COVID-19 in Children

08.31.21
Jessica Cataldi MD MSCS
Pediatrician and Infectious Diseases Specialist
35,072,484 cases
613,488 deaths

2 weeks ago
Monday 8/2/21

https://globalepidemics.org/key-metrics-for-covid-suppression/
38,837,675 cases
637,082 deaths

This week

Sunday 8/29/21

https://globalepidemics.org/key-metrics-for-covid-suppression/
Cases of COVID-19 in Colorado by Date Reported to the State

Last week
This week
Daily COVID-19 PCR Test Data From Clinical Laboratories With Daily Positivity

This week

8.7 %
Last week
This week
Deaths Among COVID-19 Cases in Colorado by Date of Death*

7,129 Deaths Among Cases

This week
For Some Colorado Kids Who Have Lost Caregivers To COVID, It’s Been ‘Loss Upon Loss’

“Those often manifest as difficulties that (new) caregivers then come in and say, ‘This child is really struggling with sleep. They’re refusing to eat. They don’t want to go to school. They don’t want to sleep without me.’ Those are some of the common things that we’re seeing,” said Dr. Ayelet Talmi, a pediatric psychologist with Children’s Hospital Colorado.

Dr. Maya Bunik, the medical director of the Child Health Clinic, part of the Children’s Hospital system, gives an example of two kids who lost their mother to COVID-19 back in March; their grandmother is now taking care of them.

“I saw them just last week,” Bunik said. “I saw the 5-year-old. And of course, because of age related things, the 5-year-old just keeps asking if mom’s going to come back. The 7-year-old understands it.”

The children’s grandmother is trying to maintain their routines, but is also struggling with the loss of her daughter.

“So it’s such a mixed group of feelings,” Bunik said. “She’s trying to be positive for her grandkids and try to show them that everything’s going to be okay. But at the same time, she’s really grieving inside.”
Rapid Increase in Circulation of the SARS-CoV-2 B.1.617.2 (Delta) Variant — Mesa County, Colorado, April–June 2021

- May 5, 2021: first 5 cases of Delta in Mesa county—**all associated with school settings**
- From beginning of May to beginning of June, sequenced virus from Mesa County went from 43% to 88% Delta
- COVID-19 case incidence, % hospitalizations in ICU, and case fatality was higher in Mesa County than other CO counties during April 27–June 6 study period
- 37 outbreaks in Mesa County during study period: 13 residential care, **11 schools**, 2 correctional facilities, 11 other
  - Residential facilities: 87% of residents and 50% of staff vaccinated
- Vaccine effectiveness to prevent symptomatic infection was 78% in Mesa county and 89% in other CO counties (measured week ending June 5)
Delta is the dominant variant in Colorado. It's (basically) all Delta.
Delta summary

• Delta is more contagious (this means herd immunity threshold is higher 😞)

• Delta is likely associated with increased risk of severe disease (hospitalization/ED care)

• Vaccines and Delta:
  • If you are vaccinated, the chance you will become infected with Delta in the first place is still a lot lower than if you were unvaccinated
  • **BUT**, if you do get infected, you may still be able to spread the virus to others

Delta and Kids

- Delta is more contagious for everyone - this includes kids
- Delta may be more severe - this may also include kids (no peds-specific data here yet)
- It’s NOT that Delta is specifically more contagious/severe for kids. It’s not ‘picking on’ kids - it’s just that kids are people too.
- BUT! Most kids are not protected by vaccination
- Increased contagiousness, increased case numbers → more hospitalizations/deaths including among kids

What’s happening w pediatric illness and hospitalization now
Fig 6. United States: Number of Child COVID-19 Cases Added in Past Week*


* Note: 5 states changed their definition of child cases: AL as of 8/13/20, HI as of 8/27/20, RI as of 9/10/20, IA as of 10/1/20, WV as of 8/12/21.
TX reported age for only a small proportion of total cases each week (eg, 3-20%); on 6/26/21, after not reporting demographic case data since 7/22/21, TX added 1,247 child cases.
As of 6/30/21, NE COVID-19 dashboard is no longer available; NE cumulative cases through 6/24/21.
Due to available data and changes made to dashboard, AL cumulative cases through 7/20/21.
Due to available data and calculations required to obtain MA child cases, weekly estimates fluctuate (eg, on 6/26/21 there were 1,015 fewer cumulative cases).
See details in Appendix: Data from 49 states, NYC, DC, PR and GU.
All data reported by state/local health departments are preliminary and subject to change; Analysis by American Academy of Pediatrics and Children’s Hospital Association.
Of 24 states that report child hospitalization data to them:

- ~3% of new hospitalizations last week were in kids
- About 1% of pediatric cases were hospitalized
Pediatric COVID-19 hospitalizations

• Have had many more children sick with COVID-19: 1,104 pediatric COVID-19 hospitalizations to date in Colorado (8/26/21 AAP/CHA)
• Many more hospitalizations and ICU admissions with Fall/Winter 2020-21 ‘wave’ and with smaller increase in cases April 2021, now increasing cases again
• Adolescents, children with obesity, children with asthma, children with sleep apnea, children with complex medical conditions all more likely to be hospitalized and have severe disease

• As more adults are protected by vaccination, proportionally more cases occur among children
• As Delta is more contagious and causes more severe disease, it takes a smaller initial number of cases to spread twice as quickly and then make 1.5-2.5x more of the infected people severely ill- this includes among kids

National COVID-NET data

46% of children hospitalized with COVID-19 do not have another condition.

Although *some* of these are children with trauma incidentally found to have COVID-19, most have primary or secondary COVID-19 illness/complications.
New Admissions of Patients with Confirmed COVID-19 per 100,000 Population by Age Group, United States

Aug 01, 2020 - Aug 28, 2021

52,245
Total Admissions
Aug 01, 2020 - Aug 28, 2021

310
Current 7-Day Average
Aug 22, 2021 - Aug 28, 2021

303
Prior 7-Day Average
Aug 15, 2021 - Aug 21, 2021

330
Peak 7-Day Average
Aug 20, 2021 - Aug 26, 2021

+2.3%
Percent change from prior 7-day avg. of Aug 15, 2021 - Aug 21, 2021

-6.0%
Percent change from peak 7-day avg. of Aug 20, 2021 - Aug 26, 2021

Based on reporting from all hospitals (N=5,251). Due to potential reporting delays, data reported in the most recent 7 days (as represented by the shaded bar) should be interpreted with caution.

Small shifts in historic data may occur due to changes in the CMS Provider of Services file, which is used to identify the cohort of included hospitals. Data since December 1, 2020 have had error correction methodology applied. Data prior to this date may have anomalies that are still being reviewed. Note that the above graphs are often shown on different scales. Data prior to August 1, 2020 are unavailable.
New Admissions of Patients with Confirmed COVID-19 per 100,000 Population by Age Group, Colorado
Aug 01, 2020 - Aug 28, 2021

- **Total Admissions**
  - Aug 01, 2020 - Aug 28, 2021: 1,066

- **Current 7-Day Average**
  - Aug 22, 2021 - Aug 28, 2021: 4

- **Prior 7-Day Average**
  - Aug 15, 2021 - Aug 21, 2021

- **Peak 7-Day Average**
  - Nov 10, 2020 - Nov 16, 2020

- **Percent change from prior 7-day avg. of Aug 15, 2021 - Aug 21, 2021**
  - -20.6%

- **Percent change from peak 7-day avg. of Nov 10, 2020 - Nov 16, 2020**
  - -46.0%

Based on reporting from all hospitals (N=2,741). Due to potential reporting delays, data reported in the most recent 7 days (as represented by the shaded bar) should be interpreted with caution. Small shifts in historic data may occur due to changes in the CMS Provider of Services file, which is used to identify the cohort of included hospitals. Data since December 1, 2020 have had error correction methodology applied. Data prior to this date may have anomalies that are still being resolved. Note that the above graphs are often shown on different scales. Data prior to August 1, 2020 are unavailable.
New Admissions of Patients with Confirmed COVID-19 per 100,000 Population by Age Group, HHS Region 8

Aug 01, 2020 - Aug 28, 2021

HHS Region 8 | 0 - 17 Years

Total Admissions
Aug 01, 2020 - Aug 28, 2021
2,474

Current 7-Day Average
Aug 22, 2021 - Aug 28, 2021
9

Prior 7-Day Average
Aug 15, 2021 - Aug 21, 2021
10

Peak 7-Day Average
Nov 08, 2020 - Nov 14, 2020
15

Percent change from prior 7-day avg. of Aug 15, 2021 - Aug 21, 2021
-5.7%

Percent change from peak 7-day avg. of Nov 08, 2020 - Nov 14, 2020
-38.3%

Based on reporting from all hospitals (N=4,251). Due to potential reporting delays, data reported in the most recent 7 days (as represented by the shaded bar) should be interpreted with caution. Small shifts in historic data may occur due to changes in the CMS Provider of Services file, which is used to identify the cohort of included hospitals. Data since December 1, 2020 have had error correction methodology applied. Data prior to this date may have anomalies that are still being resolved. Note that the above graphs are often shown on different scales. Data prior to August 1, 2020 are unavailable.


New Admissions of Patients with Confirmed COVID-19 per 100,000 Population by Age Group, HHS Region 7
Aug 01, 2020 - Aug 28, 2021

HHS Region 7 | 0 - 17 Years

2,157
Total Admissions
Aug 01, 2020 - Aug 28, 2021

12
Current 7-Day Average
Aug 22, 2021 - Aug 28, 2021

10
Prior 7-Day Average
Aug 15, 2021 - Aug 21, 2021

14
Peak 7-Day Average
Nov 13, 2020 - Nov 19, 2020

+26.1%
Percent change from prior 7-day avg. of Aug 15, 2021 - Aug 21, 2021

-11.2%
Percent change from peak 7-day avg. of Nov 13, 2020 - Nov 19, 2020

Based on reporting from all hospitals (N=5,251). Due to potential reporting delays, data reported in the most recent 7 days (as represented by the shaded bar) should be interpreted with caution. Small shifts in historic data may occur due to changes in the CMS Provider of Services file, which is used to identify the cohort of included hospitals. Data since December 1, 2020 have had error correction methodology applied. Data prior to this date may have anomalies that are still being resolved. Note that the above graphs are often shown on different scales. Data prior to August 1, 2020 are unavailable.

Last Updated: Aug 30, 2021
New Admissions of Patients with Confirmed COVID-19 per 100,000 Population by Age Group, HHS Region 6
Aug 01, 2020 - Aug 28, 2021

9,020
Total Admissions
Aug 01, 2020 - Aug 28, 2021

61
Current 7-Day Average
Aug 22, 2021 - Aug 28, 2021

65
Prior 7-Day Average
Aug 15, 2021 - Aug 21, 2021

-13.3%
Percent change from prior 7-day avg. of Aug 15, 2021 - Aug 21, 2021

65
Peak 7-Day Average
Aug 19, 2021 - Aug 25, 2021

-18.8%
Percent change from peak 7-day avg. of Aug 19, 2021 - Aug 25, 2021

Based on reporting from all hospitals (N=4,251). Due to potential reporting delays, data reported in the most recent 7 days (as represented by the shaded bar) should be interpreted with caution. Small shifts in historic data may occur due to changes in the CVIS Provider of Services file, which is used to identify the cohort of included hospitals. Data since December 1, 2020 have had error correction methodology applied. Data prior to this date may have anomalies that are still being resolved. Note that the above graphs are often shown on different scales. Data prior to August 1, 2020 are unavailable.

Last Updated: Aug 30, 2021
Availability of Pediatric Inpatient Services in the United States

Anna M. Cushing, Emily M. Bucholz, Alyna T. Chien, Daniel A. Rauch and Kenneth A. Michelson

Pediatrics July 2021, 148 (1) e2020041723; DOI: https://doi.org/.proxy.hsl.ucdenver.edu/10.1542/peds.2020-041723

**FIGURE 3**
Distance to pediatric inpatient unit and ICU services. Heat maps of distance to the nearest pediatric inpatient unit and PICU are shown by census block group for 2018. Areas that experienced a change in distance to the nearest pediatric inpatient unit and PICU from 2009 to 2018 are highlighted at differing distance thresholds.
Pediatric Deaths

- At least 454 pediatric COVID-19 deaths (CDC) / 425 pediatric COVID-19 deaths (45 states AAP/CHA)
- At least 18 pediatric COVID-19 deaths Colorado (AAP/CHA)

Appendix Table 6A: Child Mortality Data Available on 8/26/21*

<table>
<thead>
<tr>
<th>Location</th>
<th>Age range</th>
<th>Cumulative child deaths</th>
<th>Cumulative total deaths (all ages)</th>
<th>Percent children of total deaths</th>
<th>Percent of child cases resulting in death</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama ¹</td>
<td>0-17</td>
<td>8</td>
<td>11,510</td>
<td>0.07%</td>
<td>0.01%</td>
</tr>
<tr>
<td>Alaska</td>
<td>0-19</td>
<td>0</td>
<td>427</td>
<td>0.00%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Arizona</td>
<td>0-19</td>
<td>35</td>
<td>18,661</td>
<td>0.19%</td>
<td>0.02%</td>
</tr>
<tr>
<td>Arkansas</td>
<td>0-17</td>
<td>3</td>
<td>6,774</td>
<td>0.04%</td>
<td>0.00%</td>
</tr>
<tr>
<td>California ³</td>
<td>0-17</td>
<td>32</td>
<td>64,931</td>
<td>0.05%</td>
<td>0.01%</td>
</tr>
<tr>
<td>Colorado</td>
<td>0-19</td>
<td>18</td>
<td>7,373</td>
<td>0.24%</td>
<td>0.02%</td>
</tr>
</tbody>
</table>

1. Data from the website: https://data.cdc.gov/NCHS/Provisional-COVID-19-Deaths-Focus-on-Ages-0-18-Years/j4r4s-juj3
Do we have any updates on longcovid19 and kids?
Population, school-based study in Switzerland

- > 1 symptom beyond 12 weeks:
  - Seropositive: 4/109 (4%)
  - Seronegative: 28/1246 (2%)
- Most frequently reported symptoms lasting > 12 weeks in SARS+ children:
  - Tiredness: 3%
  - Difficulty concentrating: 2%
  - Increased need for sleep: 2%
Why does preventing COVID-19 in kids matter

• Kids are people too and we don’t want them to get sick (feel bad, miss school)
• Children with medical conditions including obesity and asthma have higher risk for severe disease
• Long-haul / post-acute COVID-19 symptoms continue >3 months in ~4% of children who have had COVID-19 (including after mild/moderate cases)
• MIS-C occurs in ~1 per 3000 children who have had COVID-19 (mostly after mild/moderate cases). >50% of MIS-C patients need ICU

• Although they may transmit less frequently than adults, they can still definitely transmit COVID-19
• Although the risk for COVID-19 hospitalization and death is lower for children than for adults, it is not zero and we should work hard to minimize health risks for kids in their own right not just on a sliding population scale.
Table 1. Numbers of hospitalizations and deaths for COVID-19 in comparison to varicella, rubella, hepatitis A, and rotavirus in pre-vaccine era*

<table>
<thead>
<tr>
<th>Virus</th>
<th>Hospitalizations/year</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>COVID-19</td>
<td>19.4 per 100,000 age 0-4 yrs 11.4 per 100,000 age 5-17 yrs Through 10/10/2020</td>
<td>185 children Age ≤ 18 yrs Through 12/16/2020</td>
</tr>
<tr>
<td>Varicella</td>
<td>4-13 per 100,000 Age &lt; 20 yrs Years 1988 – 1995</td>
<td>50 children per year Age&lt; 15 yrs Years 1970-1994</td>
</tr>
<tr>
<td>Rubella</td>
<td>Not available</td>
<td>17 children per year All ages Years 1966 – 1968</td>
</tr>
<tr>
<td>Hepatitis A</td>
<td>107 hospitalized children Age &lt; 15 yrs Year 2005</td>
<td>3 children per year Age &lt; 20 yrs Years 1990 – 1995</td>
</tr>
<tr>
<td>Rotavirus</td>
<td>55,000 - 70,000 children Age &lt; 5 yrs Years 1993 – 2002</td>
<td>20 – 60 children per year Age &lt; 5 yrs Years 1999 - 2007</td>
</tr>
<tr>
<td>Influenza</td>
<td>34-92 per 100,000 age 0–4 yrs 20-41 per 100,000 age 5-17yrs for 2016 – 2020 season</td>
<td>110-192 children per year Years 2016 – 2020</td>
</tr>
</tbody>
</table>

*Updated table courtesy of Evan Anderson
Recommendations for safe in person learning

All emphasize the importance of multiple layers of protection including masks, vaccination, symptom screening and staying home when sick, ventilation, cohorting, testing, and isolation and quarantine when needed

CDC: https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/k-12-guidance.html


The Swiss Cheese Respiratory Virus Pandemic Defence

Recognising that no single intervention is perfect at preventing spread

Physical distance
Stay home if sick
Masks
Hand hygiene, cough etiquette
Avoid touching your face
If crowded: limit your time
Fast & sensitive testing & tracing
Ventilation, outdoors, air filtration
Governing messaging & financial support
Quarantine & isolation
Vaccines
Border controls

Each intervention (layer) has imperfections (holes).
Multiple layers improve success.

MISINFORMATION MOUSE

With thanks to Jody Lanard, Katherine Arden & the Uni of Qld
Based on the Swiss cheese model of accident causation, by James T Reason, 1990
Version 4.0
Update: 26DEC2020
AAP, CDC, NASN, CDPHE, and Children’s Hospital Colorado all recommend masking in schools


CDC: https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/k-12-guidance.html


The American Academy of Pediatrics, Colorado Chapter

Urges Gov Polis, CDPHE Executive Director Ryan, and Local Public Health Directors to Incorporate New Safety Measures into School Guidance for Fall 2021

AAP Colorado’s letter calls for universal masking in all Colorado schools

Denver Colorado – Today, the American Academy of Pediatrics, Colorado Chapter (AAP-CO) sent a letter to Governor Jared Polis, CDPHE Executive Director Jill Hunsaker Ryan, and the Colorado Association of Local Public Health Officials urging immediate enactment of universal masking for all Colorado schools and childcare settings, reflecting the AAP’s most recent guidance on safe, in-person learning, as well as CDC’s recommendations for fully vaccinated people.

“Colorado students need access to safe, uninterrupted learning this school year. The time has come for statewide action to make that happen,” states Edward C. (Ted) Maynard, MD, FAAP, AAP-CO Chapter President. “The current patchwork of school policies across the state will result in more COVID-19 cases, more transmission of the virus, more quarantines, and repeated school closures.”

The Colorado Medical Society and undersigned organizations of the Colorado House of Medicine urge Gov. Jared Polis to immediately enact a universal mask mandate for students, staff and visitors in all Colorado K-12th grade schools and childcare settings.

Taking into account public health recommendations grounded in science, this action will provide a critical layer of protection for schoolchildren – particularly those under age 12 who are currently ineligible to receive a COVID-19 vaccination – and the larger school community of teachers, employees and families at a time when Colorado is experiencing a surge in COVID-19 cases, hospitalizations and deaths due in large part to the increased transmissibility of the Delta variant. Failure to enact this mandate puts the lives of these 883,000 K-12 children and all associated families at risk.

Signed:

- American Academy of Pediatrics, Colorado Chapter
- American College of Emergency Physicians, Colorado Chapter
- Aurora-Adams Medical Society
- Colorado Academy of Family Physicians
- Colorado Chapter of the American College of Physicians
- Colorado Child and Adolescent Psychiatric Society
- Colorado Ear Nose and Throat Society
- Colorado Medical Society
- Colorado Psychiatric Society
- Denver Medical Society
- Foothills Medical Society
- Northern Colorado Medical Society
- PEDIATRX / MEDNAX Medical Group
Mask Guidance for Children
August 2020

Face coverings are a proven, effective way to prevent the spread of COVID-19. Cloth face coverings can be safely worn by all children 2 years of age and older, including the vast majority of children with underlying health conditions, with rare exception.

Children age 2 and older should wear cloth face coverings when it is not possible to maintain 6 feet of physical distancing indoors and outdoors, for example at school, child care, a playground, park, grocery store or doctor’s office.

Our practice strongly supports this recommendation.

The medical reasons a child may not be able to wear a mask are few, and may include active breathing difficulties or inability to remove a mask on their own. If you have specific concerns such as these, please discuss this with your pediatrician or clinician.

Masks can be safely worn for extended periods of time by most adults and children, including during the school day. Children are resilient and easily adaptable. Once mask-wearing becomes normalized, most children will comply. Just like children understand that they must wear bicycle helmets and buckle into their car seats, they will come to learn to wear masks routinely when necessary.

If your child has difficulty wearing a mask, here are a few suggestions to help them adjust:

- Try different masks, including different styles (pleated, duck bill, ear loop, bandana, or possibly a face shield).
- Look in the mirror with the face coverings on and talk about it.
- Offer your child stickers or small rewards for keeping their mask on.
- Put a cloth face covering on a favorite stuffed animal.
- Decorate them so they’re more personalized and fun.
- Be a good role model. If your child sees you wearing a mask comfortably without complaining, they are more likely to accept it.
- Be patient and keep working on it. Masks will likely be recommended for a long time, so putting effort in now will make things easier in the coming months.

Finally, the best way to protect children who are too young to wear masks is to practice physical distancing, and encourage those around the infant to wear cloth face coverings.

See also: “Mask Mythsbusted: 5 Common Questions About Kids & Cloth Face Coverings,” on HealthyChildren.org.

Colorado Chapter
American Academy of Pediatrics

Mask Guidance for School-Aged Children

Recent guidance from the American Academy of Pediatrics reinforces that face coverings are a proven, effective way to prevent the spread of COVID-19. Cloth face coverings can be safely worn by all children 2 years of age and older, including the vast majority of children with underlying health conditions, with rare exception.

**Should a child be required to wear a mask during school?**

| **YES** | **The American Academy of Allergy, Asthma and Immunology recommends that individuals with asthma wear a mask in public.** |
| **YES** | **These conditions do not necessarily justify a mask exemption unless the child is unable to wear a mask without excessive trauma. Practice mask-wearing try behavioral techniques or mask modifications to overcome challenges.** |
| **YES** | **Explore instructional adaptations or use a face mask with a clear plastic insert as appropriate.** |
| **NO** | **Encourage the family to consider virtual learning opportunities or discuss use of face shield.** |
| **NO** | **The child is asleep, unconscious or has active difficulty breathing.** |

The child has asthma.

The child has a condition such as autism spectrum disorder, intellectual disability, or a mental health disorder.

The child cannot communicate clearly while wearing a mask.

The child cannot remove the mask on their own.
Children’s Hospital Colorado Encourages Masking in School Settings

CHILDREN’S HOSPITAL COLORADO | AUGUST 20, 2021

With climbing COVID-19 numbers and an early respiratory season beginning before kids have even returned to school, Children’s Hospital Colorado says it is more important than ever to keep up the basic prevention efforts that keep us all healthy and safe. That’s why they are strongly encouraging state and local officials, school leaders and parents alike to take action to protect their children mentally and physically.

Voicing support for universal masking in Colorado schools and childcare settings

Throughout the pandemic, Children’s Colorado’s medical experts have consistently said that the best way to protect ourselves and others is by getting vaccinated, wearing masks, social distancing and frequent handwashing. Because kids under the age of 12 are not yet eligible for the COVID vaccines and only 41% of Colorado adolescents and young adults ages 12 to 20 have been vaccinated, they are voicing support for masking in all Colorado schools and childcare settings for all children and personnel. Additionally, they state that if made a policy at schools, masking would decrease uncertainty, which poses an additional source of anxiety, isolation and further reduces the potential for bullying.
Q&A: Back to School in Year Two of the COVID Pandemic

Does masking in schools impact children’s mental health?

No. Masks are not harmful to children’s mental health. There is no scientific evidence to support this claim.

“Kids are resilient and are able to tolerate and wear mask without negative consequences to their mental health,” says Jenna Glover, PhD, MS, a child and adolescent psychologist. “Emphasizing the importance of helping others by wearing a mask is a great way to reinforce this safe behavior with kids.”

Getting back to school safely – in masks – will benefit children’s mental health after more than a year of uncertainty and strain.

“Children and teens need to be back in school and have connections with other kids and adults to improve their mental health,” says Dr. Glover. “And right now wearing mask is the best way to ensure that will happen.”

Editor’s note: This page was updated on Aug. 9, 2021. Please follow all rules and guidelines set by state and local public health and safety authorities. Reference the Centers for Disease Control and Prevention (CDC), the Colorado Department of Public Health and Environment (CDPHE) and your local public health agency for immediate updates.
SCHOOL HEALTH

Masking in Schools

Evidence for school leaders to consider as they contemplate COVID-19 prevention strategies for the 2021-2022 school year.

Key Points

✓ The American Academy of Pediatrics, the National Association of School Nurses, and the Centers for Disease Control and Prevention all recommend masking in schools to prevent the spread of COVID-19. See “Other Resources” for these recommendations.
✓ School-associated COVID-19 transmission is low when risk mitigation measures, including universal masking, are used. Schools with universal masking policies experience an extremely low secondary transmission rate (1-4%),\(^2\)\(^3\)\(^4\) as compared to schools without masking (11-27%).\(^1\)
✓ If everyone is masked there may be flexibility to institute modified quarantine protocols\(^4\) and reduced distancing.\(^3\)\(^4\)\(^5\) Consult with your local public health agency to determine the best strategy for your community.

Literature Review

   • This study followed 2,809,553 registered students in 6,800 public, charter and private K-12 schools in Florida. Most schools resumed in-person learning in August 2020.
   • About 60% of districts did not require masking.
Three recent studies confirm importance of masks and other layers of prevention:

- **Chicago & Tennessee schools** using regular asymptomatic screening testing found low rates of in-school secondary transmission when universal masking in place.
  - One time with high rates of positive screening tests was week after winter break.

- **Virginia school district** using robust layered prevention strategies (masks, distancing, cohorts, symptom screening, ventilation, epi / disease control training for staff, epidemiologist assigned to school). Secondary transmission low (1.1%). Did everything but asymptomatic testing.
Masks for Kids: What You Need to Know About Face Coverings

What if my child’s school does not require face coverings for younger children? Should I be concerned?

First, the American Academy of Pediatrics and other public health experts all recommend masking in schools for kids ages 2 and older. Even if your child’s school is not mandating masks, you can send your child to school in a mask.

After masking, you should learn what other protective measures your child’s school has in place. Is their school adding other layers of protection to their plan?

Even prior to COVID-19, there’s never been a way to eliminate all risk at school or even at home. However, we can take steps to protect ourselves and those around us, and we can use protective measures together to be even safer. So, if your child’s school isn’t requiring face coverings you should also ask:

- Is the school implementing learning pods, where your child will be with the same kids every day and will not interact with others outside of their pod?
- Are there procedures and policies to maintain physical distancing between students, especially during the times when face coverings are not required?
- What other preventive measures are in place?

Protective measures used together are the best way to keep kids safe in school. The more layers of protection we use, the safer places like schools become.

Read even more Q&A about school during the pandemic.
Masks for Kids: What You Need to Know About Face Coverings

Can wearing a mask cause mental health problems?

No. There are no valid reports or scientific studies linking masks to mental health problems in children or any other group.

“There is no scientific evidence to support this potential concern,” says Dr. Glover, a child and adolescent psychologist. “It’s actually the opposite: We’re encouraging all families and children follow mask guidelines so kids can return to safe in-person learning and activities as soon as possible. Masking will help many kids and teens get back to their friends, teachers, coaches and other support systems.”

The mental health challenges that many children are experiencing are due multiple factors, namely disruptions to routine, family life and schooling coupled with isolation, stress and anxiety due to the pandemic. “In general, kids are feeling more stressed and distressed than ever before,” Dr. Glover says. “The major activities in their lives have been constantly changing during the pandemic and youth have been faced with prolonged periods of trying to cope with the unknown. Masks are not harmful to children’s mental health. They need to be back in school and have connections with other kids and adults to improve their mental health. Right now, wearing masks is the best way to ensure that will happen.”

Kids and teens’ mental health challenges existed before the pandemic. What’s changed is that many of the activities that helped them cope with these challenges – like school, sports and extracurricular activities – changed significantly. Going back to in-person learning safely – by wearing masks and getting kids vaccinated as soon as they are eligible, along with other protective measures – is a beacon of hope for communities. Masks are a key step on the road to getting back to normal and providing kids the support systems they need to thrive mentally, emotionally and physically.

Pediatric experts at Children’s Colorado support safe in-person learning (with masks) because of its benefits for child health overall. Learn how to support children’s mental health throughout the pandemic.
Do Masks Delay Speech and Language Development?

During a child’s first few years of life, they are rapidly developing communication skills. Whether by smiling, cooing and babbling, pointing and gesturing, or saying their first words, children express themselves from birth. But a year and a half into the COVID-19 pandemic and no solid end in sight, some families wonder whether continuous use of face masks by daycare providers, preschool teachers, and other adults may negatively affect their child’s speech and language development.

While this is a natural concern, there is no evidence that use of face masks interferes with speech and language development or social communication.

How do babies learn to communicate?

Babies are hard-wired to communicate. From day 1, they are watching their loved ones’ faces and mouth movements. They are listening to them talk (for families that use spoken language), and making attempts to interact with their parents and caregivers.
SCHOOL HEALTH

Masking in Schools

Evidence for school leaders to consider as they contemplate COVID-19 prevention strategies for the 2021-2022 school year.

Key Points

✓ The American Academy of Pediatrics, the National Association of School Nurses, and the Centers for Disease Control and Prevention all recommend masking in schools to prevent the spread of COVID-19. See “Other Resources” for these recommendations.

✓ School-associated COVID-19 transmission is low when risk mitigation measures, including universal masking, are used. Schools with universal masking policies experience an extremely low secondary transmission rate (1-4%), as compared to schools without masking (11-27%).

✓ If everyone is masked there may be flexibility to institute modified quarantine protocols and reduced distancing. Consult with your local public health agency to determine the best strategy for your community.

Literature Review

   - This study followed 2,809,553 registered students in 6,800 public, charter and private K-12 schools in Florida. Most schools resumed in-person learning in August 2020.
   - About 60% of districts did not require masking.
   - Incidence of school-related COVID-19 infection among students was higher in schools that did not require masking (1.7% vs 1.2%).
   - Of 86,832 school-contacts of school COVID-19 cases, 43% got tested and 27% were positive. This means secondary transmission of COVID-19 to school contacts was between 11% (if everyone un-tested was negative) and 27%.

   - This study followed 4,876 students and staff at 17 K-12 schools in rural Wisconsin. Precautions implemented were: 1. Masking (92% compliance), 2. Students cohorted in groups of 11-20, 3. Staff maintained 6 feet of distance, if possible, and 4. Quarantined students and staff after exposures.
   - Results: During a 13-week period (fall 2020), 7 of the 191 cases of COVID-19 among the student population were linked to in-school transmission. Zero staff acquired COVID-19 during that time; no spread is known to have occurred to or from staff in school, despite the relatively high community transmission during that time.
   - This study demonstrates that, with precautions in place, including masking, in-school transmission of SARS-CoV-2 appeared to be uncommon.

   https://doi.org/10.15585/mmwr.mm7012e3

   - This study investigated a convenience sample of 20 elementary schools (K-6) in Salt Lake County after reopening to in-person learning (fall 2020); it followed a total of 1,214 staff members and 10,171 students.
   - There were 51 index cases: 40 students and 11 staff. Those cases had 1,041 school contacts; 71% of those contacts were tested. The secondary transmission was 0.7%.
   - Mask use among students was high (86%) and most schools used 3 feet distancing for students and 6 feet for staff.
   - Despite high community incidence and an inability to space students’ classroom seats ≥6 ft apart, this investigation found low transmission and no school-related outbreaks in 20 Salt Lake County elementary schools with **high student mask use** and implementation of multiple strategies to limit transmission.


   https://doi.org/10.15585/mmwr.mm7012e4

   - This study investigated participating school teachers, staff, and students with COVID-19 from 22 schools over a 2-week period. The precautions in place were universal masking, increased ventilation, 3 feet distance.
   - There were 56 cases with 270 contacts identified; 102 contacts were tested and 2 were positive. The secondary transmission was 1.2%.
   - Despite high community transmission, SARS-CoV-2 transmission in schools that implemented COVID-19 mitigation strategies, including masking, was lower than that in the community.
   - One school district implemented a **modified quarantine** (in-person learning with masking, no extracurriculars, 6 ft distance from anyone at lunch, daily symptom screening, and testing 5-10 days after exposure) for certain students. They permitted 42 student contacts to continue in-person learning during their quarantine period; 30 of these contacts were interviewed, and none of the 21 students who received testing had a positive test result.


   - This study compared incident rates cases of SARS-CoV-2 in students and staff in Massachusetts public schools (251 districts, 537,336 students, 99,390 staff) among districts with different physical distancing requirements (3 feet versus 6 feet). During the study period there was a state masking mandate for all school staff and students grade 2 and higher; the majority of school districts required universal masking for all students.
   - They concluded that lower physical distancing can be adopted in school settings with universal mask wearing without negatively impacting student or staff safety.


   - This study was conducted in North Carolina over 9 weeks with 11 school districts including more than 90,000 students and staff who attended school in-person.
   - Among that group there were 773 community-acquired SARS-CoV-2 infections; 32 infections were determined to be acquired within schools (secondary transmission). Most of the secondary transmission cases were related to non-compliance with masking.
   - **Enforcing SARS-CoV-2 mitigation policies** - such as mask wearing, hand washing and distancing - resulted in minimal clusters of SARS-CoV-2 infection and low rates of secondary transmission in schools.
Other Resources

- Children’s Hospital Colorado
  - Masks and Kids FAQ | Children’s Hospital Colorado (childrenscolorado.org)
- American Academy of Pediatrics (AAP)
  - COVID-19 Guidance for Safe Schools (aap.org)
  - AAP: Masks encouraged for camp, child care, school to prevent COVID-19 | American Academy of Pediatrics (aappublications.org)
  - Face Masks (aap.org)
- National Association of School Nurses (NASN)
  - NASN Statement on Schools Providing In-person Learning
- Centers for Disease Control and Prevention (CDC)
  - Science Brief: Community Use of Cloth Masks to Control the Spread of SARS-CoV-2 | CDC
- Colorado Department of Public Health and Environment (CDPHE)
  - Guidance for wearing masks | Colorado COVID-19 Updates
- Large literature review on the evidence behind mask efficacy in general, outside the school setting (see pages 146-161).
  - https://globalhealth.massgeneral.org/covidlibrary.pdf
7-DAY INCIDENCE PER 100,000

Source for US data: Johns Hopkins University, updated Aug 31, 2021
HOSPITALIZATIONS PER 100,000

Currently Hospitalized per 100,000 (7-Day Average)

Number Currently Hospitalized by Age Group

Hospitals began reporting current pediatric hospitalizations on August 18, 2021.
Number Currently Hospitalized by Pediatric Age Group

Hospitals began reporting current pediatric hospitalizations on August 18, 2021.
Proportion of Cases Hospitalized, All Cases and Pediatric Cases

Case Hospitalization Rate

- March: 33.4%
- April: 29.4%
- May: 12.3%
- June: 7.7%
- July: 6.3%
- August: 5.5%
- September: 7.5%
- October: 5.5%
- November: 4.7%
- December: 4.6%
- January: 4.3%
- February: 4.5%
- March: 4.6%
- April: 7.1%
- May: 9.2%
- June: 6.6%

Pediatric Case Hospitalization Rate

- March: 9.6%
- April: 8.5%
- May: 4.6%
- June: 2.7%
- July: 1.3%
- August: 1.7%
- September: 1.5%
- October: 1.0%
- November: 1.2%
- December: 0.8%
- January: 1.3%
- February: 0.9%
- March: 1.2%
- April: 1.8%
- May: 1.8%
- June: 1.8%

Month
COVID-19 Hospitalization Rate by Age Group and Vaccination Status

Week of Hospital Admission

Rate per 1 Million

Updated Aug 30 2021. Includes admissions through the week ending Aug 14. "Unvaccinated" may include partially vaccinated individuals.
Vaccine Breakthrough Cases by Age Group

Age Group Distribution Among Vaccine Breakthrough Cases vs. Vaccinated Coloradans

Cumulative Breakthrough Cases

Updated Aug 30, 2021. Includes cumulative cases through Aug 21, 2021
Vaccine Breakthrough Hospitalizations by Age Group

Age Group Distribution Among VB Hospitalizations vs. Vaccinated Coloradans
Cumulative Breakthrough Hospitalizations

Updated Aug 30, 2021. Includes cumulative hospitalizations through Aug 14, 2021
COVID-19 Case Rate by Vaccination Status

Crude Vaccine Effectiveness Estimate (95% CI)
COVID-19 Case Rate by Vaccination Status

Crude Vaccine Effectiveness Estimate (95% CI) For Hosp. Outcome

- **12-59**
  - Week: Mar, Apr, May, Jun, Jul, Aug
  - Crude Vaccine Effectiveness: 93.4%

- **60-69**
  - Week: Mar, Apr, May, Jun, Jul, Aug
  - Crude Vaccine Effectiveness: 90.6%

- **70+**
  - Week: Mar, Apr, May, Jun, Jul, Aug
  - Crude Vaccine Effectiveness: 82.9%
Individual State Analysis: Georgia

Mid-sized to large Georgia school districts that started school Aug 2-5...

**With masks:** DeKalb, Clayton, Gwinnett, Chatham, Henry, Douglas, Atlanta

**Without masks:** Cobb, Cherokee, Carroll, Forsyth

Starting Aug 5, the districts requiring masks in school began to see case growth in ages 5-14 slow, while case growth continued exponentially in districts not requiring masks.

Note: Dealing with data from other states, we may not always be aware of possible reporting anomalies. Results could change with new data.
Individual State Analysis: Indiana

Indiana school districts that started school Aug 2-5…

**With masks:** Indianapolis Public Schools, Mooresville Consolidated, Monroe County, Hamilton Southeastern

**Without masks:** Brownsburg, Greenfield-Central, Avon, Kokomo-Center Township Consolidated

*Note: Indianapolis-area school districts were mostly excluded from this analysis because sufficiently granular COVID data was not available.*
Individual State Analysis: Colorado

**Preliminary results based on a very small number of school districts that started before Aug 16.**

Colorado school districts that started school Aug 3-12...

**With masks:** Adams County 14, Fountain School 8

**Without masks:** District 49, Douglas County RE-1, Harrison 2, District 27J, Mesa County Valley 51, Mapleton 1, Windsor RE-4, Adams Arapahoe 28J, Greeley 6, Littleton 6, Pueblo County 70

On Aug 16, school districts with and without masking requirements had similar prevalence among 5-17 year-olds in their geographies. In the subsequent week, a significant gap opened up, with districts not requiring masks showing ~40 additional 7-day cases per 100k.

At this point, very few districts have started school with a mask requirement, and as a result the available data is very limited. These results are preliminary and will likely change when we have data from districts that opened the week of Aug 16.
Thank you!