IFRC guidance on the generalised use of cloth face masks during the COVID-19 pandemic

Background

The use of medical masks[1], respirators[2] and other face coverings is a widely discussed intervention in the response to COVID-19. There is no strong evidence either in favour of or against the widescale use of masks by members of the general public. WHO's recommendation is that medical personal protective equipment (PPE) such as medical masks and respirators should be reserved for two categories of people: 1) people involved in the care of suspected and confirmed COVID-19 cases, and 2) people who are suspected of or confirmed to have COVID-19.

Current evidence supports droplet and contact transmission of COVID-19 in standard settings, whereas in health facilities, the virus can be aerosolised during certain procedures, e.g. intubation and ventilation, therefore presenting a higher risk of transmission. Respirators are needed for high-risk healthcare activities (i.e. aerosol-generating procedures), and medical masks are required as a general precaution in healthcare settings where COVID-19 cases may be present. Healthcare workers and other frontline workers are also at heightened risk for illness and death from COVID-19 due to their repeated exposure to infectious patients. From the health worker perspective, lack of PPE can lead to anxiety and fear of seeing sick patients, and may lead to attrition of staff, which has been seen in some countries. Additionally, without the availability of respirators, health workers may face a dilemma when faced with patients whose treatment would require aerosol generating procedures, potentially increasing fatalities.

If many health workers fall ill due to exposure to the virus that causes COVID-19, it can reduce the capacity of the health system to care for both COVID-19 patients and to deliver other essential services like routine vaccination, maternal and child health, or treatment of other conditions. Other outbreaks with disproportionate impact on healthcare workers, such as Ebola, have shown the long-term health systems impacts that result from the death of frontline workers, with reduced access to care for the most vulnerable populations both during the pandemic and after it ends. Lack of appropriate protection for frontline workers therefore has significant humanitarian impacts for frontline workers, for outbreak response, and for longer-term population health.

There are significant global supply challenges for PPE, including medical masks and respirators. The use of medical PPE by people who are neither carers nor patients decreases the availability of this critical equipment for frontline workers.

Despite the lack of evidence for the use of medical masks by the general public, some governments are recommending or requiring the use of masks for activities in public spaces. This can be expected to increase demand on these critical medical PPE, which may endanger frontline workers with limited access to the equipment they need. It also increases the risk for members of the public who may purchase a low-quality mask due to fear of not doing the right thing. **The incorrect use of medical masks or the use of substandard masks may also increase the risk to individuals, who may experience a false sense of security and reduce other behaviours that reduce risk.**

Some governments have asked National Societies to support the production of cloth masks in countries where their use in public is mandated. It is critical that this production results in a supply of masks that are likely to reduce transmission, not increase it.

[1] Medical masks and surgical masks are the same thing, for the purpose of this guidance. Both refer to face masks intended for use in clinical settings.
[2] E.g. N95 or FFP2 respirators

Evidence base

WHO recommendations for COVID-19

- WHO recommends the use of medical masks and respirators for healthcare and deathcare workers (clinical, ambulance, pharmacy, homecare, community health workers, forensic/burial, and cleaners in these settings) and for people who are ill with respiratory symptoms
- This guidance is based on a continuous assessment of evidence and risk by a team of infection prevention and control (IPC) experts.
- The use of masks is discussed as one prevention method that may limit the spread of respiratory diseases, but must be used in conjunction with other public health measures including handwashing and social distancing. Medical masks and respirators should be reserved for healthcare workers and caregivers.[i]
- WHO does not provide any guidance for or against the use of cloth masks for people who don't require medical PPE.
- WHO reviewed its mask guidance April 6 2020 and maintains the above recommendations.

Medical masks

- Evidence for the use of medical masks in clinical settings is high. A Cochrane review of evidence from the SARS outbreak—the most analogous outbreak to COVID-19—demonstrates the importance of barriers and protection for healthcare workers, including medical masks, gloves and goggles.
- There is less evidence for use of masks by the general public, and where evidence exists, it is not possible to separate the effects of the use of medical masks from the effects of handwashing, physical distancing, and other public health measures that were taken jointly.

Cloth face masks

- A cluster randomised trial of cloth masks compared with medical masks in healthcare workers found a higher rate of infection with respiratory virus in the group wearing cloth masks. As the control included both people who wore medical masks and those who wore no masks, it is not possible to say whether cloth masks actually increased infection or merely failed to significantly decrease it within a clinical setting.[3] There have been no large-scale studies on the impact of wearing cloth masks within the general population.
- Several elements of cloth masks may increase risk to the wearer, including:
    - Physical properties inherent to the cloth mask
    - Reuse and frequency/effectiveness of cleaning
    - Virus may survive on the surface of the facemasks [ii,iii]
    - Self-contamination due to repeated use and improper removal of the mask
    - Cloth masks may be uncomfortable or unergonomic, resulting in increased face touching or manipulation of the mask
    - Filtration can be extremely poor (almost 0%)[iv]
    - Poorly made or poorly fitted masks (i.e not snug across nose, cheeks and under chin) may give a false sense of security decreasing attention to proven measures of distancing and hand hygiene and in fact increase the risk of transmission
    - Cloth masks may increase the risk of infection because of moisture, liquid diffusion and pathogen retention.[v] These were identified as risk factors for infection related to double-masking during the SARS outbreak, and similar effects can be foreseen with cloth masks.
- There may be particular increased risk with cloth masks that are not washed frequently enough or dried well enough.
- There is currently no statistically significant evidence for or against the use of cloth masks by members of the public. It is possible that cloth masks may reduce—but not eliminate—production of

[3] Per the BMJ study, the rate of clinical respiratory illness was highest in the cloth mask group, followed by the control group (which included both people wearing medical mask and no masks), and lowest in the medical mask group. Influenza-like illness was significantly higher among healthcare workers (HCWs) in the cloth masks group, compared with both the medical masks group and the control group. It is also unknown whether the rates of infection observed in the cloth mask group are the same or higher than in HCWs who do not wear any mask, as almost all participants in the control group used a mask.

droplets by ill people coughing or sneezing, reducing the risk of infection to others by creating a projectile barrier. There is no evidence that the use of cloth face coverings can reduce the risk of infection for members of the general public.

- Any use of cloth face coverings must be accompanied by strict hand hygiene, continued self-isolation for anyone with respiratory symptoms, and physical distancing wherever possible.

An approach to reduce harm and increase potential public health impact of mandatory mask use and cloth face masks

The IFRC continues to follow WHO guidance about the use of medical masks and respirators for healthcare workers and patients, and advocates for evidence-based interventions to end and mitigate public health emergencies.

Where authorities or culture mandate the use of face masks, approaches advocating the use of cloth masks must both seek to prevent harm from inadequate masks and help to maintain the stock of medical PPE for the appropriate users. In epidemic or pandemic period such as Covid-19, wearing a cloth mask that covers the mouth, nose and chin may contribute to reducing the spread of the virus from infected individuals and therefore may protect others from getting infected. Any person who is in contact with an infected person, with or without visible symptoms, may be exposed to respiratory droplets containing viral particles. Use of cloth face masks may reduce the amount of virus-containing droplets produced by an infected person, thereby decreasing risk of transmission to others. There is no evidence that cloth masks reduce the risk for individuals exposed to infected respiratory droplets.

The largest impact of a cloth mask policy is expected to come from replacing the generalised use of medical equipment with the use of cloth face masks in a way that does not cause harm. It is important to re-emphasise the adjunct public health measures that have shown to reduce spread of the virus such as hand hygiene and physical distancing (where possible).

This approach to cloth masks has three goals:

1) Reduce the negative impact of widespread use of medical masks on the availability of PPE for frontline health workers, by replacing medical equipment with reusable cloth face masks for members of the general public for whom WHO guidance does not recommend the use of medical masks;
2) Facilitate the correct use of reusable cloth masks meeting minimum standards, where opportunities for social distancing, respiratory etiquette, and handwashing are limited; this may limit infected people's ability to project respiratory droplets infected with the virus onto surfaces or people who have not been exposed;
3) The correct use of cloth masks may help to reduce face touching, which could help to reduce individual risk.

In order to maintain a harm-reduction approach, the following support will be provided:

1) Minimum supported standards, the higher of the ICRC/IFRC standard (below) or minimum standards as provided by MOH should be used.
2) Community engagement approaches should be used to understand people's perceptions and beliefs regarding face coverings with cloth or medical masks , in order to adapt information and guidance provided accordingly, along with informing risk communication and community engagement approaches towards promoting healthy and safe behaviours in relation to their use:
3) These should address:
    a. the need to maintain a high level of hand hygiene, physical distancing, etc. as the *primary* means of reducing transmission;
    b. maintenance measures for cloth face coverings;
    c. correct fit, wearing and removal of the cloth face mask;
    d. the need to maintain the stock of medical masks for frontline workers;
    e. the unknown protective nature of cloth face coverings;
4) Continued monitoring for evidence of harm and ways to mitigate it.

Guidelines for the use of reusable cloth masks for the general public

Individuals **without** respiratory symptoms living in areas with active transmission where the use of a cloth mask has been advised should:

- Avoid as much as possible groups of people (e.g. gatherings, shopping, crowds, public transportation);
- Implement social distancing of at least 1-2 metres from others when outside of their own households;
- Stop shaking hands, social kissing and hugging, including at funerals
- Wash hands frequently, using soap and water or an alcohol-based hand rub
- Refrain from touching mouth, nose or eyes
- Follow instructions below to wear, remove, wash and dispose of the cloth face mask

Individuals **with** respiratory symptoms, in addition to the above measures, are advised to wear a medical/surgical mask, according to WHO standards and follow advice from local authorities.

How to use a reusable cloth face mask:

- After washing hands, place a clean and dry mask carefully on the face, ensuring it covers the mouth, nose and chin. Tie it securely to minimize any gap between the skin and the mask.
- Avoid touching the mask while wearing it.
- To remove the mask, do not touch the front part of the mask but untie it from behind.
- Before and after removal or whenever touching the mask, wash hands with soap and water or an alcohol-based hand rub.
- Replace the mask with a clean dry mask as soon as it becomes damp, or at least once a day, or more often for prolonged use.
- Use a dedicated storage bag to keep your used mask (see specifications).
- Wash and then dispose of damaged masks immediately.
- As early as possible after the mask is removed, wash the mask and the protective bag with hot water and soap and dry it completely before using it again.
- Do not discard or leave the mask out without washing it or closing it into a protective bag.
- Wash masks in hot soapy water (at least 60 degrees Celsius)
- Dry cloth masks in the sun or in a dryer until they are completely dry. Damp masks may increase the risk of infection.
- Expected lifespan of a reusable cloth mask is two months with daily washing.
- If planning to provide masks, count at least 3 masks per persons per day.

Reusable cloth mask specifications

This type of facial mask is not suitable for medical personnel at work. Medical personnel should use specific Respiratory Protective Mask instead. The specifications here below are meant for local manufacturers, tailor shops, and for homemade masks. ICRC and IFRC are grateful to AFNOR, IFTH, DGA, and Apave for their valuable contributions to these specifications.

Standard	The mask should meet the EN14683+AC type I specification, tested according to simplified test procedure as per AFNOR S76-001 published on 2020-03-27.
Material	Cloth, woven, fine and tight weaves, soft touch, 100% cotton (not knitted, not felted, not coated nor waxed), yarn count: minimum 50 to maximum 60 threads/cm²
Grammage	115 g/m² +/- 10% for each layer For home-made masks, one can use bedsheet, kikoi, pagne, kitengé, sarong, and most of the soft cotton cloths used for shirts, dresses etc; do not use cloth where holes are visible between the yarns, use only fine and tight cloth.
Make	Stitched only on the edges. No stitching in front of mouth and nose. The type of hemming and of stitching yarn should reduce the risk of skin irritation. All seams to be knot lock.
Number of layers	2 layers
Shape	Flat rectangular mask, with 5 cm pleat
Dimension for tailor shops and industries	Finished dimensions 21 cm width x 11 cm height, pleated with two opposite pleats of 2,5 cm each. Cutting dimensions to be calculated by the maker according to good practice.
Dimension for home-made masks, or for special sizes (e.g. children)	Take the face dimension of the user: Vertical unfolded dimension: distance from the bridge of the nose along the nose and over the chin to the back of the chin (plus hemming as per practice) Horizontal dimension: 2/3 of the distance from one ear centre to the other ear centre passing over the chin (plus hemming as per practice)
Colour	Other than plain blue and plain green, to avoid confusion with medical masks. Use two different colours to differentiate the inside and the outside of the mask. Use preferably a white colour cloth for the inside layer.
Ties	Soft touch elastic ties behind the ears or behind the head, or When no elastic ties are available, ties can be made of the same cloth as the mask (pieces of 90cm x 3cm hemmed and folded once) No staples for fixing the ties, only stitched Ties must withstand a traction of 5kg each.
Durability	Able to withstand regular washing at 60°C without any damage. Expected lifespan is two months with daily washing.
Contaminants	Wash and dry the masks before packing and delivery.
Packing	According to purchase contract. On request, masks will be packed in a durable plastic bag that can be used as a protective container for used masks.

WASH HANDS with WATER and SOAP
- BEFORE putting on mask
- After REMOVING mask
- If mask is TOUCHED while worn

PLACE CLEAN DRY MASK CAREFULLY OVER MOUTH, NOSE AND CHIN
Tie securely in place to avoid gaps
TO REMOVE, untie FROM BEHIND

NOT INTENDED FOR MEDICAL STAFF AT PLACE OF WORK

DO NOT TOUCH MOUTH AND NOSE
DO NOT TOUCH MASK WHILE WEARING

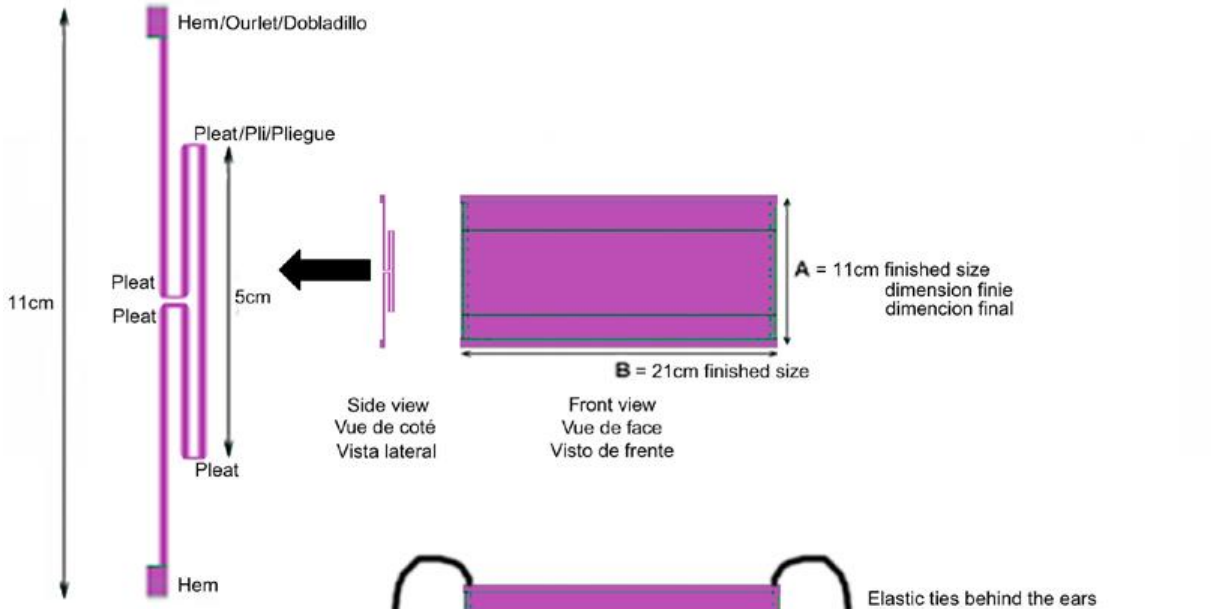
DO NOT PUT MASK ON FOREHEAD OR UNDER THE CHIN WHILE IN USE OR AFTER USE

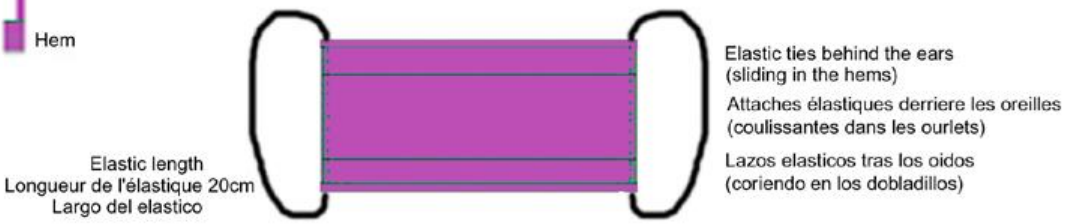
REPLACE MASK if DAMP, or at least ONCE A DAY
Or more often for prolonged use

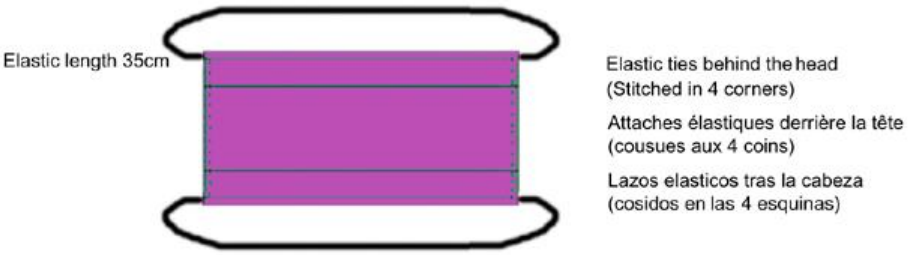
WASH DAILY with HOT WATER AND SOAP

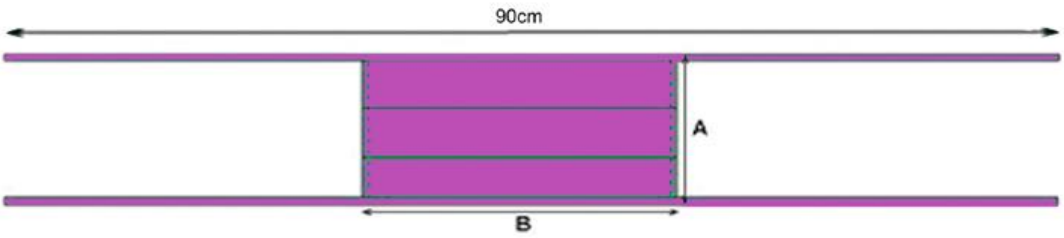
DISPOSE OF DAMAGED MASK IMMEDIATELY
DO NOT DISCARD WITHOUT PRIOR WASHING
Or CLOSING in PLASTIC BAG

ALWAYS CONSULT AND APPLY HEALTH AUTHORITIES RECOMMENDATIONS









Cloth ties to attach behind the head
(Stitched on all length upper and lower sides)

Attaches en tissu derrière la tête
(cousues sur toute la longueur haute et basse)

Lazos de tela atados detras de la cabeza
(cosidos en todo lo ancho arriba y abajo)

Examples of homemade masks:

[i] WHO. Advice on the use of face masks in the context of COVID-19 interim guidance. 6 April 2020.
[ii] Osterholm MT, Moore KA, Kelley NS, et al. Transmission of Ebola viruses: what we know and what we do not know. mBio 2015;6: e00137–15.
[iii] Fisher EM, Noti JD, Lindsley WG, et al. Validation and application of models to predict facemask influenza contamination in healthcare settings. Risk Anal 2014;34:1423–34.
[iv] https://bmjopen.bmj.com/content/5/4/e006577
[v] Li Y, Wong T, Chung J, et al. In vivo protective performance of N95 respirator and surgical facemask. Am J Ind Med 2006;49:1056–65.