

# Effect of Masking to Prevent COVID-19 Transmission in Schools and the Responsibility of States to Protect Public Health

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 See also DeJonge et al., p. 1791.

The 2022–2023 school year marks the third time US children and adolescents have returned to school during the COVID-19 pandemic, and there is hope that it will be less challenging than the previous two years. At the start of the 2021–2022 school year, the highly transmissible Delta variant was causing rapid increases in cases and hospitalizations, notably among children and adolescents.<sup>1</sup> By December 2021, the even more infectious Omicron variant had emerged. At its peak in January 2022, Omicron caused almost 1 million cases per day, with a rate of new cases among school-aged children (5–11 years) of 1545 per 100 000 per week.<sup>2</sup> The Omicron surge also caused considerable disruption of school attendance. In a *New York Times* poll, half of US parents reported that their child missed three or more days of in-person schooling in January 2022.<sup>3</sup>

The COVID-19 pandemic may not be over, and there is considerable

uncertainty about how COVID-19 will impact the current school year and about our level of preparedness. Given the pattern of the past two years, the potential for new surges is an important concern, particularly given the low vaccination coverage among school-aged children. Although COVID-19 vaccines are now authorized for children aged six months and older, at the start of the school year, only 31% of school-aged children had been vaccinated, and less than 15% had received a booster.<sup>2</sup> Uptake of boosters among adults is also low, even among those at high risk because of age or comorbidities.

An additional concern is that the guidance on COVID-19 mitigation strategies from the Centers for Disease Control and Prevention (CDC) for the 2022–2023 school year recommends a localized approach that is responsive to COVID-19 community levels as indicated by hospitalization and case data. The CDC recommends using face masks in schools

when community infection levels are high<sup>4</sup>; however, our recent work suggests that implementation of these guidelines may be challenging. Because of the widespread use of at-home antigen tests, which are not included in routine surveillance data, it may be difficult to accurately track the number of new COVID-19 cases and to use these data to rapidly respond to surges.<sup>5</sup>

## EFFECTIVENESS OF SCHOOL-BASED COVID-19 PREVENTION STRATEGIES

In this issue of *AJPH*, DeJonge et al. (p. 1791) present the findings of a study comparing the effectiveness of COVID-19 mitigation strategies in Wisconsin school districts in the fall of 2021. Using employment records and COVID-19 testing data from September through November 2021, they compared the incidence of new cases of COVID-19 among teachers working in school districts with prevention policies with the incidence of infections in districts without policies. The researchers examined the individual effects of three different COVID-19 prevention strategies: mask wearing by teachers and students, physical distancing, and quarantine.

The study found that the overall COVID-19 incidence rate was 5458 per 100 000 educators during the first three months of the 2021–2022 school year. The researchers also showed that although distancing and quarantine had no impact on reducing infections among teachers, masking policies were associated with decreased risk of infection. Teachers across all grade levels who worked in districts with masking policies were 19% less likely to have a positive test result for COVID-19 than those in districts without masking

policies (hazard ratio = 0.81; 95% confidence interval = 0.72, 0.92). Furthermore, the study shows that even among a highly vaccinated population (78% of Wisconsin teachers were fully vaccinated), masks were protective against COVID-19 transmission. These findings demonstrate that during a period of high infection rates, the combination of masking and vaccination provided stronger protection than vaccination alone.

The study is comprehensive and has important strengths. It includes data from 307 Wisconsin school districts (81%) and almost 52 000 teachers. It adjusted for critical confounders, including the age, sex, and vaccination status of teachers, as well as community characteristics (vaccination coverage and infection rates) and school-level factors (average class size and location). Notably, it was conducted before the widespread use of at-home antigen testing, which could make conducting similar studies more difficult because of decreased recording of cases.<sup>5</sup> A reported limitation of the study is the lack of accounting for adherence to COVID-19 prevention policies by districts. However, nonadherence to prevention policies would most likely have biased the results toward the null, indicating that masking in schools may be more protective than this study was able to show.

Unfortunately, this study did not measure COVID-19 infections among students to demonstrate the direct benefit of mitigation strategies for children and adolescents. The finding of reduced infections among educators is indicative of lower transmission within schools, which is indirect evidence of the impact on students. The findings are consistent with previous studies showing that masking prevents secondary transmission in schools.<sup>6</sup> This evidence for the protective

effect of masking in the school environment is important and timely, given the high levels of COVID-19 vaccine hesitancy among US parents that we have previously reported.<sup>7,8</sup> With so few school-aged children vaccinated, these findings are particularly relevant because masking will be a critical prevention intervention in the event of another COVID-19 surge during the 2022–2023 school year.

## RESPONSIBILITY OF STATE GOVERNMENTS TO PROTECT PUBLIC HEALTH

The study by DeJonge et al. also demonstrates how many US states refused to implement evidence-based public health policies that would have protected their workers, students, and communities during a critical point in the pandemic. At the start of the 2021–2022 school year, only 18 states had mandates requiring masking in schools, whereas eight states passed laws prohibiting school districts from requiring masks, and the remaining 24 states allowed local decisions about masking policies.<sup>9</sup> KFF reported that in the fall of 2021, more than two thirds of school-aged children lived in US states that either did not have mask requirements or prohibited them. Explanations for why several states chose to legislate against evidence-based COVID-19 mitigation strategies have been examined in previous editions of *AJPH*.<sup>10</sup> Fewer studies have described the reasoning behind and consequences of the approach taken by other states that left critically important public health decisions up to individual school districts.

Wisconsin was one of the states that did not adopt a statewide mask mandate for schools in the fall of 2021, in spite of CDC guidance recommending

the use of masks and existing evidence at the time showing lower COVID-19 caseloads in states that implemented mask mandates.<sup>11</sup> DeJonge et al. showed that at the start of the 2021–2022 school year, the most common COVID-19 mitigation policy in place across Wisconsin school districts was physical distancing, adopted by 68%, followed by quarantine, implemented in just over half (52%). Only 25% of school districts in Wisconsin in the fall of 2021 had masking policies, while 21% of school districts were not implementing any of the COVID-19 mitigation policies examined.

According to the Wisconsin Department of Health Services, COVID-19 cases were increasing in early September 2021 and continued rising throughout the fall.<sup>12</sup> The largest increase in cases during this period was among school-aged children and adolescents, which marked the first time that COVID-19 cases in children across the state had outpaced those in adults.<sup>12</sup> In the week of September 12, 2021, those younger than 18 years in Wisconsin had a COVID-19 infection rate of 447 cases per 100 000 (5624 cases) compared with the next highest age group, 35–44-year-olds, with 345 cases per 100 000 (2492 cases). Wastewater surveillance from this time showed similar trends of rising infections across the state after the start of the school year. In this context, it is remarkable that more was not done at the state level to protect Wisconsin's students and educators from COVID-19. Further studies should explore whether lack of statewide mandates compounded unequal distributions of COVID-19 cases, hospitalizations, and deaths.

The study by DeJonge et al. adds to the body of evidence showing that the use of face masks helps prevent COVID-19 transmission in schools and

communities.<sup>11,13,14</sup> These data are critical for informing plans for future surges, when widespread use of masks may be necessary again to protect children, educators, and their communities. In addition, enhanced surveillance that does not rely solely on reported cases is also needed to allow immediate and appropriate interventions. Finally, this study demonstrates that reliance on local decision-making about critical public health measures left many schools unprotected from COVID-19 and created inequities in risk for Wisconsin's children and educators. Protecting public health is one of the fundamental responsibilities of governments, and the COVID-19 pandemic has made it clear that many state governments need to take stronger actions to protect the health of all of their citizens. **AJPH**

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**CONFLICTS OF INTEREST**

The authors have no conflicts of interest to declare.

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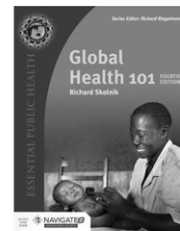
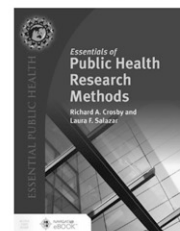
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