

# Masks: clearing the air?

Friday 24 July 2020

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[World Bank](#) photo

It is sometimes hard to imagine life before the COVID-19 pandemic. More than a year ago, we were driving across the beautifully lush South African province of KwaZulu-Natal to visit different health facilities. For our research project *Umoya Omuhle*, which translates to “good air” from isiZulu, we were interested in improving ways to prevent the bacteria that cause TB from being transmitted through the air at health facilities. At that time, conversations about infection prevention and control measures were not trending as they are today. However, the World Health Organization had already long-established recommendations for ways to prevent the transmission of TB in health facilities. One of which you will certainly have become familiar with: wearing a mask.

During the first three days we spent at each of the six primary health care facilities, it quickly became clear that wearing a surgical mask (for patients) or respirator (for health care workers) was the exception, not the rule. When asked, health care workers often became slightly embarrassed. They know that they are supposed to wear a respirator to protect themselves, but find them suffocating and unbearable to wear in hot temperatures (to which you may be able to relate to by now). There is also stigma among patients and staff towards surgical masks and respirators, particularly if they are only worn by one or a few patients and staff members. An added problem is that the effective use of respirators requires trying on different shapes and sizes through “fit-testing”, but none of the facilities we visited had the capability to do this.

If, at this time, you would have told us that a year later masks would become a familiar sight on the streets and even an appealing source of revenue to the retail industries, we would have been very surprised. To date, a quick Google search shows that the estimated global COVID-19 death toll has surpassed half a million over a 7-month period (though likely to be an underestimate). Strikingly, 1.5 million people died from TB in 2018, and this has been a roughly consistent yearly pattern of the past two decades. Could this pandemic be an opportunity for the return of the mask to prevent TB?

But how effective is mask-wearing for TB and COVID-19? The lack of evidence on the effectiveness of masks in filtering the air we breathe has previously limited the ability to implement strict rules around any type of mask wearing. This lack of clarity coupled with the uncomfortable and fidgety experience of wearing a respirator or mask in stuffy, overcrowded clinics has led to problems with mask-wearing. Let's discuss the current evidence on what we know, and what we don't know about mask-wearing for disease protection.

We know that TB bacteria and COVID-19 viruses can move through the air via variously sized droplets and particles. TB bacteria are known to spread in small droplets and can hang around and travel in the air, like specs of dust, after being coughed up. The disease spreads when another person breathes them in – this is known as airborne transmission. In contrast, the virus that causes COVID-19 is mostly carried in bigger, heavier droplets, which settle on surfaces and are then transferred from a person's hands to their mouth, nose, or eyes. However, recent evidence suggests that COVID-19 may be also spread via the airborne route, similar to TB.

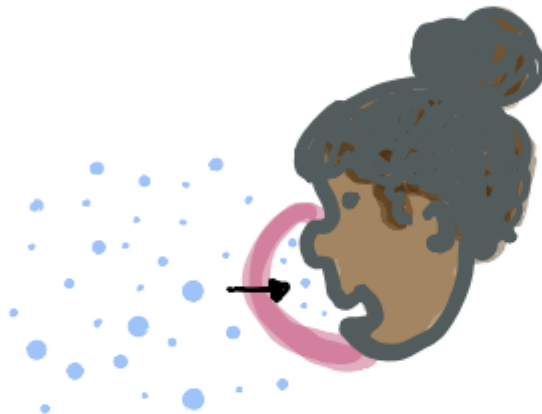
Different types of masks can effectively filter the air of most droplets and bigger particles by collecting them on the mask surface when breathing, talking, laughing, singing, coughing or sneezing. We know that respirators, known as N95 or FFP2/3 masks, protect the wearer from breathing in both large and small droplets containing viruses and bacteria. Although they cannot filter all the tiny particles, they are particularly helpful in high-risk healthcare settings. Surgical masks protect other people from the person wearing the mask coughing, sneezing or breathing out bigger droplets. These are therefore best used by patients and are known to halve the risk of spreading TB. Less is known about the effectiveness of fabric or paper masks, and although they work similarly to surgical masks, they are thought to be less protective. They can, however, provide some protection to others if the fabric or paper used is dense, layered and fits snugly onto the face of the wearer. These are therefore best used by the public, those who do not experience any symptoms but may unknowingly be infected and potentially infectious.

# MASKS

## Respirator

BEST USED BY:  
HEALTH WORKERS

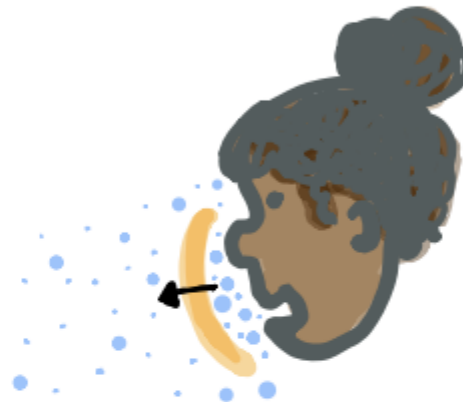
TO PROTECT:  
THEMSELVES



## surgical

BEST USED BY:  
PATIENTS

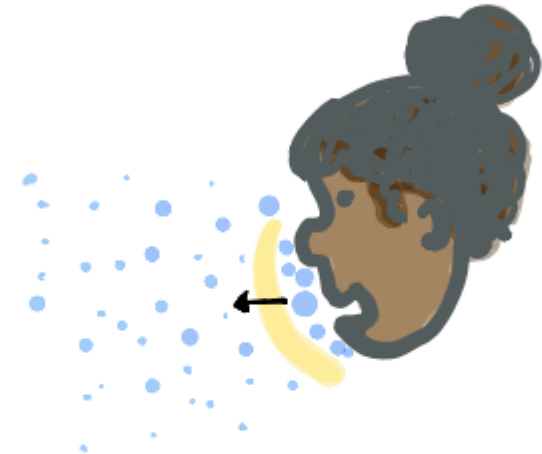
TO PROTECT:  
OTHERS



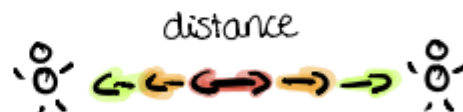
## fabric

BEST USED BY:  
THE PUBLIC

TO PROTECT:  
EACH OTHER



NEED TO BE COMBINED WITH:



time of exposure



In short, we know that none of these masks are 100% perfect in preventing COVID-19 and TB, but wearing something that covers your mouth and nose is likely to reduce the risk of you passing disease to other people. Because the particles and droplets collect on the mask surface, it is crucial to properly and regularly wash your hands to protect yourself, especially immediately before and after you use any type of mask. Physical distancing is another important measure, especially for COVID-19 prevention. Distancing reduces the opportunity to inhale potentially dangerous particles as there is more time for bigger particles to settle on the ground before reaching you. Opening the windows or being outside means that potentially infectious particles are quickly dispersed and are less likely to be inhaled. And, painfully, the less time you spend with others, the less you potentially expose yourself and others.

It is crucial that we continue the conversation on mask-wearing and 'clear the air' long after this pandemic. TB is already an existing threat to millions of lives and will continue to burden health systems of many low- and middle-income countries, such as South Africa. The COVID-19 pandemic response gives us an opportunity to establish stronger health systems and practices for sustainable TB prevention, and perhaps change embedded habits around infectious disease control. It's now time to listen and learn from this pandemic and do our best to protect those most vulnerable to infectious diseases.

*More information about [fabric masks](#).*

*Credit - [hand washing](#) cartoon.*