

24 March 2021

## **BRIEF19**

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

### **RESEARCH BRIEFING**

**Vaccines decrease coronavirus disease *and* infection among healthcare workers, several new studies find.**

As vaccine distribution continues, marked with the passing of 100 million in the United States vaccinated [last week](#), four important research communications released yesterday in the *New England Journal of Medicine* describe various successes of vaccination programs among healthcare workers. Three of the letters focus on infection rates among the vaccinated workers and another reported on antibody levels in the blood of vaccinated participants.

One letter ([Nir-Paz and colleagues](#)) comes from researchers in Israel, a country which has had one of the fastest mass vaccination programs of any nation. Researchers studied the effectiveness of the Pfizer/BioNtech mRNA vaccine among healthcare workers. At baseline, 10 percent of the 6,680 healthcare workers across a two medical center campus in Jerusalem were found to be afflicted with covid-19, most of which was believed to be from community (as opposed to hospital) spread. Over an 8-week period beginning in December, nearly 85 percent of the non-infected workers were vaccinated. A notable decline in SARS-CoV-2 cases was seen among healthcare workers starting two weeks after the first dose and remained low one month after vaccination. Importantly, the researchers found that in addition to the vaccine-associated reductions in the number of new cases (including both symptomatic and asymptomatic infections), the number of new infections remained low even when a variant of concern (the United Kingdom B.1.1.7) surged among the general population.

Two other letters published simultaneously demonstrated similar success among healthcare workers. One, from the United States ([Podolsky and colleagues](#)) found that vaccinations decreased new confirmed infections by a *factor of 50*. Researchers studied the over 23,000 hospital employees who work at University of Texas-Southwestern Medical Center in Dallas. During the first month of vaccinations, 59 percent of employees received the first dose and 30 percent received the second dose of either the Pfizer or Moderna vaccines. When assessing new infections, a marked difference was seen among those unvaccinated compared to those partially or fully vaccinated (2.6 percent versus 1.8 percent versus 0.05 percent). A 90 percent decrease in the number of employees requiring isolation or quarantine was seen, showing that the vaccines effects on workforce preservation was massive.

Similar findings were also seen at Southern California medical centers ([Torriani and colleagues](#)). Over 36,650 health care workers at two campuses received a first dose over a two-month period starting in December with 77 percent receiving the second dose in this time frame. Among those receiving just the first dose of the vaccine only 379 of the over 36,650 workers tested positive for SARS-CoV-2; 71 percent of those infections occurred within two weeks of vaccination. After both vaccinations, only 37 out of the over 28,180 workers who received a second dose became infected, corresponding to a positivity rate similar to the UT-Southwestern population of rates (see above). The absolute risk of infection was higher in both the San Diego (1.2 percent) and Los Angeles (0.97 percent) populations compared to earlier vaccine research but many reasons for this are possible, including expanded testing, higher prevalence of the virus, and the appearance of variants of concern.

Finally, new research assessing vaccine responses to people who were previously been infected was published. Given that the initial research led to the US Food and Drug Administration's granting of emergency use authorization for the Pfizer/BioNtech, Moderna, and

Johnson & Johnson vaccines focused on persons who had never been infected with SARS-CoV-2, there remains much to be learned about what kinds of responses we can expect from the previously infected population. Researchers at Children’s Mercy in Kansas City ([Bradley and colleagues](#)) assessed antibody responses in previously infected healthcare workers after a single dose of the Pfizer/BioNtech vaccine. Baseline antibody levels were checked among 36 health care workers, followed by repeat testing three weeks post-vaccination, among those who had confirmed covid-19 somewhere between 30 and 60 days prior to receiving the vaccine. The results were compared to 152 healthcare workers who did *not* have a prior known covid-19 illness. Not surprisingly given how common asymptomatic infection appears to be, six of the *control* subjects were found to have positive antibodies, consistent with unknown previous infections. When assessed at the three-week point, those who had been previously infected were found to have a higher quantity of antibodies. What is unknown is how long those increased levels will persist.

As the authors of the Dallas study ([Podolsky and colleagues](#)) state, these data are important to share with employees who may be hesitant to receive vaccination, despite access to vaccination not being a hinderance. While over 90 percent of healthcare workers in a [recent study](#) reported the intention of vaccinating, the real rates have been lower in many areas. We need to continue vaccination the front-line workers, not only for health and safety but for continued workforce preservation.

— Christopher Sampson, MD, FACEP

## **POLICY BRIEFING**

### **Speed isn’t everything in vaccine rollout.**

The distribution of vaccines and supplies in the United States faced many hurdles early on. Under the Trump administration, states were [given](#) a percentage of the available supply and left to make their own prioritization determinations. Then, as doses were stretched thin, support started to [form](#) for spreading out the inoculation schedule, or reducing the amount of vaccine given. Finally, under the Biden administration, a plan with national coordination and oversight was [announced](#), with the goal of minimizing inequity and reaching the most vulnerable quickly.

But with states still controlling their own supplies and pacing, regional differences began [emerging](#) with respect to those deemed eligible; federal guidelines coordinated the stratification of patients, but not timelines for vaccination. Similarly, the discovery that the 50 percent of the federal stockpile didn’t actually [exist](#) threw plans across the country into chaos. Most recently, the administration has [decided](#) to reallocate unused doses and increase domestic production to greatly expand vaccine availability.

Many of the new changes make sense. There was, and remains, a sense of urgency to reach “herd immunity” as rapidly as possible to hasten the end of the pandemic. But new data [shows](#) that speed is not a certain panacea, at least not under the current circumstances. It turns out that states that planned rapid expansion of eligible pools vaccinated similar percentages of the population compared to states which instituted slower, tiered approaches. Attributing this to supply-and-demand mismatch, one analysis determined that the poor coordination minimized any advantage faster dissemination would have otherwise offered.

In short, the intent to rapidly rollout vaccines is necessary but not sufficient. An awareness of current and anticipated supply, delivery, and rate of consumption is also needed for states to be maximally successful. *Various*.

—Brief19 Policy Team