



Coronavirus disease (COVID-19): Serology, antibodies and immunity

13 November 2020 | Q&A

The answers to the questions below are based on our current understanding of the SARS-CoV-2 virus and COVID-19, the disease it causes. WHO will continue to update these answers as new information becomes available.

What is serology?

What is the difference between molecular testing and serologic testing?

What is the purpose of serologic testing?

Does the presence of antibodies mean that a person is immune?

Can people who have had SARS-CoV-2 infection be re-infected?

What are the results of seroprevalence studies published to date?

[What is herd immunity?](#)

‘Herd immunity’, also known as ‘population immunity’, is a concept used for vaccination, in which a population can be protected from a certain virus if a threshold of vaccination is reached.

Herd immunity is achieved by protecting people from a virus, not by exposing them to it. *Read the Director-General’s [12 October media briefing speech](#) for more detail.*

Vaccines train our immune systems to develop antibodies, just as might happen when we are exposed to a disease but – crucially – vaccines work without making us sick. Vaccinated people are protected from getting the disease in question. *Visit our [webpage](#) on COVID-19 and vaccines for more detail.*

As more people in a community get vaccinated, fewer people remain vulnerable, and there is less possibility for passing the pathogen on from person to person. Lowering the possibility for a pathogen to circulate in the community protects those who cannot be vaccinated due to other serious health conditions from the disease targeted by the vaccine. This is called ‘herd immunity’.

‘Herd immunity’ exists when a high percentage of the population is vaccinated, making it difficult for infectious diseases to spread, because there are not many people who can be infected. *Read our [Q&A](#) on vaccines and immunization for more information.*

The percentage of people who need to have antibodies in order to achieve herd immunity against a particular disease varies with each disease. For example, herd immunity against measles requires about 95% of a population to be vaccinated. The remaining 5% will be protected by the fact that measles will not spread among those who are vaccinated. For polio, the threshold is about 80%.

Achieving herd immunity with safe and effective vaccines makes diseases rarer and saves lives.

Find out more about the science behind herd immunity by reading our dedicated [Q&A](#) or watching or reading this [interview](#) with WHO’s Chief Scientist, Dr Soumya Swaminathan.

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Emergencies Preparedness, WHO Headquarters (HQ)

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