

Novel Coronavirus (COVID-19) - A Review

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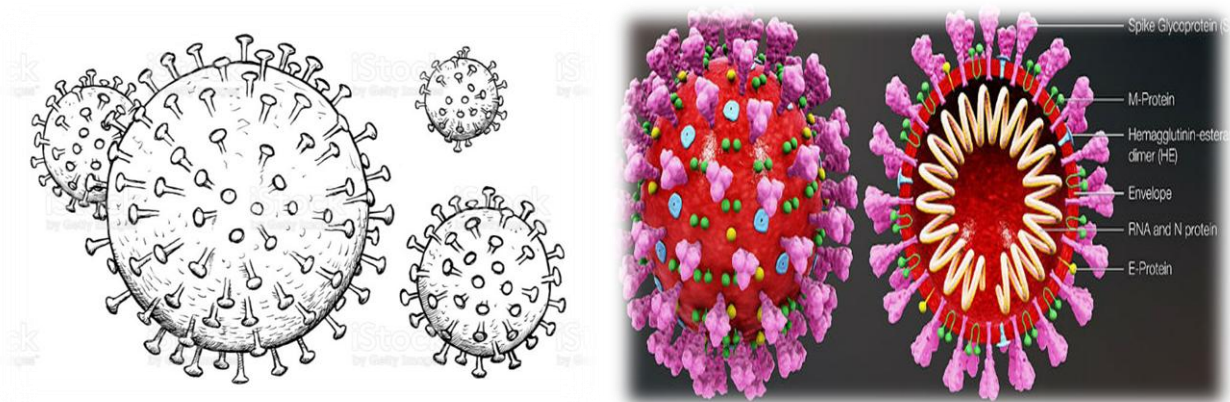
Abstract: *Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus. Most people infected with the COVID-19 virus will experience mild to moderate respiratory illness and recover without requiring special treatment older people, and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illness. The virus mainly spreads from person to person through droplet transmission in close contact. The incubation time, which is the time from the exposure to the first symptoms, is estimated to be approximately 2-12 days, on average approximately 4-5 days. How efficiently the virus spreads and the period of infectiousness are not yet well known. In general, the blood-brain barrier (BBB) serves as a natural defense against exogenously pathogenic microorganisms, attenuating the risk of intracranial infection. It is already known that human coronaviruses can spread from the respiratory tract to the central nervous system (CNS) through transneuronal and hematogenous routes. Symptoms are fever, dry cough, tiredness, aches and pains, sore throat, diarrhea, conjunctivitis, headache, loss of taste or smell a rash on skin, or discolouration of fingers or toes. Prevention avoid close contact (within about 6 feet, or 2 meters) with anyone who is sick or has symptoms. Keep distance between yourself and others (within about 6 feet, or 2 meters). This is especially important if you have a higher risk of serious illness. Keep in mind some people may have COVID-19 and spread it to others, even if they don't have symptoms or don't know they have COVID-19. Avoid sharing dishes, glasses, towels, bedding and other household items if you're sick*

Keywords: Coronavirus, moderate respiratory, blood-brain barrier, central nervous system, transmission

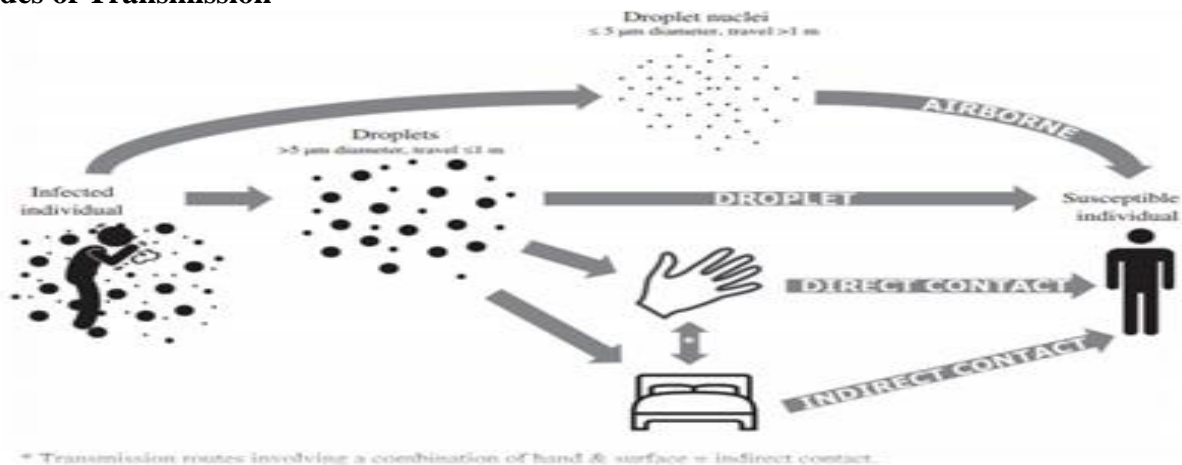
1. Introduction

Coronaviruses (CoV) belong to the genus Coronavirus in the Coronaviridae. All CoVs are pleomorphic RNA viruses characteristically containing crown-shape peplomers with 80-160 nm in size and 27-32 kb positive polarity¹. In the Wuhan region in China, an outbreak of a novel coronavirus also called severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) began in December 2019. The virus can cause COVID-19 disease. Most patients have a fever and respiratory complaints. It rapidly spread, resulting in an epidemic throughout China, with sporadic cases reported globally. In February 2020, the World Health Organization designated the disease COVID-19, which stands for coronavirus disease 2019.² A novel coronavirus (nCoV) is any recently discovered coronavirus of medical significance not yet permanently named. Although coronaviruses are endemic in humans and infections are normally mild (such as the common cold, which is caused by human

coronaviruses in about 15% of cases), cross-species transmission has produced some unusually virulent strains which can cause viral pneumonia and in serious cases even acute respiratory distress syndrome.^{3,4,5} The virus mainly spreads from person to person through droplet transmission in close contact. The incubation time, which is the time from the exposure to the first symptoms, is estimated to be approximately 2-12 days, on average approximately 4-5 days. How efficiently the virus spreads and the period of infectiousness are not yet well known. In general, the blood-brain barrier (BBB) serves as a natural defense against exogenously pathogenic microorganisms, attenuating the risk of intracranial infection. It is already known that human coronaviruses can spread from the respiratory tract to the central nervous system (CNS) through transneuronal and hematogenous routes, resulting in encephalitis and neurological diseases.⁷



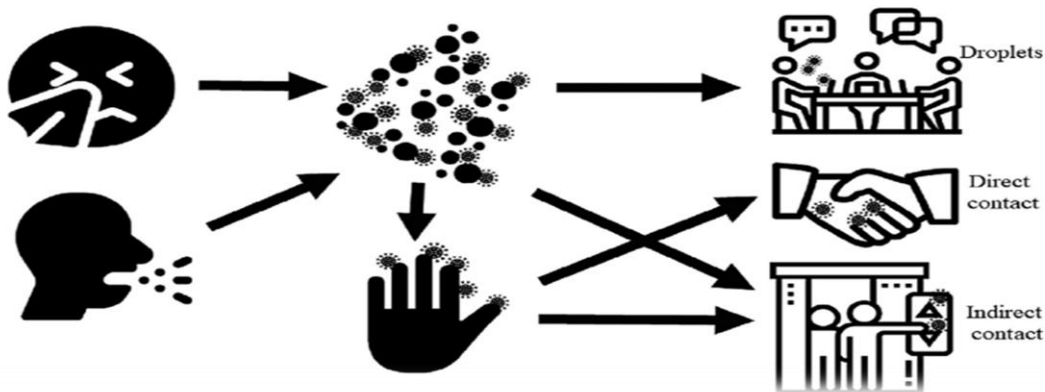
2. Modes of Transmission



Respiratory infections can be transmitted through droplets of different sizes, when the droplet particles are $>5-10\ \mu\text{m}$ in diameter they are referred to as respiratory droplets, and when then are $<5\ \mu\text{m}$ in diameter, they are referred to as droplet nuclei. According to current evidence, the COVID-19 virus is primarily transmitted between people through respiratory droplets and contact routes.⁸⁻⁹ In an analysis of 75,465 COVID-19 cases in China, airborne transmission was not reported.¹⁰ Droplet transmission occurs when a person is in close contact (within 1 m) with someone who has respiratory symptoms (e.g., coughing or sneezing) and is therefore at risk of having his/her mucosae (mouth and nose) or conjunctiva (eyes) exposed to potentially infective

respiratory droplets. Airborne transmission is different from droplet transmission as it refers to the presence of microbes within droplet nuclei, which are generally considered to be particles $<5\ \mu\text{m}$ in diameter, can remain in the air for long periods of time and be transmitted to others over distances greater than 1 m. There is some evidence that COVID-19 infection may lead to intestinal infection and be present in faeces. However, to date only one study has cultured the COVID-19 virus from a single stool specimen. There have been no reports of faecal-oral transmission of the COVID-19 virus to date¹¹

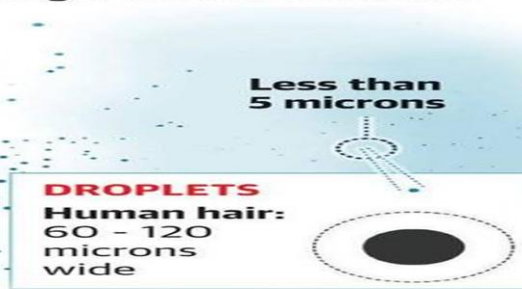
COVID-19 transmission routes: droplets, direct contact, and indirect contact



DROPLET
Coughs and sneezes can spread droplets of saliva and mucus



AIRBORNE
Tiny particles, possibly produced by talking, are suspended in the air for longer and travel further



SOURCE: WORLD HEALTH ORGANIZATION

Most common symptoms: Fever, dry cough, tiredness

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Less common symptoms: aches and pains, sore throat, rash on skin, or discolouration of fingers or toes. diarrhea, conjunctivitis, headache, loss of taste or smell a

Know the symptoms of COVID-19, which can include the following:



Complications-Although most people with COVID-19 have mild to moderate symptoms, the disease can cause severe medical complications and lead to death in some people. Older adults or people with existing chronic medical conditions are at greater risk of becoming seriously ill with COVID-19.

Complications can include-Pneumonia and trouble breathing, Organ failure in several organs, Heart problems, a severe lung condition that causes a low amount of oxygen to go through your bloodstream to your organs (acute respiratory distress syndrome), Blood clots, Acute kidney injury, Additional viral and bacterial infections.

Prevention

- Avoid close contact (within about 6 feet, or 2 meters) with anyone who is sick or has symptoms.
- Keep distance between yourself and others (within about 6 feet, or 2 meters).
- This is especially important if you have a higher risk of serious illness.
- Keep in mind some people may have COVID-19 and spread it to others, even if they don't have symptoms or don't know they have COVID-19.

- Wash your hands often with soap and water for at least 20 seconds, or use an alcohol-based hand sanitizer that contains at least 60% alcohol.
- Cover your face with a cloth face mask in public spaces, such as the grocery store, where it's difficult to avoid close contact with others. Surgical masks may be used if available.
- N95 respirators should be reserved for health care providers.



- Cover your mouth and nose with your elbow or a tissue when you cough or sneeze. Throw away the used tissue. Wash your hands right away.
- Avoid touching your eyes, nose and mouth.
- Avoid sharing dishes, glasses, towels, bedding and other household items if you're sick.
- Clean and disinfect high-touch surfaces, such as doorknobs, light switches, electronics and counters, daily.
- Stay home from work, school and public areas if you're sick, unless you're going to get medical care. Avoid public transportation, taxis and ride-sharing if you're sick.

If you have a chronic medical condition and may have a higher risk of serious illness, check with your doctor about other ways to protect yourself

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