

SARS-CoV-2 and COVID-19



A Novel Coronavirus

mised so this immune response could potentially have a more severe impact to their body in its attempt to eliminate the virus. This could result in a more deadly case of COVID-19 for them.

Symptoms of COVID-19, fever, cough and tiredness are similar to influenza and appear anywhere from two to 14 days after exposure. Additional symptoms may include shortness of breath or difficulty breathing, muscle aches, chills, sore throat, runny nose, headache and chest pain. Some people also experience loss of taste or smell. COVID-19 can be asymptomatic, meaning people test positive for the virus but never have any outward signs of COVID-19 itself. It is unknown how many people are “carriers” of the virus. When symptoms do appear, they can be anywhere from very mild to severe and may result in hospitalization or death even in people who are not known to be high risk.

Transmission

The World Health Organization (WHO) states that SARS-CoV-2 spreads via respiratory secretions, directly through droplets or, potentially, indirectly from contaminated surfaces.

Direct transmission, the overwhelmingly most common route, is from an infected person who coughs, sneezes, speaks or sings. The virus contained in the droplets can infect anyone within approximately 3 to 6 feet and enters through the mouth, nose or eyes. Symptomatic and asymptomatic people spread the virus to others.

Indirect transmission may be achieved by an infected person coughing or sneezing on a surface, which may then be picked up on the hands. The virus may also be found on surfaces if the person coughs or sneezes into their hand and then touches the surface. Depending on the type of surface, the virus can survive from hours to days; however, the Centers for Disease Control

Coronaviruses are, for the most part, harmless; however, of the known viruses, four of them illicit a response in humans. Two cause colds and the other two, Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS) cause severe lung infections. A novel coronavirus is unknown, which means humans have no immunity and there is no treatment or vaccine available.

A novel coronavirus was first reported in Wuhan, China in 2019 with bats being the most likely source, although transmission was not direct to humans. Due to its similarity to SARS it was named Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) and the disease that manifests is called COVID-19.

Coronaviruses consist of single-stranded RNA in a protein envelope. Once the virus enters the host, the RNA uses components of host cells to replicate, which, in turn continues to infect other cells. It is important to note that the only purpose of the virus is to replicate. If it is denied the opportunity to infect a host, it will die.

The Body Fights Back

Once a virus enters the host, the immune response kicks in. In the case of a novel virus, there are no antibodies to fight the virus so other immune mechanisms are employed. The immune response itself is the cause of symptoms. Older people and those with underlying disease are high risk, meaning they are already compro-

(CDC) states that transmission from surface to host has not been documented.

Prevention

A pandemic happens when people do not take the proper precautions to prevent the spread of a virus for which we have no known cure or vaccine. The virus needs to be contained while scientists develop treatments that help patients fight back against it. A vaccine is not a treatment, it is prevention of future infections.

Based on all of the above information, it should be clear that the way to stop the spread of SARS-CoV-2 is to keep it from entering the body to replicate. The CDC and the WHO make the following recommendations:

- ✿ Limit close contact by keeping a distance of 6 feet from others, especially if they have symptoms.
- ✿ Wear a cloth face mask over your mouth and nose when in a public place.
- ✿ Avoid large gatherings, especially indoors where there may be poor ventilation. When outside, maintain distance and wear a mask if close proximity to others is unavoidable.
- ✿ When coughing or sneezing, use a tissue or your elbow. Wash your hands immediately.
- ✿ Wash your hands with soap and water for at least 20 seconds or use a hand sanitizer that is at least 60% alcohol.
- ✿ Avoid touching your nose and mouth, especially if you have come in contact with someone who has symptoms.

Complying with these guidelines will dramatically reduce the spread of SARS-CoV-2.

There are still a lot of unknowns about this virus, such as how long immunity lasts in recovered patients. Vaccines are currently in development in several countries, but they will not stop the spread now. Be vigilant and mindful of every-

one to avoid transmitting it, especially to someone who is high risk. We do not need any more deaths from COVID-19.

Sources:

Information in this paper was taken from the following sources:

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