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BRIEF19

A daily review of covid-19 research and policy

RESEARCH BRIEFING

Past covid-19 infection does not fully protect against future infection; vaccines required.

Early in the pandemic, it seemed that reinfection with SARS-CoV-2 was unlikely. Then, case reports and anecdotal evidence started to indicate that this was not entirely the case. Now, a recent study out of Denmark, published in *The Lancet* suggests that fears of reinfection are not entirely unfounded.

Denmark presented a unique opportunity to obtain this kind of robust data, as an impressive 69 percent of its population has been tested for covid-19 at some point during the pandemic, many of whom were tested more than once. With this in mind, the authors of this new study wanted to know if a prior SARS-CoV-2 infection provided some ample immunity to preent reinfection.

The researchers compared individual reinfections between the first wave of the pandemic (March to May of 2020) and the second wave (September to December of 2020). Of the more than 11,000 people who tested positive during the first round, 72 individuals tested positive again. This means that 0.65 percent—or one out of around 153 people—was reinfected. When factored into infection rates later in the pandemic, this also implies that initial infection is about 80 percent effective at preventing reinfection, a rate which is notably worse than the protection afforded by both the Pfizer/BioNTech and Moderna vaccines.

But more worrisome were the data gleaned from individuals 65 years and older. Among that group, the data suggest just 47 percent protection against reinfection. Rates were similar between genders and there was no significant waning immunity after 7 months.

This study had some limitations, though. The study did not correlate symptoms with the risk of reinfection, so it's unclear if the infected individuals had mild, moderate or severe covid-19, which of course vastly changes the implication of a repeat infection. Additionally, there were no data regarding protection from the various covid-19 variants of concern.

Nevertheless, a national dataset that captured a significant proportion of the general population provides important information. Ultimately, it's clear that recovery from a SARS-CoV-2 infection affords some degree of immunity to the virus, but clearly not universally. The data certainly imply that protection from a prior infection is likely to be no better or inferior to that obtained by vaccination. In particular, older individuals with more vulnerable immune systems should not count on a prior infection to protect them going forward. We expect that more data will come out of other countries in the near future, and we hope that the people around globe will continue to get vaccinated, regardless of whether they previously had SARS-Cov-2.

—Joshua Niforatos, MD MTS

POLICY BRIEFING

Johnson & Johnson vaccine pause still in effect.

Earlier this week, the US Food and Drug Administration and the US Centers for Disease Control and Prevention announced a "pause" in the rollout of the Johnson & Johnson vaccine, after six women ages 20-50 in the United States developed a clotting disorder causing severe symptoms, and at least one death.

The Advisory Committee on Immunization Practices, an independent body of experts that advises the CDC, has since announced that the pause will remain in place. While the risk-benefit

analysis for the Johnson & Johnson vaccine versus the risk of contracting a severe case of covid-19 seems to favor the vaccine in all adult age groups, the FDA and CDC wants to gather more information. The main reason is that there are still over 3 million people who received the vaccine who are still in the 14-day window which is thought to represent the highest risk period for the development of this rare complication. The FDA and CDC clearly want to know the rates of complications before proceeding.

More cases are likely to be reported during the pause. However, unless the numbers change by a very large amount, the risk-benefit calculation is unlikely to lean away from the Johnson & Johnson vaccine for almost any demographic, including women 20-50 in whom all of the clots have been found so far. For example, a doubling of clotting rates would not change the outcome of the risk-benefit calculation. However, if the pause allows areas that had previously expected Johnson & Johnson to scramble in order to arrange for Moderna and Pfizer/BioNtech instead (albeit, this is not so easily done, because of the extremely cold freezers that are needed and which are not-so-easily found), public health officials could try to triage the doses such that younger women are preferentially given the Moderna and Pfizer/BioNtech options, whenever possible.

However, the overall message remains the same: covid-19 is far more dangerous to all adult demographics than the rare clotting problem that appears to have emerged in 6 out of 1.4 million doses given to women ages 20-48. In fact, covid-19 itself raises the rates of blood clots, some mild, and some fatal. The rate of clots caused by covid-19 is debated, especially since we do not know how long the risk of that complication lasts.

—Jeremy Samuel Faust, MD MS

Kimi Chernoby, MD, JD, Policy Section Founder, Joshua Niforatos, MD Research Section Editor, Frederick Milgrim, MD, Editor-at-Large, Joshua Lesko, MD Lead Policy Analysist, Barb Cunningham, Copy-editor, Benjy Renton, Thread-of-the-Week, Anna Fang, Week-in-Review. Megan Davis, social media. Kane Elfman PhD, Publishing and Design. Jeremy Samuel Faust MD MS, Editor-in-Chief. http://www.brief19.com/ Twitter: @brief_19 submissions@brief19.com. Brief19 is a daily executive summary of covid-19-related medical research, news, and public policy. It was founded and created by frontline emergency medicine physicians with expertise in medical research critique, health and public policy.