

WHY SCHOOLS PROBABLY AREN'T COVID HOTSPOTS

Young children are unlikely to spread the virus – but older kids are more at risk, say researchers.

By Dyani Lewis

Data gathered worldwide are increasingly suggesting that schools are not hotspots for coronavirus infections. Despite fears, COVID-19 infections did not surge when schools and day-care centres reopened after pandemic lockdowns eased. And when outbreaks do occur, they mostly result in only a small number of people becoming ill.

However, research also shows that children can catch the virus and shed viral particles, and older children are more likely than very young kids to pass it on to others. Scientists say that the reasons for these trends are unclear, but they have policy implications for older children and teachers.

Globally, COVID-19 infections are still much lower in children than among adults, says Walter Haas, an infectious-diseases epidemiologist at the Robert Koch Institute in Berlin. “They seem rather to follow the situation than to drive it.”

Data have previously shown that schools can reopen safely when community transmission is low. But even in places where community

infections were on the rise, outbreaks in schools have been uncommon, particularly when precautions are taken to reduce transmission. More than 65,000 schools in Italy reopened in September, as case numbers were climbing in the community. But only 1,212 campuses had experienced outbreaks four weeks later¹. In 93% of cases, only one infection was reported, and only one secondary school had a cluster of more than 10 infected people.

In the state of Victoria, Australia, where a second wave of COVID-19 infections surged in July, large outbreaks linked to schools and childcare centres were also rare, although schools were only partially open. Two-thirds of the 1,635 COVID-19 infections in schools were limited to a single case (see go.nature.com/2hwb94x).

In the United States, community transmission remained high in many places when schools started to reopen in August, and the proportion of infections in children continued to climb, says Ashlesha Kaushik, a paediatrician in Sioux City, Iowa, and a spokesperson for the American Academy of Pediatrics.

But it is still unclear how often outbreaks that originate in schools contribute to

community transmission, because other factors, including the easing of restrictions on businesses and gatherings, have also contributed to community spread.

Data on school outbreaks in England have also shown that adults were often the first to be infected².

Young children transmit less

Researchers suspect that one reason schools have not become COVID-19 hotspots is that children – especially those under the age of 12–14 – are less susceptible to infection than adults, according to a meta-analysis³ of prevalence studies. And once they are infected, young children, including those aged 0–5 years, are less likely to pass the virus on to others, says Haas. In an analysis⁴ of German schools, Haas’s team found that infections were less common in children aged 6–10 years than in older children and adults working at the schools. The potential to transmit increases with age, and adolescents are just as likely to transmit the virus as adults, he says. Teenagers and teachers should be the focus of mitigation measures, such as wearing masks or a return to online lessons when community transmission is high, says Haas.

This gradient in infectiousness is emerging in other data sets, too. In the United States, the rate of infection is twice as high in children aged 12–17 years as it is among 5–11-year-olds⁵.

But “we don’t actually understand the natural history of transmission in children, because we mitigate against it”, says paediatrician Fiona Russell at the University of Melbourne, Australia, who was involved in the Victoria school-outbreaks study. Children aren’t in a typical school environment – instead, they’re social distancing, wearing masks and following other precautions.

Evidence gleaned from national statistics also has shortcomings, because asymptomatic COVID-19 infections are being missed in many places.

Why young children seem less likely to spread the new coronavirus to others is also unclear, says Haas. One possibility is that because they have smaller lungs, they are less able to project infectious aerosols than are adults. Haas says that this occurs in tuberculosis. But in tuberculosis, infection is spread from lesions in the lungs; SARS-CoV-2 infections are different, because the virus infects the upper airways. The question “puzzles me”, Haas says.



Measures to reduce viral spread are being used in schools around the world.

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