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BRIEF19

A daily review of covid-19 research and policy

RESEARCH BRIEFING

Both Pfizer/BioNtech and Moderna vaccines remain active against India variants.

India has become ground zero of the covid-19 pandemic. As of now, just 3 percent of India's population has been fully vaccinated, while 10 percent have received one of a two-dose series. Though more vaccines are coming in from the United States and around the world, it will take time for those doses to reach arms. An important question looms: will the newly described SARS-CoV-2 variants evade existing and eventual vaccine-induced antibodies.

A new study preprinted on *biorxiv* by researchers at New York University provides good news. While some of the new variants described in India evade, to some degree, the antibodies of patients who have recovered from infection (convalescent plasma), both these antibodies and those derived from fully vaccinated people still appear to function as intended, at least in laboratory settings. To a lesser extent, the study found the same to be true of monoclonal antibodies (i.e. Regeneron's therapeutic compound). These data imply that the new variants, B.1.617 and B.1.618 may be a little more slippery in their ability to wriggle away from natural and vaccine-induced antibodies, but not enough that those antibodies are rendered ineffective. In particular, most people who have recovered from infection or have been vaccinated are likely to have antibodies that are good enough to provide protection (the true clinical effect of the monoclonal antibodies among the "original" or "wildtype" variants remains debated).

Interestingly, the measured antibody levels among vaccinated persons were about 5 times greater than those found among samples of blood taken from covid-19-recovered persons. This once again demonstrates that vaccines induce a *massive* antibody response, which is likely what makes them so effective to begin with and also explains in part why they have, so far, been remarkably able to overcome an onslaught variants. That said, the strength of the binding between the B.1.617 variant and vaccine-induced antibodies dropped 4-fold in this laboratory-based study. A 2.7-fold decrease was noted for the B.1.618 variant.

Meanwhile affinity of the antibodies taken from blood samples of covid-19-recovered patients was only 2.3 to 2.5-fold diminished as compared to the wildtype version. However, as mentioned, those antibodies were lower than vaccine-induced levels to begin with. In addition, Regeneron's monoclonal antibodies were found to have a 4.7-fold drop in binding affinity, which may or may not be meaningful given how modest the benefit for patients has been to begin with, especially in comparison to recovered and vaccinated patients, in whom exceedingly low rates of serious subsequent covid-19 cases have occurred.

The take home messages are clear: yet again, vaccines appear up to the task of standing strong against variants. But we cannot let the virus keep trying. Eventually we'll lose that battle, unless the number of infections drops around the world. Vaccinations (or else massive point-of-care rapid testing or else draconian distancing measures) are the best way to achieve lower infection rates. Another message is also clear: some variants are notably more contagious than the wildtype version was, but they still respond to antibodies. This means that mutations are likely *not* responsible for the severity of India outbreak. Prior to this spring spike, some ill-informed pseudo-experts floated the idea, without evidence (and in the face of contradictory evidence, in fact) that India's population may have had high levels of existing immunity to SARS-CoV-2. Both this study and conditions on the ground refute such half-baked notions robustly.

—Jeremy Samuel Faust, MD MS

POLICY BRIEFING

White House to invest in public health. Details of the American Rescue Plan unveiled.

In early March, President Biden signed the American Rescue Plan into law, serving as his $1.9 trillion opening salvo in the ongoing battle against the pandemic and the recovery. Many questions remained after its passage, including the specific monetary allocations for many concepts in the bill's language.

This past week the White House provided new details on the buildout of the American public health infrastructure. $7.4 billion from the American Rescue Plan will be divided into two funds with the goal of increasing the number of public health employees and futureproofing. $4.4 billion will be directed to states and smaller localities to support their public health departments. Here are some of the proposed allocations:

- $3.4 billion dedicated to recruiting and hiring of employees across the spectrum of what are deemed to be vital functions.
- $500 million for hiring school nurses who will be able to serve as vaccination-providers for younger individuals.
- $400 million to launch *Public Health AmeriCorps*, an initiative aimed at building a public health workforce ready to respond to future needs, including new outbreaks.
- $245 million to expand the US Centers for Disease Control and Prevention (CDC) Epidemic Intelligence Service (EIS), a national deployable public health work force tasked with rapidly evaluating and responding to new outbreaks.
- $337 million to strengthen the CDC laboratory workforce.
- $3 billion to plan for future pandemics.

These funds will be developed into a federal grant system to support the national public health infrastructure and under-resourced local public health entities. *The White House.*

—Brief19 Policy Team

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