Considerations for school-related public health measures in the context of COVID-19

Annex to Considerations in adjusting public health and social measures in the context of COVID-19

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Introduction

Countries around the world are taking broad public health and social measures (PHSM), including closure of schools, to prevent the spread of the SARS-CoV-2 virus, which causes COVID-19.[1] This Annex examines considerations for school operations, including openings, closures and re-openings and the measures needed to minimize the risk to students and staff of COVID-19. This Annex applies to **educational settings for children under the age of 18 years** and outlines general principles and key recommendations that can be tailored not only to schools but to specific school-related contexts, such as extracurricular activities.

This Annex **replaces** a document published by the World Health Organization on 10 May 2020 entitled *Considerations for school-related public health measures in the context of COVID-19*.[2] This document was developed with input from the Technical Advisory Group (TAG) of Experts on Educational Institutions and COVID-19 and experts from WHO, UNICEF, and UNESCO, who jointly reviewed the latest evidence to develop this interim guidance, which considers equity, resource implications, and feasibility. The main changes introduced in this document are a risk-based approach for school operations in the context of COVID-19 based on the level and intensity of the transmission at administrative levels lower than the national level, age-appropriate considerations for both physical distancing and the use of masks in the school setting and comprehensive, multi-layered measures to prevent introduction and spread of SARS-COV-2 in educational setting.

This Annex is intended to help policy makers and educators with making decisions on running schools as safely as possible during the COVID-19 pandemic. At the forefront of all considerations and decisions should be the continuity of education for children for their overall well-being, health and safety. Nonetheless, all decisions will have implications for children, parents or caregivers, teachers and other staff and more broadly, their communities and societies.[3]

Readers may also wish to refer to WHO-issued guidance on adapting PHSM as the epidemiology of COVID-19 evolves, while managing the risk of resurgence of cases.[3]

General principles

The principles underlying the considerations for school-related public health measures to prevent and minimize SARS-CoV-2 transmission in school settings are as follows:

- Ensuring continuity of safe, adequate and appropriate educational and social learning and development of children
- Minimizing the risk of SARS-CoV-2 transmission within school and school-associated settings among children, teachers and other school staff
- Guarding against the potential for schools to act as amplifiers for transmission of SARS-COV-2 within communities
- Ensuring school-related PHSM are integrated into and support the wider measures implemented at the community level

Considerations in decisions on school operations

From a public health perspective, deciding to close or re-open schools should be guided by a risk-based approach, taking into consideration the epidemiology of COVID-19 at the local level, the capacity of educational institutions to adapt their system to operate safely; the impact of school closures on educational loss, equity, general health and wellbeing of children; and the range of other public health measures being implemented outside school. Decisions on full or partial closure or reopening should be taken at a local administrative level, based on the local level of transmission of SARS-CoV-2 and the local risk assessment, as well as how much the reopening of educational settings might increase transmission in the community. The shutting down educational facilities should only be considered when there are no other alternatives.

Based on the best available data, COVID-19 appears to have a limited direct burden on children's health, accounting for about 8.5% of reported cases globally, and very few deaths (see the box **Research on COVID-19 in children and in schools** on page 8). In contrast, school closures have clear negative impacts on child health, education and development, family income and the overall economy. National and local governments should consider prioritizing continuity of education by investing in comprehensive, multi-layered measures (see Table 2) to prevent introduction and further spread of SARS-CoV-2 in educational settings, while also limiting transmission in the wider community.

SARS-CoV-2 transmission

The intensity of SARS-CoV-2 transmission within a distinctive administrative and epidemiological unit (district or sub-districts) can be classified as follows:

- **No cases:** an area with no cases detected locally (no laboratory-confirmed cases locally in an area with comprehensive surveillance) [4]
- **Sporadic transmission:** An area experiencing one or more cases, imported or locally. In this situation, all schools will be open (or re-opened if good control of previously widespread transmission has been achieved through implementation of public health measures).
- **Clusters transmission:** An area experiencing cases clustered in time, limited geographic location and/or by common exposures. In this situation, most schools will remain open, implementing COVID-19 prevention and control measures. Authorities may consider closing schools as part of broader PHSM in the areas experiencing an expansion in the number of clusters that includes schools.
- **Community transmission:** An area experiencing larger outbreaks of local transmission defined through an assessment of factors including, but not limited to: large numbers of cases not able to be linked to transmission chains; large numbers of cases from sentinel lab surveillance and multiple unrelated clusters in several areas. Depending on the trends and intensity of the transmission, local authorities may consider a risk-based approach for the operation of school and other community-wide PHSM, including school closure, particularly in areas with increasing trends of COVID-19 cases, hospitalizations for COVID-19 and COVID-19 deaths; any schools remaining open should adhere strictly to COVID-19 guidelines[4] (see Table 1).

Table 1: Status of SARS-COV-2 transmission level and consideration for school operations.

Transmission level at district/sub-district level	**General considerations**
No cases	All schools open and implement COVID-19 prevention and control measures.
Sporadic cases	All schools open and implement COVID-19 prevention and control measures.
Clusters transmission	Most schools open, and implement COVID-19 prevention and control measures. Authorities may consider closing schools as part of broader PHSM in the areas experiencing an expansion in the number of clusters that includes schools.
Community transmission	Risk-based approach for the operation of school and other community-wide PHSM with aim of ensuring the continuity of children's education. It is likely that broad PHSM including school closure will be in place in areas with increasing trends of COVID-19 cases, hospitalizations for COVID-19 and COVID-19 deaths; any schools remaining open should strictly adhere to COVID-19 guidelines.[4]

School readiness and capacity to implement and maintain COVID-19 prevention and control measures

National guidance on the prevention and control of COVID-19 in schools has been published by some countries and international organizations.[5,6] The recommended key measures to be taken to help ensure the safety of students and staff are summarized in Table 2. The capacity of schools to implement the outlined recommended measures should be considered in decisions regarding the operation of schools in all transmission scenarios.

Table 2: Comprehensive, multi-layered measures to prevent introduction and spread of SARS-COV-2 in educational settings. [1,5,7,8]

Community level	Recommended broader community level measures in communities where schools are reopening: [3] • Early detection of suspected cases, test suspect cases; identify and trace contacts; quarantine contacts • Investigation of clusters to implement and communicate localized measures to limit gatherings and reduce mobility • Physical distancing of at least 1 metre, hand and other personal hygiene practices and age-appropriate wearing of masks when physical distancing cannot be achieved[9] • Community-led initiatives for risk reduction (e.g. addressing incorrect and misleading information, rumours and stigma) and protection/shielding of vulnerable groups and safe public transportation, including organizing "walking buses" and safe cycling routes • Other PHSM, as appropriate.
School level	• Administrative policies: setting attendance and entry rules; cohorting (keeping students and teachers in small groups that do not mix, also referred to as bubble, capsule, circle, safe squad); staggering the start of school, breaks, bathroom, meal and end times; alternate physical presence (e.g. alternate days, alternate shifts) • Infrastructure: Reorganization of the physical space or its use, identifying entry/exists and marking direction of walking, handwashing facilities, building environmental design clues ("nudging") to facilitate appropriate use of space • Maintaining clean environment: frequent cleaning of surfaces and shared objects • Ensuring adequate and appropriate ventilation with priority for increasing fresh outdoor air by opening windows and doors, where feasible, as well as encouraging outdoor activities, as appropriate • The age-appropriate use of masks where physical distancing cannot be maintained; this includes ensuring the availability of masks • Symptom screening by parents and teachers, testing and isolation of suspected cases, as per national procedures; stay-at-home when sick policies • Reorganization of school transportation and arrival/departure times • Clear accessible sharing of information, and feedback mechanisms established with parents, students and teachers • Continuation of essential school-based services such as mental health and psychosocial support, school feeding and nutrition programmes, immunization and other services.
Classroom level	• Physical distancing where appropriate • Wearing of masks, where recommended • Frequent hand hygiene • Respiratory etiquette • Cleaning and disinfection • Adequate ventilation • Spacing of desks or grouping of children if required.
Individuals at high-risk	• Identification of students and teachers at high-risk of severe illness – those individuals with pre-existing medical conditions; develop appropriate strategies to keep these individuals safe • Adoption of a coordinated and integrated approach to ensure vulnerable children's holistic needs (protection, mental health and psychosocial support, rehabilitation, nutrition and other issues) • Maintenance of physical distancing and use of medical masks • Frequent hand hygiene and respiratory etiquette. .

COVID-19 prevention and control measures

Physical distancing

Physical distancing at school

Physical distancing measures can be applied to individuals (in and outside classrooms) and through administrative measures that aim to keep groups apart (cohorting, staggering, alternating distance learning with presence in school, where possible, etc.).

Individual physical distancing

Outside classrooms

- Maintain a distance of at least 1 metre for both students (all age-groups) and staff, where feasible.

Inside classrooms, the following age-appropriate measures may be considered based on local SARS-COV-2 transmission intensity.

- Community-transmission districts/sub-districts
  - Maintain a distance of at least 1 metre between all individuals (students of all age groups and staff) for any schools remaining open.
- Cluster-transmission districts/sub-districts
  - A risk-based approach should be applied to maintain distance of at least 1 metre between students. The benefits of adhering to physical distancing of at least 1 metre inside a classroom should be weighed against the social, emotional, developmental and mental health gains from interactions between children.
  - Teacher and support staff should keep at least 1 metre from each other and from students. When maintaining at least 1 metre distance is not practical or hampers support to students, teachers and support staff should wear a mask.
- Sporadic cases transmission districts/sub-districts
  - Children under the age of 12 years should not be required to keep physical distance at all times.
  - Where feasible, children aged 12 years and over should keep at least 1 metre apart from each other
  - Teacher and support staff should keep at least 1 metre apart from each other and from students. When keeping at least 1 metre distance is not practical or hampers support to students, teachers and support staff should wear a mask.
- No cases transmission districts/sub-districts
  - Children under the age of 12 years should not be required to keep physical distance at all times.
  - Where feasible, children aged 12 years and over should keep at least 1 metre apart from each other
  - Teacher and support staff should keep at least 1 metre apart from each other and from students. When keeping at least 1 metre distance is not practical or hampers support to students, teachers and support staff should wear a mask.

Physical distancing between groups

- Limit mixing of classes and of age groups for school and after-school activities.
- School districts with limited space or resources may consider alternative class modalities to limit contacts between different classes. For example, in the staggering modality, different classes start and end at different times.
- The high-school timetable can be modified, with some students and teachers attending in the morning, others in the afternoon, others in the evening. Schools can also minimize shared break times by alternating when and where classes take meals.
- Consider increasing the number of teachers or having recourse to volunteer support, if possible, to allow for fewer students per classroom (if space is available).
- Ensure crowd control during school or day-care drop off and pick up periods; clearly identify entry and exits, with marking direction for walking; consider restrictions for parents and care-givers entering school campus and premises.
- Create awareness that ensures students do not gather in large groups or in close proximity when in lines, when leaving the school and in their free time.

Use of masks in school settings

WHO and UNICEF recently issued *Advice on the use of masks for children in the community in the context of COVID-19*.[9] To operationalize this guidance for school settings, age categories should be aligned with the local educational structure.

In countries or areas where there is intense community transmission of SARS-CoV-2 and in settings where physical distancing cannot be achieved, WHO and UNICEF advise decision makers to apply the following criteria for use of masks in schools (either in classes, corridors or communal areas) when developing national policies:

- Children aged 5 years and under should not be required to wear masks.
- For children between six and 11 years of age, a risk-based approach should be applied to the decision to use a mask. This approach should take into consideration:
  - intensity of transmission in the area where the child is and updated data/available evidence on the risk of infection and transmission in this age group
  - social and cultural environment such as beliefs, customs, behaviour or social norms that influence the community and population's social interactions, especially with and among children
  - the child's capacity to comply with the appropriate use of masks and availability of appropriate adult supervision
  - potential impact of mask wearing on learning and psychosocial development
  - additional specific considerations and adaptations for specific settings such as sport activities or for children with disabilities or underlying diseases.
- Children and adolescents 12 years or older should follow the national mask guidelines for adults.
- Teacher and support staff may be required to wear masks when they cannot guarantee at least a 1-metre distance from others or there is widespread transmission in the area.
- All efforts should be made to ensure the use of a mask does not interfere with learning.
- Children should not be denied access to education because of mask wearing or the lack of a mask because of low resources or unavailability.

The use of masks by children and adolescents in schools should only be considered as one part of a comprehensive strategy to limit the spread of COVID-19. Schools should establish a system for waste management including disposal of used masks to reduce the risk of contaminated masks being disposed of in classrooms and playgrounds. [9]

Ventilation

Strategies for ensuring adequate ventilation in public buildings including classrooms are described in details in the *Operational considerations for COVID-19 management in the accommodation sector* and the recent WHO Q&A on ventilation and air conditioning in the context of COVID-19. [10,11] To summarize:

- Consider using natural ventilation (i.e., opening windows if possible and if it is safe to do so) to increase dilution of indoor air by outdoor air when environmental conditions and building requirements allow.
- Ensure adequate ventilation and increase total airflow supply to occupied spaces, if possible.
- If heating, ventilation and air conditioning (HVAC) systems are used, they should be regularly inspected, maintained and cleaned. Rigorous standards for installation and maintenance of ventilation systems are essential to ensure that they are effective and safe. The same applies to monitoring the condition of filters. If feasible, increase central air filtration to the highest level possible without significantly diminishing design airflow.
- For mechanical systems increase the total airflow supply and the percentage of outdoor air, such as by using economizer modes of HVAC operations (potentially as high as 100%). First verify compatibility with HVAC system capabilities for both temperature and humidity control as well as compatibility with outdoor/indoor air quality considerations.
- Disable demand-control ventilation (DCV) controls that reduce air supply based on temperature or occupancy.
- Consider running the HVAC system at maximum outside airflow for 2 hours before and after times when the building is occupied, in accordance with the manufacturer's recommendations.

Hygiene and daily practices at school

The hygiene and environmental cleaning measures to limit exposure include:

- Educate everyone in the school about prevention of COVID-19, including appropriate and frequent hand hygiene, respiratory etiquette, use of mask use, if recommended, symptoms of COVID-19 and what to do when one feel sick; offer

regular updates as the pandemic evolves; counter rumors and misleading information through messaging and communication.

- Create a schedule for frequent hand hygiene, especially for young children, specifically at school arrival and at certain key moments of the school routine, including before snacks and lunch and before school exit; provide sufficient soap and clean water or alcohol-based rub at school entrances and throughout the school and in classrooms where feasible; ensure physical distancing when students wait at hand hygiene/washing points using signage on the ground.
- Schedule regular cleaning of the school environment daily, including toilets, with water and soap/detergent and disinfectant;[1] clean and disinfect frequently touched surfaces such as door handles, desks, toys, supplies, light switches, doorframes, play equipment, teaching aids used by children and covers of shared books; elaborate checklists for schools' cleaners to ensure all daily hygiene tasks are accomplished and ensure provision of cleaning and protective supplies for cleaning staff such as personal protective equipment (PPE).
- Assess what can be done to limit risk of exposure, or direct physical contact, in physical education classes, sports, music or other physical activities and playgrounds, wet areas (shower/pool) and changing rooms, labs/computer labs, libraries, bathrooms and dining areas/cafeteria.
- Increase frequency of cleaning in the canteen, gym and sports facilities and changing rooms. Provide hand hygiene stations at entrances and exits, establish one-way circulation of athletes through the facilities and limit the number of persons allowed in the locker room at one time; display clear information as to the number of people allowed at the entrance of individual school facilities.
- Put in place respiratory and hand hygiene and physical distancing measures in transportation such as **school buses.** If possible, the bus windows should be kept open; provide information for students on safe commuting to and from school, including for those using public transportation.

Screening and management of sick students, teachers and other school staff

- Enforce the policy of "staying at home if unwell" for students, teachers or school staff with potential COVID-19 infection and connect them with local healthcare providers for assessment, testing and care. If possible, connect with local organizations to provide home care support and ensure communication between home and school.
- Create a checklist for parents/students /staff to decide whether they can go to school, with due consideration for the local epidemiology of COVID-19. The checklist should include:
  - underlying medical conditions and vulnerabilities, to protect the student/staff
  - recent illness or symptoms suggestive of COVID-19, to prevent spread to others
  - special circumstances in the home environment, to tailor support as needed.
- Waive the requirement for a doctor's note to excuse absences when there is community transmission of COVID-19.
- Consider daily screening for history of fever or feeling feverish in the previous 24 hours upon entry into the building for all staff, students and visitors to identify persons who are sick.
- Ensure students who have been in contact with a COVID-19 case stay home for 14 days. School officials should notify public health authorities in the event of a positive COVID-19 case among students or staff.

To respond to school-based cases, prompt isolation of cases and contact tracing and quarantine of contacts should be implemented while maintaining confidentiality.[12] This should also include:

- Decontamination of relevant areas of schools; contact tracing and risk assessment before considering class or school closures. Depending on the national policy, consider isolation of a classroom or a group within a classroom if contact has been limited to specific groups rather than moving school closure.

Communication with parents, students, teachers and school staff

Inclusive and early collaboration between the school and the community (including but not limited to community and religious leaders, teachers' union, community organizations, women's organizations and youth associations) is key to developing and implementing necessary measures. It will be important to maintain flexibility and modify approaches as needed and ensure learning and sharing of good practices.

- Ensure frequent communications and messaging on COVID-19 and school measures that will reassure parents, students, and teachers that schools are safe to attend once the mitigation measures have been undertaken. In addition, communication should be carried out to address and counter rumours and misleading information, as well as stigma among school staff, teachers, parents/caregivers and students,

- Consult with students, school staff and teachers about the measures the school is putting in place and their roles.
- Inform parents about the measures the school is putting in place and ask for cooperation to report any cases of COVID-19 that occur in the household. If someone in the household is suspected of having COVID-19, all children in the household should stay at home and keep schools informed.

Explain to the students the reason for school-related measures, including discussing the scientific considerations and highlighting the help they can get through schools (e.g. psychosocial support).

Additional school-related measures on re-opening a school that was closed

- Ensure that school-based and school-linked health services, health promotion, school feeding, care and support services are maintained where possible, while maintaining infection prevention and control:
  - Assess the impact of differential access to health information and education during school closures. Once schools reopen, design tailored catch-up strategies, especially for students with particular vulnerabilities.
  - Continue existing school health policies such as immunization. For school-based immunization programmes, ensure there is a plan for catch-up vaccination, if needed.
  - Reinstate and continue the provision of essential school health (including menstrual health management and related products) and school feeding/nutrition packages.
  - Intensify classroom-based socioemotional learning as schools reopen. Follow up with those who have dropped out of school to institute support mechanisms. Enhance opportunities for young people and their families to access mental health and psychosocial support services.
  - Be alert to the possibility that children or adolescents may have experienced violence or sexual violence during times of restricted mobility, and make provisions so that they can obtain support and care if needed.
- Boarding schools and other specialized institutions will need to extend all COVID-19 provisions to residential facilities, lecture halls, laboratories and other learning facilities.
- Water systems should be flushed and chlorinated to mitigate legionellosis risk following building reopening.

Remote learning

Where children cannot attend classes in person, support should be given to ensure students have continued access to educational materials and technologies (internet, texting radio, radio, or television). See the Framework for Reopening Schools for more details.[5]

Monitoring of school operations

As protective school measures are applied, it is important to conduct monitoring in close collaboration with schools and communities and establish surveillance programmes to carefully monitor the impact of schools reopening. With surveillance data the most appropriate measures to mitigate the risks and allow authorities/stakeholders to reassure parents, learners and teacher alike that schools are safe to attend. It will be important in these activities to maintain flexibility and modify approaches as needed and to ensure learning and sharing of good practices. The following effects and trends should be monitored:

- Effectiveness of symptoms-reporting, monitoring, rapid testing and tracing of suspected cases
- Effects of policies and measures on educational objectives and learning outcomes
- Effects of policies and measures on health and well-being of children, siblings, staff, parents and other family members
- Trend in school dropouts after lifting the restrictions
- The number of cases in children and staff in the school, and frequency of school-based outbreaks in the local administrative area and the country
- Assessment of impact of remote-teaching on learning outcomes and formative assessments

Check list for assessment of school readiness

Refer to the IASC Interim Guidance for COVID-19 Prevention and Control in Schools [6] and the School Reopening Framework[5] for an extensive review of this section.

Research on COVID-19 in children and in schools

Data from individual countries and several studies suggest that children under the age of 18 years represent about 8.5 % of reported cases, with relatively few deaths compared to other age-groups. [13–17] Infection in children generally causes mild disease, and serious illness due to COVID-19 is seen only infrequently. However, cases of critical illness have been reported.[18,19] As with adults, pre-existing medical conditions have been suggested as a risk factor for severe disease and ICU admission in children.[20,21]

The extent to which children contribute to transmission of SARS-CoV-2 remains incompletely understood. Young children seem to have lower susceptibility to infection compared to adults, with susceptibility generally increasing with age. [22,23] Children under the age of 10 seem to become infected less frequently than adults and adolescents, whereas the epidemiology among adolescents is more like that of young adults. Current evidence from contact tracing and cluster investigations also suggests that children are less likely than adults to be main transmitters of infection. [24,22,25,26,23] For example, a recent study from the Republic of Korea of both household and non-household contacts suggests that infected children under 10 years of age are less contagious than infected adults.[27]

Documented transmission among children and staff within educational settings is limited because so many countries closed schools and children have largely remained at home during intense periods of community transmission.[28–33] Studies in educational settings suggest that the introduction of the virus generally started with infected adults. Staff-to-staff transmission was more common than staff to student transmission, and student-to-student transmission was rare.[28,17,35] Overall, most evidence from countries that have reopened schools or never closed them, suggest that schools have not been associated with significant increases in community transmission.[35] Adherence to enhanced prevention measures and timely detection and isolation of cases and their contacts has so far been successful in preventing progression to larger outbreaks in most situations (as outlined in page 2). The exception of one country, where a major school outbreak emerged 10 days after school reopening, highlights the potential for spread within crowded high-school environments when limited precautionary measures (masks and physical distancing) are taken.[35,36] However, a clear causal role for schools in community resurgence has currently not been demonstrated.

Risk of an outbreak in schools and other settings where young people congregate is determined in large part by the background community transmission and settings-linked risk amplifiers.[28,36,37] An outbreak in Georgia, United States of America, has demonstrated that SARS-CoV-2 can spread efficiently in youth-centric overnight settings, resulting in high attack rates in all age groups (the median age was 12 years old). [38] Understanding the high-risk settings where SARS-CoV-2 spread easily will guide policy makers in prioritizing preventive and response PHMS. Analysis of data from Japan suggests a small proportion of cases (20%) spread the virus to many others, creating clusters.[38] Based on analysis of the shared characteristics of clusters, Japanese authorities developed a concept called the "Three Cs" to denote high-risk places and situations: *1) Closed spaces with poor ventilation; 2) Crowded spaces with many people; and 3) Close contact, such as from intimate conversations, loud cheering, singing, or exercise within a short distance from other persons*. [38] Mass public awareness was launched in Japan asking residents and visitors to avoid the Three Cs, and in some situations local jurisdictions have closed venues with environments related to them. The major COVID-19 outbreak in a high school that started 10 days after school reopening provides a cautionary tale that a "Three Cs" cluster can start in over-crowded school settings.[39]

Considering that most countries are only slowly lifting restrictions on activities and social gatherings, the longer-term effects of keeping schools open on community transmission are yet to be evaluated. This underscores the importance of rigorous implementation of preventive measures when SARS-CoV-2 is circulating in the community.

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WHO, UNESCO and UNICEF will continue to closely monitor emerging evidence about this topic and the situation for any changes that may affect this interim guidance. Should any factors change, WHO, UNESCO and UNICEF will issue a further update. Otherwise, this interim guidance document will expire two years after the date of publication.

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