

Covid 19: Information and Resources

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Abstract:

Coronavirus disease (COVID-19) is an infectious disease caused by a new virus. Most people infected with the COVID-19 virus will experience mild to moderate respiratory illness and recover without requiring special treatment. Older people, and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illness.

In addition to links to helpful resources from national and local health authorities, people will also find a carousel of Twitter accounts from local civic organizations and health authorities to help connect them with the latest local guidance as it's shared. We've also introduced a feature to surface some of the most common questions about the pandemic, with relevant snippets sourced from the WHO and the Centers for Disease Control and Prevention (CDC).

As this public health crisis has evolved into a pandemic, information needs are continuing to change, differing from region to region. When COVID-19 was declared a public health emergency by the World Health Organization (WHO) in late January.

As the outbreak of coronavirus disease 2019 (COVID-19) in China's Hubei province continues and new cases of the disease increase globally.

Coronavirus disease 2019 (COVID-19) is a respiratory illness that can spread from person to person, which has affected people in many countries. Here are some resources to find more information.

Introduction:

Coronaviruses are a large family of zoonotic viruses that cause illness ranging from the common cold to severe respiratory diseases. Zoonotic means these viruses are able to be transmitted from animals to humans. There are several coronaviruses known to be circulating in different animal populations that have not yet infected humans. COVID-19 is the most recent to make the jump to human infection.

Common signs of COVID-19 infection are similar to the common cold and include respiratory symptoms such as dry cough, fever, shortness of breath, and breathing difficulties. In more severe cases, infection can cause pneumonia, severe acute respiratory syndrome, kidney failure, and death.

The COVID-19 infection is spread from one person to others via droplets produced from the respiratory system of infected people, often during coughing or sneezing. According to current data, time from exposure to onset of symptoms is usually between two and 14 days, with an average of five days.

COVID-19: A History of Coronavirus

Coronaviruses are a large family of viruses that can cause illnesses ranging widely in severity. The first known severe illness caused by a coronavirus emerged with the 2003 Severe Acute Respiratory Syndrome (SARS) epidemic in China. A second outbreak of severe illness began in 2012 in Saudi Arabia with the Middle East Respiratory Syndrome (MERS).

On December 31 of last year, Chinese authorities alerted the World Health Organization of an outbreak of a novel strain of coronavirus causing severe illness, which was subsequently named SARS-CoV-2. As of February 20, 2020, nearly 167,500 COVID-19 cases have been documented, although many more mild cases have likely gone undiagnosed. The virus has killed over 6,600 people.

Shortly after the epidemic began, Chinese scientists sequenced the genome of SARS-CoV-2 and made the data available to researchers worldwide. The resulting genomic sequence data has shown that Chinese authorities rapidly detected the epidemic and that the number of COVID-19 cases have been increasing because of human to human transmission after a single introduction into the human population.

Types of Human Coronavirus:

Coronaviruses are named for the crown-like spikes on their surface. There are four main sub-groupings of coronaviruses, known as alpha, beta, gamma, and delta.

Human coronaviruses were first identified in the mid-1960s. The seven coronaviruses that can infect people are:

Common human coronaviruses

1. 229E (alpha coronavirus) α -CoV
2. NL63 (alpha coronavirus) α -CoV
3. OC43 (beta coronavirus) β -CoV
4. HKU1 (beta coronavirus) β -CoV

Other human coronaviruses

5. MERS-CoV (the beta coronavirus that causes Middle East Respiratory Syndrome, or MERS)
6. SARS-CoV (the beta coronavirus that causes severe acute respiratory syndrome, or SARS)
7. SARS-CoV-2 (the novel coronavirus that causes coronavirus disease 2019, or COVID-19)

First four of these strains produce the generally mild symptoms of the common cold.

People around the world commonly get infected with human coronaviruses 229E, NL63, OC43, and HKU1.

Coronavirus disease (COVID-19) Pandemic:

The COVID-19 coronavirus pandemic has led to mass scientific conference cancellations, travel restrictions, social distancing, and other unprecedented prevention measures.

Coronavirus disease spreads primarily through contact with an infected person when they cough or sneeze. It also spreads when a person touches a surface or object that has the virus on it, then touches their eyes, nose, or mouth.

The disease causes respiratory illness (like the flu) with symptoms such as a cough, fever, and in more severe cases, difficulty breathing. You can protect yourself by washing your hands frequently, avoiding touching your face, and avoiding close contact (1 meter or 3 feet) with people who are unwell.

COVID-19 coronavirus epidemic:

The novel SARS-CoV-2 coronavirus that emerged in the city of Wuhan, China, last year and has since caused a large scale COVID-19 epidemic and spread to all over countries.

The COVID-19 virus spreads primarily through droplets of saliva or discharge from the nose when an infected person coughs or sneezes, so it's important that you also practice respiratory etiquette (for example, by coughing into a flexed elbow).

How does the virus spread?

The scientists analyzed the genetic template for spike proteins, armatures on the outside of the virus that it uses to grab and penetrate the outer walls of human and animal cells. More specifically, they focused on two important features of the spike protein: the receptor-binding domain (RBD), a kind of grappling hook that grips onto host cells, and the cleavage site, a molecular can opener that allows the virus to crack open and enter host cells.

The scientists found that the RBD portion of the SARS-CoV-2 spike proteins had evolved to effectively target a molecular feature on the outside of human cells called ACE2, a receptor involved in regulating blood pressure.

- Like other coronaviruses, the new one is transmitted from person to person via droplets when an infected person breathes out, coughs or sneezes. It can also spread via contaminated surfaces such as door handles or railings.

- Infectious disease and virus specialists estimate that each person carrying the virus is passing it to two or three other people on average.

- COVID-19 causes a range of symptoms. The most common include fever, fatigue and a dry cough. The disease is mild in majority of the cases.

- In the most critical cases, the infection can cause severe pneumonia, multiple organ failure and death.

- WHO says COVID-19 has killed about 5.9 percent of confirmed cases globally, a figure far above the fatality rate for the seasonal flu.

Covid-19 is very much a disease of the moment, emerging in a crowded city in a newly prosperous and connected China before spreading to the rest of the world in a matter of months. But our response to it has been both hyper-modern – and practically medieval.

Counterattack:

Scientists around the world are using cutting-edge tools to rapidly sequence the genome of the coronavirus, pass along information about its virulence, and collaborate on possible countermeasures and vaccines, all far quicker than could have been done before.

Compared with human cells, viruses are small and can't reproduce on their own. The coronavirus has about 30 proteins, whereas a human cell has more than 20,000.

To get around this limited set of tools, the virus cleverly turns the human body against itself. The pathways into a human cell are normally locked to outside invaders, but the coronavirus uses its own proteins like keys to open these "locks" and enter a person's cells.

Once inside, the virus binds to proteins the cell normally uses for its own functions, essentially hijacking the cell and turning it into a coronavirus factory. As the resources and

mechanics of infected cells get retooled to produce thousands and thousands of viruses, the cells start dying.

Lung cells are particularly vulnerable to this because they express high amounts of the "lock" protein SARS-CoV-2 uses for entry. A large number of a person's lung cells dying causes the respiratory symptoms associated with COVID-19.

Clinical Treatment of Covid-19:

At this time, there are no specific vaccines or treatments for COVID-19. However, there are many ongoing clinical trials evaluating potential treatments. WHO will continue to provide updated information as soon as clinical findings become available

The best way to prevent and slow down transmission is be well informed about the COVID-19 virus, the disease it causes and how it spreads. Protect yourself and others from infection by washing your hands or using an alcohol based rub frequently and not touching your face.

Antimalaria drug Hydroxychloroquine and antibacterial Azithromycin have been advised to be administered to confirmed patients of novel coronavirus in India by Ministry of Health and Family Welfare (MoHFW). The clinical guidelines were revised on March 31.

Uptil now MoHFW advisory said that only Hydroxylchloroquinine should be given as preventive treatment to healthcare workers and contacts of confirmed cases.

Also, anti-HIV drugs Lopinavir and Ritonavir were advised for patients with severe disease admitted in intensive care unit (ICU), which have now been removed.

However, based on the available information (uncontrolled clinical trials), the following drugs may be considered as an off-label indication in patients with severe disease and requiring ICU management - Hydroxychloroquine 400 mg twice a day for one day, followed by 200 mg twice a day for 4 days, in combination with Azithromycin 500 mg once a day for 5 days.”

Conclusions:

This provides important information on the development of the disease and the fact that severe cases of Covid-19 present with multi-organ failure and evidence of cardiovascular damage.

It also provides details about the interactions of the virus on a cellular level, as well as how it can infect blood vessels and kidneys.

Coronaviruses are zoonotic, meaning they are transmitted between animals and people. While the animal source of the new type of virus is not yet clear, scientists suspect bats may be its host, and say the virus passed to humans via another animal species, such as the pangolin.

Scientists believe SARS also originated in bats and was most likely passed on to humans through cat-like civets. The coronavirus that causes the Middle East Respiratory Syndrome (MERS) jumped to humans via camels. Below, we look at the most deadly disease outbreaks that originated in animals.

Covid-19 marks the return of a very old – and familiar – enemy. Throughout history, nothing has killed more human beings than the viruses, bacteria and parasites that cause disease. Not natural disasters like earthquakes or volcanoes. Not war – not even close.

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