Coronavirus disease 2019 (**COVID-19**) is a contagious disease caused by a virus, the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The first known case was identified in Wuhan, China, in December 2019.[7] The disease quickly spread worldwide, resulting in the COVID-19 pandemic.

Symptoms of COVID-19 are variable, but often include fever,[8] cough, headache,[9] fatigue, breathing difficulties, loss of smell, and loss of taste.[10][11][12] Symptoms may begin one to fourteen days after exposure to the virus. At least a third of people who are infected do not develop noticeable symptoms.[13] Of those people who develop symptoms noticeable enough to be classed as patients, most (81%) develop mild to moderate symptoms (up to mild pneumonia), while 14% develop severe symptoms (dyspnoea, hypoxia, or more than 50% lung involvement on imaging), and 5% develop critical symptoms (respiratory failure, shock, or multiorgan dysfunction).[14] Older people are at a higher risk of developing severe symptoms. Some people continue to experience a range of effects (long COVID) for months after recovery, and damage to organs has been observed.[15] Multi-year studies are underway to further investigate the long-term effects of the disease.[15]

COVID-19 transmits when people breathe air contaminated by droplets and small airborne particles containing the virus. The risk of breathing these is highest when people are in close proximity, but they can be inhaled over longer distances, particularly indoors. Transmission can also occur if splashed or sprayed with contaminated fluids in the eyes, nose or mouth, and, rarely, via contaminated surfaces. People remain contagious for up to 20 days, and can spread the virus even if they do not develop symptoms.[16][17]

COVID-19 testing methods to detect the virus's nucleic acid include real-time reverse transcription polymerase chain reaction (rRT-PCR),[18][19] transcription-mediated amplification,[18][19][20] and reverse transcription loop-mediated isothermal amplification (RT-LAMP)[18][19] from a nasopharyngeal swab.[21]

Several COVID-19 vaccines have been approved and distributed in various countries, which have initiated mass vaccination campaigns. Other preventive measures include physical or social distancing, quarantining, ventilation of indoor spaces, covering coughs and sneezes, hand washing, and keeping unwashed hands away from the face. The use of face masks or coverings has been recommended in public settings to minimise the risk of transmission. While work is underway to develop drugs that inhibit the virus, the primary treatment is symptomatic. Management involves the treatment of symptoms, supportive care, isolation, and experimental measures.

Signs and symptoms

The symptoms of COVID-19 are variable depending on the type of variant contracted, ranging from mild symptoms to critical and possibly fatal illness.[37][38] Common symptoms include coughing, fever, loss of smell (anosmia) and taste (ageusia), with less common ones including headaches, nasal congestion and runny nose, muscle pain, sore throat, diarrhea, eye irritation,[39] and toes swelling or turning purple,[40] and in moderate to severe cases breathing

difficulties.[41] People with the COVID-19 infection may have different symptoms, and their symptoms may change over time. Three common clusters of symptoms have been identified: one respiratory symptom cluster with cough, sputum, shortness of breath, and fever; a musculoskeletal symptom cluster with muscle and joint pain, headache, and fatigue; a cluster of digestive symptoms with abdominal pain, vomiting, and diarrhea.[41] In people without prior ear, nose, and throat disorders, loss of taste combined with loss of smell is associated with COVID-19 and is reported in as many as 88% of symptomatic cases.[42][43][44]

Of people who show symptoms, 81% develop only mild to moderate symptoms (up to mild pneumonia), while 14% develop severe symptoms (dyspnea, hypoxia, or more than 50% lung involvement on imaging) which requiring hospitalization and 5% of patients develop critical symptoms (respiratory failure, septic shock, or multiorgan dysfunction) requiring ICU admission.[45] At least a third of the people who are infected with the virus do not develop noticeable symptoms at any point in time.[46][47] These asymptomatic carriers tend not to get tested and can still spread the disease.[47][48][49][50] Other infected people will develop symptoms later, called "pre-symptomatic", or have very mild symptoms and can also spread the virus.[50]

As is common with infections, there is a delay between the moment a person first becomes infected and the appearance of the first symptoms. The median delay for COVID-19 is four to five days[51] possibly being infectious on 1-4 of those days.[52] Most symptomatic people experience symptoms within two to seven days after exposure, and almost all will experience at least one symptom within 12 days.[51][53]

Most people recover from the acute phase of the disease. However, some people – over half of a cohort of home-isolated young adults identified in June, 2021[54][55] – continued to experience a range of effects, such as fatigue, for months even after recovery, a condition called long COVID; long-term damage to organs has been observed. Multi-year studies are underway to further investigate the potential long-term effects of the disease.[56]

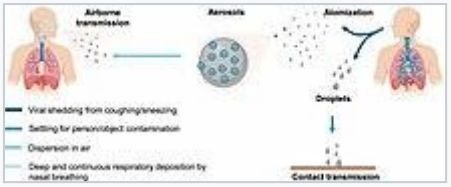
The Omicron variant became dominant in the U.S. starting in December 2021. Symptoms with the Omicron variant are less severe as they are with other variants.[57]

Cause

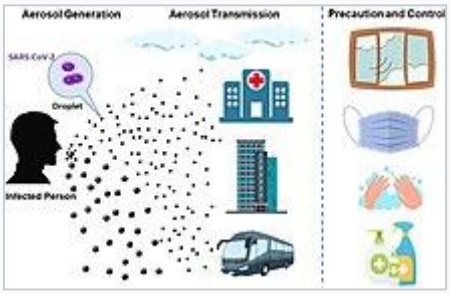
COVID-19 is caused by infection with a strain of coronavirus known as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).

Transmission

Main article: Transmission of COVID-19

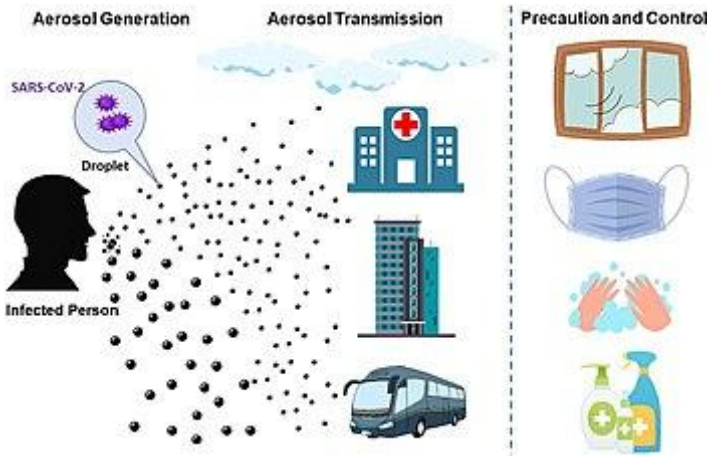


Transmission of COVID-19



Transmission of COVID-19

Other names	Mode of spread of COVID-19



Specialty	Infection prevention and control
Types	Respiratory droplet, airborne transmission, fomites
Prevention	Face coverings, quarantine, physical/social distancing, ventilation, hand washing, vaccination

COVID-19 is mainly transmitted when people breathe in air contaminated by droplets/aerosols and small airborne particles containing the virus. Infected people exhale those particles as they breathe, talk, cough, sneeze, or sing.[59][60][61][62] Transmission is more likely the more physically close people are. However, infection can occur over longer distances, particularly indoors.[59][63]

Infectivity can begin four to five days before the onset of symptoms,[64] although contact tracing typically begins only two to three days before symptom onset.[65] Infected people can spread the disease even if they are pre-symptomatic or asymptomatic.[65] Most commonly, the peak viral load in upper respiratory tract samples occurs close to the time of symptom onset and declines after the first week after symptoms begin.[65] Current evidence suggests a duration of viral shedding and the period of infectiousness of up to ten days following symptom onset for people with mild to moderate COVID-19, and up to 20 days for persons with severe COVID-19, including immunocompromised people.[66][65]

Infectious particles range in size from aerosols that remain suspended in the air for long periods of time to larger droplets that remain airborne briefly or fall to the ground.[67][68][69][70] Additionally, COVID-19 research has redefined the traditional understanding of how respiratory viruses are transmitted.[70][71] The largest droplets of respiratory fluid do not travel far, but can be inhaled or land on mucous membranes on the eyes, nose, or mouth to infect.[69] Aerosols are highest in concentration when people are in close proximity, which leads to easier viral transmission when people are physically close,[69][70][71] but airborne transmission can occur at longer distances, mainly in locations that are poorly ventilated;[69] in those conditions small particles can remain suspended in the air for minutes to hours.[69]

The number of people generally infected by one infected person varies,[72] but it is estimated that the R_0 ("R nought" or "R zero") number is around 2.5.[73] The disease often spreads in clusters, where infections can be traced back to an index case or geographical location.[74] Often in these instances, superspreading events occur, where many people are infected by one person.[72]