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## **BRIEF19**

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

### **RESEARCH BRIEFING**

#### **Toxicities of possible covid-19 treatments. A review.**

*Many medications are being developed or repurposed in an attempt to treat covid-19. Each of these potential therapies carry risks that accompany any possible benefits. Medical toxicologists are specialists in treating toxicity and can help medical teams anticipate side effects and serious adverse reactions. We asked the authors of a [recent paper](#) appearing in the *Journal of Medical Toxicology* to summarize their work on the side effects of repurposed medications and potentially novel therapeutics being tried for covid-19. –Jeremy Samuel Faust, Editor-in-Chief, Brief19.*

**Chloroquine and hydroxychloroquine:** Initially used to treat malaria and autoimmune diseases such as lupus and rheumatoid arthritis, these medications were suggested as a treatment of covid-19 and even prophylaxis against infection. The suggestion arose because chloroquine and hydroxychloroquine hindered the growth of SARS-CoV-1, the virus that caused SARS, in lab experiments. [Small human trials](#) assessing chloroquine showed no beneficial effect, but 15 percent of participants developed abnormal electrical activity in the heart and 2.7 percent had life-threatening abnormal heart rhythms.

**Remdesivir** (Gilead Sciences) was initially studied for hepatitis C, then unsuccessfully repurposed for Ebola, and is now being used for covid-19. Little is known about remdesivir toxicity. Other mechanistically similar drugs (nucleoside analogues used in some HIV medications) cause inflammation of the pancreas and impaired metabolism leading to a buildup of lactic acid in the blood. A placebo-controlled [trial of remdesivir](#) in 237 patients showed no significant clinical improvement in patients, but 12 percent of patients stopped remdesivir early due to adverse events including trouble breathing or gastrointestinal side effects. However, in the ACTT-1 [trial](#), there were higher rates of adverse effects both amongst patients who received remdesivir but also similar rates in patients who received placebo. Overall, a numerically higher number of patients in the placebo arm had adverse effects. However, because many of the adverse effects reported are difficult to distinguish from symptoms of critical illness (kidney failure, respiratory distress), it is challenging to categorize symptoms as either side effects of medications or signs of worse illness.

**Vaccines** provide long-lasting immunity by allowing the body to create antibodies that specifically target and destroy a virus. Incomplete data provided by [Moderna](#), a company attempting to create a vaccine based on the genetic material of SARS-CoV-2, have reported that while some participants experienced medically significant side effects, most were “self-limited” (resolved without requiring medical treatment) and none were life-threatening. Side effects are graded on a 5-point [scale](#); so far, only one patient in this phase 1 trial has been reported as having had a grade 3 reaction--in this case significant redness near the injection site. General principles: Many unvetted ideas regarding possible covid-19 treatments are circulating online. Caution is advised. There is no specific treatment for covid-19. For people who have attempted to self-medicate or have been given off-label medications, watching for side effects is important. The first steps in treating any adverse reaction (e.g. difficulty breathing, palpitations, fainting) is to stop using the substance, and seek medical help, including calling Poison Control

(1-800-222-1222). Many medications proposed to treat covid-19 are unfamiliar to the general medical community. You can find discussion of toxicities from additional covid-19 therapeutics, including lopinavir-ritonavir, convalescent plasma, azithromycin, and other vaccine candidates in our article appearing in The Journal of Medical Toxicology [here](#).

–Alexander Barbuto, MD, –Michael Chary, MD, PhD

## **POLICY BRIEFING**

**Provider liability protection.** Introduced by US House Representatives Lou Roe (D-CA) and Phil Correa (R-TN), the House Judiciary Committee is [set to consider](#) HR 7059, the Coronavirus Provider Protection Act. Developed in conjunction with the American Medical Association and several state and specialty medical organizations, this bipartisan bill seeks to give healthcare providers and their institutions liability limitations related to the coronavirus. Because of the pandemic, many non-emergent medical screenings, exams, and procedures have been delayed in an effort to limit potential spread of SARS-CoV-2. This bill establishes a safe harbor for acts or omissions occurring within the declared national emergency through sixty days after its termination that were determined to be due to lack of adequate resources, inadequate testing ability, workforce shortages, or as a result of following established infection control guidelines that would otherwise be considered deviations from the standard of care. The bill does not offer provider protection for patients harmed as a result of gross negligence or misconduct. *The House of Representatives.*

–Joshua Lesko, MD

## **Covid-19 strikes Minnesota National Guard.**

Protests over the murder of George Floyd are now occurring in over 100 U.S. cities. These protests bring large crowds, and social distancing among protestors and associated law enforcement has become virtually impossible. So, it is no surprise that coronavirus infections are [emerging](#) at the site of protests. The protests began in Minnesota, the site of George Floyd’s death. Since then, one deployed national guard member has tested positive for SARS-CoV-2, and nine other members have begun to show symptoms. In response, the Minnesota National Guard plans to test all deployed members. However, given pre-symptomatic spread, these measures may be too-little too-late. Further, it is not just the close contact that renders protests prime opportunities for the spread of coronavirus; the use of tear gas and other agents that can provoke coughing also may contribute to the spread. In addition, Black communities that are out protesting have already been hardest hit by the covid-19 outbreak in the United States, with demonstrably worse outcomes. The increased risks around protesting could compound these effects and inequities. Accordingly, local and state officials may be advised to increase testing capacity. Such efforts would be in line with the broad testing that public health experts have been calling for since the virus first emerged. *CNBC.*

–Kimi Chernoby, MD, JD

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*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.