10 September 2020

BRIEF19

A daily review of covid-19 research and policy.

RESEARCH BRIEFING

Risk of contracting covid-19 in hospitals with dedicated covid-19 units appears low.

Is it safe to go the hospital in the covid-19 era for non-covid-19 problems? An important paper published in *JAMA Network Open* from researchers at Brigham and Women's Hospital (Boston, MA) assessed the risk of acquiring covid-19 after being admitted to the hospital. Stated another way, the primary outcome of the study was whether patients without covid-19 when admitted to the hospital and later contracted covid-19 were exposed while in the community or whether they became infected while in the hospital for other reasons.

Notably, the hospital implemented a comprehensive infection control program that included dedicated, isolated covid-19 units, PPE for healthcare providers, donning and doffing monitoring, universal masking, and visitor restrictions. The infection control program evolved over the course of the study. Given this background, researchers looked at data for patients without covid-19 admitted to their hospital between March 7 to May 30, 2020. Patients and their outcomes were followed through June 17, 2020.

Over the study period, 9,149 patients were admitted to the hospital of which 81 percent were tested for covid-19. Of the 697 who tested positive (9.4 percent), 12 patients (1.7 percent) tested positive on hospital day 3 or later. Of those 12 patients, in only 1 case was the infection deemed to be acquired during the hospitalization. In that particular case, a pre-symptomatic spouse who was visiting the hospitalized patient daily (before visitor restrictions and masking were implemented) and who was later diagnosed with covid-19 appears to have been the source.

As for the 8,730 non-covid-19 patients admitted to the hospital, just 11 (0.1 percent) patients tested positive within 14 days of hospital admission. Only 1 case was deemed to have been "hospital acquired," though the infection control program was unable to determine the exposure in that case.

While this study represents only one U.S. institution, the results are nonetheless encouraging. When hospitals implement comprehensive infection control programs with liberal and robust SARS-CoV-2 testing, the risk to patients of acquiring covid-19 while in the hospital on non-covid-19 units is likely close to negligible, and possibly no different than the risk of getting the infection if they had not been hospitalized at all and had simply been going about their normal lives in the community, where the virus also lurks.

—Joshua Niforatos, MD

POLICY BRIEFING

AstraZeneca halts vaccine trial due to a possible serious side effect in one patient.

Currently, there are nine vaccines undergoing large "phase III trials" for SARS-CoV-2. One of them has been temporarily halted after a woman in the United Kingdom who was enrolled in the trial, being run by the pharmaceutical company AstraZeneca, developed a rare but serious neurologic condition known as transverse myelitis. It is unclear whether the vaccine itself was responsible.

Transverse myelitis is an inflammation-based neurological problem that affects one level of the spinal cord. Its features are similar to a compression of the spinal cord at the location of the inflammation. In some cases, transverse myelitis is caused by viruses, though other neurologic conditions such as multiple sclerosis are common causes. Vaccines have been rarely reported as a cause—though it is not unheard of in the medical literature. Symptoms can be mild (pain and tingling) or quite serious (incontinence, weakness of the arms and legs, and even paraplegia). This can often occur quickly, in hours to days. Treatments include steroids like dexamethasone, which has also been shown to be effective in severe cases of covid-19. Some patients recover fully, while others have devastating and long-lasting neurologic symptoms.

AstraZeneca now has to determine whether this was a one-off event, unfortunate and unrelated, or not. It was already determined that the patient in question received the vaccine itself, and not a placebo. What happens next will depend on whether any similar events are discovered among test subjects who have received the vaccine, and how many patients have received the vaccine overall in the trial.

The numbers matter. For example, if this one event occurred among the first 100 patients in this clinical trial, this could be a very bad indicator; in that case, more events like this might soon appear, which would lead to a termination on the trial altogether. But if the event occurred once in every 100,000 patients, and the vaccine were to be found to be 99% effective in protecting against SARS-CoV-2, the risks and benefits would have to be weighed. Of course, the possibility remains that this event was entirely unrelated to the candidate vaccine.

Meanwhile, the other eight vaccines being tested in phase III trials may turn out to have fewer, the same, or more side effects than the AstraZeneca vaccine, which is based on a technology that has never before been widely used. And some of those other candidate vaccines may be more effective than others. This is why gathering the most amount of phase III data—and not rushing a vaccine via an emergency use authorization based on incomplete data—is not only good science, but a matter of public safety.

STAT News and others. *—Jeremy Samuel Faust, MD MS*