



Centers for Disease Control and Prevention  
CDC 24/7: Saving Lives, Protecting People™



## COVID-19

# Operational Considerations for Schools

Updated Jan. 29, 2021 [Print](#)

## Document purpose

Schools play an important role in educating students about disease prevention within their homes and communities. Additionally, many children and adolescents rely on key services provided by schools, such as school meal programs, psychosocial support, disability services, and outreach for vulnerable populations. Schools are considered safe havens for children who might be experiencing various forms of abuse or violence. This document provides suggestions for mitigating risks for COVID-19 transmission in schools in low-resource international settings and describes considerations associated with each mitigation measure, including considerations for secondary impacts such as food insecurity and exposure to violence and for students who are at high risk for dropping out of school, so that schools may safely resume and sustain operations. The proposals are presented by mitigation practice (**respiratory hygiene (use of masks), hand hygiene, and physical distancing**). This document does not supersede any national or local government laws, regulations, or mandates; rather, it is intended to complement existing or proposed mitigation measures.

## Document audience



This document is intended for use by any person, institution, or organization preparing for or responding to community transmission of COVID-19, and for those assisting these entities (such as national and local governments, CDC country offices, and others). The document contains special considerations for mitigating the risks of resumption and sustained operation of schools in low-resource, international settings.

## Layered approach

Mitigation measures in schools can be organized into three categories: personal measures, administrative measures, and engineering measures. These should be layered on top of each other to reduce the overall risk of COVID-19 transmission for students and school staff.

- **Personal measures:** Individuals' behaviors to protect themselves and those around them
- **Administrative measures:** Processes and policies that keep people safe
- **Engineering measures:** Physical structures put in place to distance people from hazards

**Note on implementation:** Below we provide ideas for how to reduce COVID-19 transmission in primary and secondary schools in low-resource, international settings. Though some ideas may not be feasible in all settings, schools can optimize as many measures as possible and implement those appropriate to their local context. Caregivers, teachers, and school administrators must be engaged in the planning and implementation process for any mitigation measure to succeed. The ideas below can be adapted to fit the local context by engaging local populations in the planning and decision-making process. To do so, governments and school administrators can identify trusted stakeholders and partners, such as community leaders and caregivers, to provide feedback on proposed mitigation measures before their implementation. These representatives will not only know the local needs and conditions, but they also may know of lessons learned from previous public health interventions in the community.

More information on how to effectively engage communities can be found [here](#)  [1.58 MB, 33 pages] .

# Respiratory Hygiene

## Personal measures: General recommendations for respiratory hygiene in schools


**Wear a [mask](#) if able.** Masks are particularly important to mitigate the spread of COVID-19. They offer some protection to people who wear them and can protect others if the wearer is infected with the virus that causes COVID-19 but doesn't know it. Wear a mask when physical distancing within 2 meters is not possible and especially when individuals are indoors with poor ventilation, for example students in a crowded classroom. Students should be frequently reminded not to touch their eyes, nose, or mouth or masks. Children under age 2, or anyone who has trouble breathing, is unconscious, incapacitated, or otherwise unable to remove the mask without assistance should not wear masks.

**Cover coughs and sneezes** using an elbow or a tissue when not wearing a mask. Dispose of the tissue and clean hands immediately either with soap and water or a hand rub containing at least 60% alcohol.

**Stay home when sick, or after close contact with someone who is sick.** If a student or staff member is sick, he or she should not come to school. If COVID-19 is known or suspected, students and staff members should self-isolate until they have had improved respiratory symptoms, 3 days with no fever, and 10 days have passed since the date symptoms first appeared. If COVID-19 is not suspected, students and staff should stay home until symptoms have resolved.

## Administrative and engineering measures: Possibilities for schools

Require all staff and students to wear a mask while on school grounds, if able.

Post signs reminding staff and students to wear masks, [instructing how to properly wear and remove masks](#)  and instructing [how to wash masks](#).

Post signs instructing staff and students [how to cover coughs and sneezes](#). 

Develop policies for students and staff to stay home if they have tested positive for or are showing symptoms of COVID-19, are caring for a sick family member, or have come in close contact with someone who is sick.

Develop flexible attendance and sick leave policies to encourage students and staff to [stay home when sick](#), or after [close contact with someone who is sick](#).

Enforce policy to stay home if unwell.

Discourage use of "perfect attendance" awards.

Ensure staff will not lose wages while isolating or in quarantine.

Ensure students who rely on school meals can still receive school meal support while isolating or in quarantine.

Consider daily symptom screening prior to entry for staff and students – do not allow anyone with a fever above 100.4 °F (38 °C) or with signs of illness to enter.

Consider sending a daily symptom screening text message/SMS/social media to staff to monitor COVID-19 symptoms.


Have a plan for [if a student or staff member shows signs or symptoms of infectious illness consistent with COVID-19 at school](#).


Restrict mixing between groups.

Modify classroom layouts.

Limit crowding

# Materials, activities, and personnel needed for implementation

Posted age-appropriate signs with visual cues on [how to properly wear and remove masks](#). 

Posted age-appropriate signs with visual cues depicting [how to cover coughs and sneezes](#). 

Informational materials for students, caregivers, guardians, and staff on how to properly make, wear, remove, and wash masks, if applicable.

Informational materials for students/caregivers/guardians/staff reminding them to stay home if sick.

Personnel, thermometer (preferably a no-contact thermometer), and screening tool to conduct symptom screening of students/staff upon entry.

Personnel, mobile phone, and phone airtime (e.g., credit for calls and messages) to send symptom screening text messages to staff and monitor responses.

Personnel or designated point of contact responsible for responding to COVID-19 concerns.

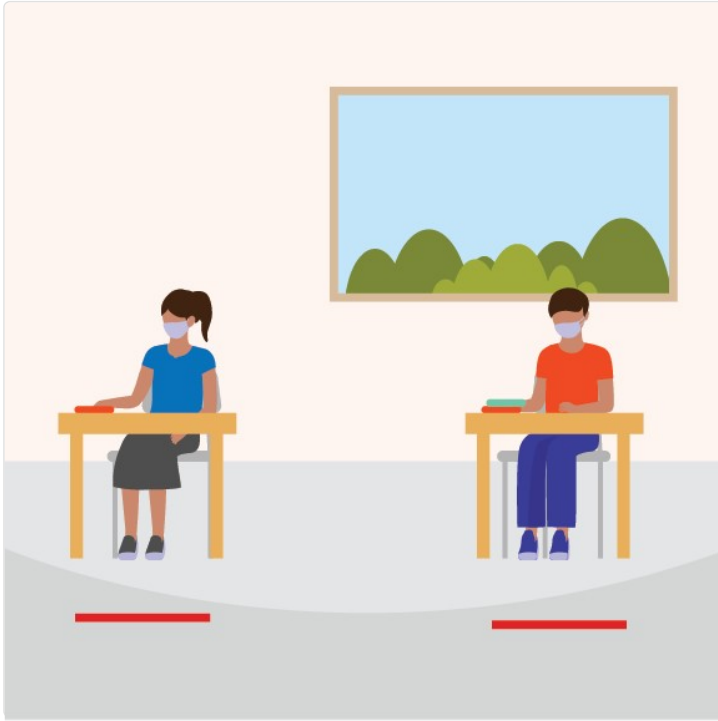
Isolation room to separate sick student and/or staff from others, when possible.

Ability of staff to model appropriate use of masks and covering coughs/sneezes.

## Considerations and challenges for schools

- Young students may not understand or adhere to wearing masks all day. In these circumstances, prioritize wearing masks during drop-off/pick-up, hallway transitions, visits to the toilet and other communal spaces, and any other time when physical distancing may be difficult.
- Some students may need support and assistance from staff with putting on or adjusting masks.
- Some students and staff may be unable to wear masks. Examples are students who are deaf or hard of hearing and rely on lip reading to communicate, those with certain disabilities or mental health disorders, and those with sensory concerns or tactile sensitivities. Schools can work with students, families, staff, and healthcare providers to accommodate these individuals.
- Schools can provide fabric for students to make masks, or work with uniform manufacturers to make masks (if uniforms are worn at school). Schools may also work with NGOs working with women or adolescents to sew masks as an income-generating activity.
- Schools should provide masks to students whose family/caretaker cannot provide one for them and consider providing masks to students who arrive at school without one.
- Schools should consider establishing a system for disposal of used masks where applicable to reduce the risk of exposure to contaminated masks.
- Schools will need to devise back-up staffing plans in case teachers/staff remain home due to illness of themselves or family members.
- Effectiveness of symptom screening in general and particularly for children is unknown. Staff may hide symptoms/signs of illness if they lose wages by staying home, risking the spread to others. Advocating for and instituting flexible sick leave policies to allow staff to stay home when sick or when caring for sick family members can help prevent this risk.
- Recipients of school feeding programs may not stay home when ill if school is one of their primary sources for meals. Schools should devise a plan for the safe pick-up or delivery of meal support for students in isolation/quarantine.
- Schools should ensure there is a space to temporarily, safely, and confidentially isolate without stigma for

students/staff who become ill/symptomatic during the day until they can go home.





Students wearing cloth face coverings in school.




Student covering a cough with an elbow.

## Hand Hygiene



### Personal measures: General recommendations for hand hygiene in schools

**Teach and reinforce frequent hand hygiene among students and staff.** Make sure that students and staff clean hands when entering and exiting the school; after breaks; after blowing their nose, sneezing, or coughing; before and after eating; after going to the bathroom; and at other [key times](#)  .


*Types of hand hygiene:*

**Handwashing with soap and water.** Soap and water are effective against COVID-19. The cleanest water available (ideally from an [improved source](#) <sup>[1]</sup>) should be used for handwashing, and all types of soap (bar soap, liquid soap, and powder soap) are effective at removing COVID-19. Make sure that all surfaces of hands (front, back, between fingers, fingernails) are scrubbed with soap and water for at least 20 seconds and dried using single-use hand drying materials (when available) or air dried.

**Soapy water** (a mix of water and either powdered or liquid soap) can also be used. To prepare, mix enough soap with water so that you can create a foam when rubbing hands together. When using soapy water, a separate handwashing station of rinse water next to the soapy water station will also be needed. Alternatively, soapy water can be provided in a

bottle or other closed container next to a handwashing station of plain water. As detailed above, the cleanest water available should be used for soapy water and rinse water. Instructions for making soapy water can be found on page 25 of [this document](#)  .




**Cleaning with alcohol-based hand rub.** If hands are not visibly dirty, hand rub with at least 60% alcohol content can be used as an alternative to washing hands with soap and water. To use, dispense enough product to cover all surfaces of both hands; rub hands together until they feel dry, approximately 20 seconds.

If soap and water or alcohol-based hand rub are unavailable or infeasible, handwashing with 0.05% chlorine solution can be considered as a temporary option. The solution should be refreshed daily and made using [the instructions found here](#) . Due to possibility of increased irritation, young children should not use chlorine solution for handwashing. Users should exercise caution to avoid getting the solution in their eyes or mouth.





## Administrative and engineering measures: Possibilities for schools

Make hand hygiene obligatory upon entry and exit of the school.

Create a schedule for frequent hand hygiene, especially for younger children.

Post signs with visual cues encouraging frequent hand hygiene, especially at [key times](#)  , and provide [instructions for proper hand hygiene](#). 

Ensure widespread access to hand hygiene facilities by placing hand hygiene stations (handwashing stations or alcohol-based hand rub dispensers) at entrances, exits, within classrooms, and within 5 meters of toilets/latrines (handwashing with soap and water should be prioritized after toilet use). Low-cost visual cues can be used to direct, or “nudge”<sup>[1]</sup> students/staff towards hand hygiene facilities throughout the school and to keep physical distancing if queuing for hand hygiene facilities.

Ensure handwashing stations follow [these](#)   hand hygiene behavior change principles. More information on different handwashing station designs is available [here](#)  . In particular, handwashing stations should: 1) Allow users to wet and rinse their hands under a stream of running water; 2) Secure provided soap with a cage (liquid soap), rope (bar soap), or other device; 3) Have a place to catch used water; 4) Provide single-use hand drying materials whenever possible; 5) Provide a waste bin to collect single-use hand drying materials (when applicable).

The installation, supervision, and regular restocking of hand hygiene stations should be the responsibility of school administrators or staff.

If using 0.05% chlorine solution, provide those doing the mixing with personal protective equipment (thick gloves, thick aprons, and closed shoes).





Where there is no improved water source or where water supply is limited, temporary measures such as water trucking may be introduced. For long-term, investments in improving water supply should be prioritized to ensure adequate water for hand hygiene and cleaning.

Store soap and alcohol-based hand rub in a secured, locked location, out of the reach of children and away from fire/flames.

## Materials, activities, and personnel needed for implementation


Daily access to adequate supplies to support hand hygiene, including safe water and a consistent supply of soap, alcohol-based hand rub with at least 60% alcohol content, or ingredients for making handwashing solution.


Availability of school administrators/staff to enforce hand hygiene practice upon entry and exit of school.

- Availability of school administrators/staff to check on hand hygiene stations regularly and refill when necessary.
- Ability of school administrators/staff to model appropriate hand hygiene behavior.
- Posted signs with visual cues and school-wide announcements encouraging hand hygiene. Messaging should be [age-appropriate](#)  and include information about [when](#)   and [how to practice hand hygiene](#) .
- Paint, chalk, tape, or signs to provide visual cues/nudges for handwashing facilities.
- If using 0.05% chlorine solution, personal protective equipment (rubber gloves, thick aprons, and closed shoes) for those mixing the chlorine solution.
- Locked location for storing hand hygiene supplies overnight, including stations or alcohol-based hand rub dispensers.

## Considerations and challenges for schools

- Continuous oversight will be required to ensure that hand hygiene stations are refilled regularly. Schools can assign a point person responsible for oversight of hand hygiene stations to ensure they are maintained.
- There will be costs associated with purchasing handwashing stations and/or alcohol-based hand rub dispensers, refilling water and soap (or rub), personal protective equipment (if needed), developing and printing communications materials, and possibly paying staff to refill and reinforce use of hand hygiene stations upon entry and exit.
- If schools do not have a quality water supply on site, implementing hand hygiene measures will be more challenging and costly to regularly refill hand hygiene stations. Water-scarce schools may consider temporary solutions for water provision, such as water trucking. Use of alcohol-based hand rub is a safe alternative to handwashing stations that require water, but still has an associated cost. Young children may need supervision when using hand rub to prevent accidental ingestion.
- Supply chain constraints on soap and alcohol-based hand rub could occur if demand increases as COVID-19 spreads. Single-use hand drying materials (such as paper towels) are often unavailable, can be costly, and increases waste; air drying of hands is a safe alternative as long as hands are dried completely.
- If using 0.05% chlorine solution, school administrators or staff should wear protective masks, rubber gloves, thick aprons, and closed shoes during the mixing process (to avoid potential skin and inhalation hazards). They should also be trained on how to mix chlorine solution. If no rubber gloves are available, any kind of gloves can be used. Those mixing should remove gloves and wash hands immediately after mixing. If no aprons are available, they can wear protective clothing (such as long pants and long-sleeved shirts).

[1] An [improved drinking water source](#)  is a source that, by nature of its construction, adequately protects the source from outside contamination and may include piped household water connections, public standpipes, boreholes, protected dug wells, protected springs, and rainwater.

[2]“Nudges” are an effective behavior change strategy that refer to changes in the physical environment to cue and reward a behavior. The use of nudges for handwashing is described [here](#) .



Students sanitize hands upon entry to school and wear cloth face coverings.



Nudges, or visual cues, to prompt students to sanitize their hands.

## Physical Distancing

### Personal measures: General recommendations for physical distancing in schools

Maintain **at least a 2-meter distance** when possible between people who do not live together.

### Administrative and engineering measures: Possibilities for schools

#### Restrict mixing between groups.

Ensure the same group of students stay together each day with the same staff/teacher (e.g., no switching classes) as much as possible and limit interaction with other classes, staff, and teachers (e.g., schedule breaks and meals at different times).

Avoid sharing books, supplies, games, or other learning aides; if sharing is necessary due to limited supply.

Restrict extra-curricular activities, field trips, and inter-group events and meetings.

Restrict entry of caregivers, non-essential visitors, and volunteers.

Encourage students to maintain a 2-meter distance from those they do not live with when walking to school.

Establish protocols to limit contact with caregivers during drop-off/pick-up.

Indicate a location by the entrance and exit beyond which caregivers cannot cross during drop-off and pick-up. Add visual cues (paint, chalk, or tape on ground and signs) to indicate the “do not cross” point. Encourage caregivers to



wear cloth face coverings or masks during drop-off and pick-up.

Encourage caregivers not to exit cars/motorbikes/bicycles when dropping off/picking up children to limit mixing and crowding at drop-off/pick-up point.

### **Modify classroom layouts.**

Space seating/desks at least 2 meters apart, when feasible. Provide physical cues such as tape or chalk to guide spacing.

Face all desks/tables in the same direction. Have students sit on only one side of the table.

### **Limit crowding**

Establish one-way circulation in hallways, classrooms, and school facilities. Provide physical distancing guides, such as tape, paint, or chalk on floors or sidewalks and signs on walls, to ensure that staff and children remain at least 2 meters apart in lines, hallways, sanitation facilities (toilets/latrines), and at other times. Assign staff to monitor traffic in hallways, classrooms, and elsewhere in school to ensure physical distancing guidelines are followed.

Post signs and make frequent announcements (e.g., via public address [PA], bullhorn) encouraging physical distancing ( $\geq 2$  meters) at all times.



Close communal spaces, such as indoor cafeterias and playgrounds.

Modify school schedules. Options may include:

1. Staggering arrival/dismissal times and class breaks.
2. Expanding the timetable: schedule some students to attend classes in the morning, others in the afternoon, and others in the evening, if lighting and security permit.
3. Expanding the school week: schedule some students to attend classes on certain days (e.g., Monday, Wednesday, Friday) and others to attend classes on remaining days (e.g., Tuesday, Thursday, Saturday).

Educate and encourage caregivers, students and staff to avoid gathering/socializing when coming to/leaving school and during class breaks.

Instruct students to maintain at least a 2-meter distance between each other when walking to/from school together and during class breaks.

Instruct students and adults to wear masks, if able, and practice [hand hygiene](#)  and [respiratory hygiene](#)  , including wearing masks, particularly when carpooling or taking public transit; limit number of passengers in car by leaving every other seat open, if possible, and keep windows open.

Clean school buses before each shift; focus on frequently touched surfaces; seat only one student per row or in every other seat if there are no rows, unless students are from the same household; keep windows open. The bus driver and passengers should wear masks.

Add visual cues (paint, chalk, or tape on ground or post signs) to indicate appropriate physical distancing for caregivers at the drop-off/pick-up point.

Assign staff to monitor that physical distancing is observed during school arrival and departure and among students during breaks.

## **Materials, activities, and personnel needed for implementation**

Ensure availability of communication materials (via radio, SMS/mobile technology, social media,

letters/announcements to caregivers) to communicate new procedures to caregivers, students, and staff.


Post signs throughout the school and make school-wide announcements (e.g., via public address [PA] system, bullhorn) to inform students/staff of new procedures and rationale and to remind students/staff to practice physical distancing.


Tape, chalk, paint, and/or post signs to indicate desk/table/seating spacing, circulation routes, and physical distancing requirements.

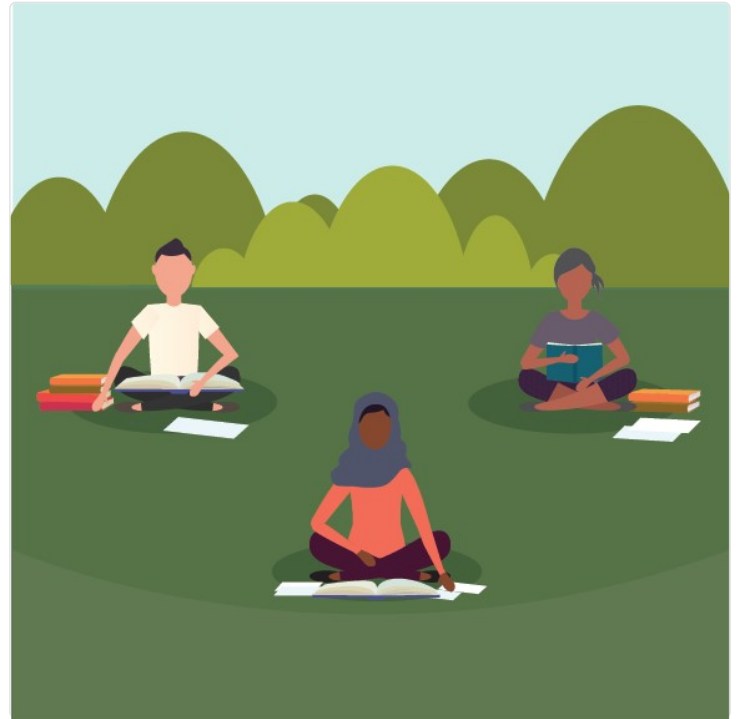
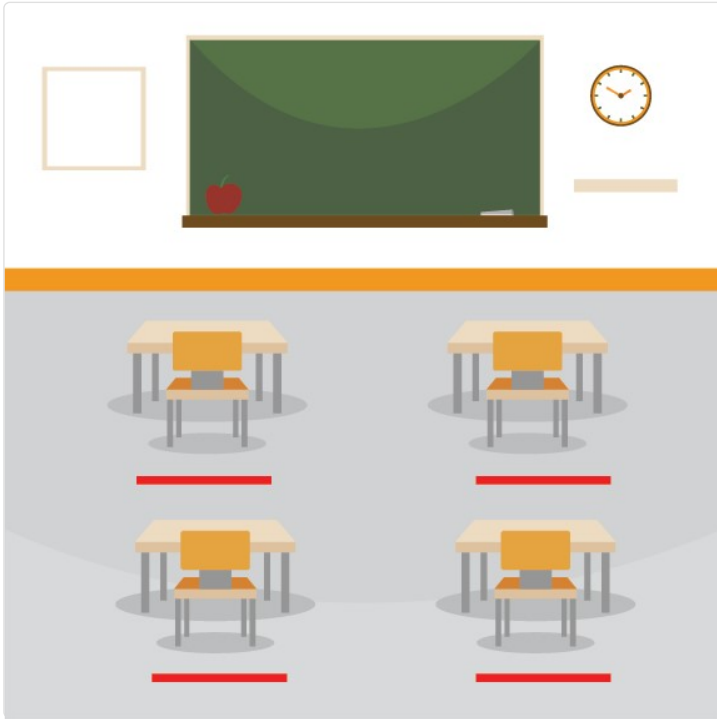
Create written order and schedule for students to enter/break/exit.

Ensure school staff model appropriate physical distancing and remind students and caregivers to maintain physical distancing.

## Considerations and challenges for schools

- Students may rely on school meal programs. If meals or supplementary foods are provided at school, consider:
  - Distributing packaged/boxed meals and supplemental foods.
  - If hot meals must be served, have only one person serve the meals (i.e., not self-serve).
  - Food distributors should wear a mask and wash their hands before putting on gloves.
  - When queuing for food, ensure that students maintain physical distance (2 meters) and wear masks.
  - Ensure that students wash their hands or use alcohol-based hand rub before eating.
  - Have meals in classrooms or outside instead of congregating in cafeterias (after proper cleaning of desks/tables and [hand hygiene](#)  ).
- If classrooms are not large enough for adequate desk spacing and physical distancing, consider:
  - Opening windows/doors (when safe to do so) to increase circulation of outdoor air.
  - Re-purposing other spaces such as cafeterias and gyms to serve as temporary overflow classrooms.
  - Moving classrooms outside if the conditions are safe and conducive to a learning environment (must consider weather conditions, pollution, wildlife, etc.).
- Modifying school schedules could reduce the total number of instructional hours students get each day or week. Schools can supplement classroom learning with distance learning platforms that are appropriate to the local context and population served. These can include e-learning, SMS/mobile technology, social media, TV programs, radio learning, and printed take-home resources. School administrators must be aware that distance learning may present additional risks to child development if not monitored (e.g., online bullying, excessive screen time, lack of direct learning and engagement with teachers/peers). School administrators should prioritize modified schedules for children most at risk for missing school (e.g., girls, students with special education needs, groups at risk for dropping out, and others for whom distance learning will be most challenging).
- School administrators can help ensure that distance learning/working opportunities are available for students and staff at [higher risk for severe illness](#) (e.g., persons with underlying medical conditions such as chronic disease, diabetes, or immunocompromised individuals; as well as older adults).
- Physical distancing may be difficult for direct service providers, including personal care attendants, paraprofessionals, therapists, and others supporting students with disabilities. In addition to standard prevention actions, ensure that direct service providers wear a mask when within 2 meters of the student and wear disposable gloves when touching the student.
- Physical distancing and isolation measures may contribute to an increase in violence (e.g., due to increased time in the same space as an abuser). School administrators should:

- Assign a point of contact to whom students and staff can confide in about experiences of violence. Frequently remind students/staff that they can contact this person safely, confidentially, and without stigma.
- Ensure staff are alert to signs of violence against children (students) and adults (other staff) and know how to report suspected violence.
- Create a safety plan for how to handle reported or suspected violence against students and staff.
- Engage with parents and caregivers in regular communication by providing resources and support on positive coping mechanisms and [positive parenting](#)  to prevent violence against children.



Tape on floor to indicate safe spacing of desks.

#### **Additional measures for maintaining healthy operations**

Classes can be moved outside if the conditions are favorable.

- Schools should have plans in place to recognize when someone is ill when arriving at school or during the school day, to identify a location at the school where ill person(s) can isolate until they are able to go home, to identify possible contacts of the ill person(s), and a communication plan to reach caregivers, when needed.

## Reducing the Spread of Germs at Schools

[Cleaning](#) and promoting hand hygiene are important [everyday actions](#) schools can take to slow the spread of COVID-19 and other infectious diseases and protect students and staff.

Cleaning with products containing soap or detergent reduces germs on surfaces and objects by removing contaminants and may also weaken or damage some of the virus particles, which decreases risk of infection from surfaces. Cleaning high touch surfaces and shared objects once a day is usually enough to sufficiently remove virus that may be on surfaces unless someone with confirmed or suspected COVID-19 has been in your school. For more information on cleaning and disinfecting schools, see [Cleaning and Disinfecting Your Facility](#).

Disinfecting (using disinfectants on [U.S. Environmental Protection Agency \(EPA\)'s List N](#) [🔗](#)) removes any remaining germs on surfaces, which further reduces any risk of spreading infection.

## Clean more frequently or clean AND disinfect surfaces and objects if certain conditions apply

- High transmission of COVID-19 in your community
- Low number of people wearing masks or improper mask usage
- Infrequent hand hygiene
- The space is occupied by people at [increased risk for severe illness from COVID-19](#)

## When Someone is Sick

If someone in your school is sick or someone who has COVID-19 has been in your school in the last 24 hours, [clean and disinfect your facility](#). For more information on cleaning and disinfecting safely, see [Cleaning and Disinfecting Your Facility](#).

## Use Disinfectants Safely

**Always read and follow the directions** on how to use and store cleaning and disinfecting products. Disinfection products should not be used by children or near children. [Ventilate](#) the space when using these products to prevent children from inhaling toxic vapor.

Consider ventilation system upgrades or improvements and other steps to increase the delivery of clean air and dilute potential contaminants in the building. [Learn More](#).

Always follow standard practices and appropriate regulations specific to your school for minimum standards for cleaning and disinfection. For more information on cleaning various surfaces and other cleaning guidelines, see [Cleaning and Disinfecting Your Facility](#).




### Identify a designated point of contact

- Designate a staff person, such as the school nurse, to be responsible for responding to COVID-19 concerns. All school staff and families should know who this person is and how to contact them.
- Train the designated point of contact and/or other staff persons on contact tracing protocols and ensure they are able to conduct full-time contact tracing activities as needed.



### Recognize signs and symptoms

- Parents or caregivers should be strongly encouraged to monitor their children [for signs of infectious illness including COVID-19](#) every day.
- Students who have symptoms of any infectious illness or symptoms consistent with COVID-19 should not attend school in-person.

## Establish procedures to address students and staff who develop symptoms when arriving at school or during the school day

- School administrators and staff should work with parents and other stakeholders to develop action plans if students or staff develop illness prior to or during the school day. These plans should outline the person(s) responsible for ensuring that a location is available for student/staff to self-isolate if unable to go home right away.
- A communication plan should be developed to contact caregivers as well as appropriate health care staff, if required by local authorities; clear communication should be maintained among staff, students, caregivers, and other stakeholders.
- Prepare written templates for school to communicate clear and consistent messaging around educational continuity and protocols for quarantine and contact tracing with staff and families.
- Designate an isolation room/area with a separate bathroom that is separate from the nurse's room, when possible. If there is more than one person in the isolation room/area, ensure everyone is wearing masks and keep them 2 meters apart.
- Ensure that extra face masks are available for ill students and staff.
- Adaptable quick guides for [teachers](#) , [nurses](#) , and [caregivers](#)  are available if a student is showing signs of COVID-19 in the classroom. These guides can be adapted for staff as well.

## Support coping and resilience

- Provide mental health and well-being information to staff, students, and caregivers. Examples include [stress and coping resources](#), [positive parenting tips and tools](#) , [How Right Now](#) , and other support resources (e.g., community services, national support hotlines).
- Promote teachers, staff and students eating healthy, exercising, getting sleep, and finding time to unwind.
- Encourage teachers, staff and students to talk with people they trust about their concerns and how they are feeling.
- Normalize messages about fear and anxiety and promote self-care strategies for students and their families, teachers and other school staff.
- Share facts about COVID-19 regularly through trusted sources of information to counter the spread of misinformation and mitigate fear.

Last Updated Jan. 29, 2021

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