# 新型冠状病毒感染防护手册

# A Manual on Protection Against COVID-19

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守望相助　　患难与共

Stand Firmly Together in Overcoming Difficulties

携手同心　　共克时艰

Work as One to Overcome Adversity

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# I. Basic Information

## 1. What is coronavirus?

Coronaviruses are a group of viruses that widely exist in the nature. The name refers to its characteristic crown-like morphology by electron microscopy. Coronavirus belongs to the genus Coronavirus, the family Coronaviridae, and the order Nidovirales. Its genome size is the largest among known RNA viruses. So far, coronavirus is only found to infect vertebrates, causing respiratory, digestive and nervous system diseases in humans and animals.

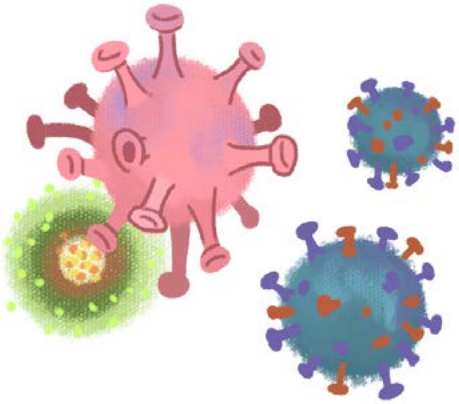
## 2. How are coronavirus and animal related?

Many viruses that infect humans are originally viruses carried by animals. When the viruses in animals mutate, they may come to infect humans, replicate in human body and spread among people. Animal coronaviruses primarily comprise mammalian coronaviruses and avian coronaviruses. Mammalian coronaviruses are mostly α and β coronaviruses, which infect dogs, cats, mice, pigs, cattle, horses, bats and other animals. Avian coronaviruses are mainly

derived from γ and δ genus coronaviruses and can infect birds such as chickens, ducks, geese, pigeons and sparrows.

## 3. What are the physical and chemical characteristics of coronavirus?

Coronavirus in human is sensitive to ultraviolet rays and heat. It can be stored for several years at -60 °C. However, with the increase of temperature, the resistance of the virus decreases. Coronavirus can be effectively inactivated after 30 minutes at 56 °C. Coronavirus in human is not resistant to acids and alkalis, and the optimal pH for virus replication is 7.2.



lipid solvents such as ether, 75% ethanol, chlorine-containing disinfectant, peroxyacetic acid and chloroform can inactivate the virus. However, chlorhexidine cannot effectively inactivate it.

## 4. What is the novel coronavirus (SARS-CoV-2)?

Coronaviruses are a large family of viruses that cause illness ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV). A novel coronavirus is a new strain that has not been previously identified in humans. On February 11, 2020, the coronavirus research group of the International Committee on Taxonomy of Viruses officially named it "SARS-CoV-2" and identified it as a sister virus to the SARS-CoV. The disease caused by the SARS-CoV-2 is named Coronavirus Disease 2019 (COVID-19).

## 5. What are the differences between SARS-CoV-2 and SARS-CoV , MERS-CoV?

In addition to SARS-CoV-2, there are 6 other coronaviruses that are known to infect humans, 4 of which are more common in the population and low pathogenic, generally causing only mild respiratory symptoms similar to the common cold. The other 2 are the already well-studied SARS-CoV and MERS-CoV. SARS-CoV-2 belongs to the β Coronavirus genus. It has envelopes and particles that are round or oval. It's often polymorphic, with a diameter of 60 - 140nm. The genetic characteristics of SARS-CoV-2 are significantly different from those of SARS-CoV and MERS-CoV.

## 6. What are the transmission routes of COVID-19?

At present,the main sources of infection are patients carrying SARS-CoV-2. Asymptomatic virus carriers can also be a source of infection. Respiratory droplet and physical contact are the main routes of transmission. The former, such as the droplets coming with sneezing, coughing and speaking, may cause infection through inhalation. The latter, such as touching the mucosa of mouth, nose, eyes and other organs with a hand that has been previously exposed to the virus, may cause infection. In a relatively closed environment, long-time exposure to high concentrations of aerosol (colloid dispersion system in which the droplets of infected persons are dispersed and suspended in the air) may also cause infection. Because we have isolated the SARS-CoV-2 from the feces and urine of patients, the aerosol or contact transmission caused by feces and urine should be noted.

## 7. How long can SARS-CoV-2 survive outside of human body?

There is no authoritative research data in this regard, as SARS-CoV-2 is a newly discovered virus, and we do not have enough information about it. However, SARS-CoV-2 and SARS virus are sister viruses and are highly correlated genetically. We can refer to some research results of SARS virus.

(1) SARS virus survives on the surface of non-water-absorbent materials for about 48 hours;

(2) SARS virus survives on the surface of water-absorbent materials for about 6 hours;

(3) The survival ability of SARS virus in tap water is strong, and the survival time can exceed 48 hours.

This indicates that SARS virus has low resistance to dryness. In different humidity environments, its survival time is different. In a dry state, SARS virus does not survive for more than 48 hours. With reference to the above SARS virus data, it can be inferred that the survival time for SARS-CoV-2 on places like elevator buttons and door handles is about 48 hours.

# II. Symptoms

## 1. What are the symptoms of COVID-19?

Based on current epidemiological research, the COVID-19 has an incubation period of 1 to 14 days, mostly 3 to 7 days.The main symptoms of COVID-19 are fever, dry cough and fatigue. Some patients may have symptoms such as nasal congestion,runny nose, sore throat, myalgia and diarrhea. Severe patients often have dyspnea and/or hypoxemia one week after the onset of the disease. In severe cases, it can quickly develop into acute respiratory distress syndrome, septic shock, metabolic acidosis, coagulation disorder and multiple organ failure. It should be noted that severe and critical patients may only have moderate to low fever, or even no obvious fever.

Some children and newborns may have "atypical" symptoms, such as vomiting, diarrhea and other digestive system symptoms, or show only weakness and shortness of breath.

Mild infections showed only low fever, slight fatigue, and no pneumonia.

According to the current cases admitted, most of the patients have a good prognosis and a few are in critical

condition. Older people, and those with underlying medical problems have poor prognosis.The clinical course of maternal women with COVID-19 are similar to that of the same age group. The symptoms of children are relatively mild.

## 2. What are the differences between the symptoms caused by COVID-19 and those by SARS, flu, and common cold?

According to the current clinical cases, COVID-19 is mainly manifested by fever, fatigue, dry cough, etc. Some patients may also have upper respiratory tract symptoms such as nasal congestion, runny nose, sputum, and digestive symptoms such as diarrhea. In some cases, the disease aggravates after one week, symptoms of pneumonia such as dyspnea, and other complications appear. Mild infections show only low fever, mild fatigue, and no pneumonia. Some virus-carriers have no obvious clinical symptoms, even though they test positive for SARS-CoV-2 in nucleic acid detections.

The symptoms of severe cases caused by COVID-19 are similar to that of SARS.

The main symptoms of flu (abbreviation for influenza) are fever, cough, headache, sore throat, myalgia or arthralgia, whole body