

Updated FAQ about Novel Coronavirus Infection

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What do we know so far?

On 31 December 2019, the World Health Organisation was alerted to several cases of pneumonia in Wuhan City, Hubei Province of China. Shortly thereafter, Chinese authorities confirmed that they had identified a new virus, from the coronavirus family, and temporarily named it 2019-nCoV. The WHO has now named the disease it causes as “2019-nCoV acute respiratory disease”.

Coronaviruses are a large family of viruses, some causing illness in people and others that circulate among animals, including camels, cats and bats. Human coronaviruses cause illnesses ranging from the common cold to more severe diseases including pneumonia. Rarely, animal coronaviruses can evolve and infect people and then spread between people such as has been seen with MERS (Middle East Respiratory Syndrome, thought to have spread via camels) and SARS (Severe Acute Respiratory Syndrome, thought to have spread via civet cats). Both viruses likely originated in bats. It is thought, but not yet confirmed, that 2019-nCoV may also have originated in bats, or possibly snakes, and then amplified in some unknown intermediate animal. An intermediate host is needed because the bat-borne virus lacks the necessary hardware to attach to human cells.

There is recent, as yet unpublished data suggesting that the stepping stone was via PANGOLINS. Pangolins are scaly long-snouted ant-eaters that are sold, controversially, for their meat and scales. Their even greater use is in traditional Chinese medicine, in which parts of the animal are used to treat ailments such as skin diseases, menstrual disorders and arthritis.

On January 26, China banned wildlife markets until the coronavirus epidemic is over. There is increasing pressure to enforce a permanent end to the trade of exotic animals.

In addition, some experts recommend compiling a watch list of all animals that could potentially transmit viruses to humans.

Global Situation Update

The Chinese have now officially named the disease NCP, or Novel Coronavirus Pneumonia.

As of February 9, 2020 the WHO has reported 31,424 cases of novel coronavirus worldwide, with 638 deaths. Globally, and even within China, more than 70% of cases continue to be reported from Wuhan and Hubei province. A total of 270 cases have been reported outside of China, from 25 countries. For better or worse, WHO includes Hong Kong, Taiwan and Macao in its China numbers, but regardless, the cases outside of China account for less than 1% of all cases.

On February 7, the death of 34-year-old Wuhan doctor, Li Wenliang, who sounded the alarm about the virus in December only to be punished, sparked an outpouring of grief and anger over the government's handling of the crisis, and demands for greater freedom of press. The Chinese law prohibiting giving out information on an epidemic was also an issue in the 2003 SARS outbreak. There is growing pressure on the Chinese central government to change this law.

Over the past three days, new case numbers have been falling, giving us some hope that the tide may be starting to turn. However, it really is too early to say for sure.

This week has also seen two confirmed infections in infants, one a newborn, although neither appear to be severely ill.

Three cruise ships have been quarantined due to Coronavirus outbreaks or fear of outbreaks, one in Japan, one in Hong Kong and one in New Jersey. The ship quarantined in Japan, The Diamond Princess, has had more than 60 confirmed infections, all linked to an elderly Hong Kong man who travelled from Yokohama to Hong Kong on January 25. The ship currently in Hong Kong was quarantined after eight former passengers were diagnosed with novel Coronavirus infection; however so far none of the 3600 passengers on board have tested positive.

Several countries, including Singapore, Australia and the US, have banned the entry of non-citizens who have travelled to China in the last 14 days.

WHO numbers dashboard:

<http://who.maps.arcgis.com/apps/opsdashboard/index.html#/c88e37cfc43b4ed3baf977d77e4a0667>

Hong Kong Centre for Health Protection numbers dashboard:

<https://chp-dashboard.geodata.gov.hk/nia/en.html>

Johns Hopkins CSSE dashboard:

<https://gisanddata.maps.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd40299423467b48e9ecf6>

Hong Kong Situation Update

Hong Kong has now reported 36 confirmed cases of novel Coronavirus infection and one death. Of the cases in Hong Kong, 13 are imported, 13 are close contacts of known cases, but 10 are locally, or possibly locally acquired, with no known epidemiological links. This does raise the possibility that some limited community transmission is occurring.

By way of comparison, Singapore has reported 40 confirmed cases, including several cases that may have been transmitted locally. Thailand has reported 32 cases and Japan 26 cases.

Hong Kong has now effectively closed its borders with China, by imposing a 14 day mandatory quarantine for anyone arriving from the Mainland. It is hoped that this will slow the spread enough to contain any community outbreak. Hong Kong has also enacted strict and very proactive social distancing measures, such as closing the schools and asking civil servants and many others to work from home. These measures, implemented even in the absence of a significant local outbreak, are designed to avert a possible epidemic.

Singapore has also closed its borders to all foreign travelers from mainland China, as has Australia, New Zealand, the US, India, the Maldives and others.

A few countries, including Taiwan and the Philippines have also imposed restrictions on travelers from Hong Kong. Others have suspended their flights here. Most though, have limited their restrictions to travelers from the Mainland.

How many cases ARE there?

The true number of cases affected by the virus remains a matter of speculation. Modelling by scientists at Imperial College London suggests that there are many more cases than currently reported, possibly 100,00 or more. However, the corresponding author on this study admits that this is still just a best guess. In large part, the uncertainty over numbers is related to differences in what constitutes a case, and difficulties in finding and counting milder cases. China counts only pneumonia cases; other places have detected patients with milder disease. If there are many mild or minimally symptomatic cases, then the count is likely far higher than reported, but the average severity is likely lower. Some of the cases detected outside of China have had only minimal symptoms and have recovered quickly, suggesting that the spectrum of disease can vary from mild to severe.

What are the characteristics of the disease?

2019-nCoV appears to cause mild to severe respiratory illness with symptoms including:

- Fever (83%)
- Malaise
- Dry cough (82%)

- Difficulty breathing
- Pneumonia in both lungs (75%) or one lung (25%) on chest X-ray
- Some cases have had diarrhea and vomiting

These percentages are based on Chinese numbers, which only count cases of pneumonia. The full clinical picture of 2019-nCoV is still not completely clear. It is thought that about 20% of cases are severe, but again, this is based on incomplete and possibly skewed data.

Early indications are that men are more at risk than women and that people of older age or with underlying health conditions are more likely to develop severe disease. There have been some paediatric cases, but no deaths. The spectrum of disease in children is not well understood. SARS was not a paediatric disease and it is to be hoped that 2019-nCoV is not either.

The incubation period is estimated to be between 2 and 14 days, with an average of 5.2 days. The estimated range will likely be narrowed as more data become available.

Transmission is thought to be by respiratory droplets. That means it is spread by sick people coughing or sneezing out the virus in droplets which can be breathed in by another person, or can settle on objects (known as “fomites” in med-speak). It is thought that diseases spread by droplet transmission may also be transmitted by people touching contaminated fomites and then touching their eyes, nose or mouth. This is why hand-washing is so important.

There is some preliminary evidence that the virus may also be spread by the fecal-oral route. During SARS, there was a well-publicized event whereby the disease was spread by this route through the bathroom drains in the building. Although this does not seem to be an important mode of transmission for 2019-nCoV, the Department of Health does recommend that you regularly (about once a week) pour about half a liter of water into each drain outlet (U-traps). As an extra precaution, they advise that you close the toilet lid before flushing to avoid spreading germs.

The disease is thought to be spread mainly by sick, symptomatic patients. Asymptomatic transmission has, however, been reported. It is not clear how common this is; the WHO has stated that it is likely to be rare. Currently the R₀, or average number of people infected by a single sick person, is estimated to be between 2 and 3, higher than for seasonal flu, but lower than SARS. The massive control measures underway are designed to try to reduce the R₀ to less than 1, so that the disease stops spreading.

What is the chance of dying of WuFlu?

The case fatality rate of 2019 nCoV is the topic of some debate and uncertainty. Just looking at the official numbers, the death rate is approximately 2%. Many experts feel this is an overestimate, as it is likely that there are a great many more mild cases than have been reported. In addition, in cases outside of Hubei province, the death rate appears to be much lower. There have been only 2 deaths outside of China, out of nearly 300 cases. This would imply a case fatality rate under 1%. More data is needed before an accurate assessment can confidently be made.

Is this now an epidemic? A pandemic? What is the difference?

An epidemic refers to an increase, often sudden, in the number of cases of a disease above what is normally expected in that population in that area. Outbreak carries the same definition as epidemic, but is often used for a more limited geographic area. A pandemic refers to an epidemic that has spread globally, usually affecting a large number of people.

HIV/AIDS is an example of a pandemic, one of the most destructive ones in history. The Spanish influenza in 1918-1919 is another. The latter is estimated to have killed 50 million people worldwide. By contrast, the emergence of Ebola Fever Disease in West Africa in 2016 was an outbreak that became an epidemic, but never turned into a pandemic.

2019-nCoV started as an outbreak in Wuhan, but would now qualify as an epidemic. As global cases are still limited, it does not yet constitute a pandemic. The public health measures being taken are designed to try to prevent it from becoming one.

The WHO declared a PHEIC. What does this mean?

The WHO declares a PHEIC (pronounced “fake”), or Public Health Emergency of International Concern when there is an extraordinary event that is determined to constitute a public health risk globally through the international spread of disease and to potentially require a coordinated international response. A key consideration in declaring a PHEIC is whether the disease threat is dire enough to risk countries enacting travel and trade restrictions, with potentially very serious economic consequences. Since the tool was developed in 2007, the WHO has only declared a PHEIC 5 times, once for Swine Flu in 2009, once for polio resurgence in 2014, twice for Ebola and once for Zika virus.

Although initially the WHO declined to declare 2019-nCoV a PHEIC, on January 30 they changed their mind due to increased international transmission and some cases of person-to-person spread outside of China. This is meant to help mobilize international response, and in particular to help protect countries with weaker healthcare systems. The WHO may recommend travel restrictions, but has not done so in this case. Many countries, including the US, Singapore, Australia and Japan have made their own decision to close their borders with China.

What is the role of masks?

Public health officials in Hong Kong have recommended that people wear a surgical mask when taking public transport, when in crowded places or when sick themselves. This is reasonable advice, but masks have become quite difficult to obtain. Should you be worried if you don't have access to face masks? How important are they?

The answer is, not very. Most people wear masks incorrectly, often contaminating themselves when putting them on or taking them off, touching their face due to the discomfort they cause, taking them off to eat, or by re-using them.

Masks are most important for sick people, to prevent them spreading their viral droplets around when they cough or sneeze. They also can be important for healthcare professionals who have close contact with sick people; in this case special virus-filtering masks (N95 masks) may be recommended. For healthy people, their role is less clear. They likely make sense in highly infected areas such as Wuhan itself, where the chance of coming in contact

with a coronavirus patient is quite high. In Hong Kong, this likelihood is low at present, and face masks have less of a role.

In all cases, other measures are far more important, in particular hand-washing. Try to avoid touching your face and practice hand hygiene frequently. If you do wear a mask, make sure to wash your hands before putting it on and after taking it off, and pay attention to how often you touch your face.

The following information on correct use of medical masks derives from the practices in health-care settings:

1. place mask carefully to cover mouth and nose and tie securely to minimise any gaps between the face and the mask;
2. while in use, avoid touching the mask;
3. remove the mask by using appropriate technique (i.e. do not touch the front but remove the lace from behind);
4. after removal or whenever you inadvertently touch a used mask, clean hands by using an alcohol-based handrub or soap and water if visibly soiled
5. replace masks with a new clean, dry mask as soon as they become damp/humid;
6. do not re-use single-use masks; discard single-use masks after each use and dispose of them immediately upon removal.

How does testing for Coronavirus work?

Testing for 2019nCoV infection involves taking a swab from the nose or mouth and looking for the DNA of the virus (PCR testing). In Hong Kong, testing can only be done by the government virology lab, and, as of this week, by all the government hospital cluster laboratories. The test takes about 3 hours to run, but usually takes longer as it is run in batches.

Private hospitals and doctors' offices cannot do the test. Patients who may have been exposed, or who are suspected cases, must go through the public hospital system.

Are there treatments? What about a vaccine?

There are no definitive treatments for novel Coronavirus infection. Treatment is largely supportive, involving provision of intravenous fluids, antibiotics, inhalers, oxygen and close monitoring.

The Chinese government has reportedly taken a stopgap measure by treating coronavirus patients with HIV drugs -- an oral two-pill combination of antiretroviral drugs along with an inhaled medication. These drugs target an enzyme called protease which is found in coronaviruses as well as in the HIV virus. When protease is disrupted, the virus has difficulty reproducing itself. These treatments do look promising, although not curative. Studies are underway.

Standard antiviral drugs such as Tamiflu do not work. Some other medications like Ribavirin and Interferon may have limited effect. Another antiviral drug, Remdesivir, is showing

promise. This drug was developed initially as a treatment for Ebola virus and Marburg virus disease, but has shown some effect in other coronavirus infections. Trials are underway.

Several candidate vaccines are in development including one in Hong Kong. However, even if development is expedited, these vaccines are months to a year away at a minimum and are therefore unlikely to be the answer to controlling the epidemic.

How do you actually control an epidemic?

It's all about getting the R_0 – the number of people infected by a single sick person, down below 1. Once this happens, the disease will die out. To do this, human-to-human transmission must be curbed. The main strategies for doing this are isolation, quarantine, contact tracing and social distancing.

Isolation is used to separate **ill** persons from those who are healthy. Patients who are sick with coronavirus infection will be isolated in hospital and separated from other patients. Hong Kong greatly expanded its isolation capacity after SARS, and currently all confirmed cases are isolated in special units.

Quarantine is used to separate and restrict the movement of **well** persons who may have been exposed to a communicable disease to see if they become ill. These people may have been exposed to the disease and do not know it, or they may have the disease but do not show symptoms. Currently, close contacts of novel coronavirus cases are being quarantined in several holiday centres around Hong Kong.

Contact tracing is defined as the identification and follow-up of persons who may have come into **contact** with an infected person. The department of health is diligent in this regard; contacts of Coronavirus cases are being followed up and quarantined.

Why did they close the schools? What is social distancing?

Social distancing is a public health safety intervention used to reduce the likelihood of transmitting communicable disease. Social distancing involves minimizing exposure to infected individuals by avoiding large public gathering venues, and by following proper personal hygiene practices.

Closing the schools was done pre-emptively, as part of a social distancing strategy. During the SARS epidemic in 2003, the government was criticized for not closing schools quickly enough. That critique certainly can't be levied this time, as the schools have been closed even in the absence of a local outbreak.

Cancelling mass gatherings and closing workplaces are other examples of social distancing. We have all been affected by event cancellations and many people are now working from home. It is all not very much fun, but worth it in the end if it averts an epidemic.

What we can say for now is that so far the public health measures being taken seem to have worked. We have not had a huge number of cases. Time will tell and hindsight will be 20/20.

The Seven Habits of Highly Protected People

1. Avoid crowded places and close contact with people who are unwell
2. Frequently wash hands with soap and water for at least 20 seconds (the time taken to sing “happy birthday” twice). Use alcohol hand-rub when soap and water is not available.
3. Wear a mask if you have respiratory symptoms or if you need to be in a crowded place. Make sure to wash your hands before putting a mask on and after taking it off.
4. Cover your mouth and nose with tissue or your flexed elbow when coughing or sneezing and dispose of the tissue immediately afterwards.
5. Avoid visiting live animal markets and the consumption of raw or undercooked meat.
6. Observe good personal hygiene and learn to avoid touching your face
7. Seek medical attention promptly if you are unwell. Make sure to share your travel history with your healthcare provider

Simple things prevent infection, if we are consistent and vigilant about applying them.

Good Sources of Information

There is a great deal of information circulating online, not all of it good. The WHO has called it an Infodemic, and has launched a concerted attempt to counter the false information and rumours that are circulating, via a number of social media platforms including (including Weibo, Twitter, Facebook, Instagram, LinkedIn, Pinterest) and their website.

<https://www.who.int>

<https://www.facebook.com/WHO/>

<https://twitter.com/WHO>

https://www.weibo.com/whoinchina?is_hot=1

<https://www.instagram.com/WHO/>

<https://www.linkedin.com/company/world-health-organization/>

<https://www.pinterest.ch/worldhealthorganization/>

Other good sources:

Hong Kong Centre for Health Protection

<https://www.chp.gov.hk/en/features/102465.html>

Public Health England

<https://www.gov.uk/government/publications/wuhan-novel-coronavirus-background-information/wuhan-novel-coronavirus-epidemiology-virology-and-clinical-features>

Centers for Disease Control (CDC) US:

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

The New York Times, The Washington Post and The Boston Globe have deep experience in health reporting