Background: Ongoing masking of K-12 children has not been universally accepted despite recommendation from public health authorities. In states without universal mask mandates for schools, district administrators are forced to make masking decisions under significant local political pressures. There is a call for endpoints to masking to allow communities to tailor mitigation while keeping schools safe, focusing on harm reduction.

Methods: We reviewed existing measures for the safe opening of schools and designed a stepwise, accessible approach to the removal of masks in the K-12 setting.

Results: Focusing first on the assessment of school impact due to COVID-19 disease and then considering the context of existing community transmission levels allows for a metrics-based approach to masking that is flexible and practical, enabling school officials to adapt quickly to the pandemic landscape in their communities, independent of political pressures.

Conclusions: While this proposal is preliminary, a dynamic metric system for masking may encourage those communities who wish to minimize masking to adopt masks during highest risk periods, protecting against SARS-CoV-2 transmission in schools and allowing for more holistic harm reduction. This approach may serve to guide districts during times of uncertainty when central guidance short of universal masking is lacking.

Keywords: schools; masking; disease mitigation; COVID-19; disease transmission.

Citation: Rowland LC, Klinkhammer MD, Ramirez DWE. Dynamic masking: a proposal of burden-based metrics for masking in K-12 schools during the COVID-19 pandemic. J Sch Health. 2022; 92: 11-19. DOI: 10.1111/josh.13099

Received on August 3, 2021
Accepted on October 10, 2021

The decision over the requirement of masks for K-12 children in schools has been fraught with emotion and controversy. The CDC’s most recent recommendation for universal masking in schools has not eased tensions. School board members have received serious personal threats, and school administrators, local officials, and clinicians are often targeted when in the public spotlight regarding such a heated issue. Health departments entered the COVID-19 pandemic understaffed, and most directors must prioritize other responsibilities such as vaccination efforts over appearances at lengthy school board meetings.
interfered with business, and were an infringement upon freedom, and San Francisco even saw the emergence of the “Anti-Mask League.” This resistance faded after the pandemic, and masks became a routine tool of the medical world. In the 1940s, surgeons adopted masking to prevent surgical fields from contamination, and countries including China have used masks during disease outbreaks since SARS circulated in 2002.

While we are still gathering data on the efficacy of masks, most data indicate that masking is an effective mitigation strategy for preventing SARS-CoV-2 spread, particularly during higher levels of COVID-19 disease in the community. Since the start of the pandemic, numerous studies have revealed the benefits of masking in reducing the spread of SARS-CoV-2 by decreasing both respiratory droplet inhalation and exhalation. It is also a fact that SARS-CoV-2 pandemic mitigations which include masking left the world with an unprecedentedly quiet influenza season in the winter of 2020-2021. Even common pediatric respiratory illnesses such as respiratory syncytial virus were low compared to pre-pandemic levels during the typical peak period.

While masking has been used as a central mitigation strategy in schools, the emergence of the B.1.617.2 (Delta) variant of SARS-CoV-2 adds a level of uncertainty to the 2021-2022 school year. Delta is twice as infectious as previous variants, and the highest risk is among unvaccinated people who are most likely to acquire COVID-19 infection and transmit the virus. However, while breakthrough infections in vaccinated individuals are extremely unlikely to lead to their hospitalization or death, symptomatic vaccinated individuals can still spread the virus, albeit for a shorter period of time. Therefore, CDC emphasizes the layering of mitigations with vaccinations for the prevention of COVID-19 disease spread. This approach was recently affirmed when 1020 Arizona schools were studied in July to August 2021: schools without mask requirements were 3.5 times more likely to experience COVID-19 outbreaks compared to schools with mask requirements in place.

Children continue to have far less risk from COVID-19 infection than adults, but there is still risk to some children, especially those with underlying medical conditions. Multisystem Inflammatory Syndrome in Children (MIS-C) is a rare but serious inflammatory condition associated with COVID-19 infection, which may involve the heart, lungs, kidneys, brain, skin, eyes, and gastrointestinal system. As of August 22, 2021, there were 4661 cases of MIS-C in the United States since the start of the pandemic, with 41 associated deaths. Myocarditis is another sequela of COVID-19 that we see in children, but it is very rare, accounting for 0.133% in those infected who are under 16 years of age. Hospitalization of children with COVID-19 is infrequent, with approximately 0.1-1.9% of known cases resulting in the need for inpatient care. However, a study of children who were hospitalized with COVID-19 found 22% had some degree of neurologic involvement with 2.5% of hospitalized children having life-threatening neurologic sequelae. It is noteworthy that hospitalization rates have been found to be 10 times higher among unvaccinated than among fully vaccinated adolescents. Also, data indicate that rates of severe disease in hospitalized children were similar before and during the current period of Delta predominance which may suggest that the increase of children in hospitals is a reflection of increased total COVID-19 cases among children. With the uncertainty of long-term effects of infection with SARS-CoV-2, the advent of the Delta variant, and the potential for other variants to arise in the future, it is imperative to have mitigation strategies such as masking available at times of high-community disease burden.

Freedom, Rights, and Dress Code: Heated Discussions in the Masking Debate

News stories across the country have depicted parents who feel that parental rights are being ignored where state officials have passed ordinances mandating masks for children in schools. This has led some states such as South Carolina and Tennessee to ban schools from having any mask mandate in the K-12 setting. Some districts, such as seen in northeast Texas, legally circumvented these mask mandate prohibitions by incorporating masks into the school dress code. The two sides of the masking debate are seemingly irreconcilable because individuals are not starting from the same shared beliefs, and school officials are left to try to moderate between the two sides. Many who oppose masking do not think that the health of their children is significantly endangered by COVID-19 exposure and feel strongly that their children need to see faces and avoid psychological downsides and potential discomfort of mask wearing. Many who support masking believe it is worthwhile because guidance and data suggest that it prevents children and others from becoming sick with COVID-19.

In the K-12 setting, unvaccinated individuals who are exposed to a person with COVID-19 during their infectious period are recommended by the CDC to quarantine for 14 days, ideally. Unique to the K-12 indoor setting, masked unvaccinated children who are 3 ft apart or more from a masked, infectious child do not have to quarantine because they are not deemed to be close contacts. This is a change in the CDC guidance from the 2020 to 2021 school year. However, if one of those children is unmasked, then children must be 6 ft apart to prevent being a close contact with a child infected with SARS-CoV-2. Most schools cannot meet 6 ft distancing, especially with more students returning
to in-person learning in the fall of 2021, which means an increase in close contacts and quarantining if some children are unmasked. The requirement of exposed children to quarantine and the resulting negative consequences are key to consider when analyzing the freedom and parental rights arguments that arise around masking. Some individuals who do not recognize the benefits of masking may reason that their child’s freedom is affected by a mask, and this is true. However, it is only a single freedom of that child that is affected, not overall freedom.18 If an unmasked child is expressing their singular freedom to be without a mask, but this results in a masked child being forced to be quarantined for 14 days, overall freedom is lost. The quarantined child no longer has the freedom for in-person learning and the associated family may lose the freedom to earn a living during that time. From a rights perspective, the right of the parent to keep their child unmasked in school is infringing on the right of the masked child’s parent to go to work.

As we know, community case rates and school case rates mirror each other.19 As cases become lower in the community, there will be fewer COVID-19 cases coming into school and less risk of in-school SARS-CoV-2 transmission. Metrics aimed at safely removing masking requirements can reassure parents that the singular freedoms of their children are part of the overall district plan, while ensuring that the singular freedoms do not take precedence over all freedoms including the right of other children to avoid quarantine or illness from disease exposure and attend in-person school, as well as the right for parents to go to work.

**Mask Mandates Across the Country**

Some state governors have chosen to “empower the localities”20 to determine for themselves whether to require masks in schools, citing that COVID-19 has varied in its impact geographically,21 as shown in Figure 1. As of September 5, 2021, mask mandates in schools are banned in 9.6% of states, such that local districts are not permitted to mandate masks. In 31.1% of states, local districts can determine their policy on masks in schools, because the state does not have mask mandates. In 17.5% of states, including Arkansas, Texas, and Florida, the statewide mask mandate ban has been overturned in legal proceedings, and some districts have then required masks. The remaining 41.8% of states have a statewide requirement for masking in schools.

**A Need for Clarity**

When COVID-19 cases began increasing in June 2021 with the circulation of the more contagious Delta variant,22 the American Academy of Pediatrics (AAP) and the CDC23 recommended masking for all K-12 schools indoors, regardless of vaccination status. However, the fact that they have not provided recommendations as to when masking requirements can be removed or fully accounted for the diversity of the country regarding vaccination rates, other mitigation measures, and case rates, has made many schools, communities, and parents frustrated. This has contributed to division between those who support masking in school and those who do not. Even policy think tanks, such as at Children’s Hospital of Philadelphia, discuss the various scenarios when masks can be made optional or will be needed most, but do not offer clear on/off guidelines for masking.24

The CDC’s failure to give schools timely opening guidance prior to fall of 2020 may contribute to the resistance of those currently against masking, because parents may be concerned that children will be masked indefinitely. In 2020, the CDC did not release back to school guidelines until August 26, 2020, weeks after many school districts had already been forced to make difficult decisions on re-opening. This delay caused many school districts throughout the country either to open very late in the 2020-2021 school year, or in some cases districts did not open at all. In acknowledging the primary importance of in-person schooling in its 2021 school guidance, the CDC has pivoted away from the idea that schools should be closed, given the lasting harms that were done to children last school year.25 Yet, after the CDC delays in recommendations for the 2020-2021 school year, parents may understandably be concerned that guidance may not be timely as the pandemic continues to evolve. Some may fear that the blanket CDC recommendations for masking in schools may not allow for mask flexibility until as late in 2022. Also of concern is that a universal mask mandate regardless of underlying community-wide disease prevalence or immunization rates may fail to incentivize children and their guardians to get vaccinated. There needs to be an approach that is still driven by metrics and clear enough to be useful on a practical level to local decision makers. The following proposal outlines one possible approach to be considered.

**METHODS**

**Dynamic Masking: A Burden-Based Model**

*Step 1: Start the school year masked.* First, as recommended by the CDC26 and the AAP,27 it is scientifically reasonable to start the school year with universal masking for all students and staff at all grade levels. Other mitigation measures such as distancing or cohorting will likely be reduced compared to the 2020-2021 school year, as increased numbers of students will be present in buildings. Last year, in-school transmission levels were found to be low with multiple layers of mitigation in place; therefore, it makes sense to leave the simple mitigation of masking in place...
to start the year. More importantly, the fact that the more contagious Delta variant is the dominant strain of SARS-CoV-2 should be considered in the decision to universally mask in schools to start the year.

**Step 2: Assess school burden.** After a period of 4 weeks of universal masking for all schools regardless of the community level of SARS-CoV-2 transmission, district officials could consider the implementation of mask-optional policies. The first step in considering the removal of masks as mitigation would be to evaluate school burden, understood as low, medium, or high impact, as shown in Table 1. This impact classification tool is available from the Virginia Department of Health. School impact, or burden, can be best understood by examining school transmission, student absenteeism, and staff capacity. If the impact

---

**Table 1. Level of School Impact due to COVID-19 Disease**

| Criteria to Consider | Level of School Impact* | Level of School Impact | Level of School Impact |
|----------------------|-------------------------|------------------------|------------------------|
| Transmission within school | Low: Zero or sporadic cases with no evidence of transmission in school | Medium: Two outbreaks within a short time period or sporadic outbreaks in school. Size of outbreaks remains small | High: Several outbreaks in school within a short time period; size of outbreaks is large or scope of outbreaks is significant (e.g., multiple classrooms or grade levels are impacted) |
| Student absenteeism | At baseline/low | Slightly above baseline | High |
| Staff capacity† | Normal | Strained | Critical |

*Level of impact to school can only be assessed for those schools that have opened to in-person instruction.

†This subjective assessment should factor in a school’s ability to maintain adequate staff for facility operations, transportation, teaching, and administrative functions, it should include input from teachers/staff regarding their availability to provide in-person instruction.
of SARS-CoV-2 on a school is low, then administrators could proceed to Table 2, which considers community disease transmission, to determine if the timing is appropriate for the removal of masks for a 4-week period. During this mask optional period, school impact must be monitored closely. If school impact rises to medium or high levels (Table 1), then masking should be reinstituted for 4 weeks, awaiting a decline in school impact. It is imperative that contact tracing is adequately performed, and health officials are assisting with monitoring transmission and impact, or burden, within the school.

**Step 3: Consider community transmission levels.**

The CDC uses the term “community transmission” to describe how much spread of SARS-CoV-2 is occurring in a region. This metric is based on new cases arising in 7 days per 100,000 residents, and test positivity, the percentage of positive tests for SARS-CoV-2 among the total number of tests performed, averaged over 7 days. The level of community transmission is classified as low, moderate, substantial, or high based on total new cases per 100,000 persons in the past 7 days (low, 0-9; moderate, 10-49; substantial, 50-99; high, ≥100) and test positivity in the past 7 days (low, <5%; moderate, 5-7.9%; substantial, 8-9.9%; high, ≥10%). Administrators can easily view their overall community transmission status via the CDC website\(^2\) which is displayed in a color-coded map.

Moreover, data obtained over the 2020-2021 school year, before the Delta variant, showed that school case rates mirror community case rates.\(^3\) If more students are entering schools during their SARS-CoV-2 infectious period, there will be more students who must be placed in quarantine, particularly among <12-year-old students who have not been able to be fully vaccinated. As shown in Table 2, if community transmission is high, we propose that schools require universal masking as a layered mitigation strategy given how many children are likely to come into the school, raising the risk of in-school transmission. If community transmission is substantial, consideration may be given to being mask-optional for those ≥12 years if school impact is low when vaccination rate among students is ≥80%. If community transmission drops to low or moderate, masking may be made optional as delineated in Table 2, with careful monitoring of school impact.

### DISCUSSION

Use of this proposed dynamic, burden-based masking model may prevent extensive outbreaks by tailoring mitigation to a community’s needs beyond what is provided by the CDC. In August 2021, many Mississippi schools\(^3\) were forced to reinstitute masking after multiple outbreaks occurred in unmasked schools, resulting in extensive quarantines, and in-school transmission. Having a start and stop point for masking may be more accepted by areas reluctant to adopt a long-term universal masking policy. Given the duration of the pandemic, our focus should be on the development and utilization of flexible harm reduction strategies, recognizing that all disease mitigation strategies have downsides.

Our dynamic masking metric proposal leans on school burden or “school impact,” which can vary greatly within a district. This could be perceived as an advantage as these metrics allow a school-by-school approach to the use of masks. This can subsequently aid more diverse, large districts where individual schools may have variability in vaccination rates, ability to mitigate with distancing, and numbers of infected children coming into the school. For instance, if one school has 80% of its staff and children vaccinated, whereas another school elsewhere in the district has only has a 40% vaccination rate, there could be medium or high school impact in the latter school such that a decision could be made, using our proposed metrics, to keep masking in this school while allowing the other school to remove masks.

While monitoring of school impact and community transmission levels is important for knowing what mitigation is needed, vaccination remains vital to the reduction of SARS-CoV-2 spread and disease severity. We do not know to what extent vaccinated, asymptomatic individuals can transmit SARS-CoV-2 but this type of transmission is felt to be low. Therefore, per the CDC, vaccinated individuals without symptoms do not have to quarantine after exposure, thus reducing impact on a school beyond decreased transmission. As of July 2021, the CDC added a recommendation that fully vaccinated individuals who have a known exposure to someone with suspected or confirmed COVID-19 should be tested 3-5 days after exposure and wear a mask in public indoor settings for 14 days.
or until a negative test is obtained, but even after this change, such individuals could still attend school.

Vaccinations remain crucial to decisions regarding universal mitigations, and every legal effort should be made for schools to have vaccine records on file for all students and staff. Some schools are leaning on vaccination rates exclusively to determine masking status in schools. For instance, in Massachusetts, masking is optional for those vaccinated staff and students ≥12 when more than 80% of the staff and student body is vaccinated.31

Unfortunately, it is not always easy for schools to obtain COVID-19 vaccination status of students and staff.32 Private schools and colleges may require vaccination or mandate reporting of vaccination status; however, the path is not always clear with public schools given that COVID-19 vaccination is not required by law in most places. In Virginia, for instance, school health officials are allowed to access a student’s state immunization record system only for the purposes of making sure a student has vaccines that are required by the state and for determining medical decisions and mitigations such as quarantine that would directly impact a student’s health.33 Federal guidelines surrounding HIPAA (Health Insurance Portability and Accountability Act) that cover health providers and FERPA (Family Educational Rights and Privacy Act) that regulates educational records are not clear regarding schools’ ability to legally request vaccination data from students and staff. We recommend districts rely on their legal counsel for determining if and how they may access vaccination records.

Some have suggested that hospitalization rates should be considered as a metric for masking.34 While this is a useful metric for masking mandates on a community level, this approach does not work as well for the school setting. Hospitalizations could remain low if the most high-risk individuals in a community are vaccinated fully, but school impact could be high due to cases in schools where children are largely unvaccinated. Utilizing low hospitalization rates to end masking does not necessarily account for the potential of high numbers of COVID-19 cases coming into schools, which may cause excessive quarantine and absences. We also know that hospitalization rates tend to lag behind case counts. In the interest of keeping as many children healthy and physically in school as much as possible, community transmission is a more appropriate secondary point for masking decisions for a school district.

Limitations

The dynamic masking model has not yet been tested and if adopted on a trial basis by districts, associated metrics may need to be modified. For instance, if it becomes clear that removing masks among K-12 children during times of moderate transmission results in immediate progression to elevated school impact, then metric cutoffs for masking should be readjusted. This could occur due to Delta, for which we are still gathering transmission data in schools, or there could be a new variant of SARS-CoV-2 that results in greater morbidity and mortality in children or is not covered as well by vaccination. While we hope this does not occur, it is possible that our dynamic model, with a “peeling the layer of masking,” could be preserved, if districts use school impact as well as community transmission as a guide to masking as a mitigation measure.

The possible variation of school impact within a district may make it challenging for administrators to decide when to remove masks for an entire district. If there is variability in absenteeism, transmission, and staffing among schools each school may need to make individual decisions rather than district-wide decisions. As described previously, this could be advantageous in that individual school-by-school decisions may be needed in large diverse districts where other variables such as vaccination rates may differ significantly from school to school. Additionally, if a school has students who are less than 12 years old who come in frequent contact with those ≥12 years, such as a grade 5-8 middle school, administrators may wish to implement masking for the entire building during times of substantial transmission.

The dynamic masking model described uses CDC metrics to determine community transmission which also has some limitations. The CDC determines percent positivity and total cases in the community from data reported from health departments. If this reporting is delayed, the community levels as reported may also be delayed. In addition, those who are asymptomatic are less likely to seek testing and those who do a home test are less likely to report results, both of which could affect percent positivity rates for the community. While numerous studies have provided strong evidence that transmission of SARS-CoV-2 in schools are reflective of transmission within the community, these studies were done prior to the Delta variant. This same data will need to be closely followed as we enter the 2021-2022 school year with the Delta variant as the predominant strain.

The dynamic masking proposal described has an option during substantial transmission to allow optional masking of children aged 12 and older when the school vaccination rate is >80%. Ideally, schools could permit vaccinated students to be mask optional in these conditions, but this would force teachers and staff to monitor individual students and track each student’s vaccination status which is not feasible. The described metrics will need to be revisited when vaccinations are available for children <12 and by individual states and districts if decisions
are made to require COVID-19 vaccination for K-12 enrollment as has occurred in some college and university settings. At that time, it may be reasonable to treat all K-12 students with a single approach with masking.

Time will tell if COVID-19 vaccinations will stand the test of new variants. However, these proposed dynamic masking metrics account for these changes by relying on community transmission and school impact rather than vaccination status alone.

**IMPLICATIONS FOR SCHOOL HEALTH POLICY**

Schools without a state-level mandate can consider the proposed dynamic masking metrics when desiring a clear data-driven approach to masking as mitigation in the K-12 setting. We suggest considering the approach described in Figure 2.

Masking should not detract society from focusing on what is most crucial: children should attend full, in-person school, for as many days as possible. Schools must consider how to reduce quarantine and keep students in the classroom. The CDC now allows children who are masked and 3 ft apart in school to avoid quarantine.36 While voices who oppose masking sometimes cite the fact that few children are hospitalized with COVID-19,37 it remains true that acquiring COVID-19 disease, even if it is a benign illness to that particular child, will result in school absence for that child and potentially close contacts. It is therefore without question that districts must focus on implementing measures to keep as many children in full-time school as possible and this includes masking during times that it is most needed.
Human Subjects Approval Statement
Preparation of this paper did not involve primary research or data collection involving human subjects, and therefore, no institutional review board examination or approval was required.

Conflict of Interest
All authors of this article declare they have no conflicts of interest.

REFERENCES

1. Lambert D. Confusion over mask mandate for California schools sparks tension between districts and parents. Available at: https://edsource.org/2021/confusion-over-mask-mandate-for-california-schools-sparks-tension-between-districts-and-parents/658759. Accessed August 1, 2021.
2. Gregory S. Social media threats against Virginia Beach School Board members prompts police investigation. Virginia Pilot. Available at: https://www.pilotonline.com/news/crime/vp-nw-virginia-beach-schools-threat-20210715-w2ygphzadbjgbuild4jbl7u-story.html. Accessed July 31, 2021.
3. Bosman J. The coronavirus swamps local health departments, already crippled by cuts. New York Times. Available at: https://www.nytimes.com/2020/03/14/us/coronavirus-health-departments.html. Accessed July 31, 2021.
4. Little B. When mask-wearing rules in the 1918 pandemic faced resistance. Available at: https://www.history.com/news/1918-spanish-flu-mask-wearing-resistance. Accessed September 5, 2021.
5. Matuschek C, Moll F, Fangerau H, Fischer J, Zänker K, et al. The history and face of masks. Eur J Med Res. 2020;25(23):1-6. https://doi.org/10.1186/s40001-020-00423-4.
6. Jennings R. Not Just Coronavirus: Asians Have Worn Face Masks for Decades. Updated March 11, 2020. Available at: https://www.voanews.com/science-health/coronavirus-outbreak/not-just-coronavirus-asians-have-worn-face-masks-decades. Accessed September 7, 2021.
7. Centers for Disease Control and Prevention. Science brief: Community use of cloth masks to control the spread of SARS-CoV-2. Available at: https://www.cdc.gov/coronavirus/2019-ncov/science/briefs/mask-use-science-sars-cov2.html. Accessed August 1, 2021.
8. Brooks J, Butler J. Effectiveness of mask wearing to prevent community spread of SARS-CoV-2. JAMA. 2021;325(10):998-999. https://doi.org/10.1001/jama.2021.1505.
9. Olsen S, Winn A, Budd A, et al. Changes in influenza and other respiratory virus activity during the Covid-19 pandemic—United States 2020-2021. MMWR Morb Mortal Wkly Rep. 2021;70(29):1013-1019.
10. Centers for Disease Control and Prevention. Delta variant: what we know about the science. Updated August 26, 2021. Available at: https://www.cdc.gov/coronavirus/2019-ncov/variants/delta-variant.html?cid=11512:cdc%20delta%20variant&sem.gap:RG:GM:gen:PTN:FY21. Accessed September 7, 2021.
11. Jehn M, McCullough JM, Dale AP, Gue M, Eller B, et al. Association between K-12 school mask policies and school-associated COVID-19 outbreaks — Maricopa and Pima counties, Arizona, July—August 2021. MMWR Morb Mortal Wkly Rep. 2021;70(39):1372-1373. https://doi.org/10.15585/mmwr.mm7039e1.
12. Centers for Disease Control and Prevention. Health Department-Reported Cases of Multisystem Inflammatory Syndrome in Children (MIS-C) in the United States. Available at: https://covid.cdc.gov/covid-data-tracker/#mis-national-surveillance. Accessed September 6, 2021.
13. Boehmer T, Komajnyets L, Lavery A, et al. Association between COVID-19 and myocarditis using hospital-based administrative data — United States, March 2020-January 2021. MMWR Morb Mortal Wkly Rep. 2021;70(35):1228-1232. https://doi.org/10.15585/mmwr.mm7035e5.
14. American Academy of Pediatrics. Children and COVID-19: State-Level Data Report. Updated August 30, 2021. Available at: https://www.aap.org/en/pages/2019-novel-coronavirus-children-and-covid-19-state-level-data-report/. Accessed September 6, 2021.
15. LaRovere K, Riggs B, Poussaint T, et al. Neurologic involvement in children and adolescents hospitalized in the United States for COVID-19 or multisystem inflammatory syndrome. JAMA Neurol. 2021;78(5):536-547. https://doi.org/10.1001/jamaneurol.2021.0504.
16. Delahoy M, Ujamaa D, Whitaker M, et al. Hospitalizations associated with COVID-19 among children and adolescents—COVID-NET, 14 states, March 1, 2020-August 14, 2021. MMWR Morb Mortal Wkly Rep. 2021;70(36):1255-1260. https://doi.org/10.15585/mmwr.mm7036e2.
17. Treisman R. A Texas school made masks part of its dress code to get around gov. Abbott’s ban. August 18, 2021. Available at: https://www.npr.org/sections/back-to-school-live-updates/2021/08/18/1028760318/paris-texas-school-district-mandate-masks-dress-code-gov-abbott-ban. Accessed September 5, 2021.
18. Costella A. Does mandatory mask-wearing restrict individual freedom? Stockholm Center. Available at: https://www.publicethics.org/post/does-mandatory-mask-wearing-restrict-individual-freedom. Accessed September 5, 2021.
19. Rowland L, Hahn J, Jelderks T, Welch N, Ramirez D. SARS-CoV-2 incidence and transmission in 48 K-12 Virginia public schools during community surge. J Pediatric Infect Dis Soc. 2021;piab075. https://doi.org/10.1093/jpids/piab075.
20. Defusco J. School mask policies will vary widely under new Virginia guidance: Northam says ‘one size doesn’t fit all’. Available at: https://www.wric.com/news/school-mask-policies-will-vary-widely-under-new-virginia-guidance-northam-says-one-size-doesn’t-fit-all/. Accessed August 1, 2021.
21. School Mask Policy Tracker. Burbio. Available at: https://about.burbio.com/school-mask-policies-by-state/. Accessed September 5, 2021.
22. Centers for Disease Control and Prevention. Guidance for COVID-19 Prevention in K-12 Schools. Updated August 5, 2021. Available at: https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/k-12-guidance.html. Accessed September 5, 2021.
23. Rubin D, Coffin S, Matone M, Marshall D, Fisher B, Gerber J. Guidance for K-12 educational settings. July 2021. Available at: https://policylab.chop.edu/tools-and-memos/guidance-for-k-12-educational-settings. Accessed September 6, 2021.
24. Centers for Disease Control and Prevention. Guidance for COVID-19 Prevention in K-12 Schools. July 9, 2021. Available at: https://www.cdc.gov/coronavirus/2019-ncov/k-12-guidance.html. Accessed September 6, 2021.
25. Buonsenso D, Roland D, De Rose C, et al. Schools closures during the COVID-19 pandemic: a catastrophic global situation. Pediatr Infect Dis J. 2021;40(4):e146-e150. https://doi.org/10.1097/INF.0000000000003052.
26. Centers for Disease Control and Prevention. Interim public health recommendations for fully vaccinated people. July 28, 2021. Available at: https://www.cdc.gov/coronavirus/2019-ncov/vaccines/fully-vaccinated-guidance.html. Accessed August 1, 2021.
