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## **BRIEF19**

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

### **RESEARCH BRIEFING**

#### **Is flying during the pandemic safe? A new estimate paints a rosy picture.**

Life as we know it has changed dramatically since March. The airline industry in particular has taken a major hit. But just how safe or unsafe is commercial air travel? While there have been a few [reports](#) of substantial covid-19 outbreaks among flight attendants, these appear to have been sporadic. The question is, how successful have airlines been in their efforts to roll out contagion-limiting policies? Some of these policies include not selling middle seats and enacting of mask requirements. All major airlines have increased cleaning procedures. The main reason we haven't seen outbreaks on planes, though, is likely byproduct of so few people flying.

A new [manuscript](#) appearing in the preprint server *MedRxIV* by a statistician at the Massachusetts Institute of Technology runs some possible numbers. The main conclusion is that on a two-hour flight, 1 out of 4,300 commercial passengers in the United States would be expected to catch SARS-CoV-2 from a nearby passenger. The number drops to one in 7,700 when occupying middle seats is not permitted.

These calculations were made using important assumptions and statistical corrections: an estimate of how likely is it that at least one passenger on the plane is contagious; where on the plane the infected passenger is seated, and; how effective actions like universal masking are in stopping the spread of SARS-CoV-2.

While the math and rationale are compelling, there are several major flaws in this analysis that limit the confidence we can have in the conclusions. The first is that the author assumes that asymptomatic persons are less likely to transmit the disease. This has *not* been shown to be the case, and in fact many studies suggest that asymptomatic persons can spread the virus as efficiently as those with symptoms. The author believes that asymptomatic people are 40 percent as contagious as symptomatic ones. This is an important assumption that is inadequately supported by available evidence. Secondly, the number of detected infections in each jurisdiction is known to be too low. Fortunately, the author corrects by assuming that there are 10 times the number of infections than reported. This is on the high end, but it fairly accounts for a worst-case scenario. But more worrying, the author makes an assumption that contagion only lasts seven days. This is not supported by all available evidence. Many researchers believe that the contagious period for SARS-CoV-2 can in some cases be far longer than that. In addition, the author downplays the potential exposure of lavatory use, and only assumes genuine exposure to people in the same or nearby rows. While air filtration on airplanes is good, making it less likely for a person who coughs in row 15 to infect a person in row 10 or 5 (let alone the opposite direction), the droplet and aerosol features of SARS-CoV-2 remain hotly debated. The very low humidity of airliners may be favorable against spread, but these dynamics simply have not been established for this virus. We'd like to see more possible ranges provided in a final version.

These assumptions and mathematical corrections potentially render the figures reported above as inaccurate. While one of these corrections—the number of infections—might make the numbers seem worse (i.e. make it seem more likely for passengers to encounter an infected person than is really the case), many of these assumptions and corrections dangerously lean in the opposite direction. Therefore, it is possible that the rate of infection from flying is greater than the author of this preprint study has concluded.

—*Jeremy Samuel Faust MD MS*

## **POLICY BRIEFING**

### **Executive order to bring medical manufacturing home.**

To combat shortages of critical medical supplies, President Trump has [signed](#) an executive order to bolster domestic production and limit dependence on foreign supplies. To address the ongoing need of “essential medicines and medical countermeasures,” the order has several approaches, outlined below.

**Production:** applicable agencies are to accelerate development of cost-effective domestic production, ensure continued demand of relevant products, and combat trafficking of counterfeit items relevant to federal appropriation.

**Procurement:** limit to those products produced in the United States, dividing such orders between at least two companies, to ensure agencies adopt recommendations from the Department of Homeland Security (DHS) to combat counterfeit and pirated trafficking of items, to develop strategies to ensure domestic procurement. Exceptions are being granted where such essential products are not produced in the US and in instances in which ramping up domestic production would be cost-prohibitive.

**Supply chain vulnerability:** to review the entire supply chain for vulnerabilities and mitigate them, to work to identify scarce critical intermediates, to accelerate process for the Food and Drug Administration (FDA) approval of domestic production, to increase unannounced foreign site inspections and refusal to import from sites that refuse or delay complying with any such requests.

Additionally the order mandates the Environmental Protection Agency to work to streamline the approval of new domestic manufacture requests pursuant to increasing production of the above supplies. It also calls for the Department of Health and Human Services (HHS) to use the Defense Production Act to prioritize federal contract fulfillment. *The White House.*

—Joshua Lesko, MD

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Twitter: [@brief\\_19](#)

[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.