

15 June 2020

## **BRIEF19**

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

### **RESEARCH BRIEFING**

#### **Community Transmission in the United States: When Did it Begin?**

After reports of two individuals who died February 6 and 12-17 whose bodies were subsequently tested and found to be positive for SARS-CoV-2, many questioned whether community transmission (i.e. transmission among people who had not traveled to China or other at-risk areas) of the virus had begun to occur in the United States earlier than the first documented cases at the end of February. An article from the [CDC Morbidity and Weekly Report](#) investigated this question by combining data from different sources, including the National Syndromic Surveillance Program (NSSP), vaccine effectiveness networks, and the “Seattle Flu Study.” The NSSP (a project of the CDC) gathers real-time data of symptoms, chief complaints, and diagnoses from over 4,000 hospitals across the United States. Data from the NSSP of 14 counties that reported early community transmission found no increase in emergency departments diagnosing covid-19-like illnesses or related symptoms including fever, cough, shortness of breath, difficulty breathing, or the listing of a coronavirus diagnosis until late February/early March. The study also looked at data from two networks designed to study the effectiveness of the influenza vaccine in six states. Samples taken earlier this year that had been stored were retrospectively tested for the presence of SARS-CoV-2. In Washington State, the first sample tested that was positive for SARS-CoV-2 came from a test taken on February 25. The prior 497 samples from January 19 to February 24 all tested negative. None of the 2,620 samples from Michigan, Pennsylvania, Tennessee, Texas, or Wisconsin tested positive. Similarly, researchers from the Seattle Flu study, designed to monitor new respiratory illnesses in the area, went back and re-tested stored viral swab samples of 5,270 patients who had been tested for respiratory illnesses starting January 1, 2020 and through February 20, 2020. No sample was positive for SARS-CoV-2. While not definitive, taken together, these data suggest that it is unlikely that symptomatic covid-19 was coursing through communities in the US before mid-to-late February.

*–Lauren Westafer DO, MPH*

#### **That respirator may be clean, but is it effective?**

The shortage of personal protective equipment (PPE), especially N95 respirators, has led to use of the Chinese version of the mask, KN95s, as well as sterilization and reuse in hospitals across the United States. The FDA has permitted such activity during the covid-19 outbreak via Emergency Use Authorization orders, as covered in *Brief19*. These respirators are designed to block at least 95 percent of particles 300 nanometers in size or larger. A new study in [JAMA Network Open](#) investigates the effect of sterilization using either vapor hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) or chlorine dioxide (ClO<sub>2</sub>) on the filtration of N95s, KN95s, and surgical face masks. Prior to sterilization, all masks had an average filtration efficiency greater than 95%. After sterilization with hydrogen peroxide, the N95 and KN95 had filtration efficiency >95%. However, when sterilized with chlorine dioxide, filtration efficiency dropped to 95.1% for N95s, 76.2% for KN95s, and 77.9% for surgical face masks. Further, the researchers evaluated the filtration of particles of various sizes and found that again, hydrogen peroxide sterilization did not damage the masks’ abilities to filter out virus particles across the spectrum of tested particle sizes. Sterilization with chlorine dioxide, however, resulted in poor filtration efficiencies of particles sized 300 nanometers. This study only tested a limited number of masks and only one type of mask in each category. However, the results

demonstrate the importance of evaluating the impact of a hospital's sterilization process on the masks used at that hospital. One weakness of this study is that it only assessed conditions in laboratory circumstances. Storage and transportation of masks for sterilization may lead to changes in mask fit, which can also influence how well masks protect the eventual wearer.

–*Lauren Westafer DO, MPH*

### **Scientists tweet against a new paper that caught fire on social media.**

A paper published in *The Proceedings of the National Academy of Sciences* ([PNAS](#)) last week grabbed headlines after concluding, without sufficient evidence, that airborne transmission is the “dominant” form of SARS-CoV-2. Experts on social media tweeted takedowns, leading some experts to revise/correct earlier tweets supporting the paper. The paper looked at how case counts changed after New York implemented a mask-wearing policy, noting that case counts went down after the policy went into effect. However, the date of that policy was not shown to correlate with when mask-wearing actually began. The authors also made no attempt to account for other explanations for the lower case counts, including the observation that mask-wearing is likely to accompany the adoption of other activities that can decrease viral spread, such as social distancing, good hygiene, and the avoidance of hand to mouth transmission. The paper was likely not vetted thoroughly, because it went through a special pathway in *PNAS* that permits members of the prestigious National Academy of Sciences (NAS) to choose their own reviewers. Some scientists are calling for a retraction of this paper, advocating that the pathway for papers submitted by NAS members may need to be reformed, or removed wholesale.

–*Jeremy Samuel Faust MD MS*

## **POLICY BRIEFING**

### **CDC updates social distancing guidelines.**

On Friday, the Centers for Disease Control and Prevention (CDC) [issued](#) an updated version of their social distancing guidelines to limit potential spread of the coronavirus. The first, and most important message remains unchanged: individuals who have concerns that they may have been exposed to SARS-CoV-2, have symptoms, or have tested positive for the virus should stay home and isolate themselves from other people. The guidelines also provide information for those people who have not been infected and are interested in resuming a more normal routine as shelter-in-place orders have relaxed nationwide. The document provides considerations for activities with different degrees of interaction and risk, including dining out, hosting a gathering, using a brick and mortar establishment, and traveling. The common thread remains advising all persons to wear a face mask when out, especially if six feet of distancing cannot be observed. Additionally, the level of local must be assessed one a case-by-case basis, as infection risk likely reflect factors including a state's reopening status and plan, the current number of cases in the area, and how much testing is occurring. The site provides a directory of state health departments and the CDC's case tracker, which provides relevant state- and county-level data. *The CDC.* –*Joshua Lesko, MD*

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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.