Has The Delta Variant Of SARS-CoV-2 Made Herd Immunity Impossible?

Prof. Andrew Pollard, head of the Oxford Vaccine Group, says that herd immunity is “not a possibility” in light of the spread of the Delta variant of SARS-CoV-2.

Prof. Pollard, who is also the chair of the Joint Committee on Vaccination and Immunisation, which advises the United Kingdom government, was giving evidence to Members of the House of Commons of the U.K. Parliament.

His comments follow the preprint publication of the latest data from the Real-time Assessment of Community Transmission 1 (REACT 1) study, which suggests that the COVID-19 vaccines are only 49% effective against the Delta variant of SARS-CoV-2.

Herd immunity

Since the outbreak of SARS-CoV-2 became a pandemic, scientists have hoped that, following an effective vaccination drive, populations could develop herd immunity to the virus.

Writing in the journal *Immunity*, Haley E. Randolph, a Ph.D. candidate at the University of Chicago, IL, and Dr. Luis Barreiro, an Associate Professor at Chicago, say that herd immunity describes a situation where so many individuals in a population are immune to a virus that it stops spreading and may even go into decline.
As a consequence, even people who do not have an antibody response to the virus have some degree of protection.

However, scientists have been concerned that the Delta variant of SARS-CoV-2, which has been spreading in the U.K. and other countries around the world, is highly transmissible, potentially reducing the effectiveness of the COVID-19 vaccines.

**The issue of the Delta variant**

This seems likely to be confirmed following data that academics at Imperial College London, U.K., in charge of the REACT 1 study published in a preprint form, prior to peer review.

In the latest round of the study, which randomly tests up to 150,000 people in England for COVID-19, the scientists found that the Delta variant was totally dominant and that it had reduced the effectiveness of the COVID-19 vaccines to 49%.

It was this that prompted Prof. Pollard to suggest that herd immunity is now “not a possibility.” If SARS-CoV-2 can still spread to a significant number of fully vaccinated people, then those who do not have an immune response to the virus are vulnerable to infection.

According to Prof. Pollard, “[t]he problem with this virus is [it is] not measles. If 95% of people were vaccinated against measles, the virus cannot transmit in the population.”

“The Delta variant will still infect people who have been vaccinated. And that does mean that anyone who’s still unvaccinated at some point will meet the virus [...], and we don’t have anything that will [completely] stop that transmission.”

- Prof. Andrew Pollard

Speaking to *MNT*, Prof. Sheena Cruickshank, of the Division of Infection, Immunity & Respiratory Medicine at the University of Manchester, U.K., said that “[h]erd immunity usually refers to the proportion of a population that needs to be immune to an infection to protect those who cannot be immune, and vaccination is the way to achieve this, as it is safest.”

“For true herd immunity, you need a good level of vaccination and evidence of sterile immunity, [that is,] you cannot contract the infection to which you have been vaccinated.”

“With [COVID-19], we are not getting evidence of complete sterile immunity for all individuals from either the vaccine or prior infection — rather, for many, there seems [to be] a partial protection either from symptomatic disease or serious disease,” she added.
“[As] such, vaccinated people can still potentially be infected and transmit [the] virus to others. [However,] there is clear evidence that vaccinated folks transmit a lot less virus than unvaccinated folks.”

Prof. Pamela Vallely, also of the Division of Infection, Immunity & Respiratory Medicine at Manchester, told MNT that Prof. Pollard is right in his assessment that herd immunity is no longer possible.

“The key point is that the vaccine is not stopping transmission of the Delta variant, and other variants — which will also be able to evade full immunity — are likely to arise as long as we have lots of viral replication going on across the globe,” she said.

**Preventing serious infection**

Nonetheless, both Prof. Cruickshank and Prof. Vallely claim there are still positives, based on the latest data.

Prof. Cruickshank said that “[t]he vaccine effectiveness has been reduced a little to the Delta variant but is still high enough to give a good level of protection from symptomatic disease and severe disease. [This] chimes with [the REACT 1] report, [which showed] the majority of hospitalization being in unvaccinated individuals.”

According to Prof. Vallely, “we can still be locally optimistic, as the vaccine is stopping serious illness in most people. So, although it appears to still be able to infect and replicate in some vaccinated people, the vast majority of those people are not getting ill, or at least not getting very ill.”

**Booster shots?**

The effectiveness of the vaccines at protecting against severe COVID-19 is one reason Prof. Cruickshank and Prof. Vallely believe booster shots are only necessary for people who are highly vulnerable to the disease.

Prof. Cruickshank said that “as we have evidence of immune memory that is durable and will protect against symptomatic infection and reduce transmission […], there seems no need at this stage to give boosters to over 50s, as is being considered, although this should be reviewed as more data [come] in.”

*Another factor is whether doses of the vaccine should be used as boosters when the vast majority of people in poorer countries are yet to receive their first dose.*

Prof. Vallely pointed out that, in addition to any ethical considerations about the distribution of vaccines, there is a medical basis to ensuring as many populations around the world are fully vaccinated, a position Prof. Cruickshank supports in a recent opinion piece.

Prof. Vallely opined: “[I]t would benefit everyone in the whole world to reduce the level of replicating virus globally. As long as there are high levels of transmission, there is a high level of replication and therefore more opportunity for the virus to mutate to a more serious form and/or further away from the control of the vaccines.”

“I am not qualified to give ethical judgments, but it makes scientific sense to get as many people vaccinated
as quickly as possible across the globe to control the pandemic," she said.

MedicalNewsToday, posted on SouthFloridaReporter.com, Aug. 17, 2021

Republished with permission