

## **BRIEF19**

*A daily review of covid-19 research and policy.*

### **RESEARCH BRIEFING**

**Pfizer releases exciting vaccine effectiveness datum. (Datum is the singular of data).**

It's all riding on a vaccine. While new or repurposed therapeutics may lower the death rate from covid-19 to some degree, most experts feel the only way to avert millions of deaths in the coming months and years is the availability of an effective inoculation against SARS-CoV-2, the novel coronavirus that has killed over 1.2 million people and infected more than 50 million others.

Yesterday, Pfizer and BioNTech announced that its candidate vaccine is “90% effective” in preventing covid-19. So far, over 30,000 people have been enrolled in their randomized placebo controlled blinded trial. Of the 94 confirmed cases, most occurred among people who received a placebo injection, not the actual vaccine.

This alone is cause for celebration. Potentially. Many important questions remain unanswered. The first point that bears understanding is that “90% effective” means that many fewer test subjects who received the two-dose series of the real vaccine candidate *developed symptomatic disease*—the constellation of symptoms we call covid-19 disease. That does not necessarily mean that 90% fewer people became *infected* with the coronavirus itself. That's important because if a vaccinated person can still be infected, they might very well be able to pass along the disease to others who in turn may develop life-threatening covid-19, even if they themselves are at far lower risk of developing symptoms, let alone a bad or life-threatening case. Moreover, the fact that 90% fewer people who received the vaccine developed symptomatic disease could still end up being a kind of statistical mirage. We know that overall fewer than 1 percent of persons die as a result of being infected with SARS-CoV-2. If it turns out that those people are *all* among the 10% of the cases that still develop symptomatic disease despite vaccination, then today's results will have been highly disappointing in the final analysis. This isn't to say that this is what happened. Rather, Pfizer released one piece of information—“datum” not “data.” We are waiting and wanting more.

For example, if this vaccine works as well as is hoped and hyped, for how long will it provide protection? (The vaccine uses mRNA vaccine technology that has only recently become feasible and has never been approved for similar purposes). Does the vaccine protect the elderly? Does it protect those with immune system dysfunction? All of these questions linger. But perhaps the single piece of information we most need that could signal that we are truly closer to being able to cast our masks aside and end our physical distancing efforts is whether or not the vaccine prevents infection and spread of the disease. If it does, 2021 will see the beginning of normalcy, though rollout will take many months or longer.

Other vaccines are in offing as well. Some may turn out to have fewer side effects. Some may work as well or better than this one. Some may not require storage in -80°C freezers—a rarity in some parts of the country, and certainly in some regions of the world.

Today's news, though, exceeds expectations. The trial was designed to be “successful” even if it was found to be far less than 90% effective at preventing symptomatic disease. In that light, and with data from other vaccines expected in the weeks and months

ahead, there is cause for more than our usual “cautious pessimism,” and perhaps reason to enjoy a moment of measured optimism. [10 November 2020](#).

—Jeremy Samuel Faust MD MS

### **Two new studies on coronavirus cases in United States military environments.**

Yesterday *The New England Journal of Medicine* released two studies related to coronavirus in the military. The [first](#), a retrospective analysis, focused on infections on the aircraft carrier *USS Theodore Roosevelt* in the Spring of 2020, and the second was a [prospective study](#) evaluating the efficacy of at-home and monitored quarantine among Marine recruits. Both studies were assessed a military population meaning that following-up test subjects without any loss of data or cross-contamination occurred.

The results of the aircraft carrier study are unsurprising. Over the course of the infection, 1,271 individuals, or 26% of the crew, tested positive for SARS-CoV-2 by PCR, with an additional sixty sailors not tested but suspected. Of these individuals, 77% had no symptoms at time of confirmed infection, and 45% remained asymptomatic throughout their course. 23 people were hospitalized, 4 received intensive care, and 1 died. Individuals working in confined spaces appeared more likely to test positive.

In the Marine recruit study, all participants completed a two-week home quarantine period followed by a two-week observed quarantine on base with weekly PCR testing and antibody blood tests. While on base, participants were required to wear double-layer cloth masks except when sleeping and eating, to maintain six feet of social distancing, they could not leave the monitored areas, had no personal electronics (to limit surface spreading), and practiced routine personal hygiene. Bathroom facilities were cleaned with bleach after each use, food was served pre-plated, unidirectional flow through buildings was maintained, and daily temperature checks and symptom screening occurred. The same restrictions applied to the instructors assigned to each platoon. Data show that on arrival, around 1% of participants were positive by PCR, with an additional 2% becoming positive at the end of the supervised quarantine. 10% of the infected servicemembers reported symptoms during the week before a positive test or on the day of positivity. After epidemiologic analysis, shared rooming and platoon membership were found to be associated with the greatest risks for transmission. [12 November 2020](#).

—Joshua Lesko, MD

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*Anna Fang, Week in Review.*

*Jeremy Samuel Faust MD MS, Editor-in-Chief.*

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Twitter: [@brief\\_19](#)

[submissions@brief19.com](mailto: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 policy, and public policy.