

In brief

Face masks and COVID-19 transmission in the community

29 October 2021

Summary

- Since July 2020 (the publication date of the previous Critical Intelligence Unit Evidence Check), eight systematic reviews have assessed the effect of face masks in community settings on reducing influenza-like illnesses. While most reviews report SARS-CoV-2 benefits in terms of reductions in incidence, hospitalisation, or mortality, or a combination of these outcomes, two concluded no significant benefit of masks.¹⁻⁷
- The efficacy of protection against respiratory viral infections may vary according to the type of facemask used.^{4, 8}
- A Cochrane review on physical interventions to interrupt or reduce the spread of respiratory viruses found that there is uncertainty about the effects of face masks.⁹
- Face masks as a containment measure are often simultaneously recommended with other protective measures such as hand hygiene and physical distancing. Few studies controlled for the possible influence of other preventive measures.^{1, 2, 5}
- A systematic review of downsides of face masks reported on discomfort and irritation.¹⁰
- A review by the European Centre for Disease Prevention and Control recommended that although the evidence for the use of medical face masks in the community is limited, they should be considered as a non-pharmaceutical intervention in combination with other measures. Use should be considered particularly in areas with community transmission in confined public spaces, and can be considered in crowded outdoor settings.¹¹
- The World Health Organization advises the use of masks as part of a comprehensive package of prevention and control measures to limit the spread of SARS-CoV-2. Face masks are recommended in areas of known or suspected community transmission indoors and outdoors, when physical distancing cannot be maintained.¹²

Background

- SARS-CoV-2 is primarily transmitted between people through respiratory [droplets and contact](#) routes.¹³
- [Short-range aerosol transmission](#) can occur within poorly ventilated and crowded indoor spaces, as aerosols remain suspended in the air and can travel more than 1m (long-range).¹⁴
- Containment and non-pharmaceutical measures are known to be important for limiting the spread of COVID-19.

Research Evidence

- A [Cochrane review](#) on physical interventions to interrupt or reduce the spread of respiratory viruses found that there is uncertainty about the effects of face masks. The pooled results of randomised trials did not show a clear reduction in respiratory viral infection with the use of medical or surgical masks during seasonal influenza.⁹

- Systematic reviews on the use of face masks in the community in the context of COVID-19 found:
 - [August 2021](#): All 21 included studies reported SARS-CoV-2 benefits in terms of reductions in either the incidence, hospitalisation, or mortality, or a combination of these outcomes. Limitations included that few studies controlled for the possible influence of other preventive measures such as hand hygiene and physical distancing, and few studies assessed compliance to mask wearing policies.¹
 - [April 2021](#): Universal wearing of facemasks may be simultaneously recommended with other protective measures. Nosocomial and community infections seem to be preventable.²
 - [February 2021](#): 11 RCTs in a meta-analysis studying other respiratory illnesses found no significant benefit of masks (with or without hand hygiene) for influenza-like-illness symptoms nor laboratory confirmed viruses. One RCT found a significant benefit of surgical masks compared with cloth masks.⁶
 - [February 2021 \(preprint\)](#): In community and clinical settings, the use of facemasks provides protection against respiratory viral infections in general; however, the efficacies may vary according to the type of facemask used.⁴
 - [January 2021](#): RCTs and observational studies found that for reducing infection rates, the estimates were in favour of wearing face masks versus no mask, but not at statistically significant levels. Mathematical models indicated an important decrease in mortality when the population mask coverage is near-universal, regardless of mask efficacy. Levels of mask filtration efficiency were heterogeneous, depending on the materials used. One laboratory study suggested a viral load reduction of 0.25 in favour of mask versus no mask.³
 - [December 2020 \(preprint\)](#): RCTs on the effect of face coverings in the general population are few. The reported effect of masks used outside the home on transmission of droplet-mediated respiratory infections in the population is minimal or non-existent.⁷
 - [August 2020](#): Masks appeared to be effective with and without hand hygiene. Both together are more protective.⁵
- A [systematic review on cloth face masks](#) found that cloth masks have more limited efficacy in combating viral infection transmission than the medical grade mask. The efficacy of cloth face masks filtration varies and depends on the type of material used, number of layers, and degree of moisture in mask and fitting of mask on face.⁸
- A [systematic review of downsides of face masks](#) found that for mask wear adherence, 47% more people wore face masks in the face mask group compared with control. The largest number of studies reported on the discomfort and irritation outcome, the fewest reported on the misuse of masks, and none reported on mask contamination or risk compensation behaviour.¹⁰

Mask policies internationally

- The [World Health Organization](#) advises the use of masks as part of a comprehensive package of prevention and control measures to limit the spread of SARS-CoV-2. Masks alone are insufficient to provide adequate protection or source control.
- Decision makers should apply a risk-based approach when considering the use of masks for the public. In areas of known or suspected community or cluster SARS-CoV-2 transmission:
 - WHO advises that the public should wear a non-medical mask in indoor settings such as shops, shared workplaces, schools, or outdoor settings where physical distancing of at least 1m cannot be maintained.

- If indoors, a non-medical mask should be worn, regardless of whether physical distancing of at least 1m can be maintained, unless ventilation has been assessed to be adequate.
- Individuals and people with higher risk of severe complications from COVID-19 should wear medical masks when physical distancing of at least 1m cannot be maintained.¹²
- A review by the European Centre for Disease Prevention and Control recommended that although the evidence for the use of medical face masks in the community is limited, face masks should be considered as a non-pharmaceutical intervention in combination with other measures. They should particularly be considered in confined public spaces in areas with community transmission, and can be considered in crowded outdoor settings.¹¹

Table one: Mask policies by country

| Country | Summary |
|-------------|--|
| Australia | <ul style="list-style-type: none"> ● NSW: From 11 October 2021, people in Greater Sydney are no longer required to carry or wear a mask outside. Masks are required indoors across NSW, other than in the home. ● ACT: Masks are mandatory outside the home for everyone 12 years and older at all times, including in workplaces. ● NT: Masks are recommended when it is not possible to maintain a physical distance of 1.5m. ● Queensland: Mask restrictions apply to 11 local government areas (impacted areas) and include wearing masks both indoors and outdoors when it is not possible to maintain physical distancing of 1.5m. People in all other areas of Queensland are recommended to wear a mask if unable to maintain physical distancing. ● South Australia: Masks are required in high-risk settings, personal care and healthcare services, transport services, indoor fitness facilities (except while exercising) and shared indoor public spaces. ● Tasmania: Face masks are mandatory for everyone 12 and older years at airports and on domestic flights, at events for more than 1000 people, and in some healthcare settings. Face masks are recommended where physical distancing is not possible. ● Victoria: Masks are mandatory outside the home for everyone 12 years and older at all times, including in workplaces. ● WA: Face masks are mandatory for everyone 12 years and older at airports, on aircraft, or transporting a person subject to a quarantine direction. Face masks are not recommended for infants or children less than 12 years of age. |
| New Zealand | <ul style="list-style-type: none"> ● The New Zealand Ministry of Health recommends that, in general, everyone should wear a face covering whenever leaving home. ● Masks are mandatory for people 12 years and older on public transport and in businesses. ● Masks are recommended for health, disability and support workers in health and disability settings. |
| Canada | <ul style="list-style-type: none"> ● Mask mandates were eased or eliminated by mid-2021 but some were brought back in August 2021 due to rising cases caused by the Delta variant. |

| Country | Summary |
|--------------------------|---|
| | <ul style="list-style-type: none"> • Alberta: Masks mandatory in all indoor public spaces, including workplaces, and schools for students in grades four and up, plus staff and teachers in all grades. • British Columbia and Manitoba: Masks mandatory in all public indoor settings, including schools, for people 5 years and older. • Ontario: Masks mandatory in indoor spaces of business or organisations, and in some outdoor situations including events and recreation activities when physical distancing greater than 2m is not possible. Vaccination status is not an exemption to mask requirements. • Quebec: Masks mandatory on public transport and in indoor public places, including schools, for people 10 years and older. Masks recommended outdoors when unable to maintain physical distancing. • Masks may be required or recommended in public settings including stores, schools, businesses, workplaces and public transport. |
| United Kingdom | <ul style="list-style-type: none"> • In the United Kingdom, you are no longer legally required to wear a face covering in any setting (including in indoor settings and on public transport). However, face coverings are expected and recommended in indoor spaces where you meet people you do not normally meet. |
| United States of America | <ul style="list-style-type: none"> • Many states eased or eliminated mask mandates by mid-2021 after the Centers for Disease Control and Prevention (CDC) released guidance that fully vaccinated people could safely go mask-free in most public settings. • However, the CDC issued revised guidance at the end of July recommending masks be reintroduced in indoor public settings, particularly for large public gatherings, in response to an increase in cases caused by the Delta variant. • Current CDC advice includes: <ul style="list-style-type: none"> ○ Unvaccinated people two years and older should wear masks indoors ○ Masks are not generally required in outdoor settings ○ Fully vaccinated people are advised to wear masks indoors in areas of substantial or high transmission • Mask requirements vary by state, with the key variable being whether vaccinated individuals are included in the requirements. Masks may be required in public indoor settings, in schools and childcare, or on public transport. |
| Singapore | <ul style="list-style-type: none"> • It is mandatory for all persons who are 6 years and older to wear a mask when leaving their homes. This applies on public transport, taxis, private hire cars, walking to or at markets, and also for permitted enterprise workers at all workplace premises. |
| Israel | <ul style="list-style-type: none"> • Israel ended mask mandate on 15 June 2021 but reintroduced it 10 days later on 25 June 2021 due to an increase in cases. • Face masks mandatory in all indoor settings apart from the home as well as outdoor gatherings of at least 100 people. |

To inform this brief, PubMed and Google searches were conducted using mask* AND communit* AND COVID-19 AND (systematicreview[Filter] OR "systematic review"[ti]) on 15 Month 2021 Mask use by individual countries was also searched. Studies were included if published from 8 July 2020 to present, to update [the previous Critical Intelligence Unit Evidence Check on face masks in the community](#). The Critical Intelligence Unit has also published an [evidence check on extended of reuse of PPE](#) in August 2021.

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