



COVID 19

And reproduction



Corona virus

- Coronaviruses are a group of viruses that can cross species barriers and become human pathogens. All seven identified human coronaviruses originated from animal reservoirs including domestic animals, bats, or mice. While most human coronaviruses cause mild illness, severe acute respiratory syndrome coronavirus (SARS-CoV), Middle East respiratory syndrome coronavirus (MERS-CoV) and the novel SARS-CoV-2 have been associated with severe lower respiratory tract infections, acute respiratory distress syndrome, and death

The novel SARS-CoV-2 virus spreads rapidly, with 2-3 people infected from every index case, a reproduction number (R0) or transmission rate of 2.24 - 3.58

The incubation period for SARS-CoV-2 ranges from 2-14 days, and asymptomatic spread occurs prior to onset of symptoms

Transmission is thought to be mainly through respiratory droplets and fomites

In one experiment, viable virus was detected in aerosols for up to three hours, with an estimated half-life of 1.1 hours. In addition, virus was detected on surfaces for days after application, with viable SARS-CoV-2 4 identified on plastic and stainless steel up to 72 hours . SARS-CoV-2 RNA has also been detected in blood and stool and it is not yet known whether the infection can be acquired through exposure to non-respiratory bodily fluids (7).

Symptoms of SARS-CoV-2 infection

- fever, cough, fatigue, shortness of breath, sputum production, headache and myalgias. In addition, patients may report gastrointestinal symptoms (8) or anosmia. The severity of infection ranges from asymptomatic carriers, to mild flu-like disease, to critical illness and death.

Critically-ill patients may experience respiratory failure, shock or multiorgan dysfunction. Approximately 80% of infections are mild with flu-like symptoms, 15-20% are severe, requiring hospitalization and supplemental oxygen, and 5% are critical and require mechanical ventilation

Risk factors for severe illness include age and underlying medical comorbidities such as cardiovascular disease, diabetes, chronic respiratory disease, hypertension and cancer . Death may occur in up to 4.5% of infections. Death from SARS-CoV-2 is more common in individuals over age 60 or with underlying medical issues but can occur in younger persons, perhaps related to the inoculum. Associated cardiac arrhythmias may be fatal.

While persons of advanced age are most likely to experience severe symptoms, women of reproductive age are also at risk for development of severe disease and death. Furthermore, reproductive age women can act as asymptomatic carriers and increase viral transmission.

Pathophysiology of corona viruses

- Coronaviruses are large, single-stranded, enveloped RNA viruses approximately 32KB (11). The viral RNA genome is housed inside a nucleocapsid, which itself is contained within a viral envelope (12). This envelope comprises three distinct proteins: a “membrane protein” and “envelope protein,” which are both directly responsible for viral assembly, as well as a “spike protein,” which mediates viral entry into host cells (12). When viewed with electron microscopy, these spike proteins are surface-exposed markers that produce a recognizable “crown-like” appearance to the virus

Pathophysiology of corona viruses

- The spike proteins serve a critical step in initiating human infection, as well as determining host tissue specificity and inducing host immune response (13-15). The coronavirus spike protein is composed of two unique subunits 9 that facilitate viral-host binding (16-19). The S1 domain of the spike protein functions in viral binding and attachment to the host cell membrane. Numerous receptors on the human cell membrane that are involved in S1 subunit binding have been identified to date, including angiotensin converting enzyme-2 (ACE2), CD26, Ezrin, and cyclophilins (20, 21). The S2 domain of the spike protein is responsible for fusion of the viral and host cell membranes,

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