COVID-19: Guidance on the Use of Masks

April 2020
Scientific and health organisations make different recommendations on the efficacy of face masks in the fight against Covid-19

- We now know from recent studies that a significant portion of individuals with coronavirus lack symptoms and that even those who eventually develop symptoms can transmit the virus to others before showing symptoms. This means that the virus can spread between people interacting in close proximity.
- CDC recommends wearing cloth face coverings in public settings where other social distancing measures are difficult to maintain (e.g. grocery stores and pharmacies), especially in areas of significant community-based transmission.

The big mistake in the U.S. and Europe, in my opinion, is that people aren’t wearing masks. This virus is transmitted by droplets and close contact. Droplets play a very important role – you’ve got to wear a mask, because when you speak, there are always droplets coming out of your mouth. Many people have asymptomatic or pre-symptomatic infections. If they are wearing face masks, it can prevent droplets that carry the virus from escaping and infecting others. —China’s CDC Director

- If you are healthy, you only need to wear a mask if you are taking care of a person with suspected 2019-nCoV infection.
- Wear a mask if you are coughing or sneezing.
- Masks are effective only when used in combination with frequent hand-cleaning with alcohol-based hand rub or soap and water.
Given the scientific uncertainty, governments have adopted different policies on the use of cloth masks by the public

<table>
<thead>
<tr>
<th>Not recommending masks</th>
<th>Changed policy to mask usage</th>
<th>Recommending masks</th>
<th>Mandating masks</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK</td>
<td>USA</td>
<td>South Korea</td>
<td>Morocco</td>
</tr>
<tr>
<td>Spain</td>
<td>Germany</td>
<td>China</td>
<td>USA*</td>
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<tr>
<td></td>
<td>Italy</td>
<td>Singapore</td>
<td>Kenya</td>
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<td></td>
<td>France</td>
<td>Thailand</td>
<td>Germany*</td>
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<tr>
<td></td>
<td></td>
<td>Japan</td>
<td>China*</td>
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</tbody>
</table>

Note: (*) Parts of the country are mandating the use of masks.

Trends in government policy

- There is a growing consensus that masks help prevent carriers from spreading the virus and that universal mask wearing brings a public health benefit. However, it is less clear if mask-wearing protects wearers from incoming germs.

- There is universal consensus (even among countries not promoting mask wearing in public) that N-95 masks and masks that comprise part of PPE kits must be reserved for frontline health workers. Some governments are regulating this.

- To prevent a shortage of masks for health workers, governments are promoting the fabrication and use of artisanal or home-made cloth masks.

- Italy, France, Germany and the USA changed policy. Having not initially recommended wearing masks, they are now advising people to wear face masks in public places.
Universal mask usage may be effective, but only in combination with other policy measures and protective measures taken by individuals.

### Government policy measures required alongside universal mask wearing
- **Universal mask wearing** among the public to reduce transmission.
- **Regulation of the availability of N-95 masks** to protect health workers.
- Forensic **contact tracing** conducted for all confirmed cases.
- Deploy available **testing capacity** and isolate those who test positive.
- Ensure smooth **access to markets and food** as well as water and sanitation.
- **Social mobilisation** that empowers communities is effective in the battle against Covid-19.

### Individuals should maintain the hygiene of masks, as well as other protective measures
- **Masks** must be kept clean or disposed of after use.
- **Hand-washing** with soap and water, or an alcohol-based hand rub.
- Maintain **social distancing**.
- Avoid touching eyes, nose and mouth.
- Support **social mobilisation** in the community to change behaviours, and recognise and act on symptoms.

Source: WHO; CDC; TBI
N-95s, face shields and surgical masks are critical supplies that must be reserved for frontline health workers, whereas the general public can use homemade cloth masks.

<table>
<thead>
<tr>
<th>Types of face masks and their properties</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<tr>
<td>N-95 masks</td>
</tr>
<tr>
<td>Use</td>
</tr>
<tr>
<td>Effectiveness</td>
</tr>
<tr>
<td>Cost</td>
</tr>
<tr>
<td>Availability</td>
</tr>
<tr>
<td>Washing and cleaning</td>
</tr>
<tr>
<td>Disposal</td>
</tr>
<tr>
<td>Should be used by:</td>
</tr>
</tbody>
</table>

Home-made cloth masks can reduce the spread of coronavirus by blocking outgoing germs, but there is more variation in terms of them protecting the wearer from incoming germs.

### Key principles of home-made mask production

Cloth face coverings should:
- Fit snugly but comfortably against the side of the face
- Be secured with ties or ear loops
- Include multiple layers of fabric
- Allow for breathing without restriction
- Be able to be laundered and dried without damage or change to shape
- Should not be placed on young children under age 2

Online guidance on how to make cloth face coverings:
- [Centers for Disease Control and Prevention, USA](https://www.cdc.gov)
- [Office of the Principal Scientific Advisor to the Government of India](https://www.india.gov.in)

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### Considerations in fabric selection

The choice of fabric affects a mask’s ability to filter out particles. Layering fabrics and inserting filters between layers increases their effectiveness. Woven or knit fabrics should not be used because the holes between stitches are bigger.

#### Fabric/filter effectiveness at filtering out particles

<table>
<thead>
<tr>
<th>Fabric/filter</th>
<th>% of &lt;0.3 microns filtered out</th>
</tr>
</thead>
<tbody>
<tr>
<td>HVAC filter</td>
<td>89-94%</td>
</tr>
<tr>
<td>Quilting fabric, 2 layer</td>
<td>70-79%</td>
</tr>
<tr>
<td>Furnace filter, 2 layer</td>
<td>75%</td>
</tr>
<tr>
<td>Pillow case, 600 thread count, 4 layer</td>
<td>60%</td>
</tr>
<tr>
<td>Pillow case, 600 thread count, 2 layer</td>
<td>22%</td>
</tr>
<tr>
<td>Coffee filters, 3 layer</td>
<td>40-50%</td>
</tr>
<tr>
<td>Wool scarf, 4 layer</td>
<td>49%</td>
</tr>
<tr>
<td>Wool scarf, 2 layer</td>
<td>21%</td>
</tr>
<tr>
<td>Cotton bandana, 4 layer</td>
<td>20%</td>
</tr>
<tr>
<td>Cotton bandana, 2 layer</td>
<td>18%</td>
</tr>
<tr>
<td>No face covering</td>
<td>0%</td>
</tr>
</tbody>
</table>

Source: [New York Times, What’s the Best Material for a Mask](https://www.nytimes.com) citing research from Missouri University and Wake Forest Health Academic Center
If adopting this policy measure, governments should work with the private sector to repurpose textile and garment* production to manufacture face masks for health workers and the public.

**Industrial manufacture should be prioritised for PPE**

1. Repurposing industrial manufacture
   - Most suitable for production of masks as Personal Protective Equipment (PPE) for frontline health workers.
   - Production lines can be quickly retooled to produce face masks.
   - Reduces job loses in the garment industry, enhances industrial capacity, and generates revenues for SMEs in the value chain.

2. Artisanal and home-made production
   - Governments can encourage civil society, community-based organisations and the public to make their own face masks.
   - Must be accompanied by an awareness-raising campaign and guidelines to inform home production.
   - Offers alternative livelihood for tailors and community groups.

**Role of government in repurposing**
- **Awareness**: Build awareness and guidelines to encourage companies and artisans to repurpose production lines.
- **Incentives**:
  - Waive taxes on profits of the masks produced.
  - Exempt the import of cotton and other inputs.
  - Provide government-owned storage and transportation for face masks.
  - Offer guaranteed purchase agreements.
- **Regulation**: Set mask quality standards and controls. AFNOR, ISO and CEN offer PPE manufacturing standards free of charge.**
- **Distribution**: Use government-owned distribution channels.

**Role of the private sector in repurposing**
- **Speed to market**: Expedite staff training and production line retooling to bring products to market rapidly (~1 week).
- **Quality of masks**: Acquire and produce quality fabric based on government advice to manufacture effective masks.
- **Selling at lowest profit**: Embody social responsibility and produce masks at the lowest possible price.

Source: TBI research
*In addition, plastics and 3D printing can be repurposed if producing face shields
**See annex
This process is already underway around the world, with many examples of government and private sector collaboration.

**Government policy measures from around the world**

- The **Chinese government** provided incentives including a **guarantee** to buy all masks produced.
- China repurposed **SOEs to manufacture PPE**. This increased face mask production from **20 million to 116 million masks per day**.
- In India, companies repurposed production to supply raw materials to the Chinese companies producing masks. Government lifted restrictions on exports of masks and raw materials.
- In Singapore, the government allowed textile companies to re-open their businesses from lockdown only if they were to produce face masks and other PPE.
- The **Kenya government** passed a law making it a **legal requirement to wear masks in public** or when travelling in a private or public vehicle.
- Government of **Zimbabwe** made available USD$1.3M in seed capital for technical universities to produce **PPE to meet local demand**. Chinhoyi University of Technology (CUT) produces **2,500-3,500 masks/day**.

**International companies have repurposed to produce masks**

- H&M started production of **N95/FFP2 face masks** for hospital staff in China. 100,000 planned to be produced by April 2.
- Inditex (owner of Zara SA) converted textile manufacturing capacity in Spain to produce masks.
- Gap and Eddie Bauer shifted production lines to manufacture face masks and gowns.
- Sports brands Nike and New Balance are producing face shields using components from existing products.
- Four garment manufacturers in Ethiopia – Everest, Shints, Almeda, and Calzedonia – installed capacity to produce and supply face masks with support from government.

Source: TBI research
Governments should plan the distribution of masks carefully, so as to safeguard stocks for frontline health workers

To safeguard stocks for frontline workers, government should reserve face masks and other PPE before distributing to the public. After setting aside reserves, governments have two distribution options:

1. **Private sector regulation:** Regulate the production and distribution of face masks and other PPE to ensure no shortages. This is manageable when government pre-selects a limited amount of private sector providers to distribute face masks and other PPE.

2. **Direct distribution:** Government can directly distribute face masks in two ways:
   
   i. **Mobile distribution:** Distribute face masks and other PPE by going door-to-door. Government can utilise health workers, the military and government administrative units to achieve this.
   
   ii. **Commodity points of distribution:** Establish central distribution points where the population can get their PPE.

China, USA, South Korea and Japan took measures that alter the way face masks and other PPEs are produced and distributed

- After setting aside masks for frontline workers, the Chinese government distributed four face masks per household in the city of Wuhan.
- South Korea has regulated 14 factories and devised a plan for how the masks would be sold to the public to prevent panic-buying and hoarding.
- Japan is supplying two face masks per household to avoid shortages of face masks for health workers.
- The US has enacted the defence military act that bans the export of face masks and other PPE to other countries. The act also forces the private sector to prioritise government orders when they manufacture PPE.

Key messages for public communications

- Wear cloth masks in public to prevent the spread of Covid-19.
- Do NOT use N-95 and surgical masks – these are for healthcare workers only.
- Provide guidelines for making masks at home to reduce burden on manufacturers.
- Hand-washing and social distancing are important and must be practiced as well.
- People have the virus without realising it. Therefore, everyone must wear a mask to reduce the number of virus droplets being circulated.
- How to use your cloth mask:
  - Ensure it covers your nose and mouth and fits snugly.
  - Do not lower when speaking, coughing or sneezing.
  - Do not touch your mask when you are wearing it.
  - Remove mask safely without touching the inside.
  - Wash hands immediately after removal.
  - Wash masks every day in warm soapy water and iron when dry if possible.
  - Get two masks, so you can wear one while the other is being washed.

Create a special awareness campaign using social media, websites and TV stations using graphical content.
- Show the materials as well as steps required to produce face masks at home and how to keep masks clean.
- Mandating mask usage will be more challenging in lower-income communities.

Source: Centers for Diseases Control and Prevention, USA; South Africa Department of Health – Everyone should wear a face mask: Masks4All
South Africa’s Department of Health social media campaign to promote the wearing of cloth face masks in public

The National Department of Health has recommended that South Africans should wear CLOTH face masks when in public to prevent the spread of COVID-19.

Why must I use a cloth face mask when going out in public?

The main benefit of everyone wearing a face mask is to reduce the amount of Coronavirus or Influenza virus droplets being coughed up by those with the infection. Since some persons with the Coronavirus may not have symptoms or may not know they have it, everyone should wear a face mask.

How to use a cloth face mask:

- The face mask must cover the nose and mouth completely.
- Face masks should not be lowered when speaking, coughing or sneezing.
- Face masks should not be repeatedly touched – fidgeting with the mask repeatedly is strongly discouraged.
- The inner side of the mask should not be touched by hands.
- Wash hands after removing the face mask.
- Wash cloth face masks with warm soapy water and iron when dry.
- Each person will need to have at least 2 face masks so that one face mask is available when the other is being washed.

Source: South Africa Department of Health – Everyone should wear a face mask
Further resources on international standards and guidelines in the production, quality control and regulation of face masks

<table>
<thead>
<tr>
<th>Face mask standards available for governments to adopt</th>
<th>All guidelines set minimum standards for the following requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>There are several international standards that determine minimum requirements, methods of testing, production and use of face masks. <strong>ISO, CEN and AFNOR</strong> lay out different metrics through the following standards:</td>
<td>1. Visual inspection</td>
</tr>
<tr>
<td><strong>ISO 22609:2004</strong>&lt;br&gt;Clothing for protection against infectious agents – medical face masks</td>
<td>2. Dimensions</td>
</tr>
<tr>
<td><strong>EN 14683:2019</strong>&lt;br&gt;Medical face masks – requirements and test methods</td>
<td>3. Packaging</td>
</tr>
<tr>
<td><strong>AFNOR SPEC S76-001</strong>&lt;br&gt;Barrier masks – guide to minimum requirements, methods of testing, making and use</td>
<td>4. Materials</td>
</tr>
<tr>
<td>5. Cleaning and drying</td>
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<tr>
<td>6. Surface condition of the parts</td>
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<tr>
<td>7. Penetration of the single-layer or multi-layer composite</td>
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<tr>
<td>8. Harmlessness as regards the skin and inhaled air</td>
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<tr>
<td>9. Head harness</td>
<td></td>
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<tr>
<td>10. Breathing resistance</td>
<td></td>
</tr>
</tbody>
</table>

Source: [ISO]; [CEN]; [AFNOR]