

News in focus



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Many schools around the world have introduced measures, such as desk screens, to keep students apart at school.

HOW SCHOOLS CAN REOPEN SAFELY DURING THE PANDEMIC

Masks, class sizes and hygiene are all important, but low community spread is key.

By Smriti Mallapaty

At schools in South Korea, children eat their lunches in silence, behind plastic screens that separate them from their friends¹. They wear masks, except when adhering to social distancing in the playground. And their temperatures are checked twice every morning – first at home, then again at the school gates.

This could be the new reality for millions of children around the world. Summer holidays are drawing to an end in the Northern Hemisphere, and in places such as the United

States, the United Kingdom and some other European countries that closed schools during the coronavirus pandemic, governments are debating when and how to open schools. A growing number of studies show that there are ways to do this safely. The key is vigilance on hygiene and physical distancing, a swift public-health response to halt the spread of any infections and, most crucially, low levels of viral spread in the community.

“Some countries in Asia, particularly South Korea, provide a good model for how schools can provide face-to-face teaching during the pandemic,” says Zoë Hyde, an epidemiologist

at the University of Western Australia in Perth.

But researchers say that if schools are opened before community transmission reaches low levels, cases will surge.

Schools can be high-risk places, says Young June Choe, a paediatrician and epidemiologist at Hallym University in Chuncheon, South Korea. Children are often crammed into poorly ventilated rooms for eight hours or more. And there’s a lot of mixing, because children come from across the neighbourhood, some on public transport, and often with their parents in tow.

Earlier in the pandemic, it seemed that the

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virus might affect children differently from adults. Because children had milder symptoms, it was assumed they might be less infectious. But now there is evidence that children can spread the virus to other people, especially those living in the same household^{2,3}. Several studies show that once children are infected, they are no less infectious than adults⁴.

“If schools are reopened in areas with high levels of community transmission, major outbreaks are inevitable and deaths will occur in the community as a result,” says Hyde.

Studies in South Korea¹, Europe and Australia⁵ show that schools can open safely when community transmission is low. Children in South Korea returned to their classrooms in mid-May, when daily confirmed cases dropped to below 50 – equivalent to around one case per million people. Even with such low transmission rates, the government introduced measures to control viral spread, such as staged opening of schools, starting with high schools and then moving on to junior schools. At larger schools, and at those in areas where cases were rising, only a portion of students attended. When someone tested positive, the affected school’s teaching went back online.

‘The right policies’

Researchers in Seoul found no sudden increase in cases of COVID-19 among children aged 19 and below in the 2 months after schools reopened¹. And government data show that only 1 of the 111 school-aged children who tested positive between May and July got the infection at school. Most were infected by family members or at other locations. “The takeaway message is that with the right policies, we can control transmission in schools in a setting of low community transmission,” says Choe.

A survey by the European Centre for Disease Prevention and Control also found

that, so far, the reopening of schools from mid-May onwards in several European countries has not been associated with a significant increase in community transmission (see go.nature.com/3gikyac).

The state of New South Wales in Australia partially closed schools at the peak of the state’s epidemic in March, but kept day-care centres open. Kristine Macartney, director of Australia’s National Centre for Immunisation Research and Surveillance in Sydney, and her colleagues analysed data from schools and day-care centres from between late January and early April. Schools remained open for the children of health-care workers or those with no alternatives.

“If schools are reopened in areas with high levels of community transmission, outbreaks are inevitable.”

During the study period, the state averaged 193 cases a day – 24 per million people – but 58% of the cases were in travellers returning from overseas. Macartney and her co-workers found that only 25 of the 7,700 schools or day-care centres reported a primary infection during the study period⁵. Of those cases, only four facilities had onward transmission.

Macartney points out that the results must be viewed in the context of the state’s strong public-health response. The state maintained high levels of testing in the population, rapidly identified cases and implemented contact tracing, and closed its borders, with strict enforcement of quarantines. “If transmission would be occurring unchecked in the community, we are sure it would spill over into schools,” says Macartney, noting that in a

recent surge in cases in the neighbouring state of Victoria, hotspots have been identified at schools. “This virus will take advantage of any chink in the armour,” she says.

Crammed classrooms

In places where there is ongoing community spread, schools have become sites of outbreaks. One outbreak occurred at a high school in Jerusalem, Israel. There were around 127 reported cases a day in the country – equivalent to 15 cases per million people – in early May, when some children began returning to school. During a heatwave, temperatures exceeded 40 °C and teenagers sat in air-conditioned rooms with more than 30 other classmates without masks. The outbreak affected 153 students and 25 staff members, as well as 87 siblings, parents and friends of those affected⁶.

The school environment can also increase the risk of further community spread. In mid-March, a large school in Santiago, Chile, had a sizeable outbreak just nine days after the country detected its first case of COVID-19. The school had more than 30 children in a class. Researchers detected SARS-CoV-2 antibodies in 10% of students and 17% of staff when they were tested about two months later⁷.

The school outbreaks suggest that large class sizes could play a part in transmission, says Edward Goldstein, an infectious-disease epidemiologist at the Harvard T.H. Chan School of Public Health in Boston, Massachusetts.

Schools should implement measures for reasonable distancing, says Miguel O’Ryan, a paediatric infectious-disease researcher at the University of Chile in Santiago who led the Santiago school study. These could include splitting the day into morning and afternoon shifts to reduce the number of children in a classroom, and preventing parents and teachers from gathering at school entrances.

If schools reopen in areas with a high rate of community transmission, being diligent about masking, class sizes, hand-washing, and testing and tracing will be particularly important, says Katherine Auger, a paediatric researcher at Cincinnati Children’s Hospital Medical Center in Ohio.

“If we go back to schools the way they used to be, then we are going to be in trouble,” she says.



The wearing of face masks is among the strict safety policies many schools are implementing.

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