



OZSAGE

Community mask use

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Background

NSW came closer than most people realize to stopping the most recent covid outbreak. The effective reproduction rate, R , was initially over 5.0, but the mask mandate and lockdowns brought it right down to 1.3. If it was under 1.0, then the outbreak would halt. This indicates that additional measures such as masks are effective, and efforts to increase use of masks may help. Studies from [Victoria](#) and from [overseas](#) also show that community mask use is effective against SARS-CoV-2.

According to the [Doherty Institute modeling](#) (Table S4.2), lockdowns will still be required half the time even with 80% vaccinated, if contact tracing capacity is exceeded. In NSW, contact tracing became only partially effective at 100 cases/day. Therefore, lockdowns will still be needed with 80% vaccinations if transmission is not reduced prior to the target being reached. [Another model](#) has found that ending restrictions with 80% vaccinated could cause 25,000 Australian deaths.

Key current problems

In Victoria last year, a [basic mask mandate](#) substantially [reduced transmission](#) of covid and, together with lockdowns, led to elimination. However, with the delta variant, this is no longer enough. That is because the basic cloth and surgical masks which most Australians use, whilst [somewhat effective](#) at protecting others from an infected wearer (“source control”), are varied in quality and are not effective at adequately protecting the wearer.

The filtration effectiveness of cloth masks is [generally lower](#) than that of surgical masks, and surgical masks have [poor fit](#). Fit is as important as filtration because air moves down the path of least resistance. If a mask has gaps, unfiltered air will be inhaled by the wearer. We need ensure that consumers understand the importance of fit, to improve the effectiveness of mask use and reduce transmission.

The current mandates for masks apply to

- Indoors and outdoors in non-residential settings
- Only indoors in privately owned apartment common property.

It does not mandate masks indoors in public housing common property, boarding house shared spaces, residential college shared spaces, shared spaces in buildings with a single owner etc. It does not mandate masks on any outdoor common property which can include small courtyards, garden paths and it can also include tennis courts, parks etc in communities with thousands of residents. All of this space is private 'residential premises' but it is still a 'community setting'.

Recommendations

1. Increase the performance of masks for use in community settings.

One of the major problems with masks, as currently used, is that the poor seal of most masks on the face of the wearer allows virus particles to enter around the mask. This greatly [limits their effectiveness](#) in protecting the wearer from inhaling virus aerosols and in protecting others from virus aerosols exhaled by the wearer. The [CDC has found](#) that the fit of surgical masks can be dramatically improved by the use of two simple, and freely available, procedures. These techniques help to seal the side gap in surgical masks and have been shown to decrease virus exposure by **a factor of more than ten** compared to wearing a cloth or surgical mask alone:

- a. “[Double masking](#)” involves simply wearing a tight-fitting cloth mask over a surgical mask.
- b. [Knot and tuck](#) involves tying the sides of a surgical mask, and tucking the remainder inside the mask. This takes around a minute and can be done at home with no tools.
- c. A well designed cloth mask (see below) can perform as well as a good quality surgical mask.

2. Define community settings more comprehensively - community advice for residential premises should be "masks on any part of a residential premise that more than one household can access.

3. Use respirators in the community where possible. In contrast to masks, respirators, such as P2, N95, and KF94 respirators, are designed to provide protection for the wearer in addition to source control. Respirators have an adjustable nose bridge to contour to the wearer's face and other features that improve fit. There is evidence that [lay-people can wear respirators effectively](#). Products such as [KN94 respirators](#) can be purchased online, and do not have global shortages. A campaign is needed to show the general public how to wear respirators to improve their effectiveness and to reduce transmission. The campaign should also show communities what to look for in a high-quality respirator and what types are suitable.

Guidelines for respirators in the community do not need to be modeled on guidelines for healthcare workers. There are no recorded cases of consumers getting infected from handling a mask, so donning and doffing procedures are not a significant issue in practice. Although surgical masks and respirators are designed to be disposable, in practice it has been observed that they are intermittently reused in the community. While effectiveness may reduce over time, rules such as "replace every 4-hours" are less practical in a community setting.

4. If there is no other alternative, any mask is better than none. [Research shows](#) that a 3-layered surgical mask protects better than a two layered cloth mask, which in turn protects better than a single layered cloth mask. But even a single layer of cloth is [better than nothing](#). However, a high-performance home-made cloth mask can be made using the [design principles](#) of layers, fabric selection, fit and water resistance. We recommend referring to [guidance](#) on caring for and washing cloth masks.

5. Use masks in schools. [Scientists have found](#) that using better masks decreases viral transmission in a classroom setting. They showed that if all teachers and students wear masks with good fit and filtration, reducing transmission substantially. International experience shows that school children are able to wear masks. As an example, all children over two years of age in San Francisco are required to wear masks at school. We recommend that mask mandates be used in primary and high school for children and staff, noting the caveats in point 6 below.

6. Use of masks for children. Globally, there is a substantial burden of disease in [unvaccinated children](#). In Australia it may be some time before high vaccination coverage is achieved in children aged 12 years and over and younger children may or may not receive the vaccine in the future. As such, it is important to protect children from COVID-19. Masks are an important part of this protection. OzSAGE strongly recommends well-fitted face masks be worn in the community by all persons aged five years or older who are able to do so, along with 2- to 5-year-old children where developmentally appropriate, in line with [recommendations of the American Academy of Pediatrics](#). It is important to acknowledge that there are some people who [cannot wear a mask, or cannot safely wear a mask](#), due to reasons including disability. While masks with good fit for children are not widely available in Australia at present, investment in importing and locally manufacturing effective children's masks is paramount.

Supporting children to wear a mask helps them learn community responsibility, and reflects a desire, not only to help protect your child, but also help protect other children and adults. To support mask use, use behavioral techniques such as modeling and reinforcing desired behaviors to help students with adjusting to the transition of using masks at school. For younger children, there may be a need to use picture schedules or visual cues. Schools should provide masks to those students who need them, such as students who forgot to bring their mask or whose families are unable to afford them.

7. Government Investment. To ensure that adults and children can wear well-fitted masks, governments need to invest in the design, manufacture (or importation) and distribution of masks that are suitable for people of all ages to wear. They should be distributed free of charge. In [Singapore](#) this has occurred through philanthropy. Public-private partnerships could be explored in Australia.

Resources required for implementation

We need a strong communication and education program to ensure that all Australians know the basics of good masking, and understand that SARS-CoV-2 spreads through shared air, especially indoors. This should include what kinds of masks to wear, how to wear them and how to make a good DIY mask or [improve the performance of a mask](#).

We also need updated mask mandates that require masks that have no significant leak around the face and use a non-woven or nanofiber filter material (which is what provides good filtration), and are not fraudulently claiming adherence to standards. Specific options include: double-masking a tight-fitting cloth mask over a surgical mask, knot-and-tuck surgical masks, P2, N95, KF94, or FFP2 respirators, or three-layer masks as described in [WHO guidance](#).

Why people will care

With cloth masks or surgical masks alone, the message in 2020 was “my mask protects you, your mask protects me”. In other words, mask wearing was largely an altruistic act, since it provided little protection to the wearer. However, with the mask upgrades discussed here, people can actually do something significant to protect themselves and their families against the Delta variant. This is a message that will resonate with community.

We need to improve community awareness of mask effectiveness to decrease the reproduction number, R, leading to fewer and shorter lockdowns. That means that people can get back to work, and back to their lives. It is especially critical when [movement restrictions are relaxed](#) that mask use is increased, not decreased (as proposed in the [NSW Roadmap](#) with lifting of outdoor mask mandates), to mitigate spread of the virus. Even with increased vaccine coverage, the use of masks will remain for the foreseeable future and so it is important that we continue to encourage their use.

Caveats

The recommendations contained in this document pertain to community mask use. When respirators are used in workplaces, it must be noted that additional requirements need to be implemented to ensure their effective use. These include training and fit-testing as part of a Respiratory Protection Program.

Glossary of Terms

Mask - A simple flexible barrier that is placed over the nose and mouth. These include cloth masks.

Surgical Mask - A fluid-resistant, disposable device intended to be placed over the nose and mouth of medical personnel or patients, to create a physical barrier between the mouth and nose of the wearer and prevent the transmission of airborne organisms during surgery or patient examination. Surgical masks are graded as level 1, 2 or 3 based on the level of protection provided, or fluid resistance. The term “medical mask” is interchangeable with “surgical mask”. Surgical masks for use in healthcare facilities are tested, meet set standards and are approved by regulatory bodies such as [the TGA](#). Consumers can check the packaging of surgical masks available for purchase in the community to see if they are TGA approved.

Respirator - A filtering face piece respirator that is designed to form a very close seal around the nose and mouth, protecting the wearer from exposure to aerosols. There are different naming conventions for disposable respirators dependant on the standards they are designed and manufactured to. In the context of this document these include P2 respirators (Australia / New Zealand Standard 1716:2012), N95 respirators (United States NIOSH 42 CFR Part 84), FFP2 (Europe EN 149-2001), KN95 (China, GB2626-2019), and KF94 (Korea KMOEL 2017-64). Re-usable respirators are also available, usually in healthcare facilities.