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Kaitohutohu Mātanga Pūtaiao Matua ki te Pirimia

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Masks prevent the spread of COVID-19

Prepared under urgency – 12 August 2020

Introduction

The Ministry of Health (MoH) have announced that they recommend all households prepare for a possible further outbreak of COVID-19 by securing non-medical grade face masks for each household member.[1] In the event of a resurgence of COVID-19, face masks will be useful when people are still mingling with each other and physical distancing cannot be easily maintained, particularly in Alert levels 2 and 3.

This is in line with advice from both the WHO[2] and the United States Centers for Disease Prevention and Control (CDC).[3] The European Centre for Disease Prevention and Control (ECDC) also says that wearing of facemasks limits transmission of COVID-19 from asymptomatic or pre-symptomatic people.[4]

Wearing a non-medical grade mask may have a beneficial effect in preventing the wearer from catching COVID-19, but much more importantly, prevents the wearer from inadvertently passing on the virus to other people.

Masks

Masks fall into three major classes:

N95 (or equivalent) respirators – these are high grade (the N95 refers to certification that if worn correctly the masks will prevent the wearer breathing in 95% of airborne particles 0.3 microns or larger). These are intended for use in COVID-19 by health workers in situations where there is a high chance of infection. The MoH is not recommending that these be used by members of the public unless they are in a healthcare situation.

Surgical (medical grade) masks – these are disposable masks originally developed so that surgeons would not infect their patients while they are working on them. They are generally widely available online, and from pharmacies and convenience stores, although supplies can be limited if there is a rush.

Cloth masks – these include a range of different types of masks, available commercially largely from hardware, outdoor and clothing shops or made at home, that will contain the coughs

[1] Ministry of Health Website accessed 6 August 2020: https://www.health.govt.nz/our-work/diseases-and-conditions/covid-19-novel-coronavirus/covid-19-health-advice-general-public/covid-19-use-masks-community
[2] WHO website accessed 6 August 2020: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public/when-and-how-to-use-masks
[3] CDC Website accessed 7 August 2020: https://www.cdc.gov/media/releases/2020/p0714-americans-to-wear-masks.html
[4] ECDC Website accessed 8 August 2020: https://www.ecdc.europa.eu/sites/default/files/documents/COVID-19-use-face-masks-community.pdf

and sneezes of the wearers. In general, it is recommended that the mask should have three layers of cloth for best effect and should be washed regularly at 60 degrees Celsius.

The last two types of mask are principally intended to prevent a wearer with the virus passing it on to others, but they do provide some protection to the wearer from other people with the virus.

Inappropriate use of masks, particularly wearing a non-medical grade or ill-fitting mask in a high-risk situation,[5] wearing a contaminated mask, or being overconfident of the level of protection provided by a mask, can raise the wearer's risk of infection. Commercially made masks should have instructions for their use and there are instructions on both the WHO and CDC websites on how to wear different types of masks properly.

While some people may find wearing masks uncomfortable, there is no evidence that the appropriate use of masks causes any health issues. Heath workers and workers in areas where there are high dust levels routinely wear masks for the bulk of their working day without problems. For those with underlying respiratory conditions it may take longer to get used to mask wearing

Wearing masks slows transmission of COVID-19

Although mask wearing has become controversial – most likely for ideological reasons – there is now good evidence to support the wearing of non-medical grade masks to prevent spread of COVID-19 and other respiratory viruses in the community.

In a recent systematic review of studies of mask wearing and other protective measures for SARS, MERS and COVID-19, the authors found that mask wearing reduced transmission in both healthcare and community settings.[6] This supports an earlier systematic review of studies of the spread of other respiratory viruses.[7]

There is evidence for areas with early outbreaks of COVID-19 that mask wearing flattened the epidemiological curve.[8] A recent study (so far appearing as a preprint) of 200 countries has shown that mask wearing is independently associated with lower per capita mortality from COVID-19.[9]

Unfortunately, because of the serious nature of COVID-19, direct experiments with masks have not been carried out with SARS-CoV-2. There is good evidence from other diseases that masks reduce microorganisms expelled by coughing and sneezing. Surgical masks have been shown to give a 25-fold reduction in the number of influenza virus particles expelled by the wearer, nearly eliminating the virus expelled in large droplets and reducing particles from aerosols.[10] Homemade masks from various materials have also been shown to significantly reduce the microorganisms produced by coughs in healthy volunteers.[11] Masks lower the droplets expelled during normal speech.[12]

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