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BRIEF19

A daily review of covid-19 research and policy

RESEARCH BRIEFING

Is one dose of the vaccine enough for people with evidence of prior coronavirus infection? New impressive data sheds light.

Around 8 hours after receiving my first dose of the coronavirus vaccine, I began to have mild body aches, in addition to the arm pain I'd been having all day. The arm pain had been expected, though as the hours passed the severity increased to the point where any lifting and ranging of the rotator cuff of my shoulder caused a substantial amount of discomfort. Then the body aches, headache, and fatigue set in. By the late evening, I was shivering in a hoodie. Trying to smile my way through, I coined a term for what I was experiencing: manaphylaxis. Of the dozens of my colleagues who had already received their first dose and with whom I had spoken (or seen their reports on social media), I was the only one I knew of who had such a strong reaction.

I began seriously wondering whether my unusually strong reaction might be an indication that at some point in the last year I had, unbeknownst to me, contracted SARS-CoV-2 and that these side effects were an indication of that. Perhaps my body "recognized" the spike protein that my cells had just been co-opted into producing and rallied the antibody troops that my immune system had generated at some point in the past. As an aside, I will mention that in mid-to-late February, I was briefly ill, experiencing a fever and extreme fatigue for two days, but no other symptoms. Since uncontrolled spread became apparent, I've had nary a sniffle (turns out masks and our new enhanced hygiene regimens warded off the usual common colds that come and go).

A new paper on *medRxiv.com*, a preprint server where non-peer reviewed manuscripts are posted, makes me think that I really *might* have been infected with SARS-CoV-2 this year. That's because researchers in New York City tested vaccine recipients before receiving their first dose of a coronavirus vaccine in order to detect and quantify the presence of SARS-CoV-2 antibodies. They then tested all participants for antibody levels around every four days or so, to see how the antibody levels changed over time. Persons found to already have had antibodies before the first dose of either a Pfizer/BioNtech or Moderna vaccination mounted an impressive response within a 5-8 days. It took 9-12 days for those without evidence of prior infection ("seronegative") to have any response at all, and when they did, their levels ("titers") were noticeably lower than those who had previously been infected ("seropositive"). As of day 24, not a single person in the seronegative group had levels as high any any single person in the seropositive group. After the second dose, the levels did not change much; both group's levels rose some, but not a lot, albeit it is unclear how long after the 2nd dose these levels were checked. These data alone suggest that at least in the short term, for people who have evidence of a prior infection, a first dose of the vaccine may effectively be functioning as a booster, meaning a 2nd dose may not be needed for quite some time. In order to conclude this safely, we would need to see durability of these findings, which this paper does not present.

To my original question, the researchers noticed that seropositive vaccine recipients were far more likely to experience the "systemic symptoms" I had felt after my first (and second) injections. While a majority of people had some kind of pain near the injection site, regardless of evidence of prior infection, fatigue and headache were both around twice as common after the first dose in seropositive people. Chills and muscle pain showed even more pronounced differences, occurring around 5 to 6 times more often among seropositive people than seronegative. I'm beginning to think I really did have coronavirus this year. I'm going to try to

get an antibody test that would not detect the vaccine-induced antibody and I'll report back. That said, when it is your turn to get vaccinated, it's safe to use products like Tylenol and Advil to manage symptoms, but don't take them *before* you have symptoms, as this theoretically could have a small impact on the vaccine's effectiveness.

—Jeremy Samuel Faust, MD MS

POLICY BRIEFING

Shifting sands of vaccine allocation and testing. Increased production and redistributions mean the vaccine may be coming to a pharmacy near you.

The past few weeks have seen seismic changes in the approach to ending the covid-19 pandemic in the United States. President Biden announced a federal vaccination plan and an expansion of eligible individuals, as well as a proposed stimulus package to support a more robust response. Meanwhile, there was the unfortunate discovery that the federal reserve of vaccine doses had been depleted for weeks.

To bolster the new approach, one million doses of the currently-authorized vaccines will be distributed directly to pharmacies around the country next week, and state allocations will be increased by five hundred thousand doses per week until the goal of 10.5 million inoculations has been reached. Additionally, states have begun redistributing unused vaccines in a federal partnership between Walgreens, CVS and the US Centers for Disease Control and Prevention. The focus will be to vaccinate long-term care facility residents and staff. The exact number of doses needed to achieve this is unknown, as the choices and logistics around the change in the rollout will fall to officials in each state.

In the world of testing, the Biden administration also announced the expanded production of an over-the-counter rapid home test that automatically reports results back to a central system, which should improve the accuracy of tracing.

While this is a step forward, testing options for providers have moved backwards. Insurance reimbursement across the country for in-office testing is often less than the price of the supplies, which has led many facilities to resort to using "send-out" tests (i.e. using external laboratories such as Quest Diagnostics, and others). Ultimately, this results in a delay in results for days, which severely limits the public health benefits of testing in the first place. *Various*.

—Brief19 Policy Team

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