

## **BRIEF19**

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

### **RESEARCH BRIEFING**

#### **Emergency room visit trends during the pandemic. Fewer patients. Sicker patients.**

Previously in *Brief19*, we reported that Emergency Department (ED) visits declined during the early covid-19 pandemic period, as [reported](#) by the Centers for Disease Control. A [new study](#) published in *JAMA Internal Medicine* provides far more granular insight regarding these aforementioned trends from five large healthcare systems spread across the United States (Connecticut, Massachusetts, New York, North Carolina and Colorado). The researchers included data from 24 EDs between January 1 and April 30, 2020. The primary outcomes of the study were daily counts of ED visits, hospital admissions, and covid-19 cases over time. A rapid decline in ED visits started around the week of March 11th, which corresponded to reports of accelerated counts of covid-19 cases in the United States. President Trump announced the national state of emergency on March 13th, which also is thought to have contributed to the decrease in ED visits, as Americans became more fearful of interacting with the healthcare system out of fears of being exposed to patients or even medical teams who might have contracted SARS-CoV-2.

While the number of ED visits decreased, hospitalization rates increased as covid-19 case rates increased in each state. The largest relative increase in hospitalization rates during the pandemic occurred in New York (a 149 percent increase), followed by Massachusetts (51.7 percent), Connecticut (36.2 percent), Colorado (29.4 percent), and North Carolina (22.0 percent). In essence, as ED visits decreased during the pandemic, hospital admission rates among patients diagnosed and treated in EDs increased, suggesting that the acuity (severity of illness) of patients presenting to EDs during the pandemic was much greater than usual, so as to overcome the expected rate of hospital admission that would normally accompany lower patient counts. This translated into increased resource utilization of those hospitals despite generally low ED volumes. Busy hospital wards (and especially intensive care units) are likely to contribute to PPE and medication shortages, which have been reported all over the country.

What is unclear is exactly why ED visits went down during the pandemic. There are important possibilities to consider. It may be that medical emergencies still occurred, but that fearful patients did not seek out medical care. This possibility has been a concern to health officials who have tried to counter this with messaging reminding the public that EDs are generally still safe places—and that the consequences of foregoing emergency treatment is often worse than the small risk of SARS-CoV-2 exposure. But it might also be the case that ED volume went down because fewer emergencies occurred. For example, fewer accidents occurred during the shutdown. Fewer heart attacks and strokes were also reported early in the pandemic. In those cases however, it is unknown whether those emergencies continued to occur (but patients were afraid to call 911 and so they went untreated) or whether lifestyle modifications (such as more healthy diets, decreased stress) or environmental factors (less pollution) led to fewer cardiac and other vascular emergencies. Researchers are now assessing those questions.

[5 August 2020.](#)

—Joshua Niforatos, MD

**Do patients with covid-19 have increased risk for blood clots in the lung?** In an article [published](#) in *Academic Emergency Medicine*, researchers studied the association between covid-

19 and the presence of abnormal and potentially dangerous blood clots in the lungs (“pulmonary embolisms”). This topic has been of particular interest to researchers, given previous reports that SARS-CoV-2 stimulates blood clot formation (“hypercoagulable” states), as many serious infections can.

This study was a large, multicenter, retrospective study across 26 emergency departments (ED) from 6 countries. Patients were included if they had undergone computed tomographic pulmonary angiograms (CT scans of the chest with intravenous contrast injected precisely so that radiologists may look for clotted blood vessels, abbreviated as CTPA). The primary outcome the researchers assessed was incidence of pulmonary embolisms on CTPA during the peak months of the early pandemic, as well as any association with patients diagnosed with covid-19 either by the presence of telltale signs of covid-19 pneumonia in the lungs on the CT scans or by regular SARS-CoV-2 swabs (RT-PCR tests which detect the viral genetic material).

A total of 3,523 patients were included in the study. Of these, 30 percent were found to have covid-19 and 15 percent were diagnosed with a pulmonary embolism. The incidence of pulmonary embolisms among patients who had undergone a CTPA was similar in patients diagnosed with and without covid-19 at approximately 15 percent in both groups. After adjusting for known risk factors for developing a pulmonary embolism (i.e. risk factors as described by a validated checklist used by healthcare providers known as the Wells Score), the odds of having a pulmonary embolism in patients who had concurrent covid-19 was not significantly different (odds ratio, 1.01; with a 95 percent chance that the ratio lies between 0.81 and 1.27).

As with all retrospective studies, however, there are several important limitations worth noting. The act of ordering a CT scan on any patient is a “nonrandom event” based not only on known risks for developing pulmonary embolisms, but also on physician “impression,” and individual practice patterns. Additionally, patients were excluded from the analysis if they did not receive a blood test (“d-dimer”) that triages patients into various categories of risk of abnormal blood clot formation, or if the test was done but the results were normal (i.e. the patients were determined to be very low risk.) Finally, this study only applies to patients presenting to emergency departments. The risk of pulmonary embolism may be different in this patient population, some of whom are still at the beginning of their covid-19 illnesses. So these findings may not hold in patients who go on to be hospitalized and who spend substantial time on the wards or in intensive care units, both of which increase the risk of blood clot formation due to the sedentary lifestyle of hospital-based medicine. Nevertheless, and despite its numerous limitations, this study provides some evidence that clinical decision frameworks that healthcare providers relied on in the pre-covid-19 era for assessing risk of pulmonary embolism—such as the Wells Score or other options such as the modified Geneva Score for pulmonary embolism in addition to d-dimer—may still be applicable in guiding the decision to order CT scans for patients during the covid-19 pandemic who are under consideration for this particular condition.

[3 August 2020.](#)

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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.