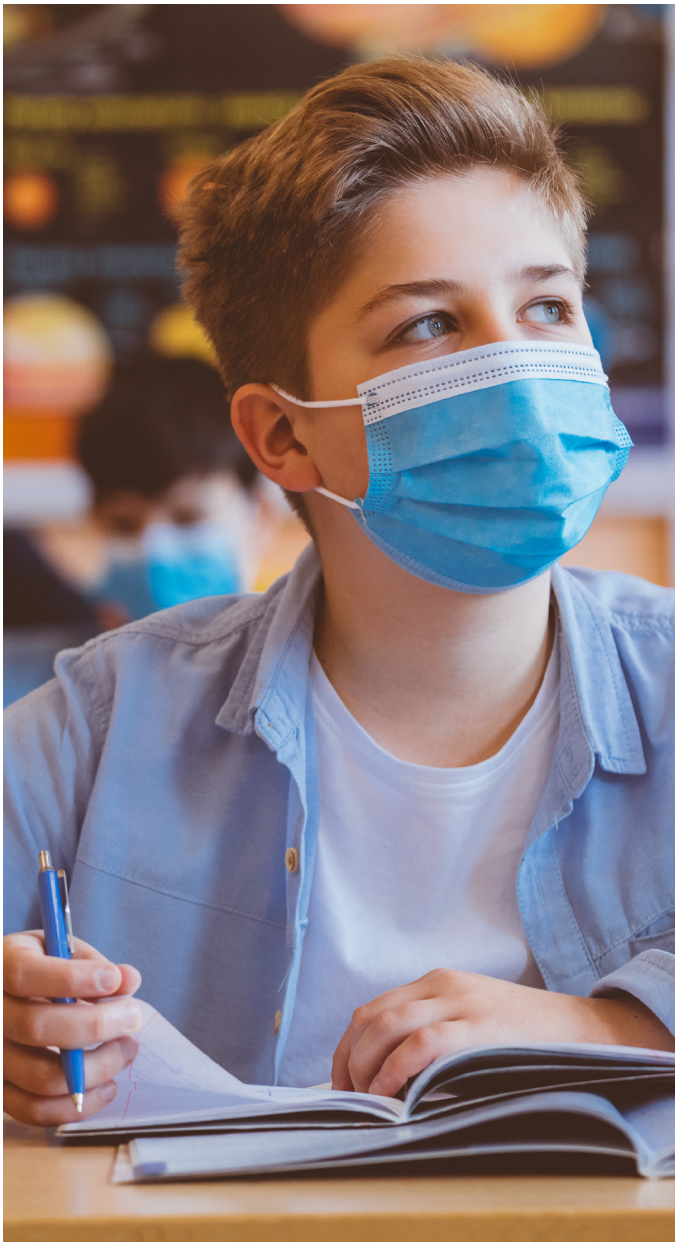
POPULATION HEALTH

Risk-Based Approach to Reopening Schools Amid COVID-19



Introduction

The COVID-19 pandemic has affected society on a global scale. Among other measures, Colorado, like most other states, closed its schools to limit the spread of COVID-19. While this and other efforts likely contributed to the slowed rate of COVID-19 transmission in Colorado, the absence of in-person learning has negatively affected student brain development, mental health and wellness, access to food, and parent access to work. In-person learning, a critical component of development for children and adolescents, cannot be replaced with online learning in perpetuity and must be revived to prevent further regressive impacts to the student population.

To provide schools with a heightened level of guidance for decision-making in their reopening and operation plans related to COVID-19, Children's Hospital Colorado has incorporated guidance from available data-based resources with in-house expertise to provide best practice guidelines intended to mitigate risk of COVID-19 transmission in schools. As it is simply unfeasible to eradicate risk, this guideline consists of tiered high-yield, low-cost practices intended to achieve maximum impact in lowering risk of transmitting COVID-19 among staff, students and families.

Schools are faced with numerous factors impacting decision-making; therefore, this guideline is meant to give schools and districts decision-making flexibility to aid in designing reopening strategies specific to them. Further, this guideline acknowledges that risk propositions may be impacted by state orders and rapidly changing regulations from Colorado Department of Public Health & Environment (CDPHE) and local public health departments, as well as school-specific age groups, community needs and varied access to resources.

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Considerations

The successful implementation of these best practices depends on many factors, including the developmental stage of the student and their ability to follow infection prevention recommendations. For example, younger children may not be able to maintain face coverings for long lengths of time, so schools may rely more heavily on other recommended practices.

While we have seen low rates of COVID-19 cases in children, national data show adolescents at higher risk than younger children for contracting the illness (similar to adults). As a result, the pandemic plan for a middle or high school may vary from that of an elementary school. Greater emphasis on pod-based learning approaches may be required in middle and high school settings to further off set this heightened risk.

COVID-19 seasonality implications are not yet clear, but we do know other viruses with similar symptoms have higher rates of spread during winter months. Therefore, school districts may want to think differently about the school year calendar and reopen during warmer months, where more activity can occur outdoors, having longer breaks take place over the traditional holiday season commencing around Thanksgiving.

Children and staff with chronic health conditions, including but not limited to those with lung disease, moderate to severe asthma, heart disease, immune deficiency, diabetes, and those over 60 years of age, should determine risk of onsite school participation with their healthcare provider and school nurse.

Unsubstantiated Practices

Before looking at what schools can do to reopen safely, it is important to first address some commonly proposed practices that largely lack evidence on meaningful risk mitigation.

Teacher to student ratios: There is no substantial evidence that the proposed ratios of teacher to students have a meaningful impact on transmission of COVID-19. The Centers for Disease Control and Prevention (CDC) and National Association of School Board Executives have not described ratios in their guidelines. Additionally, observations of schools reopening in Europe did not include ratios.

Testing: While polymerase chain reaction (PCR) testing is recommended for all symptomatic children and staff, there is currently no evidence to support universal PCR testing of asymptomatic children or school staff as a prerequisite for school attendance. Epidemiologic data suggest that testing of asymptomatic children will provide, at best, only minimal benefit due to the incubation period of COVID-19. Children who initially test negative could contract COVID-19 on subsequent days when testing is not being conducted. Additionally, in accordance with CDC recommendations, antibody tests should not be used to inform decisions regarding school attendance, grouping of students, use of face mask or lifting of physical distancing measures. This is because current data do not show with any certainty that the presence of antibodies makes a person any less likely to become re-infected or have a lower rate of contagiousness. Further, false positivity antibody tests are common.

Ultraviolet (UV) Light: The addition of UV light does not add significant benefit to surface cleaning and is damaging to the human body. It has not been widely used or tested against COVID-19, and additional studies are needed to understand UV effectiveness on the virus.

Personal Protective Equipment (PPE): Gloves, booties, gowns and hats are unnecessary in a general education environment and do not replace the effects of mask-wearing. In most cases, while effective, face shields are not critically necessary either, given the higher initial cost to purchase and/or replace if damaged.

Tiered Risk Mitigation Practices

To minimize and contain the risks associated with the spread of COVID-19, there are definitive risk mitigation practices that, if consistently used, can support large-scale, in-person learning in school settings. These practices were selected based on their high level of impact on reducing transmission of COVID-19 between people, specifically in school settings. Some of these are considered commonsense practices and have been used successfully in school settings to contain prior norovirus outbreaks. These practices operate with the assumption that anyone exhibiting symptoms of illness is advised to stay home and/or inform the school immediately.

Different practices have different levels of impact. The practices outlined here have been grouped into three tiers based on their level of impact, with Tier 1 being the most impactful. Each tier was developed to help schools understand the practices that are the most effective when utilized together.

TIER	RISK MITIGATION PRACTICE	
1	Hand Hygiene Distancing Face Coverings Vaccination	**Tier 1: Core principles, most effective at minimizing risk**
2	Screening Exclusion Pod-style Learning Touch-free Surfaces	**Tier 2: Practices to complement the effect of Tier 1**
3	Enhanced Cleaning Contact Tracing Airflow/Ventilation Communication	**Tier 3: Existing practices that, when steadily maintained, further enhance Tiers 1 and 2**

As schools create their reopening plans, it is important to focus efforts and often limited resources on practices that will yield the greatest impact. Recognizing this is not always possible in a school setting, each practice provides its own level of risk reduction by itself and becomes significantly more important in the absence of another. For example, in situations where physical distancing cannot be maintained, face coverings and frequent hand hygiene become more important. Not being able to use a Tier 1 strategy does not in and of itself preclude reopening schools and/or in-person learning; it does however require a heightened obligation to adhere to other practices.

To review, Tier 1 practices are considered core principles and have maximum impact when utilized together at all times. Tier 2 practices are an adjunct to the Tier 1 practices and become essential in the event some Tier 1 practices are not implemented. Tier 3 practices highlight the importance of key existing school operation practices that must be sustained to reduce risk even further.

TIER 1

Core Principles of Reducing Risk in Transmitting COVID-19 in Schools

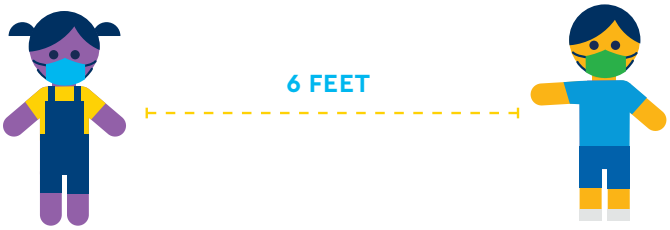
Hand Hygiene: Access to and frequency of thorough handwashing and hand sanitizing, with proper education of importance and technique

Hand hygiene is a simple and effective way to prevent the spread of disease when practiced properly. Incorporate these practices into lesson plans and invest in proper hygiene standards like reinforced handwashing and covering coughs and sneezes among children and staff.

Recognizing that not every room can be equipped with a sink for soap and water handwashing, utilize hand wipes and hand sanitizer (with supervision for younger groups) as appropriate, including, but not limited to before and after touching eyes, nose, mouth; before and after eating; after using the bathroom; entering and leaving a classroom, bus, other setting, and when hands are visibly soiled.

Distancing: Intentionally increasing physical space between individuals

Colorado School of Public Health Modeling (utilizing existing data and mathematical formula) shows that unless Coloradans maintains 60% social distancing, state COVID-19 cases will peak in the fall, which would devastate affected communities, including school reopening plans. While 6 feet is shown to be effective, it is not always possible. In these situations, achieving 5 feet of distancing is still better than 4 feet, and 4 feet is better than 3 feet, et cetera. Even 3 feet of physical distancing between students has been used successfully in some countries. Generally, everyone should have as much space around them for as much of the day as possible.



Use of larger spaces, such as outdoor areas and gymnasiums, and assigned seats in classrooms, cafeterias and buses, can help to give students and staff space and direction to move. High-traffic environments, such as hallways, will need to be assessed to support movement at a safe distance and prevent congregating. It's also important to think, not only about the student, but the staff interactions as well. More often, staff will need to connect virtually for previously in-person interactions. Schools can consider closing, limiting access to, or repurposing shared common areas, such as break rooms and playgrounds.

Additionally, physical barriers, when used safely, can serve as an effective alternative when physical distancing is not possible. If affordable and attainable, the use of plexiglass, currently a limited commodity, may be considered for use in high-contact, face-to-face environments, such as a reception desk or registrar's office. Existing furniture, such as tables and chairs, and floor marking tape can also be used creatively to support a physically distanced environment.

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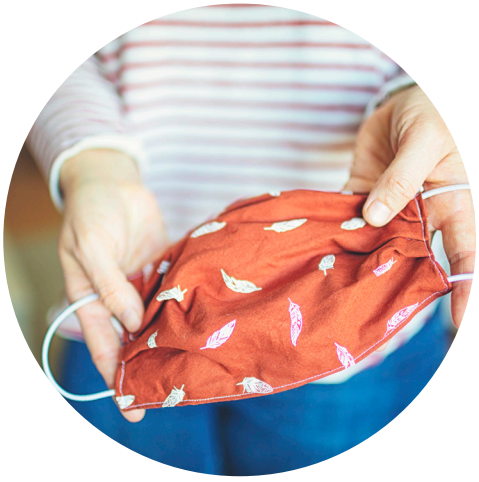
TIER 1

Face coverings: Wearing cloth face coverings and/or face shields to cover the nose and mouth

Face coverings are used to reduce the release of air particles from a person's face, such as when someone speaks, coughs or sneezes. As recommended in CDC guidance, children under age 2, and anyone who has trouble breathing, is unconscious, incapacitated, or otherwise unable to remove the face covering without assistance, should not use a face covering. Further, some children have special needs that also preclude their ability to use face coverings and other practices will need to be used to replace the benefit normally derived from wearing face coverings. All other students and staff can use a cloth face covering to achieve a high level of transmission reduction. Staff conducting an aerosol-producing procedure, such as suctioning a trach-vented student, must wear an N-95 mask.



When students are unable to physically distance, face coverings become much more important. An example of this would be in a bus setting where students are sitting in close proximity. However, the reality of small children wearing masks all day may require distancing to be the primary risk mitigator.

Face shields, which cover the eyes in addition to nose and mouth, can be costly, in contrast to cloth face coverings, but are beneficial. In addition to reducing exposure to disease, they allow for full visibility of facial expressions, easier communication, and ease of cleaning. Face shields may be a requirement for some areas, such as speech language pathology, where students will need to see the lips to be able to perform their therapy.

Vaccination: Influenza, in addition to existing school requirements

Existing school vaccination requirements should be continued. Schools and local public health authorities should partner with pediatricians to promote childhood vaccination messaging well in advance of the start of the school year.

Also, although influenza vaccination is generally not required for school attendance, it should be highly encouraged for all students in the coming academic year. In addition, school districts should consider requiring influenza vaccination for all staff members.

TIER 2

Practices to Complement the Effects of Tier 1

Wellness screening: Checking for and tracking symptoms; different from testing

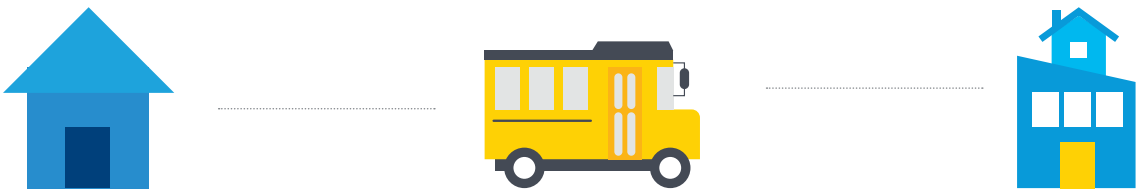
The CDC recommends screening for COVID-19 symptoms for all children and staff entering school. The most important protective action schools can take is emphasize the importance of staying home when ill to students, parents, and school staff. Beyond that, there is flexibility in how symptom screening may be implemented.

Screening prior to school entry should be performed on all students, staff and visitors entering the building. Schools should screen for the following symptoms on a daily basis: fever greater than 100.4°F/38°C, chills, new onset cough, shortness of breath, body/muscle aches, fatigue, loss of taste/smell, vomiting, diarrhea, new onset runny nose and sore throat. While a student or staff member may not have COVID-19 symptoms, schools can also consider a household screening question to track recent contact with someone who is ill at home. Screenings should be reported in conjunction with school attendance processes, in order to quickly determine if symptomatic students are arriving at school versus staying at home. Additionally, if asymptomatic students or staff share a household with someone who is ill, contact tracing would benefit from this documentation.

Schools can arrange for screening to largely occur virtually, with use of online survey applications, such as Microsoft Office Forms or Google Forms. QR Codes can also be helpful in ease of access on smartphones by providing a direct link to the survey URL.

Colorado Department of Education describes a three-point screening continuum: home, transportation and school. Screening at home before school may occur via online daily surveys with a checklist identifying symptoms of illness. Transportation screening is also important to reduce the spread of illness in the confined space of buses and family vehicles. Schools may consider providing additional staffing on buses to facilitate wellness screening. Families choosing to carpool may require extra precautions prior to travel. Schools should consider limiting and monitoring all access points of the building in order to ensure all individuals are screened. Additionally, schools should consider how to prevent crowding at screening locations.

Screening protocol must be practiced in conjunction with the school's exclusion plan, in the event of a symptomatic student or staff member.



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TIER 2

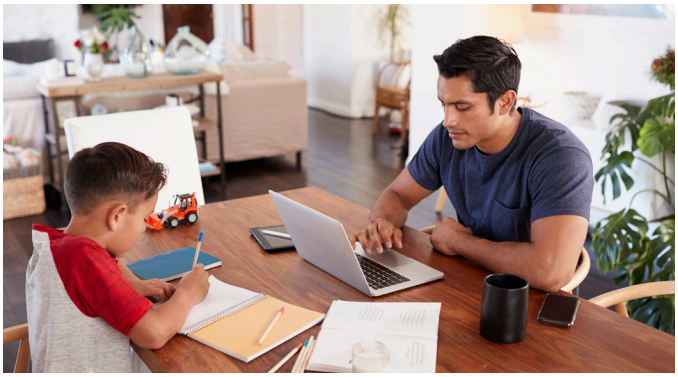
Exclusion: Quickly identifying and separating student/staff exhibiting illness while reducing disruptions to in-person learning, transportation and food access

Parents are still strongly encouraged to keep sick kids at home until they are free of symptoms; this also applies to staff staying home when exhibiting symptoms. Schools will need to develop and clearly communicate policies that encourage students and staff to stay home when they are sick, such as eliminating perfect attendance awards, supporting virtual work options, and offer flexibility with excused absence and sick leave. Inevitably, though, children or staff will arrive ill to school and schools should have protocols in place to address such situations.

Exclusion must be practiced in conjunction with the school's screening protocol. Require students exhibiting illness at bus boarding to sanitize their hands, wear a provided face covering (if not wearing one) and sit in a designated seat. Upon arrival, the student should be escorted to an exclusion space for monitoring, care and learning.

The exclusion space needs to be a ventilated area located away from routine care of students with chronic conditions, such as asthma and diabetes, and basic first aid. Designated care staff, without other school-related duties, are needed in order to provide isolation care. This care staff will need hand hygiene access and appropriate personal protective equipment (PPE) beyond a face covering, such as a face shield or safety goggles and gloves.

Following a positive COVID-19 test result, individuals should notify the school and isolate (stay home) until it is safe to be around others, which is after 3 days with no fever, respiratory symptoms have improved (e.g. cough, shortness of breath), and 10 days since symptoms first appeared/positive test result. Schools should notify their local public health agency (LPHA), staff and families and ensure appropriate confidentiality.



Practice pod-style learning: One group interacts with itself

In an environment with an inherently large number of people, it becomes less important how many people are in the room than it is how many people those people interact with. The concept of pod-style learning is to reduce mingling as much as possible, by managing and limiting the interactions of groups, or pods of people.

Recently published modeling data about social networks influencing the pandemic showed that when the same group, or pod, of 10, 15 or even 20 students only interact with their pod, and not another pod of 20 students, the risk of exposure to the disease is lessened. If a student becomes sick, it may only impact their one pod. However, if every pod is interacting with every other pod, when one student becomes sick, they are all exposed.

This may present more challenges in high schools than in grade schools, where most subjects are traditionally taught in one classroom to one set of students. However, there are ways of having different pods and isolating pods on some level. One example would be for all high school students to remain in one homeroom for the day's classes, with the teachers being mobile.

Additional practices can be incorporated in assigned seats on the bus, in class and in the cafeteria, as well as thoughtful use of outdoor space. A bus, for example, that has assigned seating and transports the exact same children in the exact same seats each day, is itself its own pod and works to help minimize risk. To the extent that children riding a bus can be even further grouped by grade, classroom, or even family, further enhances the benefits of a pod-based approach to transportation.

Touch-free surfaces: Reducing the frequency of touching surfaces

Transmission of COVID-19 appears more and more to be through respiratory droplets in close proximity to someone else. Although we still lack a clear understanding of the role of touched surfaces in transmission, they likely play a minor role, and efforts should be made to reduce or eliminate high-touch surfaces.

Schools should consider practical applications that are low-cost and effective, such as propping doors open to avoid students having to touch doorknob. This application may also result in better flow of students through the door and additionally increases ventilation.

TIER 3

Existing Practices to Sustain and Further Enhance Tiers 1 & 2

Enhanced cleaning: Frequent cleaning of common areas, shared spaces, and high-traffic areas

The CDC provides information about cleaning processes with links to appropriate cleaning products to kill the virus on surfaces, such as counters and doorknobs. Consider how much time, product and staffing it may take to conduct a thorough daily cleaning of the school. In addition, the exclusion space, after use by a sick person, must also be closed off until cleaning and disinfection in accordance with these guidelines.

When appropriate, students can share responsibility by wiping down their desks at the start and end of each class.

Contact tracing: Understanding attendance to respond quickly to a COVID-19 positive case

Local public health agencies (LPHAs) are the primary owners of contact tracing and will rely on schools to support their efforts to track a positive COVID-19 case. School nursing is grounded in public health and the school nurse is ideally suited to be the designated staff responsible for responding to COVID-19 concerns and support collaboration with the LPHA. A school's ability to manage the student population and make thoughtful determinations on how students are excluded depends on tracking data that supports contact tracing. This data will impact LPHA ability to support ongoing safe school operations. Additionally, the pod-style system tries to limit circles of students and their interactions and would further assist in understanding who is in contact with whom. LPHA will make decisions with schools regarding which students should be placed in quarantine and when schools/classrooms should be closed, in response to the presence of COVID-19.

Airflow/ventilation: Air movement throughout facility

Ventilation and airflow that allows for outdoor air to circulate can dilute small, potentially infected air particles. This airflow can be as simple as opening a door or window and ensuring ventilation systems are working properly. However, safety and health considerations must be made first, as this practice should not put any individual at more risk, such as prompting asthma symptoms.

Communication: Ensuring clear understanding of changes, the goal and benefit of the changes, and the role that staff members are expected to play

Communication should happen early, often and in a culturally appropriate manner. The ability for a school and/or district to adhere to its plans depends completely on how well-informed staff, students and families are with these new expectations.

Communication will need to be multi-modal, meaning staff, students and families get their information through different channels— what works for staff may not work for students. Schools will need to incorporate social media use, highly visible signs and regular broadcast announcements into their communication channels. Schools should also support emotional wellness and resiliency efforts through these channels.

All staff need to be well-informed and expected to answer questions that come to them from students and families. Whether it is the bus driver, custodian staff, front office or teaching staff, all must be equipped with all the information needed as a large, successful team. Everyone will need to be responsible for mitigating risk.

Implement regular processes that give staff and families the opportunities to share feedback on what is and what is not working. Create and use regular virtual or distanced huddles that reach every staff member to quickly and regularly facilitate this kind of communication process. Schools can use a number of different existing channels to gather parent/family feedback on a regular basis. This includes online surveys, emails and virtual town hall-style meetings.

Conclusion

The consistent application of mitigating risk by implementing practices outlined above can support the goal of largescale, in-person learning. Students have a long list of needs ranging from traditional educational attainment to food, health and mental health services that cannot be met when deprived of the live classroom experience. Students with special needs can and should be supported in the effort to bring students back to class.

Schools don't have to "break the bank" to implement these practices. This guidance was developed specifically with limited school resources in mind and intends to meet schools and their communities where they are to allow for flexibility in approach.

We all have a role to play in mitigating the risks associated with the transmission of COVID-19. Children's Colorado will continue to provide support to our state, our schools, our communities and our families in working to eradicate the virus and ensure the total health and well-being of our state's children.

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