

- Virus

A dictionary of COVID-related terms

A quick review of COVID-19

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The COVID-19 pandemic has changed our lives in many ways. It has also expanded our vocabulary, at least COVID-19 -related terms. There remain a lot of misconceptions surrounding technical terms like strain, variant, quarantine, and isolation, and so a quick review to clarify them may be helpful.

SARS-CoV-2

This stands for Severe Acute Respiratory Syndrome Corona Virus 2. This is the virus that causes COVID-19. In the same species as SARS CoV, the causative agent of SARS, it is considered a strain of Betacoronavirus (genus) severe acute respiratory syndrome-related coronavirus (species). Therefore, there is only one strain of SARS-CoV-2. SARS-CoV-2 with distinct mutations are referred to as variants, clades, or lineages.

Variants

These are mutated forms of SARSCoV-2. Mutations occur naturally as the virus reproduces. Most mutations are neutral or harmful to the virus. Occasionally, however, the virus stumbles across a mutation that makes it more fit, more transmissible, or less susceptible to the current vaccines. Variants with a proven track record of increased transmissibility or which show increased vaccine breakthrough are termed variants of concern (VOCs). The WHO has currently designated four VOCs: Alpha, Beta, Gamma, and Delta.

Variants of interest (VOIs) are variants with potentially troublesome mutations but have not yet proven to be more transmissible or vaccine-resistant in real life. Variants under monitoring (VUMs) are newly emerged variants or previous variants of interest that were downgraded. Variants are continuously emerging and are more likely to be produced in areas with high transmission.

COVID-19 and Severity

COVID-19 stands for Corona Virus Disease 2019. It is the illness caused by the SARS-CoV-2 virus. COVID-19 can come in different levels of severity: asymptomatic, mild, moderate, severe, and critical.

Asymptomatic infection refers to a patient who tests positive for SARSCoV-2, usually on RT-PCR, without manifesting any symptoms within 10 days of the positive test. No specific treatment is given for asymptomatic COVID-19.

Mild COVID-19 is defined as having a positive SARS-CoV-2 test along with upper respiratory symptoms such as cough, colds, and fever, but without evidence of pneumonia. Very

few people die from mild COVID-19. No specific treatment is needed for mild COVID-19 other than symptomatic relief.

Moderate COVID-19 is symptomatic COVID-19 with evidence of pneumonia, but without evidence of hypoxia (low oxygen levels below 94 percent when breathing room air). Moderate COVID-19 can also be mild COVID-19 in someone who belongs to the vulnerable population (elderly or with co-morbid infections), because mild COVID-19 can progress quickly in this group of patients. The risk of dying from moderate COVID-19 is about one percent. Treatment of moderate COVID-19 is generally supportive. There are some anti-viral medications that may be given under compassionate use if the patient is at risk for progression to more severe disease, but these need to be carefully discussed with an infectious diseases specialist.

Severe COVID-19 is symptomatic COVID-19 with pneumonia that requires supplemental oxygen to keep a patient's oxygen levels above 94 percent. Severe COVID-19 requires hospitalization, and even with proper care can still kill five to 10 percent of patients. Without hospitalization and proper care, risk of death is very high.

Critical COVID-19 is symptomatic COVID-19 that results in lifethreatening pneumonia requiring support from a mechanical ventilator. It refers to COVID-19 with multiorgan failure resulting in unstable vital signs requiring treatment in an intensive care unit. Up to half of critical COVID-19 patients may die even with proper care.

Quarantine

Quarantine is the period of time one needs to stay away from the general population following possible exposure to an infectious disease. Quarantine prevents transmission of an infectious disease in case the quarantined patient was infected but is not yet showing symptoms of the disease. The length of quarantine is typically the "long" incubation period of the disease, i.e., the longest time it usually takes from exposure to the pathogen (virus, bacteria, etc.) to the manifestation of symptoms. While most COVID-19 patients start having symptoms at five days from exposure, some people may take up to 14 days to become symptomatic. Therefore, the recommended quarantine period for COVID-19 is 14 days.

Testing quarantined individuals who are asymptomatic is not required. If testing is undertaken, it should be done at least five days after exposure. This is because someone who is infected with SARS-CoV-2 may not have enough detectable virus in the nose and throat until five days have passed from the time of infection.

The quarantine period should be observed for 14 days even with a negative RT-PCR result since testing is less accurate in asymptomatic individuals. If someone develops symptoms during the quarantine period, they should be tested and isolated (see below). The isolation period is counted from the first day of the start of symptoms and is treated separately from quarantine. If someone develops symptoms on the 12th day of quarantine, they need to isolate anew on top of the quarantine days that have been fulfilled.

Isolation period

The isolation period refers to the amount of time a COVID-19 patient needs to be separated from society until he or she is no longer infectious. The isolation period applies to confirmed COVID-19 cases, or those who are symptomatic and are awaiting confirmatory

testing. It may also be applied to people who tested negative but have a clinical presentation that is compatible with COVID-19. This last scenario is plausible since even RTPCR is not 100 percent accurate and may miss some infections.

The length of isolation depends on the severity of illness. There is no need to repeat the RT-PCR at the end of the isolation period unless symptoms are persistent. A negative PCR before the end of the isolation period cannot shorten the duration of the isolation period since even RT-PCR tests are not 100 percent accurate and may miss continuing infection. For mild COVID-19 cases, the isolation period is 10 days from symptom onset with at least three days without symptoms. The reason the isolation period for mild is shorter than the 14-day quarantine is because by the time someone develops symptoms, he or she has already been infected for about four to five days. Early studies on mild COVID-19 cases using viral culture have shown that there was no longer any infectious virus 10 days after the onset of symptoms, even if the RT-PCR remained positive beyond this time.

For moderate, severe, and critical COVID-19 patients, the period of isolation is 21 days from symptom onset with at least three days without symptoms. Patients with more severe disease manifestations tend to have higher viral loads and prolonged shedding, hence the longer isolation duration.

For completely asymptomatic individuals, isolation is 10 days from the first positive test. For as long as there are no symptoms for 10 days from the positive test, it is considered safe to release an asymptomatic confirmed COVID-19 patient from isolation. If the patient develops symptoms during the 10-day isolation period for asymptomatic disease, the clock resets to the first day of symptoms and isolation starts anew depending on the severity of illness

Quarantine and isolation for fully vaccinated patients are frequently being reviewed since there is evidence that duration of viral shedding and level of contagiousness may be abbreviated compared to unvaccinated patients. With the rise of the more transmissible Delta variant, however, healthcare authorities have paused these initiatives until more data is available. Expect more changes, especially for length of travel quarantines, for fully vaccinated persons as the world opens up and more people are vaccinated. Despite the increase in breakthrough infections from Delta, vaccine effectiveness against severe disease and death remains quite high. More vaccination, with hope, will mean more mobility, less quarantine and isolation, and a faster return to normalcy.

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