

# Advice on the use of masks for children in the community in the context of COVID-19

## Annex to the Advice on the use of masks in the context of COVID-19

21 August 2020



### Purpose of the document

This document provides guidance to decision makers, public and child health professionals to inform policy on the use of masks for children in the context of the COVID-19 pandemic. It does not address the use of masks for adults working with children or parents/guardians or the use of masks for children in health-care settings. This interim guidance will be revised and updated as new evidence emerges.

### Background

The World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) advise the use of masks according to a risk-based approach, as part of a comprehensive package of public health interventions that can prevent and control the transmission of certain viral respiratory diseases, including COVID-19. Compliance with other measures including physical distancing, hand hygiene, respiratory etiquette and adequate ventilation in indoor settings is essential for reducing the spread of SARS-CoV-2, the virus that causes COVID-19.

This guidance provides specific considerations for the use of non-medical masks, also known as fabric masks, by children as a means for source control in the context of the current COVID-19 pandemic. The document is an annex to the WHO's Advice on the use of masks in the context of COVID-19<sup>1</sup> in which further details on fabric masks can be found. This annex also advises the use of medical masks for children under certain conditions. For the purposes of this guidance, children are defined as anyone below the age of 18 years<sup>2</sup>.

### Methodology for developing the guidance

The World Health Organization (WHO) Infection Prevention and Control (IPC) Guidance Development Group (GDG) and experts from UNICEF and the International Paediatric Association (IPA) jointly reviewed the available evidence to develop guidance on the use of masks for children in the context of the current pandemic. Five international expert meetings were held between June and August 2020. In the absence of strong scientific evidence, consensus among these groups forms the main basis for this guidance. Furthermore, the draft guidance was reviewed by a multidisciplinary group of additional external experts prior to finalization.

### Available evidence

#### *Transmission of COVID-19 in children*

Currently, the extent to which children contribute to transmission of SARS-CoV-2 is not completely understood. According to the WHO global surveillance database of laboratory-confirmed cases developed from case report forms provided to WHO by Member States<sup>3</sup> and other studies, 1-7% of COVID-19 cases are reported to be among children, with relatively few deaths compared to other age groups<sup>4-8</sup>. The European Centre for Disease Prevention and Control (ECDC) has recently reported the age distribution of COVID-19 among children in the European Union (EU), European Economic Area (EEA) and the United Kingdom (UK); they reported that as of 26 July 2020, 4% of all cases in the EU/EEA and the UK were among children<sup>6</sup>.

To date, the available evidence suggests that most reported cases among children have resulted from transmission within households, although this observation may have been influenced by school closures and other stay at home measures implemented by some countries<sup>7,9</sup>. Although culture-competent virus has been isolated from symptomatic children with viral load levels found to be similar to that in adults<sup>10</sup>, evidence from available studies of contacts of COVID-19 cases and cluster investigations suggests that children are unlikely to be the main drivers of COVID-19 transmission<sup>7,9 11-14</sup>. To date, documented transmission among children and staff within educational settings is limited<sup>15-20</sup>. Evidence is also limited regarding the prevalence of SARS-CoV-2 infection among children, as measured by seroepidemiology studies. However, available evidence suggests that seroprevalence appears to be lower for younger children compared to older children and adults<sup>17,21-25</sup>.

Studies of viral load and the duration of viral shedding of infectious virus in children compared to adults, are also limited. One published study suggests that viral load in infected patients may differ by age, and that symptomatic children have a longer duration of viral shedding than asymptomatic children<sup>25</sup>. Some studies have reported that children below five years are reported to have lower

amounts of viral RNA in respiratory secretions and faeces compared to school children, adolescents and adults<sup>26,27</sup>. However, one study from the United States of America found that children below five years with mild to moderate COVID-19 have higher amounts of viral RNA in their upper respiratory samples compared with older children and adults<sup>28</sup>, while a pre-print (non-peer-reviewed) study from Germany reported no differences in the amount of viral RNA among adults and children<sup>29</sup>.

In summary, the degree to which age alone, regardless of symptoms, affects viral load and transmission is not well understood.

### **Available evidence on the use of masks in children for COVID-19 and other respiratory diseases**

Evidence on the benefits and harms of children wearing masks to mitigate transmission of COVID-19 and other coronaviruses is limited. However, some studies have evaluated the effectiveness of mask use in children for influenza and other respiratory viruses<sup>30-34</sup>. A study of mask wearing during seasonal influenza outbreaks in Japan noted that the use of masks was more effective in higher school grades (9-12 year old children in grades 4-6) than lower grades (6-9 year old children, in grades 1-3)<sup>34</sup>. One study, conducted under laboratory conditions and using non-betacoronaviruses, suggested that children between five and 11 years old were significantly less protected by mask wearing compared to adults, possibly related to inferior fit of the mask<sup>35</sup>. Other studies found evidence of some protective effect for influenza for both source control<sup>30</sup> and protection in children<sup>34</sup>, although overall compliance with consistent mask wearing, especially among children under the age of 15, was poor.

Some studies, including studies conducted in the context of influenza and air pollution, found the use and acceptability of mask wearing to be highly variable among children, ranging from very low to acceptable levels and decreasing over time while wearing masks<sup>30,31,33,36-38</sup>. One study was carried out among primary school children during COVID-19 and reported 51.6% compliance.<sup>31</sup>

Several studies found that factors such as warmth, irritation, breathing difficulties, discomfort, distraction, low social acceptability and poor mask fit were reported by children when using masks<sup>30,33,36,37</sup>. So far, the effectiveness and impact of masks for children during play and physical activity have not been studied; however, a study in adults found that N95 respirator and surgical masks reduced cardiopulmonary capacity during heavy exertion<sup>39</sup>.

### *Main conclusions*

According to the limited available evidence, young children may have lower susceptibility to infection compared to adults<sup>11,14</sup>, however available data suggests that this may vary by age among children<sup>17, 21-25</sup>. Data from seroepidemiology studies and transmission studies suggest that older children (e.g. teenagers) may play a more active role in transmission than younger children.<sup>11,14,17, 21-25</sup>

The benefits of wearing masks in children for COVID-19 control should be weighed against potential harm associated with wearing masks, including feasibility and discomfort, as well as social and communication concerns. Factors to consider also include age groups, sociocultural and contextual considerations and availability of adult supervision and other resources to prevent transmission.

There is a need for data from high quality prospective studies in different settings on the role of children and adolescents in transmission of SARS-CoV-2<sup>40</sup>, on ways to improve acceptance and compliance of mask use and on the effectiveness of masks use in children. These studies must be prioritized and include prospective studies of transmission within educational settings and households stratified by age groups (ideally <2, 2-4, 5-11 and > 12 years) and with different prevalence and transmission patterns. Particular emphasis must be placed on studies in schools in low- and middle-income settings.

## **Advice to decision makers on the use of masks for children in the community**

### **Overarching guiding principles**

Given the limited evidence on the use of masks in children for COVID-19 or other respiratory diseases, including limited evidence about transmission of SARS-CoV-2 in children at specific ages, the formulation of policies by national authorities should be guided by the following overarching public health and social principles:

- Do no harm: the best interest, health and well-being of the child should be prioritized.
- The guidance should not negatively impact development and learning outcomes.
- The guidance should consider the feasibility of implementing recommendations in different social, cultural and geographic contexts, including settings with limited resources, humanitarian settings and among children with disabilities or specific health conditions.

### Advice on the use of masks in children

WHO and UNICEF advise decision makers to apply the following criteria for use of masks in children when developing national policies, in countries or areas where there is known or suspected community transmission<sup>a</sup> of SARS-CoV-2 and in settings where physical distancing cannot be achieved.

1. Based on the expert opinion gathered through online meetings and consultative processes, children aged up to five years should not wear masks for source control. This advice is motivated by a “do no harm” approach and considers:
  - childhood developmental milestones<sup>b 41</sup>
  - compliance challenges and
  - autonomy required to use a mask properly.

The experts (following the methods described above) recognized that the evidence supporting the choice of the age cut-off is limited (see above, section related to transmission of COVID-19 in children), and they reached this decision mainly by consensus. The rationale included consideration of the fact that by the age of five years, children usually achieve significant developmental milestones, including the manual dexterity and fine motor coordination movements needed to appropriately use a mask with minimal assistance.

In some countries, guidance and policies recommend a different and lower age cut-off for mask use<sup>42-45</sup>. It is recognized that children may reach developmental milestones at different ages and children five years of age and under may have the dexterity needed to manage a mask. Based on the do no harm approach, if the lower age cut-off of two or three years of age is to be used for recommending mask use for children, appropriate and consistent supervision, including direct line of sight supervision by a competent adult and compliance need to be ensured, especially if mask wearing is expected for an extended period of time. This is both to ensure correct use of the mask and to prevent any potential harm associated with mask wearing to the child.

Children with severe cognitive or respiratory impairments who have difficulties tolerating a mask should, under no circumstances, be required to wear masks.

Other IPC, public health and social measures should be prioritized to minimize the risk of SARS-CoV-2 transmission for children five years of age and under; specifically maintaining physical distance of at least 1 meter where feasible, educating children to perform frequent hand hygiene and limiting the size of school classes. It is also noted that there may be other specific considerations, such as the presence of vulnerable persons or other local medical and public health advice that should be considered when determining if children five years of age and under need to wear a mask.

2. For children between six and 11 years of age, a risk-based approach should be applied to the decision to use of 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; and
  - additional specific considerations and adaptations for specific settings such as households with elderly relatives, schools, during sport activities or for children with disabilities or with underlying diseases.
3. Advice on mask use in children and adolescents 12 years or older should follow the WHO guidance for mask use in adults<sup>1</sup> and/or the national mask guidelines for adults.

Even where national guidelines apply, additional specific considerations (see below) and adaptations for special settings such as schools, during sport, or for children with disabilities or with underlying diseases will need to be specified.

4. The use of a medical mask for immunocompromised children or for paediatric patients with cystic fibrosis or certain other diseases (e.g. cancer) is usually recommended but should be assessed in consultation with the child’s medical provider<sup>46,47</sup>.

---

<sup>a</sup> Defined by WHO as “experiencing larger outbreaks of local transmission defined through an assessment of factors including, but not limited to: large numbers of cases not linkable to transmission chains; large numbers of cases from sentinel surveillance; and/or multiple unrelated clusters in several areas of the country/territory/area” (<https://www.who.int/publications-detail/global-surveillance-for-covid-19-caused-by-human-infection-with-covid-19-virus-interim-guidance>)

<sup>b</sup> An example of considering childhood developmental milestones as defined by CDC are available here:

[https://www.cdc.gov/ncbddd/actearly/pdf/checklists/Checklists-with-Tips\\_Reader\\_508.pdf](https://www.cdc.gov/ncbddd/actearly/pdf/checklists/Checklists-with-Tips_Reader_508.pdf)  
[https://www.cdc.gov/ncbddd/actearly/pdf/checklists/Checklists-with-Tips\\_Reader\\_508.pdf](https://www.cdc.gov/ncbddd/actearly/pdf/checklists/Checklists-with-Tips_Reader_508.pdf)

For children of any age with developmental disorders, disabilities or other specific health conditions that might interfere with mask wearing, the use of masks should not be mandatory and should be assessed on a case by case basis by the child's educator and/or medical provider.

### **Implementation considerations**

Local epidemiology and contextual issues, such as intensity of transmission, ability to physically distance or implement appropriate ventilation measures in indoor settings, age mixing and contact with other vulnerable individuals should be considered when adopting advice for wearing masks among different age groups, in addition to potential harms and adverse effects of mask wearing.

Age-appropriate communication aimed at improving understanding of the purpose of mask wearing, safe and appropriate mask wearing and maintenance of masks, should be provided by parents/guardians, teachers, educators, and trusted community members through role-modelling. Materials, messages and mechanisms for communication on masks for children should remain flexible and adaptive and be systematically reviewed and updated based on changes in evidence and community needs and questions<sup>48,49</sup>. Children should also be listened to regarding their perceptions and any concerns about wearing a mask. Adapted communication should be available for different social, cultural and linguistic settings, with feedback mechanisms in place for responding to children's questions and expectations.

Specific education and communication messages should be developed to ensure that the use of masks does not result in a false sense of security or disregard for other public health measures by children. It is important to emphasize that the use of masks is one tool and that children should also adhere to physical distancing, hand hygiene and respiratory etiquette. Parents, family members, teachers and educators have a critical role in ensuring that these messages are consistently conveyed to children.

Strategies for assisting children, especially in younger age groups, to manage the wearing of masks safely and effectively should be included in the implementation of this advice. This may include processes for safe storage of used masks for reuse by the same child after eating or exercising, storing soiled masks (e.g. in dedicated bags or containers) before they can be laundered and storage and supply of additional clean masks if a child's mask becomes soiled, wet, or is lost.

Masks should be made accessible free of charge to children living in households or geographic areas with social vulnerabilities and limited resources to ensure equitable access for all children. Consideration should also be made for provision of masks for the journey to and from school.

The design of face masks for children should take into consideration the overall quality of the fabric, suitable breathability and comfort<sup>1</sup> and child-friendliness (appropriate size, colours, design, etc.) to help improve their acceptance of and use by children. Specific attention needs to be given to the care of masks and the need for masks to be changed when they get wet or soiled. Specific measures will need to be in place for children under 12 years who are in a situation where they are asked to wear masks.

The age cut-off for wearing a mask should be adapted to social or school settings to avoid stigmatizing and alienating children in mixed-aged groups where individuals may be on opposite sides of a recommended age cut-off. For example, in situations where older children for whom masks are advised are in the same class as younger children who fall below the age cut-off for wearing masks, the older learners might be exempt from wearing masks.

### **Specific additional considerations for children with disabilities**

Children with developmental disorders or disabilities may face additional barriers, limitations and risks and therefore should be given alternative options to mask wearing, such as face shields (see below). Policies on masks should be adapted for children with disabilities based on social, cultural and environmental considerations.

Some children with disabilities require close physical contact with therapists, educators or social workers. In this context, it is critical that all care providers adopt key IPC measures, including wearing masks, and that settings are adapted to strengthen IPC.

The wearing of masks by children with hearing loss or auditory problems may present learning barriers and further challenges, exacerbated by the need to adhere to the recommended physical distancing<sup>50</sup>. These children may miss learning opportunities because of the degraded speech signal stemming from mask wearing, the elimination of lipreading and speaker expressions and physical distancing. Adapted masks to allow lipreading (e.g. clear masks) or use of face shields (see below) may be explored as an alternative to fabric masks<sup>51</sup>.

### **Specific additional considerations for school settings**

To facilitate the operationalization of this guidance in school settings (as per national standards) it is advised that the age categories be adapted to the national/local education level structure.

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. The following guidance documents can be used to inform policy making and programming either for a comprehensive school safety strategy when re-opening or operations in the context of COVID-19:

- [WHO considerations for school-related public health measures in the context of COVID-19](#)
- [WB/WFP/UNESCO/UNICEF framework for school reopening](#)
- [WHO/UNICEF/IFRC Interim Guidance for COVID-19 Prevention and Control in Schools](#)

As part of the comprehensive school safety strategy for reopening, the views of teachers and educators on the perception of risks and the time burden required to ensure adherence to COVID-19 policies in schools and classrooms—including the use of masks by children—should be considered. Situations where wearing a mask can significantly interfere with the learning process and have a negative impact on critical school activities like physical education, meal programs, play time and sports – as well as learning – require special consideration.

If wearing of fabric masks is recommended in schools, specific instructions and supplies should be provided for the safe storage, handling and availability of fabric masks (see above). A sufficient supply of appropriate masks should be ensured for all school children. Basic water, sanitation and hygiene requirements should be met in the school building so that comprehensive IPC measures can be implemented, linked to specific age-appropriate educational activities.

If medical or disposable masks are used in specific situations, a system for waste management including disposal of used masks will need to be established to reduce the risk of contaminated masks being disposed of in classrooms and playgrounds.

No children should be denied access to education because of mask wearing or the lack of a mask because of low resources or unavailability.

## Alternative to fabric masks for children

### Face shields

Face shields are designed to be used<sup>52</sup> to provide protection from splashes of biological fluid (particularly respiratory secretions), chemical agents and debris<sup>53,54</sup> into the eyes. In the context of protection from SARS-CoV-2 transmission through respiratory droplets, they are used by health workers as personal protective equipment (PPE) for eye protection in combination with a medical mask or a respirator<sup>55,56</sup>. In the context of COVID-19 in community settings, some children may not be able to wear a mask for a variety of reasons (e.g. health issues, fear of mask), and thus, face shields may be considered as an alternative to masks as respiratory droplet protection or as source control, based on availability, improved feasibility and better tolerability<sup>57,58</sup>. Some countries, such as Australia<sup>59</sup> recommend face shields as an alternative to a mask. Other countries, such as Singapore<sup>60</sup> advise that both a mask and a shield can be worn together, but acknowledge that children with special needs may need to be exempt from wearing either.

WHO and UNICEF have reviewed the current available evidence on the use of face shields for respiratory droplet protection and/or source control in the context of the COVID-19 pandemic. While a face shield may confer partial protection<sup>52</sup> of the facial area against respiratory droplets with the added benefit of ease of use, the effectiveness of face shields for source control has not yet been adequately studied. Droplets may be exhaled or inhaled from the open gaps between the visor and the face<sup>52</sup>, which is a disadvantage inherent to its design<sup>53</sup>. Other design disadvantages include glaring, fogging, optical imperfection, and being bulkier than goggles and safety glasses<sup>61</sup>. There are many emerging face shield designs that attempt to overcome these limitations, but current laboratory testing standards only assess face shields for their ability to provide eye protection from chemical splashes<sup>61,62</sup>. Further research and laboratory challenge standards are urgently needed to investigate the effectiveness of face shields for respiratory droplet protection and/or source control<sup>56</sup>. At present, face shields are considered to provide a level of eye protection only and should not be considered as an equivalent to masks with respect to respiratory droplet protection and/or source control.

WHO and UNICEF will continue to monitor emerging information on the use of face shields for the prevention of respiratory virus transmission. WHO and UNICEF advise that when physical distance cannot be maintained, and in special situations where it is not practical to wear a mask (for example, among children with hearing loss or other disabilities or health conditions that limit compliance with wearing fabric or medical masks and consequently their utility), face shields may be used while taking the following considerations into account:

- The face shield is an incomplete physical barrier and does not provide the filtration layers of a mask.
- The face shield should cover the entire face, be wrapped around the sides of the face and extend to below the chin<sup>58</sup>.
- Reusable face shields must be properly cleaned (with soap or a detergent and water), disinfected (with 70-90% alcohol) and stored after each use<sup>44</sup>. Face shields that will withstand the use of disinfectants without damaging their optical properties should be selected.
- Maintaining physical distance of at least 1 m (3.3 feet) should be maintained where feasible, with ongoing promotion of frequent hand hygiene and respiratory etiquette<sup>56</sup>.
- Caution should be taken to avoid injury when children don, wear, and doff face shields.

## Monitoring and evaluation of the impact of the use of masks in children

If authorities decide to recommend mask-wearing for children, key information should be collected on a regular basis to accompany and monitor the intervention. Monitoring and evaluation should be established at the onset and should include indicators that measure the impact on the child's health, including mental health; reduction in transmission of SARS-CoV-2; motivators and barriers to mask wearing; and secondary impacts on a child's development learning, attendance in school, ability to express him/herself or access school; and impact on children with developmental delays, health conditions, disabilities or other vulnerabilities.

Data should be used to inform strategies on communication; training and support to teachers, educators, and parents; engagement activities for children; and distribution of materials that empower children to use masks appropriately.

Analysis should include sex, age, physical, social and economic stratification to ensure that the policy implementation contributes to reducing health and social inequities.

WHO 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 and UNICEF will issue a further update. Otherwise, this interim guidance document will expire six months after the date of publication.

## Acknowledgements

This document was developed in consultation with the following members of:

1. The WHO Health Emergencies Programme (WHE) Ad-hoc COVID-19 Guidance Development Group:  
Jameela Alsalman, Ministry of Health, Bahrain; Anucha Apisarnthanarak, Thammasat University Hospital, Thailand; Baba Aye, Public Services International, France; Roger Chou, Oregon Health Science University, USA; May Chu, Colorado School of Public Health, USA; John Conly, Alberta Health Services, Canada; Barry Cookson, University College London, United Kingdom (UK); Nizam Damani, Southern Health & Social Care Trust, UK; Dale Fisher, Goarn, Singapore; Tiouiri Benaissa Hanene, CHU La Rabta Tunisia; Joost Hopman, Radboud University Medical Center, The Netherlands; Mushtuq Husain, Institute of Epidemiology, Disease Control & Research, Bangladesh; Kushlani Jayatilleke, Sri Jayewardenapura General Hospital, Sri Lanka; Seto Wing Jong, School of Public Health, Hong Kong SAR, China; Souha Kanj, American University of Beirut Medical Center, Lebanon; Daniele Lantagne, Tufts University, USA; Fernanda Lessa, Centers for Disease Control and Prevention, USA; Anna Levin, University of São Paulo, Brazil; Yuguang Li, The University of Hong Kong, China; Ling Moi Lin, Sing Health, Singapore; Caline Mattar, World Health Professions Alliance, USA; MaryLouise McLaws, University of New South Wales, Australia; Geeta Mehta, Journal of Patient Safety and Infection Control, India; Shaheen Mehtar, Infection Control Africa Network, South Africa; Ziad Memish, Ministry of Health, Saudi Arabia; Babacar Ndoeye, Infection Control Africa Network, Senegal; Fernando Otaiza, Ministry of Health, Chile; Diamantis Plachouras, European Centre for Disease Prevention and Control, Sweden; Maria Clara Padoveze, School of Nursing, University of São Paulo, Brazil; Mathias Pletz, Jena University, Germany; Marina Salvadori, Public Health Agency of Canada, Canada; Ingrid Schoeman, TB Proof, South Africa; Mitchell Schwaber, Ministry of Health, Israel; Nandini Shetty, Public Health England, United Kingdom; Mark Sobsey, University of North Carolina, USA; Paul Ananth Tambyah, National University Hospital, Singapore; Andreas Voss, Canisus-Wilhelmina Ziekenhuis, The Netherlands; Walter Zingg, University of Geneva Hospitals, Switzerland.

预览已结束，完整报告链接和二维码如下：

[https://www.yunbaogao.cn/report/index/report?reportId=5\\_24430](https://www.yunbaogao.cn/report/index/report?reportId=5_24430)

