

## **Evidence Review of Reopening Schools During the COVID-19 Pandemic**

*Brookline Remote Learning Expert Advisory Panel on Public Health, Safety, and Logistics*

Prepared June 29, 2020; Presented July 2, 2020; Updated July 31, 2020

### **Overview**

In considering whether and how to reopen public schools in Brookline in 2020-2021, our expert advisory panel has reviewed the evidence from published studies in several areas: 1) The risk of COVID infection and serious illness in children; 2) School-based outbreaks and risks to teachers, staff, and other students; and 3) Effect of school closures on overall community COVID rates. These materials include evidence from the recent guidance from the Massachusetts Department of Elementary and Secondary Education (DESE), as well as additional published studies and reports.

### **Risks of COVID Infection in Children:**

Multiple peer-reviewed show that children are significantly less likely to become infected with COVID:

- In a [study](#) of 2766 people in Switzerland that tested for antibodies to the virus causing COVID, children ages 5-9 were 60% less likely to have been infected than adults.
- An [international study](#) of 6 countries estimated that individuals younger than 20 were half as likely to become infected as adults over 20 years old.
- A [study](#) of households with COVID-19 exposure in China showed that children were infected at lower rates than adults – 4% vs. 17% – even though these individuals all lived in the same home with a COVID-positive family member. Another [preliminary study](#) found children had similar infection rates (7%) as adults under age 60, while older adults were higher risk (15%).

Among those who do get infected, the risk of serious illness among children due to COVID is very low:

- A [study](#) in China showed that 1.6% of children with confirmed COVID-19 had severe or critical disease, most of whom (7 of 9) had underlying medical conditions. Another [study](#) from China showed that 5.2% of infected children had severe disease and 0.6% had critical disease. Two of the combined 2686 infected children in these two studies died (0.07%).

Rates of childhood infection have increased as overall national case rates have risen, but complication rates for children remain quite low. The Centers for Disease Control and Prevention (CDC) [reported](#) that from the start of the pandemic through July 2020 the rate of infection requiring hospitalization for 5 to 17 year-olds was roughly 1 out of 22,000 children.

### **School-Based Outbreaks and Risks:**

Studies of schools with known cases of COVID-19 show that infection risk among other teachers and students are low. In most cases, schools did not close but used contact tracing and quarantining instead:

- A public health [report](#) from Australia tracked 18 individuals (9 students, and 9 teachers/staff) with confirmed COVID-19 infections during times they were present at school. Of the 735 students and 128 staff who came into contact with these individuals, **zero teachers** and two students (0.3%) contracted COVID-19.
- In a French [case study](#) of a 9-year old child who attended 3 schools while symptomatic with respiratory symptoms later confirmed to be COVID-19, 176 contacts were identified, including 84 who had shared a classroom with the child. There were **zero confirmed COVID-19 cases** in this group, after close surveillance and testing of symptomatic individuals.
- A [study](#) in Ireland tracked 6 episodes where students (3) or teachers/other adults (3) at schools were confirmed to have COVID. Of the 924 students and 101 adults that came into contact with these individuals at school, there **zero confirmed cases** of COVID-19, after close follow-up, contact tracing, and testing of symptomatic individuals.
- A recent population-based [study](#) from South Korea indicates that children 0-9 years old are only half as likely to transmit the infection to household members as adults are, while older children/teens may have rates of transmission – *once infected* (which as noted above occurs at lower rates for teens than adults) – at least as high as adults.

- Increasing [evidence](#) suggests that consistent mask use in indoor spaces can significantly reduce the risk of viral spread, which is most relevant for adults and older children who may be at higher risk of transmission.
- A study of infection risk by occupation in [Sweden](#) – which did not close schools – found that COVID infections were highest for taxi and bus drivers, while teachers’ rates were similar to the population average. The [Netherlands](#) reported in June that the infection rate for teachers and childcare workers who were tested was less than half the rate of the general population.
- More recent news has shown outbreaks of COVID among children after reopening schools in Israel, without classroom size limits or consistent social distancing practices. It is unclear whether all of these infections were transmitted in schools, as Israel reopened [large adult gatherings](#) at the same time. Overall [numbers](#) show nearly 2000 student and teacher cases through early July, out of more than [2 million](#) school children in the country.
- In contrast, education ministers in [22 European countries](#) reported that reopening schools has not led to a rise in COVID-19, and reopening’s in several Asian nations have had been associated with only small and [infrequent](#) outbreaks.

### **Role of School Closures in Community Spread**

Re-opening schools has implications for the broader community. Infections from school can be brought home. Having children out of the home can change adults’ behaviors and affect disease spread. Studies on the broader effect of school closures on COVID community spread have found that social distancing steps as a whole are critical to slowing COVID infection, but findings are mixed on whether school closures are effective, and the majority of published papers thus far suggest that school closures are not as effective as other policies such as banning large events. These studies are challenging to conduct, however, since many school closures occur at or near the same time as other social distancing policies, which may account for the mixed findings:

- One [study](#) of county-rates of COVID across the U.S. found “no evidence that school closures influenced the growth rate” in COVID infections, while another [found](#) that school closures were associated with significant reductions in COVID infections and deaths, though this paper did not account for other closure policies like large gathering bans, restaurant closures, or non-essential business closures.
- An [analysis](#) of 11 European nations found large reductions in COVID spread from lock-downs, but no significant effect from school closures on their own. Another [analysis](#) of social distancing policies in Italy, France, and the United States found no significant effect of school closures on COVID growth rates.

### **Conclusion and State Guidance:**

The decision to re-open in-person schools is not simple. We recognize the stress, fear, and confusion all of us have experienced during the pandemic. Community members – parents, teachers/staff, and children themselves – may wonder, “*If we needed to close this spring, what changed to let us to open this fall?*” Our committee’s consensus is that three major factors have changed since March 2020.

- Current rates of COVID in our state have fallen dramatically. Current rates of new cases of COVID in Massachusetts are roughly 90% [lower](#) than they were during the peak rates in April.
- We now have stronger evidence that children are at lower risk for being infected by the virus and that school closures don’t appear to be a very effective way to reduce COVID spread.
- We have more evidence on tools that can reduce risks of COVID. The combined effects of physical distancing, masks when feasible, improved hand hygiene and cleaning, and use of well ventilated indoor and outdoor space all reduce risks of re-opening. In addition, having a clear testing strategy and contact tracing for the school district is critical to allow public health and school authorities to respond to and reassess the risks as the epidemic evolves.

**\*\* DRAFT DOCUMENT – SUBJECT TO REVISION\*\***

Overall, the goal is not zero risk – that is not feasible. With or without COVID, schools have always had to consider and manage risks such as influenza and other infections, traffic safety for children getting to school, playground injuries, etc. In all cases, the imperative is to educate our children while appropriately managing and reducing the risks to students, staff and teachers, and the broader community.

Recent [guidance](#) from the Massachusetts Department of Elementary and Secondary Education reiterates these points: “Based on current data and research – the medical community supports the return of our students to in-person learning, with appropriate health and safety guardrails in place. **With adherence to a comprehensive set of critical health and safety requirements, we can bring our students, staff, and families safely back to school.**”

While the evidence summarized here is our best current guide, new information may change this assessment in the future and we will continue to update this review periodically. Re-opening is not a simple one-time decision. Rather, we look forward to working with school leadership, teachers, parents, students, and community members in an ongoing way to best balance the need for in-person schooling for our students and COVID risk management.