovirus Outbreaks Among Hospitals in a Region"

Vox

What are the common symptoms of Corona virus

- Common symptoms - fever, cough, Dyspnea/Shortness of breath, body pains and fatigue
- less common symptoms - sputum production, headache, blood in sputum, and diarrhea [3%].
- Severe cases- respiratory failure and death
- The median age of patients is between 49 and 56 years.Cases in children have been rare.

How deadly is the virus?



Note: Average case-fatality rates and transmission numbers are shown. Estimates of case-fatality rates can vary, and numbers for the new coronavirus are preliminary estimates.

What are the current numbers[2/6/20]?

SITUATION IN NUMBERS total and new cases in last 24 hours

Globally

28 276 confirmed (3722 new)

China

28 060 confirmed (3697 new)

3859 severe (640 new)

564 deaths (73 new)

Outside of China

216 confirmed (25 new)

24 countries

1 death

WHO RISK ASSESSMENT

China Very High

Regional Level High

Global Level High

- While it is unclear how many people are truly infected, a modeling study suggests that as of January 25, 2020, 75 815 individuals have been infected in Wuhan alone

What to do if you are sick with 2019 Novel Coronavirus (2019-nCoV)?

Recently Returned Travelers from China

If you were in China in the last 14 days (or close contact of a confirmed/suspected case) and feel sick with fever, cough, or difficulty breathing, you should:

- Seek medical care right away. Before you go to a doctor's office or emergency room, call ahead and tell them about your recent travel and your symptoms.
- Avoid contact with others in the household. Avoid contact with pets and other animals. Avoid sharing household items
- Not travel while sick. Stay home except to get medical care.
- Cover your mouth and nose with a tissue or your sleeve (not your hands) when coughing or sneezing.
- Wash hands often with soap and water for at least 20 seconds to avoid spreading the virus to others. Use an alcohol-based hand sanitizer that contains at least 60% alcohol if soap and water are not available.
- Monitor your symptoms

Do we need to regularly use a face mask to prevent 2019-nCoV?

- No. CDC does not currently recommend the use of face masks among the general public. While limited person-to-person spread among close contacts has been detected, this virus is not currently spreading in the community in the United States.

Am I at risk for novel coronavirus from a package or products shipping from China?

Yes, it is safe. People receiving packages from China are not at risk of contracting the new coronavirus.

From previous analysis, we know coronaviruses do not survive long on objects, such as letters or packages.

Is it safe to receive a letter or a package from China?



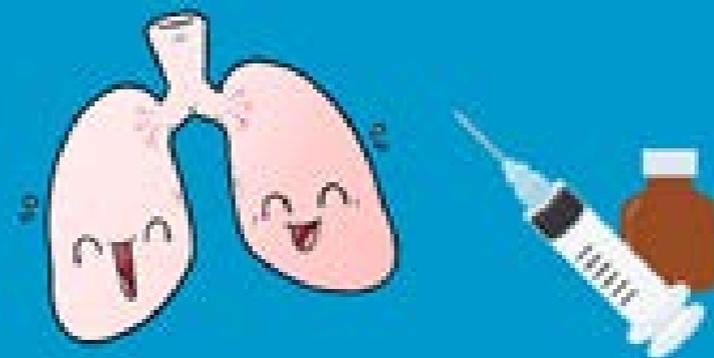
Do vaccines against pneumonia protect you against nCoV?

No. Vaccines against pneumonia, such as pneumococcal vaccine and Haemophilus influenza type B (Hib) vaccine, do not provide protection against the new coronavirus.

The virus is so new and different that it needs its own vaccine. Researchers are trying to develop a vaccine against 2019-nCoV, and WHO is supporting their efforts.

Although these vaccines are not effective against 2019-nCoV, vaccination against respiratory illnesses is highly recommended to protect your health.

Do vaccines against pneumonia protect you against the new coronavirus?



Are antibiotics effective in preventing and treating the new coronavirus?

No, antibiotics do not work against viruses, only bacteria.

The new coronavirus (2019-nCoV) is a virus and, therefore, antibiotics should not be used as a means of prevention or treatment.

However, if you are hospitalized for the 2019-nCoV, you may receive antibiotics since bacterial co-infection is possible.



#Coronavirus

Are antibiotics effective in preventing and treating the new coronavirus?



A patient in the United States who meets the following criteria should be evaluated as a **patient under investigation (PUI)** for 2019-nCoV

Clinical features

Epidemiologic risk

Fever **or** signs/symptoms of lower respiratory illness (eg, cough or shortness of breath)

: **AND** :

Any person, including health care workers, who has had close contact with a laboratory-confirmed 2019-nCoV patient within 14 days of symptom onset

Fever **and** signs/symptoms of lower respiratory illness (eg, cough or shortness of breath)

: **AND** :

A history of travel from Hubei Province, China, within 14 days of symptom onset

Fever **and** signs/symptoms of lower respiratory illness (eg, cough or shortness of breath) requiring hospitalization

: **AND** :

A history of travel from mainland China within 14 days of symptom onset

If a PUI is confirmed, clinicians should notify their health care facility's infection prevention team as well as the local or state health department.

Is there a test available to diagnose the infection?

- Yes, testing is available currently through CDC only. However, efforts are being made to make testing available locally through state health departments.

What treatments are available?

- Mostly supportive.
- The effectiveness of antivirals is unproven [Lopinavir-ritonavir(kaletra), Remdesivir]
- Vaccines?

2019-nCoV vaccine development programs

Company/group	Technology	Organization type
Johnson & Johnson	Viral vector	Pharma/big biotech
Inovio Pharmaceuticals; Beijing Advaccine Biotechnology	DNA vaccine	Biotech
Codagenix	Live attenuated vaccine	Biotech
Novavax	Protein-based	Biotech
Sichuan Clover Biopharmaceuticals	Protein-based	Biotech
CureVac	RNA vaccine	Biotech
Moderna	RNA vaccine	Biotech
Stermirna Therapeutics; Tongji University	RNA vaccine	Biotech
GeoVax Labs; BravoVax	Viral vector	Biotech
Baylor College of Medicine; University of Texas Medical Branch; New York Blood Center; Fudan University	Protein-based	Academic
University of Queensland	Protein-based	Academic
University of Saskatchewan	Protein-based	Academic

2019-nCoV therapeutics development programs

Company/group	Technology	Organization type
AbCellera Biologics	Antibody	Biotech
Regeneron Pharmaceuticals	Antibody	Biotech
Vir Biotechnology	Antibody	Biotech
WuXi Biologics	Antibody	Biotech
Sorrento Therapeutics; Celularity	Cell therapy	Biotech
Sirnaomics	siRNA	Biotech
National Institutes of Health	Antibody	Academic

Is it safe to travel to China or other countries where 2019-nCoV cases have occurred?

- US State Department has increased the alert level to 4, recommending that citizens not travel to China
- Screening at airports and Quarantine of returning travelers from Hubei Province.
- CDC recommends avoiding all unnecessary travel to China at this time.

Flu is a much bigger threat than Corona virus

