

# Coronavirus Disease 2019 (COVID-19)

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## Indicators for Dynamic School Decision-Making

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Table of Indicators

Indicators	Lowest risk of transmission in schools	Lower risk of transmission in schools	Moderate risk of transmission in schools	Higher risk of transmission in schools	Highest risk of transmission in schools
<b>Core Indicators</b>					
Number of new cases per 100,000 persons within the last 14 days*	<5	5 to <20	20 to <50	50 to ≤ 200	>200
Percentage of RT-PCR tests that are positive during the last 14 days**	<3%	3% to <5%	5% to <8%	8% to ≤ 10%	>10%
<b>Ability of the school to implement 5 key mitigation strategies:</b> <ul style="list-style-type: none"> <li>• Consistent and correct use of masks</li> <li>• Social distancing to the largest extent possible</li> <li>• Hand hygiene and respiratory etiquette</li> <li>• Cleaning and disinfection</li> <li>• <a href="#">Contact tracing</a> in collaboration with local health department</li> </ul> Schools should adopt the additional mitigation measures outlined below to the extent possible, practical and feasible.	Implemented <b>all 5</b> strategies correctly and consistently	Implemented <b>all 5</b> strategies correctly but inconsistently	Implemented <b>3-4</b> strategies correctly and consistently	Implemented <b>1-2</b> strategies correctly and consistently	Implemented <b>no</b> strategies

CDC indicators and thresholds for risk of introduction and transmission of COVID-19 in schools

It is critical for schools to open as safely and as quickly as possible for in-person learning. To enable schools to open and remain open, it is important to adopt and correctly and consistently implement actions to slow the spread of SARS-CoV-2, the virus that causes COVID-19, not only inside the school, but also in the community. This means that students, families, teachers, school staff, and **all** community members should take actions to [protect themselves and others](#) where they [live, work, learn, and play](#). In short, success in preventing the introduction and subsequent transmission of SARS-CoV-2 in schools is connected to and dependent upon preventing transmission in communities.

## Background

Schools are an important part of the infrastructure of communities, as they provide safe, supportive learning environments for students, employ teachers and other staff, and enable parents, guardians, and caregivers to work. Schools also help to mitigate health disparities by providing critical services including school meal programs and social, physical, behavioral, and mental health services. SARS-CoV-2 transmission in schools may be a reflection of transmission

in the surrounding community. Therefore, when making decisions on when to open schools for in-person learning it is important to understand SARS-CoV-2 transmission within the surrounding community to determine the possible risk of introduction and transmission of SARS-CoV-2 within the school.

[International and domestic experiences](#) have demonstrated that even when a school carefully coordinates, plans, and prepares for reopening, cases of COVID-19 may still occur. Expecting and planning for the occurrence of one or more cases of COVID-19 in schools can help respond immediately to mitigate the impact to allow the school to remain open for in-person learning, if appropriate. When mitigation strategies are consistently and correctly used, the risk of spread within the school environment and the surrounding community is decreased.

## Purpose of indicators

During the COVID-19 pandemic, States, Tribes, Localities, Territories (STLT) and school districts have been making decisions about when and how to safely open schools. Many STLTs, partners, and members of the public have asked CDC how to determine when it is safe to open schools for in-person learning. There is no easy answer or single indicator. Many variables must be considered.

This document proposes core and secondary indicators that STLTs can use to aid in their decision-making process regarding school reopening for in-person learning. In-person learning includes all classes and activities conducted during core school hours. It does not explicitly include extracurricular activities — like sports or theater — conducted after school hours. However, these indicators could also be used to determine whether and how to implement extracurricular activities with the necessary mitigation strategies in place.

This document is meant to assist STLT officials in making decisions rather than establishing regulatory requirements. Recommendations are based on CDC's current knowledge of COVID-19 in the United States. CDC will continue to monitor COVID-19 activity and update guidance as needed. This guidance is meant to supplement—not replace—any state, local, territorial, or tribal health and safety laws, rules, and regulations with which schools must comply.

Each STLT should decide the most appropriate indicators to reference when deciding to open, close, or reopen schools. CDC recommends the use of 3 core indicators. These core indicators include two measures of community burden (number of new cases per 100,000 persons in the past 14 days; and percentage of RT-PCR tests that are positive during the last 14 days) AND one self-assessed measure of school implementation of key mitigation strategies. **CDC suggests decision-makers use one or both of the first core measures of community burden in addition to a third core indicator, the self-assessed measure of school implementation of key mitigation strategies. These key mitigation strategies should be implemented to the largest extent possible.**

The two measures of community burden should be used to assess the incidence and spread of SARS-CoV-2 in the surrounding community (e.g., county) and not in the schools themselves. Currently, CDC does not recommend using these core indicators as measures of burden within the school.

Secondary indicators may also be used to complement the core indicators and further support actions taken. The list of secondary indicators is illustrative and is not meant to be exhaustive.

Other factors should also be considered in local decision-making – including the extent to which mitigation strategies are adhered to in the broader community. Local officials should seek out other sources of data to assess adherence to recommended mitigation strategies within the community. Each STLT can decide the most appropriate indicators to reference when deciding to open, close, or reopen schools.

Finally, the thresholds provided with each indicator should serve as a guide of inherent risk at the local level.

## Description of indicators

The following are core and secondary indicators for decision makers to consider when deciding to open, close, or reopen schools over time. The core indicators include measures of underlying community transmission as well as a measure of adherence to key mitigation strategies.

### Core indicators

Core indicators include one or both measures of community burden AND one self-assessed measure of school implementation of key mitigation strategies. Additional information including how to calculate these indicators is found in the table below.

#### Measures of community burden

- The number of new cases per 100,000 persons within the last 14 days, AND/OR
- The percentage of RT-PCR tests that are positive during the last 14 days, AND

#### Implementation of mitigation strategies

- The school's ability to adhere to the following key mitigation strategies
  - Consistent and correct use of [masks](#)
  - [Social distancing](#) to the extent possible
  - [Hand hygiene and respiratory etiquette](#)
  - [Cleaning and disinfection](#)
  - [Contact tracing](#) in collaboration with local health department

Schools should adopt the additional mitigation measures outlined below to the largest extent possible, practical and feasible.

### Secondary indicators

Additionally, we provide secondary indicators that officials can use to support the decision-making process in local communities. These secondary indicators should not be used as the main criteria for determining the risk of disease transmission in schools. They should be used to support decision-making derived from the core indicators.

For example, knowing the percentage of hospital beds and intensive care unit beds occupied in a local hospital, including the percentage of inpatient beds occupied by a patient with COVID-19, can indicate the severity of illness in the community and whether the health care system can serve more patients. Similarly, the identification of a community outbreak indicates increased community transmission and, therefore, elevated risk of the introduction and subsequent transmission in schools.

## Application and interpretation of indicators

Each indicator or combination of indicators should neither be used in isolation nor should they be viewed as hard cut-offs by STLT officials and school district decision-makers. Rather, they serve as broad guideposts of inherent risk to inform decision-making.

If, after applying the core indicators described in the table below, a school is at “medium,” “higher,” or “highest” risk of transmission, **it does not** mean that the school cannot re-open for in-person learning, but that the risk of introduction and subsequent transmission of SARS-CoV-2 is higher and the school could consider alternative learning models (e.g., mix of in-person and virtual learning, also known as hybrid learning, or virtual-only).

Similarly, if a school meets all core indicators and many secondary indicators, a case or cases of COVID-19 may still occur in a school among students, teachers, administrators, and other staff. As a result, falling into the category of being at “lower” or “lowest” risk of transmission does not mean that the school should relax adherence to mitigation measures.

Officials should frequently monitor these indicators and adjust accordingly.

While risk of introduction and subsequent transmission of SARS-CoV-2 in a school may be lower when indicators of community spread are lower, this risk is **dependent** upon the implementation of school and community mitigation strategies. If community transmission is low but school and community mitigation strategies are not implemented, then the risk of introduction and subsequent transmission of SARS-CoV-2 in a school will increase. Alternately, if community transmission is high, but school and community mitigation strategies are implemented and strictly followed as recommended, then the risk of introduction and subsequent transmission of SARS-CoV-2 in a school will decrease.

Regardless of the level of risk, as determined by the indicators, it is critical that schools use multiple mitigation strategies including consistent and correct use of masks, social distancing to the extent possible, hand hygiene and respiratory etiquette, cleaning and disinfection, and contact tracing to help prevent the spread of SARS-CoV-2.

Vigilance to mitigation strategies within schools and the broader community will reduce the risk of introduction and subsequent transmission of SARS-CoV-2 in schools. This will enable schools that are open for in-person learning to stay open and accelerate the timeline of returning to full in-person learning by schools that began the school year using hybrid or virtual learning. The application and utility of these indicators are inextricably linked to schools and communities both following recommended mitigation strategies together.

By rigorously following mitigation strategies, current and future risk of introduction and subsequent transmission of SARS-CoV-2 in schools can diminish over time regardless of baseline indicators – with risk of spread especially low when community transmission is low to begin with.

CDC is a non-regulatory agency and can only make recommendations. This document is meant to assist STLT officials in making decisions rather than establish regulatory requirements.

## CDC indicators and thresholds for risk of introduction and transmission of COVID-19 in schools

Indicators	Lowest risk of transmission in schools	Lower risk of transmission in schools	Moderate risk of transmission in schools	Higher risk of transmission in schools	Highest risk of transmission in schools
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Core Indicators					
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Secondary Indicators					
Percent change in new cases per 100,000 population during the last 7 days compared with the previous 7 days (negative values indicate improving trends)	<-10%	-10% to <-5%	-5% to <0%	0% to ≤ 10%	>10%
Percentage of hospital inpatient beds in the community that are occupied***	<80%	<80%	80 to 90%	>90%	>90%

<b>Percentage of intensive care unit beds in the community that are occupied***</b>	<80%	<80%	80 to 90%	>90%	>90%
<b>Percentage of hospital inpatient beds in the community that are occupied by patients with COVID-19***</b>	<5%	5% to <10%	10% to 15%	>15%	>15%
<b>Existence of localized community/public setting COVID-19 outbreak****</b>	No	No	Yes	Yes	Yes

\*Number of new cases per 100,000 persons within the last 14 days is calculated by adding the number of new cases in the county (or other community type) in the last 14 days divided by the population in the county (or other community type) and multiplying by 100,000.

\*\*Percentage of RT-PCR tests in the community (e.g., county) that are positive during the last 14 days is calculated by dividing the number of positive tests over the last 14 days by the total number of tests resulted over the last 14 days. Diagnostic tests are viral (RT-PCR) diagnostic and screening laboratory tests (excludes antibody testing and RT-PCR testing for surveillance purposes). Learn more on the [Calculating Severe Acute Respiratory Syndrome Coronavirus 2 \(SARS-CoV-2\) Laboratory Test Percent Positivity: CDC Methods and Considerations for Comparisons and Interpretation](#) webpage.

\*\*\*Hospital beds and ICU beds occupied: These indicators are proxies for underlying community burden and the ability of the local healthcare system to support additional people with severe illness, including those with COVID-19. A community can be defined at the city, county or metro area level; federal analyses of hospital utilization rates within a community are typically conducted at the core-based statistical area (e.g., by metropolitan or micropolitan status).

\*\*\*\* Sudden increase in the number of COVID-19 cases in a localized community or geographic area as determined by the local and state health department.

## Mitigation strategies to reduce transmission of SARS-CoV-2 in schools

Regardless of what the indicators determine, **it is critical to ensure the use and layering of [mitigation strategies](#):**

- **Masks:** Encourage consistent and correct use of face masks, by all students, teachers, and staff to prevent SARS-CoV-2 transmission through respiratory droplets. [Exceptions for use of face masks](#) include children under the age of 2 years and persons with or those who support individuals with cognitive, sensory, or behavioral issues.
- **Social Distancing to the extent possible:** Maintain a distance of at least 6 feet between people. [Learn more](#) about promoting behaviors that reduce the spread of COVID-19.
- **Hand hygiene and respiratory etiquette:** Teach and reinforce [handwashing](#) with soap and water for at least 20 seconds and increase monitoring to ensure adherence among students and staff. Encourage students and staff to cover coughs and sneezes with a tissue and immediately wash their hands after blowing their nose, coughing or sneezing. Persons with disabilities may need assistance with hand hygiene. [Learn more](#) about promoting hand

hygiene and respiratory etiquette.

- **Cleaning and disinfection:** [Clean and disinfect](#) frequently touched surfaces (e.g., playground equipment, door handles, sink handles, toilets, drinking fountains) within the school and on school buses at least daily or between use as much as possible.
- **Contact Tracing:** Systematic [contact tracing](#) of infected students, teachers, and staff in collaboration with local health department.
- **Cohorting:** [Cohorts](#) (or “pods”) are groups of students, and sometimes teachers or staff, that stay together throughout the school day to minimize exposure for students, teachers, and staff across the school environment. Ensure that cohorts are as static as possible by having the same group of students stay with the same teachers or staff (all day for young children, and as much as possible for older children). If additional space is needed to support cohorting, consider all available safe spaces in the community and any relevant partnerships with properly vetted school volunteers that can support students while minimizing group size. Consider ways to support equitable access to cohort support. Limit mixing between cohorts if possible.
- **Staying home when appropriate:** Educate staff and families about when they and their child(ren) should [stay home](#) and when they can return to school. [Learn more](#) about preparing for someone is sick with COVID-19.
- **Adequate supplies:** Support [healthy hygiene](#) behaviors by providing adequate supplies, including soap, hand sanitizer with at least 60 percent alcohol (for staff and older children who can safely use hand sanitizer), a way to dry hands, tissues, disinfectant wipes, face masks (as feasible) and no-touch/foot-pedal trash cans.
- **Staggered scheduling:** [Stagger](#) school arrival and drop-off times or locations by cohort, or put in place other protocols to limit contact between cohorts, as well as direct contact with parents, as much as possible.
- **Alternating schedules with fixed cohorts:** [Alternate schedules](#) with fixed cohorts of students and staff to decrease class size and promote social distancing to prevent wide scale transmission.
- **Shared objects:** [Discourage sharing of items](#), particularly those that are difficult to clean or disinfect.
- **Visitors:** [Limit any nonessential visitors, volunteers, and activities](#) involving external groups or organizations as much as possible – especially with individuals who are not from the local geographic area (e.g., not from the same community, town, city, county). Persons with disabilities may need direct service providers or service animals in a school environment.
- **Ventilation:** Ensure ventilation systems operate properly and increase circulation of outdoor air as much as possible, for example by opening windows and doors. Do not open windows and doors if doing so poses a safety or health risk (e.g., risk of falling, triggering asthma symptoms) to anyone using the facility.
- **Water systems:** [Take steps](#) to ensure that all water systems and features (e.g., sink faucets, decorative fountains) are safe to use after a prolonged facility shutdown.
- **Physical barriers and guides:** [Install physical barriers](#), such as sneeze guards and partitions, particularly in areas where it is difficult for individuals to remain at least 6 feet apart (e.g., reception desks).
- **Communal spaces:** Close communal use of shared spaces, such as dining halls and playgrounds with shared playground equipment, if possible; otherwise, stagger use and [clean and disinfect](#) between use.
- **Food service:** Avoid offering any self-serve food or drink options such as hot and cold food bars, salad or condiment bars, and drink stations. Have children bring their own meals as feasible, or serve individually plated or pre-packaged meals instead, while ensuring the [safety of children with food allergies](#). 🚫 [Learn more](#) about food service during COVID-19.

## Transmission risk in schools by learning modalities

Regardless of what the indicators determine, the more students or staff who interact and the longer that interaction, the higher the risk of SARS-CoV-2 spread.

In general, the risk of SARS-CoV-2 spread in schools increases across the continuum of virtual, hybrid, to in-person learning with the risk moderated for hybrid and in-person learning based upon the range of mitigation strategies put in place and the extent they are correctly and consistently followed.

While not exhaustive, this stratification from [Operating schools during COVID-19: CDC's Considerations](#) attempts to characterize the risks of spread among students, teachers, and staff across this continuum:

#### **Lowest risk:**

- Students and teachers engage in virtual-only classes, activities, and events

#### **Some risk:**

- Hybrid Learning Model: Some students participate in virtual learning and other students participate in in-person learning
- Small, in-person classes, activities, and events
- Cohorting; leveraging all available safe community spaces, including outdoor spaces; alternating schedules, and staggered schedules are applied rigorously
- No mixing of groups of students (i.e., cohorts) and teachers throughout/across school days
- Students and teachers do not share objects
- Students, teachers, and staff always follow all steps to protect themselves and others, including proper use of face masks, social distancing, hand hygiene, and respiratory etiquette
- Regularly scheduled cleaning and disinfection of frequently touched surfaces implemented consistently

#### **Medium risk:**

- Hybrid Learning Model: Most students participate in in-person learning, some students participate in virtual learning
- Larger in-person indoor classes, activities, and events
- Cohorting, alternating schedules, and staggered schedules are applied with some exceptions
- Some mixing of groups of students (i.e., cohorts) and teachers throughout/across school days
- Students and teachers minimally share objects
- Students, teachers, and staff follow all steps to protect themselves and others such as proper use of face masks, social distancing, hand hygiene and respiratory etiquette
- Regularly scheduled cleaning and disinfection of frequently touched surfaces largely implemented consistently

#### **Higher risk:**

- Full sized, in-person classes, activities, and events
- Students minimally mix between classes and activities
- Students and teachers share some objects
- Students, teachers, and staff follow some steps to protect themselves and others at all times such as proper use of face masks, social distancing, hand hygiene and respiratory etiquette
- Irregular cleaning and disinfection of frequently touched surfaces

#### **Highest risk:**



- Full sized, in-person classes, activities, and events
- Students mix freely between classes and activities
- Students and teachers freely share objects
- Students, teachers, and staff do not/are not required to follow steps to protect themselves and others such as proper use of face masks, social distancing, hand hygiene and respiratory etiquette
- Irregular cleaning and disinfection of frequently touched surfaces

## Youth sports

The more people a child or coach interacts with, the closer the physical interaction, the longer that interaction, and the more sharing of equipment there is by multiple players, the higher the risk of SARS-CoV-2 spread. The risk of spread of the virus that causes COVID-19 increases in [youth sports](#) settings as follows:

- **Lowest risk:** Performing skill-building drills or conditioning at home, alone, or with family members.
- **Increasing risk:** Team-based practice.
- **More risk:** Within-team competition.
- **Even more risk:** Full competition between teams from the same local geographic area.
- **Highest risk:** Full competition between teams from different geographic areas.

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Content source: [National Center for Immunization and Respiratory Diseases \(NCIRD\)](#), [Division of Viral Diseases](#)