SARS-CoV-2 Transmission in K-12 Schools

Governor's Coronavirus Work Group

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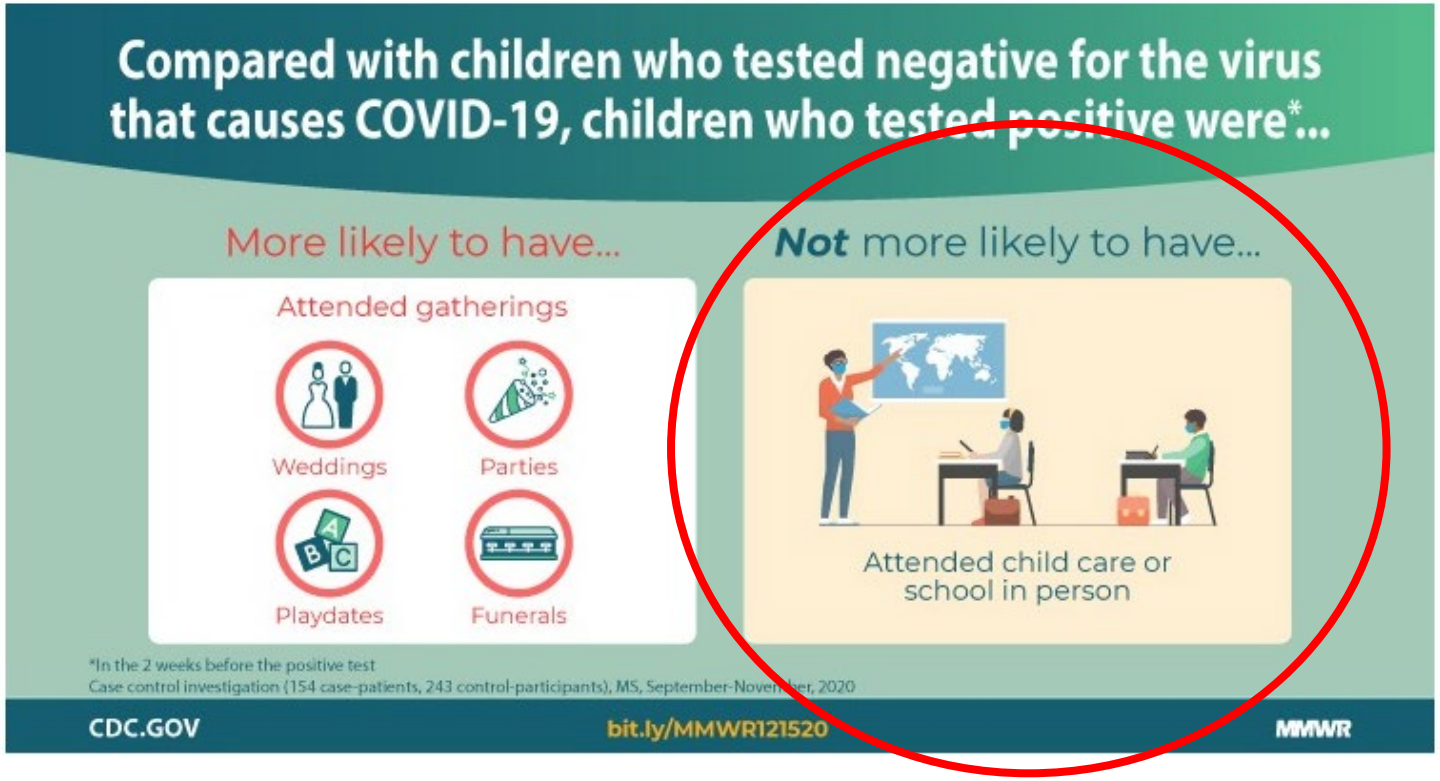
Children less likely to acquire and spread COVID-19

- Findings suggest younger children may be more likely to get COVID-19 from an adult rather than spread infection to adults.
  - Children, particularly younger children, appear to be less likely than adults to become infected, even after exposure.
  - Children <14 years of age may be less likely to spread COVID-19 to others when compared with older teens and adults.
- When children do become infected, it is much more likely because of household exposure than exposure in non-household settings (e.g., in schools)

Mississippi case-control study (published 12/15)



Children infected with the virus were:

- More likely to have had reported close contact with a person with confirmed COVID-19.
- Less likely to have had reported consistent mask use by students and staff members inside the school facility

Close contacts were:

- more likely to be family members and
- less likely to be school or child care classmates

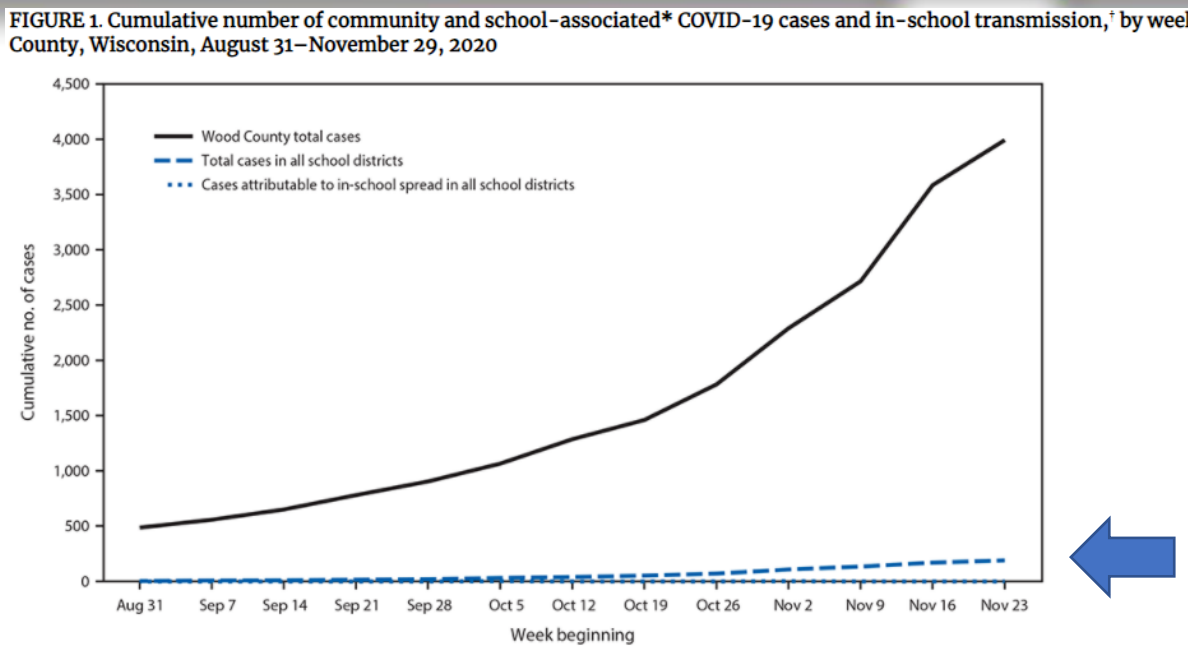
Authors concluded that *"Attending in-person school or child care during the 2 weeks before the SARS-CoV-2 test was not associated with increased likelihood of a positive SARS-CoV-2 test result."*

Hobbs CV, Martin LM, Kim SS, et al. Factors Associated with Positive SARS-CoV-2 Test Results in Outpatient Health Facilities and Emergency Departments Among Children and Adolescents Aged <18 Years — Mississippi, September–November 2020. MMWR Morb Mortal Wkly Rep. ePub: 15 December 2020. DOI: http://dx.doi.org/10.15585/mmwr.mm6950e3external icon

Most children have very mild illness

- Children infected with COVID-19 generally have mild or no symptoms.
- Although rare, those with underlying medical conditions are at increased risk of severe illness from COVID-19.
- African American and LatinX communities and children are disproportionally affected by COVID-19.

Wood County, Wisconsin (published 1/26)



- Among 191 cases identified in students and staff members, only seven (3.7%) cases, all among students, were linked to in-school spread.
- The 17 rural Wisconsin schools reported student mask-wearing was high.
- COVID-19 incidence among students and staff members was lower than in the county overall.

With masking requirements and student cohorting, transmission risk within schools appeared low, suggesting schools might be able to safely open with appropriate mitigation efforts in place.

https://www.cdc.gov/mmwr/volumes/70/wr/mm7004e3.htm?s_cid=mm7004e3_e&ACSTrackingID=USCDC_921-DM47411&ACSTrackingLabel=MMWR%20Early%20Release%20-%20Vol.%2070%2C%20January%2026%2C%202021&deliveryName=USCDC_921-DM47411#F1_down

North Carolina (preprint 2/1)

- Over 9 weeks, 11 participating school districts had more than 90,000 students and staff attend school in-person; of these
  - 773 (<1%) community-acquired SARS-CoV-2 infections documented by molecular testing.
  - 32 infections were acquired within schools.
  - 0 instances of child-to adult transmission of SARS-CoV-2 were reported within schools.
- Most cases of secondary transmission were related to absent face coverings.
  - Occurred in very young children, during lunch, or among children with substantial special needs.

Zimmerman KO, Akinboyo IC, Brookhart A, et al. Incidence and secondary transmission of SARS-CoV-2 infections in schools. *Pediatrics*. 2010 doi: 10.1542/peds.2020-048090 https://pediatrics.aappublications.org/content/early/2021/01/06/peds.2020-048090

Georgia (published "early release" 2/22)

- 24 in person school days during December 1, 2020–January 22.
- 2,600 students (approximately 80% of the district's elementary school students) and 700 staff members attended elementary school in person.
- Nine clusters of COVID-19 cases were identified, involving 13 educators and 32 students at six of the eight investigated elementary schools.
- Two clusters involved probable educator-to-educator transmission that was followed by educator-to-student transmission in classrooms and resulted in approximately one half (15 of 31) of school-associated cases.

Idaho

- Clusters have occurred in Idaho; most are among high school-aged students.
- There is some, but very limited, evidence of transmission in classrooms between students or between staff and students. Most transmission occurs outside the classroom.
- When school-based transmission is documented, it is associated with team sporting events and extra-curricular activities where mask-wearing and distancing are not taking place.

CDC's Operational Strategy

https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/operation-strategy.html

Mitigation by level of community transmission

Level of community transmission

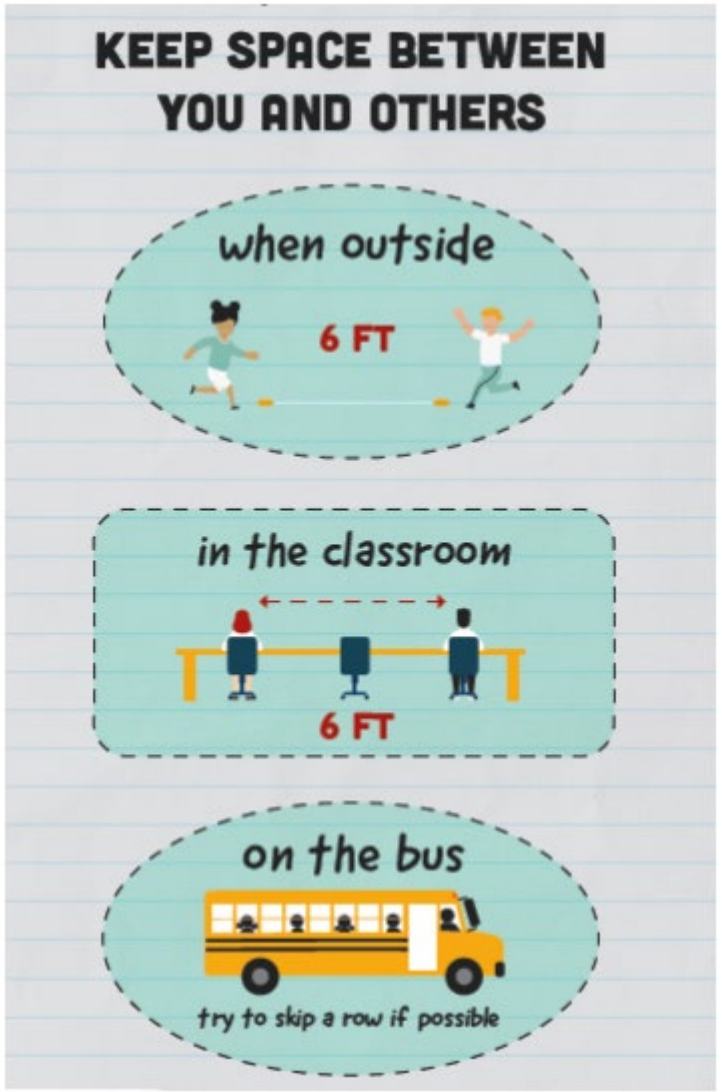
1. New cases per 100,000 in past 7 days
   - Low: 0-9
   - Moderate: 10-49
   - Substantial: 50-99
   - High: 100+
2. Percentage of positive tests in past 7 days
   - Low: <5%
   - Moderate: 5-7.9%
   - Substantial: 8-9.9%
   - High: 10%+

<table>
<tr><th>Low Transmission[1]
Blue</th><th>Moderate Transmission
Yellow</th><th>Substantial Transmission
Orange</th><th>High Transmission
Red</th></tr>
<tr><td colspan="4">All schools: Universal and correct use of masks is required; implementing other key mitigation strategies: handwashing and respiratory etiquette; cleaning and maintaining healthy facilities; contact tracing and diagnostic testing2 in combination with quarantine and isolation.</td></tr>
<tr><td colspan="2" rowspan="2">K-12 schools open for full in-person instruction
Physical distancing of 6 feet or more to the greatest extent possible[3]</td><td colspan="2">Elementary schools in hybrid mode[4]; physical distancing of 6 feet or more required</td></tr>
<tr><td>Middle and high schools in hybrid learning mode or reduced attendance
Physical distancing of 6 feet or more is required</td><td>Middle and high schools in virtual only instruction unless they can strictly implement all mitigation strategies, and have few cases; schools that are already open for in-person instruction can remain open, but only if they strictly implement mitigation strategies and have few cases [5]</td></tr>
<tr><td>Sports and extracurricular activities with masks required;
physical distancing of 6 feet or more to the greatest extent possible[6]</td><td>Sports and extracurricular activities with masks and physical distancing of 6 feet or
more required</td><td>Sports and extracurricular activities occur only if they can be held outdoors, with masks
and physical distancing of 6 feet or more required</td><td>Sports and extracurricular activities virtual only</td></tr>
</table>

Prioritize 2 mitigation strategies

Schools providing in-person instruction should prioritize two mitigation strategies

- Universal and correct use of masks should be required.
- Physical distancing (at least 6 feet) should be maximized to the greatest extent possible.



Phased mitigation and learning modes

- In-person learning for **elementary schools is likely to have less risk** of in-school transmission than for middle schools and high schools.
- Families of students who are at increased risk of severe illness or who live with people at high risk should be given **the option of virtual instruction regardless of the mode of learning offered.**
- **In-person instruction should be prioritized** over extracurricular activities including sports and school events, to minimize risk of transmission in schools and protect in-person learning.
- Schools are encouraged to **use cohorting or podding** of students to facilitate testing and contact tracing, and to minimize transmission across cohorts.
- Students, teachers, and staff who are at high risk of severe illness or who live with people at high risk should **be provided virtual options.**

Testing and vaccination considerations

- **Schools should offer referrals to diagnostic testing** to any student, teacher, or staff member who is exhibiting symptoms of COVID-19 at school or who is a close contact of a person who tested positive.
- Some schools **may also elect to use screening testing** as a strategy to identify cases and prevent secondary transmission.
- Public health officials should **consider giving high priority to teachers** in early phases of vaccine distribution.
- Access to vaccination should **not be considered a condition for reopening schools** for in-person instruction.
- Even after teachers and staff are vaccinated, **schools need to continue mitigation measures for the foreseeable future**, including requiring masks in schools and physical distancing.