The science of the pandemic supports teachers' concerns over the dangers of school reopening, Part two

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Continued from January 20. To read part one, click here .

What the studies of school reopenings show

Proponents of school reopening have referenced many small studies or reports that attempt to give credence to their position that schools are safe. What characterizes many of these studies is the limited scope of their school data, the small interval of time to evaluate these issues and limiting their analysis to early fall when the incidence of COVID-19 cases was at its lowest point.

Among these, a more recent and often-cited nationwide report from Tulane bears discussion. The study attempts to discern the impact of school reopening on hospitalization rates, which is a critically important issue. The report concludes that in settings where viral transmission and hospitalizations were already low, the opening of schools for in-person or hybrid learning did not seem to impact health care systems. However, in regions where the infections were more pervasive, school openings seemed to make matters worse.

There are limitations to the study that bear mentioning. The authors use a narrow two-to-five-week lag between exposure to infected individuals and potential hospitalizations. They write, "We cannot even attempt to estimate effects for changes in opening status that occurred after September. Even if we had more recent data, any subsequent changes likely involve endogeneity [inherent contradictions] in the dynamics of school reopening that would be difficult to account for in any empirical analysis."

They also go on to state, "Most schools that are offering in-person instruction are also giving families the option of remote instruction, and many families are taking advantage of this. This means that what we are actually estimating is the effect of the policy of sending all children back in-person, not the effect of actually having all students in school buildings as they were prior to the crisis. So, even if these results were taken literally, they do not mean that sending all children back to school in-person, even in low-baseline-hospitalization counties, would be safe."

The problem, as outlined above, is in many cases as few as one-third of children have returned to in-person education, so the full consequences of reopening the schools cannot yet be measured.

Data analyzed from June to August, as reported by NPR, found that people in their 20s accounted for the largest share of confirmed cases. Because of the asymptomatic nature of or mild symptoms among this group, they will be overlooked by public health departments and not significantly contribute to the use of health resources. Rising infections among this group precede increases in COVID-19 by at least four to 15 days among people over the age of 60, if not longer, depending on the social interactions and regional variation in demographics, making the Tulane study on school opening and hospitalizations challenging to interpret.

One recent study from Montreal, Quebec, evaluated the transmission of COVID among school-aged children from September to early January, a period of more than four months. The authors reported that "the transmission of COVID among school-age children is not a consequence, but rather a determinant of the general level of infection in surrounding communities." In other words, children were the source of community spread. The data revealed that cases first began to increase among those age 10 to 19, with a subsequent rise among adults between 30 to 49. As the *Montreal Gazette* noted, "the study found it's children who passed the virus onto adults when schools reopened in the fall, feeding the alarming spread seen in Montreal during the pandemic's second wave."

Recently, in Europe, the UK, Germany, Ireland, Austria, Denmark and the Netherlands have announced school closures over concerns with the new variant in the coronavirus that makes it more transmissible. According to Antoine Flahault, director of the University of Geneva's Institute of Global Health, "In the second wave, we acquired much more evidence that school children are almost equally, if not more infected by SARS-CoV-2 than others." Even Prime Minister Boris Johnson openly admitted after his abrupt reversal on keeping elementary schools open after the Christmas break, "The problem is not that schools are unsafe for children. The problem is schools may nonetheless act as vectors for transmission causing the virus to spread between households."

Dr. Flahault explained that in a yet to be peer-reviewed study, random antibody tests conducted in Geneva in May and December found that children age 6 to 18 were becoming infected just as much as young adults. Swiss schools have been open since summer.

An Austrian nationwide survey found children under 10 had similar infection rates as older children. Additionally, these children were getting infected as often as their teachers, according to Michael Wagner, a microbiologist at the University of Vienna who supervised the study. Recent surveys before Christmas in the UK, when schools were still open, found the positivity rate among children was higher than in adults. In a Dutch village near Rotterdam, 30 cases of the B.1.1.7 variant were discovered at an elementary school.

Schools as vectors of infection

According to a recent report by ABC News from January 15, positivity rates at schools in Austin, Texas, are up to 20 percent in high schools, 27 percent at middle schools, and 19.8 percent in elementary schools. The WHO had recommended this rate remain under 5 percent for more than 14 days before districts consider opening.

Schools in Austin are at 70 to 90 percent occupancy. Dr. Mark Escott, the interim medical director and health authority for Austin Public Health, said, "This is a recipe for disaster. It's a recipe for outbreaks in our schools. And in addition to the impact on our children's health, on our teachers and school staff, so is the continuity of education. We are going to quickly see that we are going to run out of teachers in order to provide in-person education."

Returning to Miguel Cardona's bald assertions, the evidence indicates that school closures have played a critical part in mitigating the spread of the coronavirus. In a JAMA study published on July 29, the authors had found that statewide school closures in the first wave of the pandemic led to a decline in the incidence of COVID-19 of 62 percent per week. Similarly, mortality saw a 58 percent decrease per week. States that closed earlier saw the most significant relative change per week. In concrete numbers, if schools had remained open when the pandemic first surged in the US, by April 21, instead of 46,395 deaths, the study estimated there would have been 87,000 deaths.

In a more recent study published in *Science* , looking at various government interventions used against COVID-19, an international team of researchers affiliated with Oxford, Harvard, Cambridge and the Australian National University estimated the effects that seven non-pharmaceutical interventions had on COVID-19 transmission in 41 countries. The combination of the closure of schools and universities, limiting gatherings to 10 people or less, and closing most nonessential businesses reduced the reproductive number, R0, to under one. In other words, it led to an overall reduction in the number of infections in the community. Among the interventions listed, school closures and limiting gatherings to 10 people had the highest impact on mitigating the pandemic.

However, it is precisely these measures that protect the community that the ruling elites oppose, as it infringes on their ability to extract surplus value from the working class. It is why their policy positions are stipulated with so many contingencies, such as if funding is available, if pristine infectious control measures are maintained, and if all students always remain masked and six feet apart, and if there is sufficient staffing to implement additional responsibilities, in order to cajole educators back into the classroom with impossible promises. Where there is open opposition, as in Chicago, defiance on the part of teachers is being met with threats and coercion.

One other factor that is frequently overlooked in these discussions by the proponents of school reopening is that the infections are spread through aerosols. Recently, numerous elegant studies have been conducted that have demonstrated that the six-foot rule is meaningless in a poorly ventilated room. Masks are not a substitute for a comprehensive social distancing measure and were never intended to substitute for all other forms of mitigation. For instance, if an infected teacher conducted two hours of instruction without a mask in a poorly ventilated room, up to 12 students, irrespective of where they are sitting, would potentially become infected. With a mask, that would only drop to five students, but does not assure safety without the ability to conduct frequent air exchanges.

Onward transmission of COVID-19 occurs through superspreading events. It isn't that one infected person will infect one or two others, but that very few will infect many. James Collins, the Termeer Professor of Medical Engineering and Science (IMES) and Department of Biological Engineering at MIT, noted, "superspreading events are likely more important than most of us had initially realized. Even though they are extreme events, they are probable and thus are likely occurring at a higher frequency than we thought."

This begs the question, how safe are schools in the US? According to a US Government Accountability Office report from June 2020, to prevent the spread of the coronavirus when inside schools, "more than 41 percent of school districts need to update or replace their heating, ventilation, and air conditioning systems in at least half of their buildings." A recent report by Edsource indicated that some districts in California are finding the costs of upgrading their systems untenable. They write, "few funding streams are guaranteed, and they may not be sufficient to cover the regular inspections and stringent filter replacements that HVAC systems require." Another question is how long will it take for these measures to be implemented and appropriate inspections conducted?

In a report published by the NEA in August of 2020, Kevin Enos, a science teacher from Franklin, Massachusetts, and a fellow member of Massachusetts Teachers Association's (MTA) Environmental Health and Safety Committee, noted that such investments would be "unlikely propositions." He added, "Older buildings make up the lion's share in Massachusetts, as they do in many areas around the US, and schools just don't have the financial resources to fix them. It's not a question of the willingness of districts, it's about the financial ability. The federal, state, and local governments are not putting in the money necessary, but I am sure they wouldn't want to go to work in a building with this kind of quality."

Jean Fay, a special education paraprofessional from Amherst, Massachusetts, and Enos' colleague, continued, "It's appalling what we expect students and staff to endure in terms of building quality, yet with schools so drastically underfunded year after year, HVAC systems are not at the top of the list for investment." However, for many school districts, the report found that improving security remains their highest priority (92 percent). Other deficits include the need for student access to technology (87 percent) and monitoring health hazards (78 percent).

The new variants of coronavirus

For nearly a month, much attention has been paid to the new variants of the SARS-CoV-2 virus found in numerous countries, with scientists and epidemiologists overly concerned. The most discussed variant, B.1.1.7, also known as the UK variant, has become the most common version of the virus in England, making the virus more transmissible, which means it spreads more easily by around 50 percent. Though the variants don't seem to be more lethal, it does mean that more stringent measures must be taken to bring its reproductive number, R0, down again. A more transmissible virus will lead to an explosion of new infections with already inundated hospital systems in the UK and Los Angeles County.

According to Harvard epidemiologist Marc Lipsitch, "once it [the variant] becomes common, it will accelerate transmission considerably. With a 50 percent increase in infectiousness, in less than two weeks, you get twice the number of cases. And in a month or so, you have four, five times as many cases. But that's very approximate. It could be higher. A 50 percent more transmissible virus means we need to cut our contacts down by another third compared to the already strong restrictions [already in place] in order to get back to the same place where we were. That could mean closing businesses that have partially opened back up, closing down schools, and other such lockdown measures."

The US CDC recently stated that at least 76 people across 12 states have been infected with the B.1.1.7 variant and threatens to worsen the situation over the next few weeks by becoming the dominant strain by late March. The report warns, "The increased transmissibility of this variant

requires an even more rigorous combined implementation of vaccination and mitigation measures to control the spread of SARS-CoV-2. These measures will be more effective if they are instituted sooner rather than later to slow the initial spread of the B.1.17 variant. Efforts to prepare the health care system for further surges in cases are warranted. Increased transmissibility also means that higher than anticipated vaccination coverage must be attained to achieve the same level of disease control to protect the public compared with less transmissible variants."

It is critical that educators, parents, and the public fully appreciate the need to immediately close schools and nonessential workplaces while adhering strictly to limiting gatherings to bring the pandemic under control. The further spread will only provide the virus with more opportunities to mutate. Teachers must arm themselves with the pandemic's science and not be coerced or compelled to acquiesce to the criminal demands to provide in-class instructions.

Concluded