

## **BRIEF19**

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

### **RESEARCH BRIEFING**

**Black patients hospitalized at disproportionately higher rates. What does this mean?** A [new article](#) published in *NEJM* compares hospitalization and mortality rates among Black and non-Hispanic White patients in Louisiana. Previous data has shown that Black individuals account for a disproportionately high number of cases and deaths in New York. This study assessed the characteristics of 3,626 patients at the time of hospital admission and followed their courses between March 1st and April 11th. Black persons comprise 31% of the patient population served by Ochsner Health, the integrated-delivery health system where the study occurred. However, 77% of hospitalized patients and 71% of the patients who died were Black. Once hospitalized, Black race was not independently associated with an increased risk of death, suggesting that other factors were responsible for the high percentages in comparison to their representation in the population. For example, Black patients were more likely to present to the hospital having already developed signs of severe illness, including new evidence of kidney and/or liver dysfunction, and elevated markers of inflammation. While a metric of existing medical problems found that the fraction of patients with pre-existing medical conditions among Black and non-Black patients was similar, in reality that metric may not have been adequate; the “Charlson Comorbidity Index” is designed to predict 1-year mortality based on 17 conditions. Even amongst patients with many chronic medical problems, 1-year survival is usually quite high and so only extreme differences would show a “statistically significant” effect. Indeed, out of 12 chronic medical illnesses listed, 10 were more common in Black patients, including high blood pressure, diabetes, and obesity. All of these have been reported to increase risk of severe illness and death from covid-19. Also in this study, Black patients were more likely to require intensive care (36% versus 30%), mechanical ventilation (28% versus 21%). Of interest, in this cohort of patients, female sex was associated with higher rates of admission. This comes in contrast to many prior studies that have shown disproportionately high rates of male patients experiencing more severe SARS-CoV-2 infections. [28 May 2020](#).  
—Jeremy Samuel Faust, MD MS

**Phase one data from another vaccine candidate raises hopes.** Of the several vaccines under development for covid-19, last week two made news. In addition to the Moderna mRNA-based vaccine ([mRNA-1273](#)) covered in [Brief19](#), early data on a vaccine candidate known as Ad5 has now been [published](#) in *The Lancet*. The Ad5 vaccine is a fusion of a live but weakened strain of adenovirus 5 (one of many causes of “the common cold”) with genetic material isolated from SARS-CoV-2. In this study, the investigators administered the Ad5 vaccine to 108 individuals who had just been tested and found to not have SARS-CoV-2 antibodies (i.e. they were not previously infected). Subjects received either low, medium, or high doses of the vaccine and then stayed in a hotel for two weeks. This study was a “phase one trial” and therefore by definition was designed to look for unwanted “adverse” reactions after receiving the vaccine. At least one symptom of an adverse reaction was reported within seven days by patients in all three dosage groups; 83% of subjects reported such a reaction in both the low and medium dose groups, and 75% in the high dose group. Fever (46%), fatigue (44%), headache (39%), and body aches (17%) were the most common reported symptoms. By 28 days, 81% of test subjects reported at least one adverse reaction. The researchers also measured T cell responses, which indicate appropriate

immune responses to vaccination. The relevant levels peaked 14 days after vaccination. On average, the response was higher in subjects without high pre-existing antibodies to adenovirus 5, as expected. In addition, more than 80% of the volunteers in all dosage groups were found to have positive antibody responses (for “neutralizing antibodies”) by 14 days; levels of these antibodies, which are seen as key indicators of a favorable immune response, peaked at 28 days. In sum, the Ad5 vaccine performed well and appeared to be safe in this small preliminary study. While side effects were common, they were mild. Rare and far more serious adverse side effects would not be mathematically likely to occur in a sample size this small. As a result, this vaccine will continue to be investigated, especially given the favorable antibody responses described in the paper. However, a previous effort to develop an HIV vaccine using a similar Ad5 approach did not succeed, with more subjects contracting the virus during the study. *Abbreviated from Brief19 for [26 May 2020](#).*

**Consequences of the hydroxychloroquine craze.** A new research letter published in *JAMA* followed prescription trends in the United States between 19 February 2020, and 25 April 2020. The researchers compared the rates of the 10 most prescribed medications in the US as well as hydroxychloroquine/chloroquine against a historical comparison using a similar time period during 2019. Hydroxychloroquine and chloroquine prescriptions skyrocketed during this period. For the week starting 15 March 2020, the number of filled prescriptions for fewer than 28 tablets rose from 2208 (2019) to 45,858 (2020), representing a 1977.0% increase. Prescriptions for 28 to 60 tablets rose 179%, and 182% for fills of more than 60 tablets. The rise in interest in these medications is believed to be related to the World Health Organization having declared covid-19 pandemic (11 March), the United States declaring a national emergency (13 March), the publication of a low-quality (non-randomized study) describing the use of hydroxychloroquine (with azithromycin), and the President of the United States public support of the drugs (19 March). Meanwhile, estimates for weekly prescription fills decreased after 21 March for many drugs. The largest reductions were seen in Amoxicillin (−64.4%), Azithromycin (−62.7%), Hydrocodone-acetaminophen (commonly known by its trade name Vicodin) (−21.8%). In addition, reductions from normal rates were also seen in medications used in the treatment of high blood pressure and cholesterol, which can reduce the risk of heart attacks and strokes, if used over time. Specifically, lisinopril was down 15.3%, amlodipine 9.2%, and atorvastatin 9.1%. These patterns are concerning in both directions. In the first case, prescriptions for drugs that have not been shown to confer benefit for covid-19 has led to shortages for patients who truly need them (e.g. lupus and rheumatoid arthritis patients). In the second, patients who are not taking medications that may reduce strokes and heart attacks could eventually suffer related health consequences. [26 May 2020](#).  
–Lauren Westafer, DO, MPH

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*Anna Fang, Week in Review.*

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

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[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.