

## Fact Sheet: N95 Respirator/Masks

### What is an N95 respirator/mask and how does it work to prevent transmission of TB?

Masks placed in front of and around the mouth and nose can act as filters, to capture infectious particles and prevent them from being inhaled. In this way, infection with TB can be prevented. Masks in this context can be called 'particulate filter respirators.' Droplet nuclei that have potential to transmit TB infection are 1-5µm in diameter. Masks that are able to prevent TB infection must capture particles this size and larger.

N95 respirator/masks meet specifications required by the United States National Institute for Occupational Safety and Health (NIOSH) which include:

- Filter size of 1µm in size
- Filter efficiency = 95%
- Tight facial seal.

The letter 'N' in N95 refers to the fact that the mask/filter is 'Not resistant to oil'.

### How well do the N95 respirator/masks prevent TB infection?

No-one has been able to measure this! Some guidelines don't even recommend the use of these masks! But one thing is for certain – they will NOT work if:

- They are not properly fitted
- If the wearer has facial hair (beard) preventing a proper fit
- They are damaged or crushed
- They are saturated (reused until the filter capacity has been exceeded)
- They get wet (even if they dry again).

### Can I re-use N95 respirator/masks?

N95 respirator/masks are expensive. It is helpful to re-use them. New masks can be issued after 2 weeks of use. General guidelines to facilitate reuse include:

- Each staff member should re-use their own mask (it is helpful to write the staff member's name on the mask)
- Keep the mask dry and clean.
- Replace masks if they are damaged, or get wet
- Never use the mask 'inside out' or reversed.

### Who should use ordinary surgical masks?

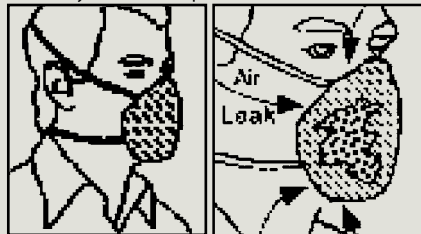
Surgical masks are very different from N95 respirator/masks. They have only 50% filter efficiency and lack a tight facial seal. Infectious patients should use ordinary surgical masks because these reduce the numbers of infectious particles in the air. Surgical masks are useful to catch larger respiratory droplets and prevent droplet nuclei from forming.

### Fitting an N95 respirator/mask

A mask will provide no protection if it is not properly fitted, as air will flow through 'gaps' between the mask and the wearer's skin. Fit-tests should be done when selecting the type of mask that your facility uses as variability in facial structure can mean that different types of masks fit better. Any facial hair, such as beards or long sideburns, may prevent the respirator from fitting properly. An informal way to test the fit of your mask is as follows:

- Fit the mask according to manufacturer's instructions.
- Once the mask is in place, inhale sharply. The mask should be drawn in towards your face, indicating that a negative pressure has been generated.
- If the mask does not draw in towards your face, or you feel leakage at the edges, adjust straps by pulling back along the sides and/or reposition respirator.
- Repeat until mask is sealed properly.

Figure 1. (A). N95 respirator/mask (B) Air leaks on an incorrectly fitted N95 respirator/mask.



### Who should use N95 respirator/masks, and when?

HCW (and visitors) should use N95 respirator/masks in specific high-risk areas only <sup>1</sup>. These could include

- Areas where administrative and environmental controls probably will not protect persons from inhaling infectious airborne droplet nuclei. This would include the clinic rooms where TB suspects are seen, hospital casualty facilities, MDR TB treatment facilities.
- When dealing with patients with suspected or confirmed infectious TB (i.e. pulmonary TB, not TB meningitis)
- When cough-inducing procedures are performed on patients with suspected or confirmed TB disease;
- XDR or MDR treatment points or facilities.

Masks are NOT a substitute for administrative and environmental controls. Masks will improve personal protection when administrative and environmental controls are functioning optimally.

### Which TB patients are most infectious?

TB suspects with the following symptoms or conditions are more likely to be infectious:

- Cough
- Cavitation on chest x-ray;
- Positive AFB sputum smear result;
- Respiratory tract disease with involvement of the lung or airways, including larynx;
- Failure to cover the mouth and nose when coughing;
- On TB treatment for less than 2 weeks.