

Opinion

Infectious Diseases,  
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# Are We Ready for Coronavirus Disease 2019 Arriving at Schools?



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As part of mitigation strategies during the coronavirus disease 2019 (COVID-19) outbreak, schools in many parts of the world have been closed. In the Republic of Korea, the Ministry of Education postponed the start of the new school year until March 23, 2020. With the decrease in the number of new cases of COVID-19, the government is now discussing whether or not to extend the closure of schools.

It is challenging to make guidance on school closure because its impact on the COVID-19 outbreak remains unpredictable. It is further complicated by the data suggesting children are less susceptible to this novel virus and less ill.<sup>1-3</sup> Strategies to mitigate the COVID-19 epidemic are rooted in the pandemic influenza preparedness plan.<sup>4</sup> Nonpharmaceutical interventions provide time for mitigation in the case of pandemic influenza.<sup>5</sup> Historical findings demonstrated a strong association between early school closure and mitigation of the 1918–1919 influenza pandemic in the United States.<sup>6</sup> Yet, a few observational studies and mathematical models have shown varied conclusions about the effects of reactive school closures on the course of influenza outbreaks.<sup>7</sup> Models have generally predicted a reduction in the peak incidence of 20%–60%, but these predictions depend on the model's assumptions, and some studies have predicted no reduction in the attack rates. Nonetheless, COVID-19 is not influenza, as it exhibits different viral kinetics, transmission dynamics, and clinical outcomes.

From the early epidemiological reports on COVID-19, we see a low frequency of cases and less severity among children. As of March 15, 2020, among 8,162 confirmed COVID-19 patients in Korea, 83 (1.0%) were aged 0–9 years and 427 (5.2%) were aged 10–19 years.<sup>8</sup> Adults with COVID-19 efficiently transmit the virus during the asymptomatic or pre-symptomatic phase.<sup>9</sup> A recent study on close contacts in China shows similar infection rates among children and adults.<sup>10</sup> In such context, it is reasonable to expect that children are a source of transmission in the community, despite their mild symptoms. As outbreaks are occurring in places where people interact with each other closely, transmission between children is likely to occur when schools open, thus triggering a second wave in the community. Opening of schools is also expected to increase contact rates in the community, decreasing the effectiveness of social distancing, which is the mainstay of the current mitigation strategy.

Before ending school closures, schools should prepare for the possible occurrence of COVID-19 on campus. The level of action and quarantine in the case of a school-outbreak will be significant and will require the closure of the affected school. Standardized

measures that can be applied to affected schools should be in place, such as detailed guidance for school closure, disinfection, and contact management.

At this moment, we do not have strong evidence to guide decisions on durations of school closures and how various durations will effect public health. A few days of closure is reasonable in response to school-based cases of COVID-19 for decontamination and contact tracing; while medium to longer lengths of closure (4–8 weeks) may be considered as part of a broader community mitigation strategy.<sup>11</sup> Extending school closure will likely support the overall effectiveness of social distancing and thus aid in lowering the peak of the epidemic curve. The policy should be balanced between public health benefits and the significant societal consequences.

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