Coronavirus disease 2019 (COVID-19) has been a devastating public health crisis, requiring significant lockdown measures to combat its spread. In the United States alone, approximately 36 million workers have become unemployed, and more than 50 million children are out of school for the remaining academic year.\(^1\) Given that a viral resurgence is expected in the fall, reopening schools is up for debate.

A critical consideration for reopening schools is the epidemiology of COVID-19 in children.\(^2\) There is evidence that, compared with adults, children are 3-fold less susceptible to infection, more likely to be asymptomatic, and less likely to be hospitalized and die. While rare reports of pediatric multi-inflammatory syndrome need to be monitored, its association with COVID-19 is extremely low and typically treatable.

School closures have many profound consequences on children that cannot be overlooked.\(^3\) These include regressions in academic gains, heightened depression and anxiety symptoms, greater digital dependence, and numerous unmet social needs.\(^4-6\)

As nearly 27 million workers depend on schools for childcare, prolonging school closures will also preclude the United States from effectively reopening and sustaining the economy. Health officials must begin working now with teachers, parents, superintendents, and local governments to advance the conversation regarding school reopening. While the US Centers for Disease Control and Prevention recently released guidelines for reopening schools in the United States, the onus of responsibility falls on states and school districts to implement these recommendations.\(^7\) To facilitate that, important lessons can be learned from the experiences of countries that have already reopened schools, including Denmark, Germany, Israel, Japan, and China.

First, a child-friendly national infrastructure to support widespread rapid testing is needed. Saliva tests need to be further optimized. In their absence, we need to prioritize testing symptomatic and exposed children. Some schools in Germany are providing self-administered viral tests with overnight results and allowing attendance only if the child has a negative result. China, Taiwan, Vietnam, and Japan are also checking students’ temperatures at school exits and entrances and sending them to nearby clinics in cases of fever. While testing is critical to assessing infection and immunity, caution should be taken to ensure that a positive result is handled in a sensitive way to avoid any stigmatization among peers.

Second, getting children safely to and from schools is critical. Private transportation should be used whenever possible. Otherwise, precautionary measures in several Chinese schools have included increasing the number of bus routes, diversifying pick-up and drop-off locations, and maintaining physical distancing measures in transit.

Third, safety precautions within schools could aim to maximally limit movement. Attendance could be alternated between coming to class and learning remotely with 1-day-on, 1-day-off schedules, as is being done in many German schools. Israel and Japan have also staggered arrival times on campus. Schools in Norway reduced their class sizes to groups of no more than 15 students and are using unoccupied classrooms to maximize physical distancing. Most countries are encouraging students to wear masks while on school premises, although this may hamper certain learning efforts, like assessment of phonation. Once in class, children could stay there through the day while teachers rotate. Denmark has temporarily closed shared spaces, such as libraries and

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gyms. Additionally, some European countries have demarcated playgrounds to discourage students from mixing more than necessary.

Where and how to safely eat lunch has required significant thought. Taiwan has implemented a policy encouraging children to eat lunch at their desks. However, some countries are still using the cafeteria but serving lunch at different times. Lunch tables have partitions installed, and students sit in rows or in a zigzag pattern to avoid facing each other.

Fourth, operational upgrades could enhance social distancing by spacing desks 6 feet apart and installing plastic tabletop partitions. Most countries that have reopened schools have alcohol-based rubs inside classrooms and enforce periodic handwashing. Facilities are being cleaned and disinfected at least once a day by personnel taking protective precautions, with a particular focus on door handles, light switches, and other heavily touched areas.

Protecting the workforce that interacts with children is also imperative. Teachers and staff members should be given adequate personal protective equipment and encouraged to wash their hands regularly. South Africa’s school reopening timeline was delayed after backlash from teacher unions and governing associations owing to inadequate access to personal protective equipment. Additionally, British, Israeli, and Danish schools, among others, have already given remote work options to whoever self-identifies as more susceptible to infection. Furthermore, expanded provisions for paid sick leave are critical.

If a phased approach to reopening is used, schools must decide which cohorts of children should attend first. Denmark and Norway started with elementary schools, whereas Germany opened their schools to graduating high school seniors. Other proposals have included prioritizing children of essential workers. Irrespective of who is allowed back first, all children should be given the choice to opt out of face-to-face instruction to accommodate their own health needs or those of high-risk family members. Many British parents have kept their children at home, with estimated school attendance ranging from 40% to 70%.

Despite taking adequate precautions, schools need to have a contingency plan to address a spike in new cases. Within the past month, dozens of reopened schools in Israel, Japan, and South Korea had to close and revert to virtual learning when new COVID-19 clusters emerged. On the other hand, none of the 22 European nations that have reopened schools have observed an increase in infections among children, parents, or staff. In time, best practices and successful implementation strategies from some of these countries could be adapted in the United States.

With states cutting education budgets, heterogeneous resource availability among US school districts, and geographic variability in COVID-19 incidence, a 1-size-fits-all solution is unlikely. While most US schools either have or will soon complete the academic year, virtual learning is an inadequate substitute for in-class instruction in the long term, even with time to prepare. Although the future of this pandemic remains uncertain, it is imperative to ensure that the critical needs of children do not become invisible.
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