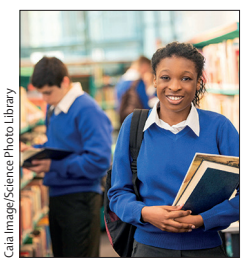
Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Finding a path to reopen schools during the COVID-19 pandemic



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As any parent knows, young children are extremely efficient at catching and passing on respiratory infections. This intuition is backed up by a raft of scientific evidence, which was greatly bolstered during the 2009 H1N1 influenza pandemic. Many studies demonstrated the crucial role that children played in the spread of this virus. When faced with the prospect of a devastating pandemic of COVID-19, it was natural that policy makers decided to close schools to try and slow or prevent transmission. UNESCO estimated that more than 60% of the world's students have had their education disrupted by national school closures during the COVID-19 pandemic.[1] These closures are likely to result in damage to children's social, psychological, and educational development, as well as lost income and productivity in adults who cannot work because of childcare responsibilities.[1,2] It is likely that children from low-income backgrounds will probably be more adversely affected than children from high-income backgrounds.[2]

As we have started to understand the clinical features and epidemiology of COVID-19, it has become increasingly apparent that, compared with influenza and most other respiratory infections, children seem to be largely spared. If infected, children typically have mild disease. This comparative lack of severe disease changes the benefit-to-cost ratio associated with closing schools: most children will only get very mild disease, if infected, but at the cost of all children suffering as a consequence of school closure. Yet at the population level, the benefits of closing schools might outweigh the costs if children play a key role in transmission to others.

Two studies published in *The Lancet Child & Adolescent Health* seek to inform this debate. Kristine Macartney and colleagues[3] did a detailed study of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) transmission in schools and early childhood education and care facilities in New South Wales, Australia, during the early part of the epidemic.[3] During much of this period, educational facilities were formally open, although attendance rates dropped precipitously in schools in mid to late March, 2020, when distance learning was implemented. Macartney and colleagues focused on the paediatric and adult population who had attended a school or early childhood education and care facility while infectious (defined as 24 h before symptom onset). 27 primary cases were identified (56% staff). 1448 close contacts were identified. Nearly half of these close contacts were tested virologically or serologically, yet only 18 secondary cases were identified. These very low rates of infection need to be interpreted with caution, because mitigation measures were in place: most educational facilities were closed briefly after case identification, and close contacts were expected to home quarantine for 14 days. Nevertheless, the result do align with findings from a similar study[4] from Ireland, also done during the early part of the epidemic, in which six confirmed cases (three adults and three children) attended schools. No secondary cases were documented as arising from the paediatric cases.

A notable exception to the general pattern of very low attack rates in school settings occurred during an outbreak centred in a high school in northern France.[5] Infection attack rates were high in students (aged 14–18 years) and staff (38% and 49%, respectively), and much lower among parents and siblings (11% and 10%, respectively) suggesting that infection was concentrated within the school environment. A follow-up study[6] in local primary schools revealed much lower infection rates (6–12%) among staff, students and family members, and no convincing evidence of any secondary transmission within schools. The contrast between the infection rates in the secondary and primary schools might turn out to be important. Contact tracing from South Korea suggests that rates of COVID-19 among household contacts of cases was lowest when the index case was younger than age 10 years (three [5%] of 57) and highest when the index case was aged 10–19 years (43 [19%] of 231).[7] If young children are less infectious than adults, then there must be an age when they start to become as infectious as older individuals. The French and Korean studies suggest that this might occur during adolescence, which could have major implications when schools, colleges, and universities return fully, as they must do soon.

The easing of restrictions and the reopening of schools is the focus of the study by Jasmina Panovska-Griffiths

and colleagues also published in the journal.[8] They fitted an agent-based model to UK-specific data and assessed a number of policies for easing lockdown, including three different test, trace, and isolate (TTI) options and two ways to reopen schools in September; either fully or partially, in which half the children attend school on alternate weeks. Reopening of schools is assumed to increase work-related contacts in adults and is accompanied by an increase in other contacts because of wider lifting of restrictions. Panovska-Griffiths and colleagues found that reopening schools (even partially) and the accompanying return to more normal contacts is likely to lead to a second wave of infections, unless testing is scaled up significantly. Unfortunately, it is not clear from their analysis whether the increase in cases that occurs when schools are reopened in the model is due to increased contact between children or increased contact between adults who can now return to work and leisure activities.

Both studies give potential options for keeping schools open and show the clear importance of adequate contact tracing and testing. Macartney and colleagues suggest that educational settings can remain open provided measures, such as contact tracing, quarantine, and even school closures, are in place to limit spread when cases occur. Panovska-Griffiths and colleagues suggest that the safe reopening of schools in the UK could occur if the TTI programme is greatly improved. However, many questions remain, including whether there are age-related differences in susceptibility and the likelihood of transmission between children and adolescents. We urgently need large-scale research programmes to carefully monitor the impact of schools reopening, as Public Health England's sKID study[9] aims to do. Only in this way can we take the most appropriate measures to mitigate the risks and allow us to reassure parents, pupils, and teachers alike that schools are safe to attend. There are no quick fixes to this terrible pandemic. However, it is becoming increasingly clear that governments around the world need to find solutions that allow children and young adults to return to full-time education as safely and as quickly as possible.

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1 UNESCO. Education: From disruption to recovery. 2020. https://en.unesco.org/covid19/educationresponse (accessed July 25, 2020).
2 Royal Society DELVE Initiative. Balancing the risks of pupils returning to schools. 2020. https://rs-delve.github.io/reports/2020/07/24/balancing-the-risk-of-pupils-returning-to-schools.html (accessed July 25, 2020).
3 Macartney K, Quinn HE, Pillsbury AJ, et al. Transmission of SARS-CoV-2 in Australian educational settings: a prospective cohort study. *Lancet Child Adolesc Health* 2020; published online Aug 3. https://doi.org/10.1016/S2352-4642(20)30251-0.
4 Heavey L, Casey G, Kelly C, Kelly D, McDarby G. No evidence of secondary transmission of COVID-19 from children attending school in Ireland, 2020. *Euro Surveill* 2020; **25:** 2000903.
5 Fontanet A, Tondeur L, Madec Y, et al. Cluster of COVID-19 in northern France: A retrospective cohort study. *medRxiv* 2020; published online April 23. https://doi.org/10.1101/2020.04.18.20071134 (preprint).
6 Fontanet A, Grant R, Tondeur L, et al. SARS-CoV-2 infection in primary schools in northern France: a retrospective cohort study in an area of high transmission. *medRxiv* 2020; published online June 29. https://doi.org/10.1101/2020.06.25.20140178 (preprint).
7 Park YJ, Choe YJ, Park O, et al. Contact tracing during coronavirus disease outbreak, South Korea, 2020. *Emerg Infect Dis* 2020; published online July 16. https://doi:10.3201/eid2610.201315.
8 Panovska-Griffiths J, Kerr CC, Stuart RM, et al. Determining the optimal strategy for reopening schools, the impact of test and trace interventions, and the risk of occurrence of a second COVID-19 epidemic wave in the UK: a modelling study. *Lancet Child Adolesc Health* 2020; published online Aug 3. https://doi.org/10.1016/S2352-4642(20)30250-9.
9 Public Health England. COVID-19 surveillance in children attending preschool, primary and secondary schools. 2020. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/904207/sKIDS_protocol_v1.4.pdf (accessed July 25, 2020).

Varenicline for smoking cessation in young people: is there more we need to know?

From a public heath perspective, the optimal time to provide an effective intervention for smoking cessation is during adolescence. Doing so can prevent decades of smoking and associated health effects. Pharmacological smoking cessation treatments for adults are effective, but the evidence for the adolescent population is underdeveloped.[1] This is in part due to challenges associated with recruiting young participants, low treatment compliance rates, and ethical considerations.[2] High quality trials with adolescents are required to assess the acceptability, efficacy, and safety of pharmacological smoking cessation aids for this age group.

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