COVID-19 immunity and vaccine

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There is a lot of controversy about efficacy of the vaccines with varying results of antibody and test positivity. When vaccines were authorized in December, we had >6,000 variants sequenced across the world and that number has increased, but the vaccines continue to be highly effective.

When we have the disease or get vaccinated our body makes IgA, IgG, many other antibodies and makes immune responses with T cells and B cells. The IgG antibodies hang around for a long time many years and protect our organs very effectively through our bloodstream. Even when there are waning antibodies, our T cells and B cells step into action when there is an invader of another variant or any kind of COVID infection and using their template from the vaccine or from the prior infection, can pivot very quickly to make antibodies against the new variant and that's why it is still 99% effective in protecting our organs from severe disease.

Of the 1% of vaccinated people who are admitted and test positive, [half](https://www.theatlantic.com/health/archive/2021/09/covid-hospitalization-numbers-can-be-misleading/620062/) of them are admitted for other reasons such as a car accident and then test positive but don't have any severe symptoms. The other half may be immune compromised due to organ transplant or taking medication such as methotrexate for rheumatoid arthritis for example, those may benefit from a booster shot.

The vaccine and the infection will also stimulate IgA production that's an antibody that is made in our mucous membranes and other secretory organs such as breastmilk and that lasts for about two months in our nasopharynx, because our body is very efficient in utilizing our resources and therefore it only makes it as long as it's necessary, and for respiratory infections it is usually only a few weeks and then they usually are gone. But because it wanes after two months, the protection in our nose and pharynx can wane and therefore the coronavirus can set up housekeeping in our nose and give us positive tests when we get tested even though we’re vaccinated or have had the disease.

The booster vaccine if we give those, can actually suppress the virus again for a couple of months and protect us also from transmitting the disease by producing IgA in the nose and pharynx and fighting the virus there. But after a couple of months again, transmission can occur; and while the viral load in the nose and in the throat is about the same in vaccinated as unvaccinated people, the transmission is cut in half probably because the antibodies from the vaccine protect our lungs very effectively via the bloodstream and therefore, we are not coughing or spewing our virus from our lungs but only from our nasopharynx.