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BRIEF19

A daily review of covid-19 research and policy.

RESEARCH BRIEFING

Hydroxychloroquine. A review of the literature shows its failure in covid-19.

Throughout the covid-19 pandemic, misinformation about possible treatments has been widespread, especially relating to hydroxychloroquine, a medication that is effective for malaria, lupus, and arthritis. Although this drug showed promise in the laboratory and in a few early observational studies based on statistics gathered from the medical charts of patients whose covid-19 outcomes were already known, recent data show that the drug is, unfortunately, ineffective in the prevention and treatment of covid-19. The results of randomized controlled trials were published this summer; in each case, the data indicated that the drug just doesn't work as hoped. These findings support the U.S. Food and Drug Administration's decision to revoke its earlier emergency use authorization for the drug's use for covid-19. Here, we summarize four peer-reviewed, high-quality, randomized clinical trials, along with links to the original papers.

1. Prophylaxis (preventing SARS-CoV-2 infection): *The New England Journal of Medicine, June 3, 2020*: This study enrolled 812 patients of which 719 had a high-risk exposure (prolonged and up-close contact with a person known to have contracted covid-19). There was no difference in the rates of SARS-CoV-2 infection among participants who took hydroxychloroquine and those who received placebo.
2. Early treatment and prophylaxis: *The Annals of Internal Medicine, July 16, 2020:* In this study, 491 patients with high-risk exposure to patients with known covid-19 disease (150) or early disease (341) not requiring hospitalization, no difference between those treated with hydroxychloroquine and placebo was detected for duration of symptoms. However, those who took hydroxychloroquine had more adverse drug reactions.
3. Early treatment of outpatients: *Clinical Infectious Diseases, July 16, 2020:* 293 patients were recruited into an open label study (i.e. both patients and researchers were aware of whether or not the test subjects received hydroxychloroquine). Conducted in Spain among patients within 5 days of covid-19 illness onset (the patients were enrolled within 3 days of symptom onset), hydroxychloroquine was not found to shorten duration of viral shedding (how long virus is detected in serial testing) nor duration of symptoms.
4. Hospitalized patients with mild to moderate covid-19 disease: *The New England Journal of Medicine, July 23, 2020:* In this open label study of 667 patients in Brazil hospitalized with covid-19 disease, there was no difference in outcomes between patients who received "usual care" versus hydroxychloroquine versus hydroxychloroquine plus azithromycin (an antibiotic that also has anti-inflammatory properties). In patients who received both hydroxychloroquine and azithromycin, an increase in cardiac side effects (dangerous electrical changes noted on the EKGs of patients) was reported.

Many compounds appear to "work" in laboratory settings—in the proverbial "Petri Dish"—for many diseases. However, only a fraction of these go on to show benefit in animals, let alone in humans. Some of this is due to the fact that diseases are more complex in living beings than in cells in the laboratory. In other cases, the medication might work in theory, but in doses so high that it would be dangerously toxic to real living patients, potentially rendering the treatment worse than the disease. This is why findings from laboratory experiments are useful in identifying possible treatments, but not remotely definitive enough to rely on for making treatment decisions.

—Hans House, MD

POLICY BRIEFING

College testing no match for college partying.

For weeks now, the University of Illinois has been touted for its widespread covid-19 testing campaign. Not only were all students tested before arriving this to campus for the fall semester, but students are required to be tested twice per week while on campus. This amounts to between 10,000 and 15,000 tests daily, and accounts for as much as two percent of the nation's daily testing.

The University appears to mean business. If a student fails to be tested as required, their ID stops working on campus. The test being used is a saliva test which has a 3 to 6-hour turnaround time. In addition to broad testing, the University has asked students to limit in-person activities to essentials like class and grocery shopping. However, just two weeks into the school year, the University has issued a two-week lockdown in response to quickly rising case numbers.

The number of cases already detected, 700, is what the University anticipated it would see over the course of the entire semester. The University now recognizes multiple realities that they did not consider in their models, including students failing to isolate after a known exposure, students hosting parties despite being actively infected with SARS-CoV-2, and many students refusal to participate in contact tracing. There are even reports of students trying to hack the phone-based app the University is using to track testing.

Ultimately, this has been a case study in widespread testing, demonstrating that it is essential to catch early trends in transmission and the importance in a system having the ability to respond swiftly. That said, testing itself will not curb transmission if individuals are not also willing to alter their behavior in response to information provided by intense testing strategies. *NPR*.

—Kimi Chernoby, MD JD