

# Facts about the SARS-CoV-2 virus and COVID-19 disease

## **About the virus**

The coronavirus family includes many different viruses that can cause respiratory infection. Many coronaviruses only cause colds, while others can cause more serious illness and, in some cases, death.

The novel coronavirus SARS-CoV-2 was first discovered in January 2020. It has some genetic similarities to the SARS virus (Severe Acute Respiratory Syndrome) which also belongs to the coronavirus family. The virus that causes MERS (Middle East Respiratory Syndrome) is another coronavirus.

Coronaviruses are also detected in animals. In rare cases, these coronaviruses can develop so they can transmit from animals to humans and between humans, as seen during the SARS epidemic in 2002. The infection probably came from bats via civet cats and other animals. and, where dromedary camels were the source of infection for the MERS virus discovered in 2012.

The new coronavirus is believed to come from bats and was transmitted to humans in the end of 2019, either directly or via other animals, but this has not been determined. There is no documentation that mutations (changes in genetic material) that have appeared since the virus was discovered have had any effect on the virus' ability to cause disease.

Research indicates that coronaviruses (including current information about the new virus) can survive on surfaces from a few hours to several days. This will vary under different conditions, such as type of surface, temperature, sunlight and air humidity. We know less about the virus transmits further from different surfaces.

## Transmission

SARS-CoV-2 is mainly spread by droplet and contact transmission with near contact (1).

As with colds and influenza, the virus is transmitted from the respiratory tract of a sick person in three ways;

- Droplet transmission: When someone who is contagious coughs, sneezes, or talks/sings, small droplets that contain virus are flung into the air. The droplets fall down quickly, usually within a meter, but people who stand close enough can breathe in the virus, or it comes into contact with the mucosa of their eyes, nose or mouth.
- By direct contact. The person who is sick has the virus on their hands from their own saliva or airway secretions and transmits it by contact with others, for example, when shaking hands. They then transfer the virus from their hands to the mucosa of their eyes, nose or mouth.
- By indirect contact. The virus is transmitted onto objects or surfaces (e.g. door handles, keyboards, telephones etc) by sneezing or coughing, or when the sick person has the virus on their hands, and then others touch the contaminated object/surface.

A systematic review from the Norwegian Institute of Public Health shows that it is difficult to gather sufficient evidence for how many of the COVID-19 patients were infected by each of the transmission routes. There is still insufficient knowledge to be certain about what role airborne transmission plays in transmission of SARS-CoV-2 outside the healthcare sector. However, it can be summarized that there is currently no evidence that airborne transmission plays a key role in the transmission of COVID-19. Healthcare personnel should nevertheless use protection against airborne transmission when aerosol-generating procedures are used in hospitals.

The virus has been detected in faeces (stools), blood and urine, but it has none been shown that anyone has been infected by contact with these bodily fluids.

Current knowledge indicates that transmission mainly occurs from sick people with symptoms, or just before symptoms arise (1-2 days) (presymptomatic carriers).

Some people can be infected by SARS-CoV-2 without developing symptoms, but lead to further transmission of others (asymptomatic carriers). It is not yet clear how often this happens, but it can be assumed to account for a small amount of transmission.

### **Infection from food, water and animals**

Currently, there are no known cases of infection via food produced in Norway or imported, or from water and animals. Based on current knowledge of coronaviruses, infection via food and water is considered unlikely. So far, no information has emerged of transmission between animals and humans. In the Netherlands and Denmark, SARS-CoV-2 has been detected in mink that are believed to have been infected by keepers. Infection of mink or other animals does not appear to have a role in transmission of the virus. It is nevertheless important that people with COVID-19 or people in quarantine do not go to work as keepers and have close contact with mink.

In the case of swimming pools, the chlorine content of the pool water will be sufficient to inactivate coronaviruses and other viruses. However, physical contact in changing rooms and by the pool could lead to transmission as with any other close contact.

### **How contagious is it? (R0)**

Calculations from China estimate that a person infected with coronavirus infects 2-3.6 others on average (2-4). In comparison, a person with influenza will infect 1-2 people. The calculations for coronavirus are currently very uncertain and will probably be lower in Norway because we have a lower population density and have implemented measures to limit transmission.

### **Incubation**

The incubation time (from infection until symptoms appear) is estimated by WHO to be 5-6 days but this can vary from 0 to 14 days.

## Symptoms and disease

The new coronavirus causes respiratory infections, ranging from mild symptoms to severe disease and, in rare cases, death.

Some people may have COVID-19 without developing symptoms. This is especially true for children and younger adults. It is unclear to what extent people without symptoms can transmit the disease.

Usually, people who become ill initially experience upper respiratory tract symptoms (sore throat, cold symptoms, mild cough), as well as feeling generally unwell and having muscle pain. Stomach pains may be present, and diarrhea may occur in some cases. The loss of the senses of smell and taste have been reported in several countries.

The course of the disease varies widely between individuals. Currently, the typical courses appear to be:

- **Mild course:** This applies to the majority of people who become sick. Symptoms pass within one to two weeks. These people rarely need treatment from the healthcare service.
- **Moderate course:** After 4-7 days of mild symptoms, some people may develop pneumonia with breathing difficulties, worsening cough and rising fever. Some will need to be admitted to hospital. X-ray examination of the lungs may show changes consistent with viral pneumonia (pulmonary infiltrates)
- **Severe course:** As for the moderate course, but these people also need intensive care treatment. They may have symptoms for 3-6 weeks. As for other serious infections, different complications can arise with severe COVID-19, including lung damage, cardiovascular disease and coagulation disturbances (5-8). Some people who become seriously ill may die.

Information about risk factors for severe disease is currently limited. Admission to hospital, intensive care treatment and death are more common among the elderly and people with underlying diseases, particularly among the elderly with underlying diseases, but can also occur among people without known risk factors.