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## **BRIEF19**

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

### **RESEARCH BRIEFING**

*The after-effects of covid-19 among a small group of children has made news headlines. We asked the authors of [a recent paper](#) appearing in the American Journal of Emergency Medicine to summarize their work for Brief19. —Jeremy Samuel Faust, Editor-in-Chief, Brief19.*

Covid-19 has caused fewer deaths in children than amongst adults. However, approximately one month after the peak in New York City in April 2020, cases of children with prolonged fevers abruptly developing shock-like states were reported in Western Europe and the United States. In a study published in the American Journal of Emergency Medicine, we described a series of four previously healthy pediatric patients who presented at Mount Sinai Hospital's Pediatric Emergency Department in New York with clinical features consistent with what is currently known as covid-19 post-infectious cytokine release syndrome, or Multi-System Inflammatory Syndrome in Children (MIS-C).

While MIS-C appears to be its own entity, patients present with symptoms similar to Kawasaki Disease, an inflammatory condition characterized by many days of fever, rash, and conjunctivitis (redness of the eyes), often along with abdominal pain and diarrhea. A subset of patients worsen in a manner similar to a deadly condition known as toxic shock syndrome. In our unit, all of the children had prolonged fever (lasting longer than 5 days), as well as gastrointestinal symptoms including abdominal pain, vomiting and/or diarrhea. Some children had rash and conjunctivitis. None of the children arrived at the hospital with substantial respiratory symptoms which are more typical in adult patients with severe covid-19. In fact, the children were all relatively well appearing on arrival to our emergency department but became critically ill within hours to days of that initial evaluation. Of note, none of the children in our series tested positive for active infection via the nasal swab, but all were found to have positive antibody tests suggesting SARS-CoV-2 infection several weeks prior. (There have been reports of some children with MIS-C who tested positive for active infection via nasal swab). All four of our patients had chemical markers of inflammation in their blood (D-dimer, fibrinogen, CRP, ESR, procalcitonin) as well as increased levels of cytokines (IL-6, IL-8 and TNF- $\alpha$ ), small proteins that serve as chemical messengers and play an important role in regulating the immune system's response to infection and other foreign substances. Each of our patients eventually developed dangerously low blood pressure, requiring intravenous fluids and medications to raise blood pressure.

While severe manifestations and after-effects of SARS-CoV-2 remain uncommon in children, our case series underscores the need for parents and physicians to monitor children carefully for any signs of this rare but important condition.

*—Jennifer Sanders, MD.*

**Surgisphere scandal fallout continues.** STAT News [reported](#) that Dr. Amit Patel MD, the senior author of two recent high profile papers that were retracted last week by *The New England Journal of Medicine* and *The Lancet*, had his faculty appointment at the University of Utah

terminated over the weekend. The decision was mutual, according to the report. STAT revealed that it was Patel who introduced Dr. Sapan Desai MD, the chief executive of the previously little-known and now embroiled data company Surgisphere, to the primary author of both studies, Dr. Mandeep Mehra MD. Mehra has faculty appointments at Harvard Medical School and Brigham and Women's Hospital in Boston. So far, there have been no changes in his status at either institution.

–Jeremy Samuel Faust, MD MS.

## **POLICY BRIEFING**

### **Tear gas agents increase risk of SARS-CoV-2. Experts are worried.**

As thousands of people have taken to the streets to mourn George Floyd and protest police brutality, many public health experts have simultaneously [supported](#) the protests while expressing concerns that such mass gatherings might increase the spread of SARS-CoV-2. Some protesters have worn masks, but while masks lower the risk of transmission, they do not eliminate it entirely. Their concerns have been [heightened](#) by the decision by some law enforcement agencies to deploy tear gas agents such as pepper spray (capsaicin) and o-chlorobenzylidene Malononitrile gas (CS or “riot control agent”). The White House itself has faced criticism, after law enforcement officers used such agents to clear a path for President Trump's brief photo-op in front of St. John's Church last week. (Attorney General William Barr defended the use over the weekend, [falsely stating](#) that pepper spray is not a chemical.) Experts' concerns about tear gas are these: First, as irritants, they induce coughing and pain. Intense coughing and loud vocalizations associated with pain are droplet-increasing activities. Victims of tear gas also often experience the sensation of drowning, which has been seen to cause some demonstrators to rip off their masks and cough in confusion and panic. Such risks are well-known to medical professionals and researchers, but have never before been compounded with the concerns of the spread of a lethal pandemic pathogen such as SARS-CoV-2. For example, a 2014 [study](#) found that US Army military recruits were more likely to require hospitalizations for respiratory illnesses after being exposed to CS tear gas during training; the military has since decreased the use of these chemical agents for training purposes. *Brief19* has [previously reported](#) on the disproportionate toll covid-19 has taken on Black Americans and Americans who live in areas with more air [pollution](#). The use of tear gas agents such as capsaicin spray and CS gas adds another layer of risk to communities already reeling from the effects of systemic racism manifesting in healthcare and environmental policy. Many physicians and public health professionals nationwide have [condemned](#) the use of these tear gas agents by law enforcement during these protests. *National Public Radio*.

–Aida Haddad M. Div.

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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.