EVIDENCE SYNTHESIS BRIEFING NOTE

TOPIC: EFFECTIVENESS AND USE OF NON-MEDICAL MASKS FOR THE PUBLIC IN COMMUNITY SETTINGS

Information finalized as of September 17, 2020.^a

This Briefing Note was completed by the Research, Analysis, and Evaluation Branch (Ministry of Health) based on information provided by members of the COVID-19 Evidence Synthesis Network. Please refer to the <u>Methods</u> section for further information.

<u>Purpose</u>: This note provides a summary of evidence on the effectiveness of non-medical masks including cloth/homemade and surgical masks and their use in community settings for all age groups. It also includes information from Canadian and non-Canadian jurisdictional statements about mask use in community settings. <u>Key Findings</u>:

- Effectiveness of different types of masks: In general, evidence continues to be mixed related to the effectiveness of wearing of medical and cloth facemasks in community settings on the spread of COVID-19, though overall most studies conclude that they appear to have a small protective effect. Systematic reviews and rapid reviews found that medical masks were more effective in filtering out smaller particles than cloth masks. However, when applied to community settings with other public-health measures in place, the difference between the two types was not significant.
- No evidence was found related to differences in effectiveness of masks between adults and children.
- Conditions of mask use that contribute to their effectiveness: Masks are more effective when used in conjunction with other public health measures including physical distancing and hand washing.
- **Potential harms due to mask wearing**: There is currently very little evidence related to harms and their potential effects on mask wearing. Harms related to mask wearing included some reports of headaches and feelings of a false sense of security when wearing a mask, which could potentially lead to a reduction in adherence to other public health measures.
 - The available evidence does not support concerns that wearing face coverings will adversely affect hand hygiene.
- Supporting mask wearing to increase adherence/effectiveness: Two systematic reviews found significant variation to adherence of mask wearing. In one review, adherence was significantly higher when required of people rather than suggested.
 - A recent survey of Canadians revealed: 1) about 60% of people report wearing a facemask most of the time when they leave the house; 2) people who were most likely to wear masks "most of the time" were women, older adults, and those living in suburban areas; and 3) about 30% of people report being unaware that there is a mask wearing policy, and two-thirds of these people do not wear masks.

<u>Analysis for Ontario</u>: The decision about whether/how to enforce masking has been left up to individual municipalities.

^a This briefing note includes current available evidence as of the noted date. It is not intended to be an exhaustive analysis, and other relevant findings may have been reported since completion.



Supporting Evidence

<u>Table 1</u> below summarizes the evidence on the types of masks and their effectiveness. <u>Table 2</u> summarizes the conditions in which it is recommended that masks are used in community settings. Additional details are provided in the Appendix. Jurisdictional information can be found in tables 3-5. <u>Table 3</u> summarizes statements for wearing non-medical masks from other countries and, <u>Table 4</u> has similar information from Canadian provinces and territories. <u>Table 5</u> summarizes recommendations and rationales for universal mask use during COVID-19 from Canadian and non-Canadian jurisdictions. Additional details about evidence sources can be found in tables 6-11. <u>Table 6</u> provides a summary of evidence documents organized by document type and relevance; <u>Table 7</u> lists primary studies relevant to the efficacy of non-medical masks; <u>Table 8</u> lists the abstracts of highly relevant documents; <u>Table 9</u> summarizes recent systematic reviews evaluating the effectiveness of universal mask use; <u>Table 10</u> summarizes additional primary studies; <u>Table 11</u> provides select examples of guidance on universal mask use; and, <u>Table 12</u> summarizes additional information provided by Evidence Synthesis Network members.

Table 1: Types of Masks and their Effectiveness

| Scientific | • Types of masks: |
|------------|---|
| Evidence | <u>Cloth/home-made</u>: Currently, there is no uniformity in the recommended design, material, layering, or shape of non-medical masks. The WHO recommends a minimum of three layers, with the following combination: 1) an innermost layer of a hydrophilic material (e.g., cotton or cotton blends); 2), an outermost layer made of hydrophobic material (e.g., polypropylene, polyester, or their blends), which may limit external contamination from penetration through to the wearer's nose and mouth; and, 3) a middle hydrophobic layer of synthetic non-woven material, such as polypropylene or a cotton layer, which may enhance filtration or retain droplets.¹ <u>Medical masks worn in non-medical settings</u>: This mask category includes surgical masks but excludes N95 masks. Other: Other face coverings may include plastic face shields, scarves or may be of a type not |
| | specified. |
| | • Effectiveness of masks: In general, the evidence supporting the effectiveness of wearing of medical and cloth facemasks in community settings is mixed, though overall most reports conclude that both types appear to have a small protective effect. The lack of conclusive findings stems largely from differences in study designsexperimental and modelling studies tend to under emphasize the protective role of facemasks, while observational studies tend to over emphasize them. ^{2,b} |
| | <u>Medical/surgical masks versus cloth masks</u>: Systematic reviews and rapid reviews found that medical masks were more effective in filtering out smaller particles than cloth masks. However, when applied to community settings with other public-health measures in place, the difference was not significant.^{3,c} |
| | <u>Effectiveness for adults versus children</u>: No evidence was found related to differences in effectiveness of masks between adults and children. One guidance document indicated that the use of masks for children in the community should not impede development or learning |

^b This topic has been the focus of extensive debate (see discussion of the 'precautionary principle' by Trisha Greenhalgh <u>here</u> or another article by <u>Schünemann et al., 2020</u>). The evidence is frequently being updated (see <u>here</u>).

^c For primary studies on the efficacy of non-medical masks see <u>Table 7</u>.

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outcomes and any requirements for masks should consider the feasibility of implementation within the specific context of each community.⁴

Table 2: Use of Masks in Community Settings

| Scientific Evidence | Conditions of mask use: Single-use masks should not be re-used; damp masks should never be worn and should be |
|------------------------|---|
| | immediately changed. ⁵ |
| | Masks are more effective when used in conjunction with other public health measures including physical distancing and hand washing.⁶ |
| | Adherence to mask wearing: Two systematic reviews found significant variation to adherence of mask wearing. In one review, adherence was significantly higher when required rather than suggested. Reasons for challenges with adherence included: experiences of discomfort, problems with communication, lack of breathability, and potential stigma related to indicating illness. Suggested solutions to belo mitigate these challenges included education on |
| | the type and fabric of masks to be used and clarity on when and how they should be worn.⁷ A July 2020 survey of Canadians (approximately 2,000 respondents) revealed the following: About 60% of people reported wearing facemasks most of the time when they leave the house. |
| | People who were most likely to wear masks "most of the time" were women, older adults, and those living in suburban areas. About 30% of people reported being unaware that there is a mask wearing policy, and two-thirds of these people report not wearing masks. |
| | About 30% of those who know there is a policy do not wear masks most of the time.^d |
| | • Potential harms due to mask wearing: Harms related to mask wearing included some reports of headaches and feelings of a false sense of security when wearing a mask, which could potentially lead to a reduction in adherence to other public health measures. However, there is currently very little evidence related to harms and their potential effects on mask wearing ⁸ |
| | The available evidence does not support concerns that wearing face coverings will adversely affect hand hygiene. In two studies, self-reported rates of hand washing were higher in the groups allocated to wearing masks.^e |

^d For further preliminary findings from the iCARE study, an international longitudinal study based at the Centre intégré universitaire de santé et de services sociaux du Nord-de-l'Île-de-Montréal (CIUSSS-NIM) and supported by the University of Quebec (Montreal) and Concordia University, see <u>Table 12</u>.

[•] Is risk compensation threatening public health in the COVID-19 pandemic? <u>Mantzari et al., 2020</u>. See <u>Table 12</u> for additional details from this article.

| International Scan | Mask use in non-healthcare settings: In Australia, Denmark, France, Germany, New Zealand, the United Kingdom (UK), and the United States (US) (with a focus on Maine, Oregon, and Vermont) the following information was identified: Mask use in indoor spaces: Most jurisdictions require individuals to wear masks in indoor spaces (including while in transit) and outdoors when physical distancing cannot be maintained. The two exceptions to this at national level is Denmark and New Zealand, where there are currently no national requirements to wear masks, except on public transit in both countries.⁹ <u>Fines</u>: Three countries (Australia, Germany and the UK) have implemented fines for not adhering to masking requirements.¹⁰ <u>Regional or state-level policies</u>: Three countries, Australia, Germany, and US are taking state or regional approaches to masking requirements. However, Germany has also reached an agreement with 16 states to require masks (or something that covers the mouth and nose) in shops and on public transportation, with a fine of \$80.85 CAD^f imposed for noncompliance. One German state (Saxony-Anholt) is the exception to this rule as it did not agree to introduce it given its low number of cases.¹¹ <u>Exemptions</u>: Exemption for mask requirements include children (with ages varying between five and 11) and those with physical or developmental limitations that make wearing a mask difficult.¹² |
|-----------------------|--|
| Canadian Scan | Most Canadian provinces are suggesting that individuals wear non-medical masks when indoors and when physical distancing is not possible.¹³ <u>Required use of non-medical masks</u>: Quebec, Nova Scotia, Newfoundland and Labrador, have put in place province-wide requirements.¹⁴ <u>Role of municipalities</u>: The provinces of British Columbia (BC), Alberta, Saskatchewan, Manitoba, Ontario, and Prince Edward Island (PEI) have left the decision up to individual municipalities about whether and how to enforce masking.¹⁵ <u>Provinces that require masks in schools</u>: BC, Alberta, Ontario, PEI, and the Northwest Territories require masking for children, teachers and staff at schools, though the grades in which requirements begins varying from junior kindergarten to grade seven.¹⁶ Nunavut is the only province or territory where there is no requirement for children to wear a mask in school; children may be asked to put one on should rates of infection change.¹⁷ <u>Transit and other forms of transportation</u>: In BC, all provincially run transit services require face masks to be worn. While none of the three territories are requiring face masks in public spaces, the Yukon and Nunavut are requiring that all travellers wear masks in airport buildings.¹⁸ |
| Ontario Scan | In Ontario, The decision to require or enforce mask wearing has been left up to the municipalities. Masks are required for children, teachers and staff at schools from grade four to 12. Students in Kindergarten to Grade 3 are encouraged to wear a mask. The City of Toronto requires all individuals to wear a mask or a face covering in indoor public spaces, except for those below the age of two or those with specific medical conditions. Businesses are required to develop a mask policy for their establishment and to communicate this with their team and customers. Owners of apartment and condominium |

^f This source reported a figure of €50. The Canadian Dollar (CAD) amount was calculated using Purchasing Power Parities (PPPs) as published by the Organisation for Economic Co-operation and Development (OECD) for Germany in 2019 (1 Euro = 1.617 CAD). PPPs are the rates of currency conversion that eliminate the differences in price levels between countries (<u>OECD, 2019</u>). Date: 13-Oct-2020; Version: 2.0 Page 4 of 43

| buildings are also required to develop policies for their properties and to communicate this with tenants. |
|--|
| Simcoe County, Durham, Wellington-Dufferin-Guelph, York, Brampton and other |
| municipalities have also mandated masks and face coverings for residents. ¹⁹ |
| A Synthesis by Public Health Ontario offers the following key points about mask wearing: |
| Public mask-wearing is likely beneficial as source control when worn by persons shedding infectious SARS-CoV-2 virus²⁰ |
| Mandatory public mask policies have been associated with a decrease in new COVID-19 cases compared to regions without such policies.²¹ |
| Studies evaluating masking in children are limited and have demonstrated variable results with respect to their effectiveness for source control. However, studies have consistently shown lower adherence, especially in younger children.²² |
| Masking to protect the wearer is unlikely to be effective in non-healthcare settings. Existing evidence demonstrates that wearing a mask within households after an illness begins is not effective at preventing secondary respiratory infections.²³ |
| There is variability in the effectiveness of homemade and cloth masks. Some materials adequately filter the expulsion of viral droplets from the wearer making them theoretically suitable for source control.²⁴ |
| There are theoretical risks of harms from public mask use including self-contamination from improper use and facial dermatitis or discomfort. Children may experience more discomfort from wearing a mask compared to adults ²⁵ |

Methods

The COVID-19 Evidence Synthesis Network is comprised of groups specializing in evidence synthesis and knowledge translation. The group has committed to provide their expertise to provide high-quality, relevant, and timely synthesized research evidence about COVID-19 to inform decision makers as the pandemic continues. The following members of the Network provided evidence synthesis products that were used to develop this Evidence Synthesis Briefing Note:

- Ontario Health (Quality). Effectiveness of Universal Mask Use: An Expedited Summary of the Evidence and Jurisdictional Scan, June 25, 2020.
- Public Health Ontario. <u>Wearing Masks in Public and COVID-19 What We Know So Far.</u> September 14, 2020.
- Waddell K, Wilson MG, Gauvin FP, Moat KA, Wang Q, Ahmad A, Bhuiya A. COVID-19 rapid evidence profile #18: Which types of non-medical masks are effective in community settings for reducing the spread of COVID-19 for different populations and under different conditions? Hamilton: McMaster Health Forum, 4 September 2020.

For more information, please contact the Research, Analysis and Evaluation Branch (Ministry of Health).



APPENDIX

Table 3: Statements for Wearing Non-medical Masks in Other Countries²⁶

| Country | Statements for wearing non-medical masks | |
|----------------|--|--|
| Australia | • As of August 2, 2020, <u>all residents in Victoria are required to wear a mask</u> or face covering when leaving their homes. Individuals may be exempt from wearing a mask or face covering if they have specific health condition which restrict them from doing so. | |
| | Individuals can be fined up to \$163.20 CAD^g for failure to wear a mask or face covering. All children above the age of 12 are required to wear a face covering, whereas children under 12 are given the option of wearing a face covering. | |
| | Students over the age of 12 who attend a specialist school are exempt from wearing face coverings. Teachers and childcare staff are not required to wear a mask while teaching or interacting with children. However, they are required to wear masks when not teaching. | |
| Denmark | Currently, there is no national mandate which requires individuals to wear masks, except when traveling via public transport. | |
| | • The Danish Health Authority <u>recommends that individuals use masks</u> if they are attending large gatherings, have been infected and need to leave their homes, are part of a high-risk group for COVID-19, or live with someone at high risk. | |
| France | As of July 20, 2020, individuals are required to wear masks in all enclosed spaces. This includes shops, banks, libraries, retail and shopping centers, office buildings, community and entertainment centers, places of worship, tourist hubs and public transport. All individuals over the age of 11 are required to wear a mask. As of August 31, 2020, all staff and students (if above the age of 11) in nursey, elementary, middle and high schools are required to wear masks. As of September 1, 2020, individuals are also required to wear masks in shared spaces in companies and associations. Individuals may be charged up to \$214.92 CAD^h for failure to wear a mask. Repeat offenders will have | |
| Germany | Given increasing numbers of COVID-19 cases, on August 27, 2020 agreements were reached between the Federal Chancellor and heads of the 16 states to require <u>masks</u>, or <u>something that covers the mouth</u> <u>and nose</u> in shops and on public transportation. Those who fail to comply are subject to a fine of \$80.85 CAD.ⁱ The exception to this policy is the state of Saxony-Anholt, which did not want to introduce the policy given the low number of cases. | |
| New Zealand | As of August 30, 2020, individuals are <u>required to wear a mask on public transport</u>, such as buses, trains, ferries and airplanes. Outside of public transport, individuals are not mandated to wear a mask, although the Government of New Zealand <u>has assigned alert levels to certain settings</u> to provide public guidance on when and where masks or face coverings are recommended or required for individuals. | |
| United Kingdom | Individuals residing in England are required to wear non-medical masks or other face coverings in specific indoor spaces. | |

⁹ This source reported the figure of \$200 Australian dollars. The Canadian Dollar (CAD) amount was calculated using Purchasing Power Parities (PPPs) as published by the Organisation for Economic Co-operation and Development (OECD) for 2019 (1 Australian dollar [AUS] = 0.8016 CAD). PPPs are the rates of currency conversion that eliminate the differences in price levels between countries (<u>OECD, 2019</u>).

^h This source reported a figure of €135. The Canadian Dollar (CAD) amount was calculated using Purchasing Power Parities (PPPs) as published by the Organisation for Economic Co-operation and Development (OECD) for France in 2019 (1 Euro = 1.592 CAD). PPPs are the rates of currency conversion that eliminate the differences in price levels between countries (<u>OECD</u>, 2019).

ⁱ This source reported a figure of €50. The Canadian Dollar (CAD) amount was calculated using Purchasing Power Parities (PPPs) as published by the Organisation for Economic Co-operation and Development (OECD) for Germany in 2019 (1 Euro = 1.617 CAD). PPPs are the rates of currency conversion that eliminate the differences in price levels between countries (<u>OECD, 2019</u>). Date: 13-Oct-2020; Version: 2.0 Page 6 of 43

| Country | Statements for wearing non-medical masks | | |
|---------------|---|--|--|
| | Individuals can be charged up to \$174.2 CAD^j for failure to wear a face covering where they are mandated. Fines can be doubled for repeat offenders. | | |
| | Children under the age of 11, employees working in indoor settings, and emergency service workers are not required to wear marke, individuals are also exempt form wearing marks if they have a specific | | |
| | medical condition which restricts them from doing so or if they are helping someone. | | |
| | • For individuals in Northern Ireland, masks or other face coverings are required on public transport. | | |
| | Individuals in Scotland are required to wear a mask or other face covering in shops, on public transport and public-transportation platforms, as well as in certain indoor public spaces. | | |
| | • Emergency response workers, police officers, and children below the age of five are not required to wear a mask. Similarly, staff working in indoor spaces who have been physically separated from customers and individuals leading a ceremony or act of worship are not required to wear masks. | | |
| | As of July 27, 2020, all individuals in Wales are <u>required to wear masks or other face coverings on public</u> transport. | | |
| United States | · | | |
| Maine | As of July 8, 2020, <u>an executive order</u> was put in place by the Governor requiring face coverings in retail stores with more than 50,000 square feet of shopping space, restaurants, outdoor bars or tasting rooms, and lodging establishments, given their potential to attract tourists and large gatherings. Individual municipalities may enforce the use of face coverings on streets and sidewalks as well as in other public spaces where individuals are not able to maintain physical distancing. | | |
| Oregon | • <u>Masks, face coverings or face shields</u> are currently required statewide for offices and indoor public spaces as well as in outdoor public spaces when physical distancing of at least six feet is not possible. | | |
| | Children five years of age and older are required to wear a face covering. | | |
| | Individuals with a disability or medical condition can request accommodation from the business if they are unable to wear a mask. | | |
| Vermont | As of August 1, 2020, <u>face masks that cover the mouth and nose are required</u> in public spaces at any time it is not possible to keep physical distance of six feet from those not in the same household. Those with a medical or developmental condition, or those that have trouble breathing are exempt from this requirement and do not have to show documentation of the condition to be provided with the | | |
| | exemption. | | |

Table 4: Statements for Wearing Non-medical Masks in Canadian Provinces and Territories²⁷

| Province/territory | Statements for wearing non-medical masks | |
|--------------------|--|--|
| British Columbia | The Government of British Columbia <u>does not have provincial requirements</u> for face masks, although businesses may require individuals to wear face coverings for service. Students and staff in middle and secondary schools are <u>required to wear masks in common school spaces</u>. Several post-secondary schools, such as <u>Simon Fraser University</u>, also have restrictions in place which require students to wear masks. As of August 24, 2020, <u>BC Transit requires all passengers to wear masks</u>, unless they are below the set of them to the present of the present of them to the present of the prese | |
| Alberta | The Government of Alberta encourages residents to <u>wear non-medical masks in any public space</u> where physical distancing is not feasible, although there is no provincial mandate requiring residents to wear masks. Non-medical masks are additionally required for all students in Grades 4-12, as well as any school staff members, under the school re-entry plan. As of August 1, 2020, the City of Edmonton requires all residents to wear a non-medical mask or face covering in <u>all indoor public spaces</u>. | |

^j This source reported a figure of 100 British Pounds (GBP). The Canadian Dollar (CAD) amount was calculated using Purchasing Power Parities (PPPs) as published by the Organisation for Economic Co-operation and Development (OECD) for 2019 (1 GBP = 1.742 CAD). PPPs are the rates of currency conversion that eliminate the differences in price levels between countries (OECD, <u>2019</u>).

| Province/territory | Statements for wearing non-medical masks | |
|--------------------|---|--|
| | This includes retail stores, entertainment venues, recreation centres, transit stations, religious spaces, hotels, public transportation, taxis and vehicles. | |
| | • The City of Calgary additionally requires residents to wear face coverings in all indoor public spaces, with the exception of individuals below the age of two and those with specific health conditions | |
| | Residents of Calgary may be given a fine of \$50 for not wearing a face covering in spaces where they are mandatory. | |
| | All businesses are required to <u>display posters and signs</u> about mandatory face coverings. | |
| | The City of Banff requires individuals to wear masks in all public spaces, including any <u>outdoor spaces</u> | |
| | included under Banff's pedestrian zone. Individuals can face a fine of \$150 for failure to wear a mask. | |
| | Businesses are also required to display signage regarding the required mask bylaw. | |
| | • Jasper, St. Albert, Lethbridge, Canmore, and other municipalities across Alberta have also mandated | |
| | wearing masks. | |
| Saskatchewan | • Individuals are <u>encouraged to wear non-medical masks</u> , as per recommendations made by the Public | |
| | Health Agency of Canada, although there is no provincial mandate requiring residents to wear masks. | |
| | Schools are given jurisdiction in deciding whether to mandate masks. | |
| | Certain school districts, such as <u>Regina Public Schools</u> , <u>Regina Catholic Schools</u> , <u>Saskatoon Public</u> | |
| | Schools (among other districts), have mandated students in Grades 4-12 and school staff to wear | |
| | masks, specifically when physical distancing is not possible. | |
| | • In August 2020, the University of Saskatchewan announced that students will be required to wear | |
| | masks in all shared spaces on campus, unless exempt due to specific medical or health needs. | |
| | • As of 1 September 2020, the University of Regina also requires masks or face coverings in all common, | |
| Marilla ha | Indoor spaces on campus. | |
| Manitoba | While masks are not required in all regions Manitoba, the Province requires masks and face coverings for the Desirie Mountain Health parties in index public access and the province in the second s | |
| | The Praine Mountain Health region in indoor public spaces, as well as certain outdoor public settings. | |
| | Ine Province of Manitoba requires non-medical masks for all students in Grade 4 to 12, as well as for staff visitors, and parents, individuals with aposition medical conditions may be event from wearing. | |
| | stan, visitors, and parents. Individuals with specific medical conditions may be exempt from wearing | |
| | A of August 2020. Winnings Transit announced mandatory marks and face severings for all travelers | |
| | • As of August 2020, withinpeg Transit announced <u>manuatory masks and face coverings for an travelets</u> , | |
| | The University of Manitoba and University of Winningen have also required masks for students, staff and | |
| | visitors in all shared spaces on campus | |
| Ontario | The Province of Ontario does not have a provincial mandate requiring residents to wear masks. | |
| | although they are recommended. | |
| | For the 2020-2021 school year, the Province of Ontario has mandated students in Grade 4 to 12 | |
| | and school staff to wear masks indoors. | |
| | Students in Kindergarten to Grade 3 are encouraged to wear a mask. | |
| | • As of July 7, 2020, the City of Toronto requires all individuals to wear a mask or a face covering in | |
| | indoor public spaces, except for those below the age of two or those with specific medical conditions. | |
| | Businesses are required to develop a mask policy for their establishment and to communicate this with | |
| | their team and customers. Owners of apartment and condominium buildings are also required to | |
| | develop policies for their properties and to communicate this with tenants. | |
| | <u>Simcoe County, Durham, Wellington-Dufferin-Guelph, York, Brampton and other municipalities</u> have | |
| Quebee | also mandated masks and face coverings for residents. | |
| Quebec | Ine government of Quebec states that: wearing a nen medical mark or face severing is mandetary on public transit for people age 10 and | |
| | o wearing a non-medical mask of race covering is manuatory on public transit of people age 10 and | |
| | o wearing a mask or face covering that covers the pase and mouth is mandatory in enclosed or | |
| | nartially enclosed public places for people age 10 and over | |
| | children under 10 years of age, people whose particular medical condition prevents them from | |
| | wearing a mask and people who are unable to put on or take off a mask by themselves do not have | |
| | to wear a face covering; and | |



| Province/territory | Statements for wearing non-medical masks | |
|------------------------------|---|--|
| | wearing a mask or face covering is recommended for children between two and nine years of age, but not recommended for those under age two. | |
| New Brunswick | The Government of New Brunswick requires non-medical masks to be worn in community spaces where physical distancing is not possible for individuals. This includes grocery stores, pharmacies and other community spaces. Individuals are exempt from this requirement is they are less than two years of age or have other medical needs. As of September 2020, students in Grade 6 to 12 are required to wear a mask when travelling on the school bus and in common spaces. However, masks are not required in the classroom. Students in kindergarten to grade 5 are not required to wear masks, although they are encouraged. Teachers in Grades 9 to 12 are required to wear a mask when physical distancing is not possible. For teachers in kindergarten to grade 8, face masks and coverings remain optional. | |
| Nova Scotia | As of July 31, 2020, The Government of Nova Scotia requires individuals to <u>wear non-medical masks in certain indoor public spaces</u>. This includes retail stores, shopping centres, aesthetician services, food stores, places of religious gathering, entertainment centers, common spaces on university and college campuses, and public transport vehicles, including airplanes. All students in Grades 4 to 12 are <u>required to wear a non-medical mask</u> while in school, except when seated at their desk two metres apart. | |
| Prince Edward Island | The Government of Prince Edward Island recommends that individuals <u>wear a face covering or a non-medical mask</u>, although they are not mandatory. Students from kindergarten to Grade 12 and bus drivers are <u>required to wear non-medical masks when traveling on the school bus</u>. Students in Grades 7 to 12 and staff are also required to wear masks in school. Students in kindergarten to Grade 6 are encouraged to wear masks, although this is not mandatory. School staff in Grades 7 to 12 are required to wear masks between classes, during emergencies and when physical distancing is not possible. | |
| Newfoundland and Labrador | As of August 24, 2020, the Government of Newfoundland and Labrador requires <u>all individuals above</u> <u>the age of five</u> to wear non-medical masks in public indoor spaces. This includes public transit, retail stores, office spaces, places of religious gatherings, funeral homes, entertainment spaces, sports and recreation facilities, and restaurants. Non-medical masks are also required in post-secondary settings and for grade-school students who ride the school bus. All high-school and junior high-school parents are required to wear masks in common spaces. | |
| Yukon | The Government of Yukon requires individuals to <u>wear masks in all airport buildings</u>, although masks are not required for other areas of Yukon. Businesses are given the jurisdiction to decide whether they require customers to wear masks and face coverings. Staff and students above the age of 10 in schools are <u>encouraged to wear masks in schools</u> when physical distancing is not possible. | |
| Northwest Territories | The Government of Northwest Territories <u>does not require masks</u> except in healthcare facilities or if an individual is ill. Students from junior kindergarten to grade 12 are <u>required to wear masks</u> in schools when physical distancing cannot be practiced and on buses. School staff are required to wear face shields. | |
| Nunavut | In April 2020, the Government of Nunavut announced that all <u>travelers must wear non-medical masks</u> <u>during air travel</u>. Individuals without face masks will not be permitted to travel. The Government of Nunavut <u>does not recommend masks for children</u>, but students in school may be asked to wear masks in certain circumstances. School staff are also given the option of wearing a mask if physical distancing cannot be practiced. | |



<u>Table 5: Recommendations and Rationales for Universal Mask Use during COVID-19 – Jurisdictional</u> <u>Scan Results</u>^{28,}

This table has been updated as a result of a June 22, 2020 search for updates of the following sources: Canada (Government of Canada and seven provinces including British Columbia Centre for Disease Control [BCCDC]), World Health Organization (WHO), Public Health Ontario, US Centers for Disease Control and Prevention (US CDC), European Centre for Disease Prevention and Control (ECDC). The remaining sources in this table including the Chinese Center for Disease Control and Prevention (China CDC) were not reviewed as part of this update and reflect recommendations as of May 14, 2020.

| Recommendation | Rationale | Source |
|---|---|--|
| It is optional for people to wear a mask or face covering where physical distancing is challenging (e.g., grocery stores, public transport, certain jobs that shopping malls, involve physical proximity such as cashiers and police). | Wearing a nonmedical mask has not been proven to protect the wearer as these masks are not able to filter out droplets produced by someone else who coughs. However, wearing a nonmedical mask may help protect others from the wearer by reducing the spread of respiratory droplets to others. Some individuals may be asymptomatic or pre- symptomatic and still transmit the virus. | ECDC, Government of United Kingdom, China CDC, France Ministry of Health, Finnish Institute for Health and Welfare, BCCDC, Government of Manitoba, Government of Newfoundland and Labrador, Government of Nova Scotia (all 2020) |
| It is recommended for people to wear a mask or face covering where physical distancing is challenging (e.g., grocery stores, public transport, shopping malls, certain jobs that involve physical proximity such as cashiers and police). | Wearing a nonmedical mask has not been proven to protect the wearer as these masks are not able to filter out droplets produced by someone else who coughs. However, wearing a nonmedical mask may help protect others from the wearer by reducing the spread of respiratory droplets to others. Some individuals may be asymptomatic or pre- symptomatic and still transmit the virus. | <u>WHO</u> , ^k <u>US CDC</u> , <u>Government of</u> <u>Canada, Government of Alberta,</u> <u>Government of Ontario, Government of</u> <u>Saskatchewan (</u> all 2020) |
| It is recommended that face coverings or masks be worn during all activities outside the privacy of one's residence or vehicle. | Wearing a nonmedical mask may help protect others from the wearer by reducing the spread of respiratory droplets to others. Some individuals may be asymptomatic or pre- symptomatic and still transmit the virus. | <u>China CDC,¹ Spain Ministry of Health,^m</u> <u>Germany Federal Ministry of Health,</u> <u>South Korea Ministry of Health and</u> <u>Welfare (</u> all 2020) |
| It is required that face masks or coverings be worn where people are unable to ensure physical distancing (e.g., public transit, waiting in line, entering a business in operation). | Jurisdictions noted that wearing a nonmedical mask may help protect others from the wearer by reducing the spread of respiratory droplets to others. Some jurisdictions observed that regions requiring universal mask use had slower spread of disease. Some jurisdictions referred to other sources such as the WHO or the US CDC recommendations as their rationale. | Singapore Ministry of Health, Spain, ⁿ Ministry of Health, Israel Ministry of Health, Italy Ministry of Health, Qatar Minister of Public Health Governors of/State of Connecticut, Hawaii, Maryland, New Jersey, New York, Pennsylvania, Rhode Island ^o (all 2020) |

^k The WHO advises that to prevent COVID-19 transmission effectively in areas of community transmission, governments should encourage the general public to wear masks in specific situations and settings as part of a comprehensive approach to suppress transmission.

^m Spain mandates masks on public transit but has a more open recommendation otherwise.

¹ China CDC recommended using disposable medical masks for activities where physical distancing is challenging and using nonmedical face covering for very low–risk activities (e.g., outdoor activities, open/well-ventilated places).

ⁿ Spain mandates masks on public transit but has a more open recommendation otherwise.

Rhode Island requires masks for employees of business unable to guarantee sufficient physical distance, but simply encourages Date: 13-Oct-2020; Version: 2.0
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| Recommendation | Rationale | Source | |
|---|--|---|--|
| Face masks are unnecessary. | Physical distance and hand hygiene are the best ways to protect oneself. | Public Health Agency of Sweden (2020) | |
| Intentional absence of a recommendation for or against any type of mask wearing in the community | Based on WHO's rationale published in April 2020: There is limited evidence on whether wearing a mask (medical or other type) by healthy individuals in the community setting can prevent them from infection with respiratory viruses. However, WHO also offered a risk-based approach for decision-makers to make recommendations suitable for individual jurisdictions. WHO advised decision-makers to consider multiple factors such as the purpose of mask use, risk of exposure, vulnerability of the population, population density, and the availability and type of masks. | <u>Japan Ministry of Health, Labour and</u> <u>Welfare</u> (all 2020) | |
| Mask use in people who are symptomatic or suspected of having COVID-19, people vulnerable to COVID-19 complications (e.g., older adults and those in poor health), or caregivers of someone who might have COVID-19 | | | |
| People are strongly encouraged to wear a mask if they are experiencing symptoms such as coughing or sneezing, to prevent the spread of pathogens. | Mask can effectively catch the wearer's respiratory droplets, preventing the spread of the virus. | Canada, ^p WHO, US CDC; ECDC, Japan Ministry of Health, Labour and Welfare, Hong Kong Centre for Health Protection, Spain Ministry of Health | |
| People are strongly encouraged to wear a mask if they are caring for someone who might have COVID-19. | No rationale reported. | WHO, Australian Queensland Department of Health, Hong Kong Centre for Health Protection | |

patrons to wear a mask as per US CDC guidance. P Canada includes sources from: British Columbia Centre for Disease Control, 2020; Government of Alberta, 2020; Government of Canada, 2020; Government of Manitoba, 2020; Government of Newfoundland and Labrador, 2020; Government of Nova Scotia, 2020; Government of Ontario, 2020; Government of Saskatchewan, 2020. Date: 13-Oct-2020; Version: 2.0



| Recommendation | Rationale | Source |
|---|---|-----------------------|
| People at moderate risk of infection or considered vulnerable (e.g., older adults and those in poor health) are recommended to wear a surgical or disposable medical mask where physical distancing is not feasible (e.g., people working in hospitals or on trains). | Based on the precautionary principle; no direct rationale reported. | <u>China CDC, WHO</u> |



Table 6: Evidence Documents that Address the Question, Organized by Document Type and Sorted by Relevance to the Question and COVID-19^{29,q}

| Type of document | Relevance to question | Focus | Recency or status |
|---|---|---|--------------------------------|
| Guidelines developed using a robust process (e.g., GRADE) | Type of mask Cloth Effectiveness of masks At preventing spread of droplets (larger than five micro metres) At preventing spread of aerosol (between one and five micro metres) For what populations Adults Children In which types of community settings Indoors (where social distancing is possible) In transit (e.g., public transit; trains; airplanes) Under what conditions Condition of the mask (e.g., damp or torn) In conjunction with other public health measures Hand washing Physical distancing Disinfecting surfaces and facilities Supporting the wearing of masks Adherence to mask wearing requirements Potential harms of mask wearing and solutions to address them | There is currently no uniformity in design, material, layering, or shape among available versions of non-medical masks, but the WHO recommends a minimum of three layers, with the following combination: "1) an innermost layer of a hydrophilic material (e.g. cotton or cotton blends); 2), an outermost layer made of hydrophobic material (e.g., polypropylene, polyester, or their blends) which may limit external contamination from penetration through to the wearer's nose and mouth; 3) a middle hydrophobic layer of synthetic non-woven material such as polypropylene or a cotton layer which may enhance filtration or retain droplets." Decision-makers should apply a risk-based approach focusing on the following criteria when considering or encouraging the use of masks for the general public: purpose of the mask, risk of exposure to COVID-19, vulnerability of the mask wearer/population; setting; feasibility; and type of mask. The guidelines provide details on non-medical mask filtration efficiency, pressure drop, and filter quality factor for 11 types of material. In general, the use of fabric masks by the general public is advised where there is widespread community transmission and physical distancing of at least one metre cannot be maintained. | Last updated 5 June 2020 |
| | Type of mask Cloth Other | Given the limited evidence on the use of masks in children for COVID-19, including limited evidence about | Last updated 21 August 2020 |
| | Effectiveness of masks At preventing spread of droplets (larger than five micro metres) For what populations | transmission of COVID-19 in children, the following principles should guide policies about the use of masks for children in the community : 1) do no harm (meaning that | |
| | Children In which types of community settings Indoors (where social distancing is not possible) | the best interest, health and well-being of the child should be prioritized); 2) the guidance should not negatively impact development and learning outcomes; and | |
| | Under what conditions | 3) the guidance should consider the | |

^q The relevance of each evidence document in this table was assessed by the authors and is indicated by colour-coding: high (darkest blue) to low (lightest blue). Date: 13-Oct-2020; Version: 2.0



| Type of | Delevence to succeive | Farme | Recency or |
|-------------------------------|---|--|--|
| document | Relevance to question | Focus fossibility of implementing | status |
| | An conjunction with other public health measures Hand washing Physical distancing Disinfecting surfaces and facilities Supporting the wearing of masks Potential harms of mask wearing and colutions to address them | recommendations in different social, cultural and geographic contexts. <u>Source</u> (WHO technical guidance) | |
| | Solutions to address them | Crow mombars of cargo shins and fishing | Last undated 25 |
| | Type of mask Cloth Effectiveness of masks At preventing spread of droplets (larger than five micro metres) For what populations | Crew members of cargo snips and fishing vessels should consider using a fabric mask while on board conveyances and in crowded places where physical distancing is not possible. <u>Source</u> (WHO technical guidance) | August 2020 |
| | Adult In which types of community settings Indoors (where social distancing is not possible) | | |
| | Under what conditions In conjunction with other public health measures Hand washing Physical distancing Disinfecting surfaces and facilities | | |
| | Type of mask Cloth Effectiveness of masks At preventing spread of droplets (larger than five micro metres) For what populations Adult In which types of community settings Indoors (where social distancing is not possible) Under what conditions In conjunction with other public health measures Hand washing Physical distancing Disinfecting surfaces and facilities | Employees of the accommodation sector whose work involves close contact with others, such as in restaurants, breakfast and dining rooms and bars, should wear fabric masks. <u>Source</u> (WHO technical guidance) | Last updated 25 August 2020 |
| Full systematic reviews | Type of mask Cloth Medical worn in non-medical settings Other Effectiveness of masks At preventing spread of droplets (larger than five micro metres) At preventing spread of aerosol (between one and five micro metres) Under what conditions In conjunction with other public health measures Hand washing | In the community, masks appeared to be effective when worn by well individuals with and without the addition of hand hygiene practices, however the combination was more effective. Community masking was found to be particularly useful in reducing the spread of COVID-19 among pre-symptomatic individuals Cloth masks still allow for some airborne particles (particularly aerosols) to be spread. Source (AMSTAR rating 4/9) | Literature last searched 17 April 2020 |



| Type of | Delevere to mosting | F | Recency or |
|----------|---|---|--|
| document | Relevance to question | Focus | Status |
| | Type of mask Medical worn in non-medical settings | Face mask use could result in a large reduction in the risk of infection, with strong association of risk protection for N95 as compared to disposal surgical masks. Source (AMSTAR rating 9/11) | Literature last searched 3 May 2020 |
| | Type of mask Medical worn in non-medical settings Effectiveness of masks At preventing spread of droplets (larger than five micro metres) In which types of community settings Indoors (where social distancing is not possible) In transit (e.g., public transit; trains, airplanes) | Wearing a facemask in the community was found to have some protective effect against primary infection and is more effective when both the infected and uninfected members wear it. However, the evidence was not found to be sufficiently strong to support the wide-spread use of facemasks in all contexts but should be prioritized for those that are particularly vulnerable, or when in transient high-risk situations. Source (AMSTAR rating 7/11) | Published 6 April 2020 |
| | Type of mask Cloth Medical worn in non-medical settings Other Supporting the wearing of masks Adherence to mask wearing requirements Potential harms of mask wearing and solutions to address them | Adherence to wearing face masks when required was about 47% higher than when not required. Adherence to wearing face masks was found to be higher for those wearing surgical or medical masks as opposed to N95 masks. More research is needed to identify barriers to wearing face masks as well as potential downsides and how they may be mitigated. Source (AMSTAR rating 7/11) | Literature last searched 18 May 2020 |
| | Type of mask Cloth Medical worn in non-medical settings Effectiveness of masks At preventing spread of droplets (larger than five micro metres) At preventing spread of aerosol (between one and five micro metres) | Physical interventions such as masks are effective to interrupt or reduce the spread of respiratory viruses during epidemics and pandemics. However, this should be moderated based on transmission rates and fatality rates. | Literature last searched November 2011 |
| | Type of mask Cloth Medical worn in non-medical settings Other Effectiveness of masks At preventing spread of droplets (larger than five micro metres) At preventing spread of aerosol (between one and five micro metres) | No studies were found examining the effectiveness of face mask use in limiting the spread of COVID-19. <u>Source</u> | Literature last searched February 2020 |
| | Type of mask Cloth Medical worn in non-medical settings Other Effectiveness of masks Under what conditions | No significant reduction was found for influenza transmission with the use of face masks. There is limited evidence for the effectiveness in preventing influenza-like virus transmission when wearing a | Literature published May 2020 |

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| Type of | Relevance to question | Focus | Recency or |
|---------|---|--|--|
| | In conjunction with other public health measures Hand washing Supporting the wearing of masks Adherence to mask wearing requirements Potential harms of mask wearing and solutions to address them | surgical mask either when worn by the infected person for source control or when worn by uninfected people to reduce exposure. It is more likely that cloth masks get used in lower-income settings as compared to disposable medical masks due to cost and availability. Ensuring proper use and disposal of facemasks along with good hand hygiene is essential, which can be supported with education to ensure effective transmission prevention. | |
| | Type of mask Medical worn in non-medical settings For what populations Adults Under what conditions In conjunction with other public health measures Physical distancing Supporting the wearing of masks Potential harms of mask wearing and solutions to address them | Nine randomized controlled trials comparing the use of masks to no masks in non-pandemic settings were included, of which seven included people living in the community. Insufficient evidence was identified to provide a recommendation on the use of facial barriers without other measures, and there was also insufficient evidence to determine whether there is a difference between surgical masks and N95 masks. Harms were poorly reported in the included studies and were limited to discomfort leading to lower compliance It is recommended that the use of masks is combined with other preventative measures. | Literature last searched 1 April 2020 (pre-print, not peer reviewed) |
| | Type of mask Medical worn in non-medical settings Effectiveness of masks At preventing spread of droplets (larger than five micro metres) At preventing spread of aerosol (between one and five micro metres) For what populations Adults Under what conditions In conjunction with other public health measures Hand washing Physical distancing Disinfecting surfaces and facilities | Evidence was not strong enough to recommend universal wearing of masks, but they were found to be slightly protective against infection from casual community contact, modestly effective against household infections when both infected and non-infected people wear them, and useful for high- risk individuals in transient situations. Source | Literature last searched 3 March 2020 |
| | Supporting the wearing of masks Adherence to mask wearing requirements | Public perceptions of some prevention approaches (e.g., hand hygiene and mask wearing) were viewed as familiar and socially responsible, but others (e.g., isolation and physical distancing) were viewed with ambivalence in some | Literature last searched February 2013 |

| Type of document | Relevance to question | Focus | Recency or |
|---------------------|---|--|--|
| uocument | | contexts (e.g., because of perceived adverse impacts social stigma). Common public perceptions of barriers to prevention approaches included "beliefs about infection transmission, personal vulnerability to respiratory infection and concerns about self-diagnosis in emerging respiratory infections." Increasing uptake will require addressing select barriers including perceived physical discomfort of wearing a mask, and concerns about attracting attention and being seen as indicating illness to others | 310103 |
| | Supporting the wearing of masks Adherence to mask wearing requirements | Facemasks are beneficial against certain respiratory infections at mass gatherings, but their specific effect related to preventing COVID-19 transmission remains unproven. The overall uptake of facemasks at mass gatherings ranged between 0.02% to 92.8%, with an average of 50%. | Literature last search 8 February 2020 |
| | Type of non-medical mask Other | Studies did not find a reduction in the occurrence of influenza-like illness with the use of a triple-layer facemask alone in community settings. Source | Literature last searched 25 April 2020 |
| Rapid reviews | Type of mask Cloth Medical worn in non-medical settings Supporting the wearing of masks Potential harms of mask wearing and solutions to address them | There is evidence of a small protective effect of medical facemask use in the community. There is no reliable evidence of the effectiveness of non-medical facemasks in community settings. Harms from facemask use include risks of incorrect use, a false sense of security, mask contamination, as well as some people reporting experiences of discomfort and problems with communication Source (AMSTAR rating 4/9) | Literature last searched 13 May 2020 |
| | Type of mask Cloth Medical worn in non-medical setting Effectiveness of masks At preventing spread of droplets (larger than five micro metres) At preventing spread of aerosol (between one and five micro metres) For what populations Adults | Limited evidence with low certainty from observational studies conducted during the COVID-19 pandemic and from studies conducted during other pandemics and for other respiratory virus indicate that facemasks in community settings may reduce the risk of COVID-19 transmission. <u>Source</u> (AMSTAR rating 5/10) | Literature last searched 24 June 2020 |



| Type of document | Relevance to question | Focus | Recency or status |
|---------------------|--|---|---|
| document | In which types of community settings Indoors (where social distancing is not possible) Indoors (where social distancing is possible) Outdoors Under what conditions In conjunction with other public health measures Hand washing Physical distancing Disinfecting surfaces and facilities | rocus | Sidius |
| | Type of non-medical mask Cloth Medical worn in non-medical settings | Evidence supports the transmission of COVID-19 from asymptomatic people. Systematic wearing of masks in public spaces to reduce the transmission of COVID-19 has been found to have a non- significant reduction in respiratory infections. The efficacy of other masks, including cloth masks has not been established. Source (AMSTAR rating 4/11) | Literature last searched 12 May 2020 |
| | Type of mask Cloth Medical worn in non medical settings Effectiveness of masks At preventing spread of droplets (larger than five micro metres) In which types of community settings Indoors (where social distancing is not possible) Indoors (where social distancing is possible) Under what conditions In conjunction with other public health measures Hand washing Physical distancing Supporting the wearing of masks Adherence to mask wearing requirements | Medical masks have not been found to have a demonstrated effect on reducing acute respiratory infections, however observational and case studies find they are helpful in reducing transmission in the context of mass gatherings and where social distancing is not possible. Medical masks should be prioritized for those with symptoms suggestive of COVID-19, while other can wear a well-constructed non-medical mask as a form of protection. In settings where social distancing cannot be maintained, medical masks or non-medical masks should be encouraged as a form of protection. Health officials should consider providing instruction about mask construction and mask etiquette as well as to enforce the dual implementation of masks alongside other public health measures. Source (AMSTAR rating 4/9) | Literature last searched 19 June 2020 |
| | Effectiveness of non-medical settings At preventing spread of droplets (larger than five micro metres) At preventing spread of aerosol (between one and five micro metres) In which types of community settings Indoors (where social distancing is not possible) Indoors (where social distancing is possible) | There is evidence of contact and droplet transmission of COVID-19, however the evidence related to aerosol-based transmission is not well established. The adoption of mandatory face mask use has been associated with decreasing infection rates, though these decreases have not been directly attributed to facemasks as other measures are often in place. | Published 20 July 2020 |



| Type of | | _ | Recency or |
|----------|--|--|--|
| document | Relevance to question | Focus | status |
| | In transit (e.g., public transit; trains; airplanes) Under what conditions In conjunction with other public health measures Hand washing Physical distancing | I here is little evidence on the use of facemasks for COVID-19 specifically, though given the primary mode of transmission is contact and droplets it is prudent to encourage facemasks in settings with community transmission. Source (AMSTAR rating 3/9) | |
| | Type of mask Cloth Medical worn in non-medical settings For what populations Adults In which types of community settings Indoors (where social distancing is not possible) Indoors (where social distancing is possible) In transit (e.g., public transit; trains; airplanes) Outdoors Under what conditions Length of time wearing the mask Condition of the mask (e.g., damp or torn) In conjunction with other public health measures Hand washing Physical distancing Disinfecting surfaces and facilities Supporting the wearing of masks Adherence to mask wearing requirements Potential harms of mask wearing and solutions to address them | Source (AWSTAR Tailing 3/5) Several best-practice recommendations were derived on graded evidence, and the highest-rated recommendation (grade A) was that a multifaceted approach that includes the use of masks during highrisk exposure combined with evidence-based hand hygiene techniques should be used to prevent the transmission of respiratory infection in the community. In addition: the use of masks by uninfected people in the community was not recommended; masks should be worn by people at high risk of exposure; masks should be changed right away if they are damp; single-use masks should never be re-used and be discarded immediately; masks should cover the mouth of nose, be tied securely in order minimize gaps, and not touched while wearing or removing (they should be cleaned immediately if this happens); and cloth masks are not recommended in low-risk community settings. Risk for infection was found to decrease with mask use as compared to non- | Literature last searched 3 March 2020 |
| | ○ Other | mask use, however little differences were found between community use of N95 as compared to surgical masks. <u>Source</u> | June 2020 |
| | Type of non-medical mask Medical worn in non-medical settings For what populations Adults | Based on 21 included documents, including six systematic reviews, the scientific evidence was found to be inconclusive about whether to recommend the use of surgical masks at a population level. Source | Literature last searched 1 April 2020 |
| | Type of mask Cloth Medical worn in non-medical settings Effectiveness of masks At preventing spread of droplets (larger than five micro metres) At preventing spread of aerosol (between one and five micro metres) For what populations | There is no evidence that cloth masks in the community setting prevent viral respiratory illness and there is some "low certainty evidence" that there is 1.6 times increase in incidence of influenza-like illness for cloth masks as compared to medical masks. <u>Source</u> | Literature last searched 31 March 2020 |



| Type of | Delevere to mostive | F | Recency or |
|---|---|---|---|
| document | | Focus | status |
| | Type of mask Other In which types of community settings Outdoors | No literature that compared the clinical effectiveness of face shields made from different materials was identified. No evidence-based guidelines for the use of face shields in outdoor winter settings were identified Source | Literature last searched 28 July 2020 |
| | Type of mask Other Effectiveness of masks At preventing spread of droplets (larger than five micro metres) At preventing spread of aerosol (between one and five micro metres) | <u>No evidence exists regarding the</u> <u>effectiveness of face shields in pre-</u> <u>hospital settings.</u> <u>Source</u> | Literature last searched 28 July 2020 |
| Guidance developed using some type of evidence synthesis and/or expert opinion | Type of mask Cloth Medical worn in non-medical settings In which types of community settings Indoors (where social distancing is not possible) In transit (e.g., public transit; trains; airplanes) | Masks worn in public are advisable given that it may provide some protection. No randomized controlled trials were found that evaluated the use of cloth masks among the general public. Source (BMJ) | Published 9 April 2020 |
| | Type of mask Cloth Medical worn in non-medical settings For what populations Adults Children Under what conditions In conjunction with other public health measures Hand washing Physical distancing Disinfecting surfaces and facilities | As source control and in conjunction with other public-health measures, the general public is advised to wear a mask with two or more layers of washable, breathable fabric, and avoid masks with unbreathable material and exhalation valves (gaiters and face shields are under evaluation). Children under two years old should not wear a mask. Source (U.S. CDC) | Last updated 27 August 2020 |
| | Type of mask Cloth Medical worn in non-medical settings Effectiveness of masks At preventing spread of droplets (larger than five micro metres) At preventing spread of aerosol (between one and five micro metres) | There is limited evidence on the effectiveness of cloth masks worn by the general public. <u>Source</u> | Published April 2020 |
| | Type of mask Cloth Medical worn in non-medical settings Effectiveness of masks At preventing spread of droplets (larger than five micro metres) At preventing spread of aerosol (between one and five micro metres) Under what conditions | Non-medical masks may be used as a source control (based on limited indirect evidence). Masks (including non-medical masks) are advised in conjunction with other publichealth measures such as physical distancing, hand washing, and other forms of etiquette. Source | Published 8 April 2020 |



| Type of | | | Recency or |
|--|--|---|---|
| document | Relevance to question | Focus | status |
| Protocols for reviews that are underway | In conjunction with other public health measures Hand washing Physical distancing Disinfecting surfaces and facilities Type of mask Cloth Effectiveness of masks At preventing spread of droplets (larger than five micro metres) At preventing spread of aerosol (between | • Evaluating the protective effect of home- made or cloth face mask against viral respiratory illness Source | Anticipated completion date 31 May 2020 |
| | At preventing spread of derecting (between one and five micro metres) Type of mask Cloth Medical worn in non-medical settings Effectiveness of masks At preventing spread of droplets (larger than five micro metres) At preventing spread of aerosol (between one and five micro metres) | The effectiveness of wearing face masks in the community for reducing the spread of COVID-19 <u>Source</u> | Anticipated completion date 08 May 2020 |
| Titles/questio ns for reviews that are being planned | Type of mask Cloth Medical worn in non-medical settings Effectiveness of masks At preventing spread of droplets (larger than five micro metres) At preventing spread of aerosol (between one and five micro metres) | What is the evidence on face mask use to prevent COVID-19 in community settings? <u>Source</u> | Under review |
| | Type of mask Cloth Other Effectiveness of masks At preventing spread of droplets (larger than five micro metres) At preventing spread of aerosol (between one and five micro metres) | What forms of non-standard PPE are there (e.g. home-made masks) and what is the evidence of their efficacy? <u>Source</u> | Under review |
| Single studies in areas where no reviews were identified | | Given the number of evidence documents that include a synthesis of existing single studies, we have included relevant single studies in <u>Table 7</u> below. | |



Table 7: Primary Studies Relevant to the Efficacy of Non-medical Masks³⁰

| Title of Drimony Study |
|--|
| Widespread use of face masks in public may slow the spread of SARS CoV-2: An ecological study (Kenvon, 2020) |
| A modelling framework to assess the likely effectiveness of facemasks in combination with lock down' in managing the COV/ID 19 |
| pandemic (Stuff et al. 2020) |
| Absence of apparent transmission of SAPS CoV 2 from two stylists after exposure at a bair salon with a universal face covering policy |
| Springfield, Missouri, May 2020 (Hendrix et al., 2020) |
| Associations of stay-at-home order and face-masking recommendation with trends in daily new cases and deaths of laboratory-confirmed |
| COVID-19 in the United States (Xu et al., 2020) |
| Bidirectional impact of imperfect mask use on reproduction number of COVID-19: A next generation matrix approach (Fisman et al., 2020) |
| COVID-19 and non-traditional mask use: How do various materials compare in reducing the infection risk for mask wearers? (Wilson et al., |
| 2020) |
| Community use of face masks and COVID-19: Evidence from a natural experiment of state mandates in the US (Lyu & Wehby, 2020) |
| Could masks curtail the post-lockdown resurgence of COVID-19 in the US? (Ngonghala et al., 2020) |
| Effectiveness of surgical and cotton masks in blocking SARS-CoV-2: A controlled comparison in 4 patients (Bae et al., 2020) |
| Face mask use in the general population and optimal resource allocation during the COVID-19 pandemic (Worby & Chang, 2020) |
| Impact of self-imposed prevention measures and short-term government-imposed social distancing on mitigating and delaying a COVID-19 |
| epidemic: A modelling study (Teslya et al., 2020) |
| Mask or no mask for COVID-19: A public health and market study (Li et al., 2020) |
| Mask wearing in pre-symptomatic patients prevents SARS-CoV-2 transmission: An epidemiological analysis (Hong et al., 2020) |
| To mask or not to mask: Modeling the potential for face mask use by the general public to curtail the COVID-19 pandemic (Eikenberry et |
| al., 2020) |
| Hand hygiene, mask-wearing behaviors and its associated factors during the COVID-19 epidemic: A cross-sectional study among primary |
| <u>school students in Wuhan, China</u> (Chen et al., 2020) |
| Epidemiology reveals mask wearing by the public is crucial for COVID-19 control (Zeng et al., 2020) |
| Understanding face mask use to prevent coronavirus and other illnesses: Development of a multidimensional face mask perceptions |
| scale (Howard, 2020) |
| The role of community-wide wearing of face mask for control of coronavirus disease 2019 (COVID-19) epidemic due to SARS-CoV- |
| <u>2</u> (Cheng et al., 2020) |
| The Psychology of wearing face masks in times of the COVID-19 pandemic (Carbon, 2020) |
| Modeling the effects of intervention strategies on COVID-19 transmission dynamics (Kennedy et al., 2020) |



<u>**Table 8: Abstracts for Highly Relevant Documents**³¹ This table includes the abstracts of documents that have been identified as most relevant.</u>

| Document type | Abstract and link to full text |
|----------------------|---|
| Guidelines developed | Advice on the use of masks for COVID-19 |
| using a robust | Abstract |
| process (e.g., | This document provides advice on the use of masks in communities, during home care, and in health |
| GRADE) | care settings in areas that have reported cases of COVID-19. It is intended for individuals in the |
| | community, public health and infection prevention and control (IPC) professionals, health care |
| | managers, health care workers (HCWs), and community health workers. This updated version includes |
| | a section on advice to decision makers on the use of masks for healthy people in community settings. |
| | Advice on the use of masks for children in the community in the context of COVID-19 |
| | This guidance provides specific considerations for the use of non-medical masks, also known as fabric |
| | masks, by children as a means for source control in the context of the current COVID-19 pandemic. It |
| | also advises on the use of medical masks for children under certain conditions. |
| Full systematic | A rapid systematic review of the efficacy of face masks and respirators against coronavirus and other |
| reviews | respiratory transmissible viruses for the community, healthcare workers and sick patients |
| | Abstract |
| | Background: The pandemic of COVID-19 is growing, and a shortage of masks and respirators has |
| | been reported globally. Policies of health organizations for healthcare workers are inconsistent, with a |
| | change in policy in the US for universal face mask use. The aim of this study was to review the |
| | evidence around the efficacy of masks and respirators for healthcare workers, sick patients and the |
| | general public. Methods: A systematic review of randomized controlled clinical trials on use of |
| | respiratory protection by healthcare workers, sick patients and community members was conducted. |
| | Articles were searched on Medline and Embase using key search terms. <u>Results:</u> A total of 19 |
| | randomised controlled trials were included in this study – 8 in community settings, 6 in healthcare |
| | settings and 5 as source control. Most of these randomised controlled trials used different interventions |
| | and outcome measures. In the community, masks appeared to be effective with and without hand |
| | nygiene, and both together are more protective. Randomised controlled trials in health care workers |
| | showed that respirators, if worn continually during a shift, were effective but not if worn intermittently. |
| | Medical masks were not effective, and cloth masks even less effective. when used by sick patients |
| | randomised controlled trials suggested protection of well contacts. <u>Conclusion</u> : The study suggests |
| | that community mask use by well people could be beneficial, particularly for COVID-19, where |
| | transmission may be pre-symptomatic. The studies of masks as source control also suggest a benefit, |
| | and may be important during the COVID-19 pandemic in universal community face mask use as well |
| | as in nealth care settings. I hais in nealthcare workers support the use of respirators continuously |
| | during a shift. This may prevent health worker infections and deaths from COVID-19, as aerosolization |
| | In the hospital setting has been documented. |
| | Physical distancing, face masks, and eye protection to prevent person-to-person transmission of SARS, CoV(2 and COVID 10: A systematic review and meta analysis |
| | And COVID-19. A systematic review and meta-analysis |
| | Background: Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) causes COV/ID-19 and |
| | is spread person to person through close contact. We aimed to investigate the effects of physical |
| | distance face masks and eve protection on virus transmission in health-care and non-health-care |
| | (e.g. community) settings. Methods: We did a systematic review and meta-analysis to investigate the |
| | optimum distance for avoiding person-to-person virus transmission and to assess the use of face |
| | masks and eve protection to prevent transmission of viruses. We obtained data for SARS-CoV-2 and |
| | the betacoronaviruses that cause severe acute respiratory syndrome, and Middle East respiratory |
| | syndrome from 21 standard WHO-specific and COVID-19-specific sources. We searched these data |
| | sources from database inception to May 3, 2020, with no restriction by language. for comparative |
| | studies and for contextual factors of acceptability, feasibility, resource use, and equity. We screened |
| | records, extracted data, and assessed risk of bias in duplicate. We did frequentist and Bavesian meta- |
| | analyses and random-effects meta-regressions. We rated the certainty of evidence according to |
| | Cochrane methods and the GRADE approach. This study is registered with PROSPERO. |
| | CRD42020177047. Findings: Our search identified 172 observational studies across 16 countries and |

| Document type | Abstract and link to full text |
|---------------|---|
| | six continents, with no randomised controlled trials and 44 relevant comparative studies in health-care and non-health-care settings (n=25 697 patients). Transmission of viruses was lower with physical distancing of 1 m or more, compared with a distance of less than 1 m (n=10 736, pooled adjusted odds ratio [aOR] 0·18, 95% CI 0·09 to 0·38; risk difference [RD] $-10\cdot2\%$, 95% CI $-11\cdot5$ to $-7\cdot5$; moderate certainty); protection was increased as distance was lengthened (change in relative risk [RR] 2·02 per m; <i>p</i> _{interaction} =0·041; moderate certainty). Face mask use could result in a large reduction in risk of infection (n=2647; aOR 0·15, 95% CI 0·07 to 0·34, RD $-14\cdot3\%$, $-15\cdot9$ to $-10\cdot7$; low certainty), with stronger associations with N95 or similar respirators compared with disposable surgical masks or similar (e.g., reusable 12–16-layer cotton masks; <i>p</i> _{interaction} =0·090; posterior probability >95%, low certainty). Eye protection also was associated with less infection (n=3713; aOR 0·22, 95% CI 0·12 to 0·39, RD $-10\cdot6\%$, 95% CI $-12\cdot5$ to $-7\cdot7$; low certainty). Unadjusted studies and subgroup and sensitivity analyses showed similar findings. Interpretation: The findings of this systematic review and meta-analysis support physical distancing of 1 m or more and provide quantitative estimates for models and contact tracing to inform policy. Optimum use of face masks, respirators, and eye protection in public and health-care settings should be informed by these findings and contextual factors. Robust randomised trials are needed to better inform the evidence for these interventions, but this systematic appraisal of currently best available evidence might inform interim guidance. |
| | Downsides of face masks and possible mitigation strategies: A systematic and meta-analysis Abstract Objective: To identify, appraise, and synthesise studies evaluating the downsides of wearing facemasks in any setting. We also discuss potential strategies to mitigate these downsides. Methods PubMed, Embase, CENTRAL, EuropePMC were searched (inception-18/5/2020), and clinical registries were searched via CENTRAL. We also did forward-backward citation search of the included studies. We included randomised controlled trials and observational studies comparing facemask use to any active intervention or to control. Two author pairs independently screened articles for inclusion, extracted data and assessed the quality of included studies. The primary outcomes were compliance, discomforts, harms, and adverse events of wearing facemasks. <u>Findings</u> : We screened 5471 articles, including 37 (40 references); 11 were meta-analysed. For mask wear adherence, 47% more people wore facemasks in the facemask group compared to control; adherence was significantly higher (26%) in the surgical/medical mask group than in N95/P2 group. The largest number of studies reported on the discomfort and irritation outcome (20-studies); fewest reported on the misuse of masks, and none reported on mask contamination or risk compensation behaviour. Risk of bias was generally high for blinding of participants and personnel and low for attrition and reporting biases. <u>Conclusion</u> : There are insufficient data to quantify all of the adverse effects that might reduce the acceptability, adherence, and effectiveness of face masks. New research on facemasks should assess and report the harms and downsides. Urgent research is also needed on methods and designs to mitigate the downsides of facemask wearing, particularly the assessment of alternatives such as face shields. |
| Rapid review | Evidence summary for face mask use by healthy people in the community Abstract Face masks aim to reduce the spread of infection by acting as a source control to stop the spread of infection by the person wearing the mask (including those who do not know they are infected) or to protect the wearer from droplet splashes or inhaling airborne contaminants including small (aerosol) and large particle droplets. Mask grades include respirators (classified as personal protective equipment designed to also protect against aerosols), medical face masks and non-medical facemasks. Since the start of the current COVID-19 pandemic, the use of face masks by persons going out in public has been recommended by an increasing number of countries. In Ireland, cloth face coverings are recommended in situations where physical distancing may not be possible, and are mandatory on public transport and in shops and other retail outlets. Nineteen studies that provide direct evidence on the effectiveness of face mask use in community settings to reduce transmission of respiratory viruses were identified. Four studies were conducted in the context of the COVID-19 pandemic, the remaining studies considered influenza, influenza-like illness (ILI), or SARS- CoV-1. Eight studies examined the effectiveness of medical masks, nine studies did not specify the type of mask used, one study |

| Document type | Abstract and link to full text | | | | | | |
|---------------|--|--|--|--|--|--|--|
| | included both medical and non-medical masks and one study included all types of masks. Four observational studies conducted during the COVID-19 pandemic, suggest that face masks may reduce the risk of SARS-CoV-2 infection. Two observational studies that examined the effectiveness of wearing face masks when going out in public suggested that face masks may have been protective against SARS-CoV-1 infection. Six randomised control trials set in households provide some weak evidence that medical masks worn by both index cases and healthy household contacts can reduce the risk of secondary household infections, when implemented early and combined with intensified hand hygiene. There was no evidence from the included studies that face masks increase harm or introduce a false sense of security leading wearers to neglect hand hygiene. The quality of evidence from the studies included was low; two of the studies conducted during the COVID-19 pandemic have not yet been formally peer-reviewed. | | | | | | |
| | Face masks and COVID-19 transmission in the community Abstract There is direct evidence of contact and droplet transmission of COVID-19. 'Flowphysics' and experimental models suggest, but have not demonstrated, airborne transmission. Epidemiological data on infection rates and transmission patterns are difficult to reconcile with long-range aerosol-based transmission. Where symptomatic patients are cared for, no studies to date have found viable virus in air samples. Community mask use is either encouraged or mandatory in over 80 countries. Face coverings have been mandated in parts of Victoria. In countries with community transmission, the adoption of mandatory face mask use has been associated with decreasing infection rates. These decreases have not been directly attributed to face mask use, as a suite of measures is generally adopted. Multiple systematic reviews examine the effect of face masks in community settings on reducing influenza like illness. Results are conflicting, with some reporting a protective effect and others no significant reduction in influenza like illness transmission. Respiratory etiquette, hand hygiene, social distancing, and isolation of cases, have a much stronger evidence base than face masks. Face masks are considered to be an additional measure, but there are concerns that masks can give a false sense of protection and may result in decreased compliance with other infection prevention practices. There is very little evidence on use of face masks on public transport, however some reviews conclude masks may have a role in settings where social distancing is not feasible. Some experts counsel a precautionary approach despite a lack of clear evidence. Cloth masks have variable filtration depending on the fabric. A systematic review found no studies on mask use among COVID-19 negative people in | | | | | | |



Table 9: Summary of Recent Systematic Reviews Evaluating the Effectiveness of Universal Mask Use³²

Twelve systematic reviews (SRs) on the effectiveness of universal mask use were identified. The reviews included various study designs (e.g., randomized controlled trials [RCT], observational studies) and settings (health care and community settings or non-health care settings only). Conclusions from the systematic reviews were consistent, stating that there is either no or very low certainty of the evidence that universal mask use reduces transmission of SARS-CoV-2 (COVID-19), SARS-CoV-1, or influenza.

| Author, Year, Search Period | Exposure | Intervention | Setting | Study Type Included | N Studies (N Relevant to Current Review) | Outcomes | Did SR Assess Quality of Included Studies? | Conclusions |
|--|---|--|--------------|---------------------------------------|---|--|---|--|
| Aggarwal et al, 2020 Inception to April 25, 2020 | Viral respiratory illness | Face mask alone, or with hand hygiene | Community | • RCTs | 9 RCTs (8 in the quantitativ e synthesis) | Influenza-like illness (ILI) | Cochrane Risk of Bias | "Existing data pooled from randomized controlled trials do not reveal a reduction in occurrence of ILI with the use of facemask alone in community settings" |
| Chu et al, 2020 Inceptio n to May 3, 2020 | SARS-CoV-2, beta- coronaviruses, MERS | Optimum distance for avoiding person-to- person virus transmissio n and use of face masks, eye protection to prevent transmissio n | All settings | All study designs | • 172 studies (44 comparativ e studies) | Risk of transmission, hospitalization, ICU admission, death, time to recovery, adverse effects of interventions, contextual factors (acceptability, feasibility, effect on equity, | Cochrane Risk of Bias GRADE | "The findings of this systematic review and meta- analysis support physical distancing of 1 m or more and provide quantitative estimates for models and contact tracing to inform policy. Optimum use of face masks, respirators, and |

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| | | | | | | resource considerations) | | eye protection in public and health-care settings should be informed by these findings and contextual factors. Robust randomized trials are needed to better inform the evidence for these interventions, but this systematic appraisal of currently best available evidence might inform interim guidance" |
|--|--|---|--|---|--|---|---|---|
| Bin-Reza et al, 2011 Inception to Nov 2009, updated on Jan 2011 | Infection with pandemic strains, seasonal influenza A or B viruses and zoonotic viruses such as swine or avian influenza | Face mask or respirator | Health care or community setting | RCTs, quasi- experimental and observational studies | 17 studies (7 studies [5 RCTs – influenza, 2 observational case-control – SARS]) | Laboratory- confirmed or clinically- diagnosed influenza and other viral respiratory infections | • No | • "None of the studies we reviewed established a conclusive relationship between mask/respirator use and protection against influenza infection." |
| Brainard et al. 2020 (preprint) Inception to Jan 2020 | Viruses – influenza or SARS coronavirus | Face masks | Community | Any study design | 31 (12 RCTs, 19 observational) | Influenza-like illness | Cochrane Risk of Bias GRADE | "Wearing facemasks can be very slightly protective against primary infection from casual |

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| | | | | | | | | community contact, and modestly protective against household infections when both infected and uninfected members wear facemasks [] The evidence is not sufficiently strong to support widespread use of facemasks as a protective measure against COVID-19. However, there is enough evidence to support the use of facemasks for short periods of time by particularly vulnerable individuals when in transient higher risk situations." |
|--|--------------|-----------------|-------------|---|---------|---|---|--|
| College of Public Health Medicine Evidence- based COVID-19 Task Team, Cochrane | • SARS-CoV-2 | Cloth masks | • Community | SRs RCTs Modelling studies | • 1 RCT | Laboratory- confirmed viruses Clinical respiratory illness ILI Adverse effects | Cochrane Risk of Bias | "There is no evidence from RCTs regarding the prevention of viral respiratory illnesses using cloth masks in the community setting. A single. |

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| South Africa, and South African Medical Research Council Health Systems Research Unit, 2020 Inception to Mar 31, 2020 | | | | | | | | large cluster trial in healthcare workers provides indirect evidence that cloth masks increase the risk to wearers compared to medical masks. Given the lack of supportive evidence directly for the efficacy, effectiveness or safety of cloth masks, they should only be used in trial settings where effects can be monitored, and potential harms identified early." |
|--|-------------|-----------------|----------------------|--------|----------|---------------------------------------|------|--|
| Cowling et al, 2010 Inception to Aug 2009 | • Influenza | • Face masks | Community setting | • RCTs | • 4 RCTs | Laboratory- confirmed influenza | • No | "There is little evidence to support the effectiveness of face masks to reduce the risk of infection. Current research has several limitations including underpowered samples, limited generalizability, narrow intervention targeting and |





| | | | | | | | | inconsistent testing protocols, different laboratory methods, and case definitions." |
|--|--|--|--|--|--|---|------|--|
| ECRI, 2020 Jan 1, 201, to Apr 6, 2020 | Viral respiratory infection | Cloth face coverings | Community | • NR | • 0 (no studies) | Efficacy of wearing cloth face coverings by the general public for reducing the risk of viral respiratory infection | • No | "We did not identify any studies reporting on clinical or epidemiologic outcomes in populations that adopted cloth face covering use in public settings to reduce transmission risk." |
| Gupta et al. 2020 (preprint) Jan 2000 to Apr 2020 | Respiratory viruses such as influenza, SARS, and SARS-CoV- 2 | Face masks (surgical or cloth) | Community and experimental setting | RCTs, non- randomize d experiment al studies, observation al studies | 7 RCTs and 2 observational studies | • NR | • No | "Theoretical, experimental and clinical evidence suggested that usage of face masks in general population offered significant benefit in preventing the spread of respiratory viruses especially in the pandemic situation, but it's [sic] utility is limited by inconsistent adherence to |





| | | | | | | | | mask usage." |
|---|------------------------|---|--|--------------------|--|---|---|---|
| Jefferson et al, 2020 (preprint) Update of previous SR (Oct 2010 to Apr 2020) | Respiratory viruses | Face masks (surgical, medical, and N95), eye protection , person distancing | Health care and community setting | RCTs, cluster-RCTs | • 7 RCTs | Reported a measure of acute respiratory illness – such as ILI, influenza, or respiratory infections – and/or its consequences (e.g., days off work, complications, hospitalization and death, if clearly reported as consequences of the respiratory illness) | Cochrane Risk of Bias | "Our results show that masks alone have no significant effect in interrupting spread of ILI RR 0.93 (95% CI 0.83 to 1.05) or influenza RR 0.84 (95% CI 0.61 to 1.17) in the all- populations analysis." |
| Liang et al. 2020 (preprint) Inception to Mar 2020 | Respiratory viruses | Face masks | Health care and community settings | • NR | 8 studies (5 RCTs and 3 observational studies) | Laboratory- confirmed or clinically- diagnosed influenza and other viral respiratory infections | Newcastle- Ottawa Scale (observational studies) Jadad scale (RCTs) | "In non- household settings, wearing masks reduced the risk by 55%. Moreover, significant protective effects were found in the study conducted in the general population, indicating the potential benefits of wearing masks for the general public. Although |





| | | | | | | | | laboratory- confirmed virus results show no difference between the mask group and the control group in a study investigating the wearing of masks by pilgrims, wearing masks reduced the risk of influenza-like illness when people gather." |
|--|---|-----------------|-------------------|---|------------|---|------|---|
| Marasingh e, 2020 (preprint) Inception to Feb 2020 | Individuals who are not medically diagnosed with COVID-19 | • Face masks | Community setting | RCTs; cohort, retrospective, or prospective studies | No studies | "Limiting the spread" (unclear) | • No | "This systematic review that searched for scientific evidence around the effectiveness of face masks in limiting the spread of COVID–19 among individuals who are not medically diagnosed with COVID–19, did not find any research studies that focused on the effectiveness of face mask use in tackling this specific virus in this specific population." |

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| Xiao et al, | Influenza | Face | Non–health care | • RCTs | 10 RCTs | Laboratory- | GRADE | "We did not find |
|-------------|-------------------------------|--------------------------|-------------------------------------|--------|-----------------------------|---------------------------------|-------|--------------------------------------|
| <u>2020</u> | | masks, | setting | | | confirmed | | evidence that |
| Inception | | respiratory | | | | influenza | | surgical- type |
| to Aug | | etiquette, | | | | | | face masks are |
| 2018 | | hand | | | | | | effective in |
| | | hygiene, | | | | | | reducing |
| | | surface | | | | | | laboratory- |
| | | and object | | | | | | confirmed |
| | | cleaning | | | | | | influenza |
| | | _ | | | | | | transmission, |
| | | | | | | | | either when worn |
| | | | | | | | | by infected |
| | | | | | | | | persons (source |
| | | | | | | | | control) or by |
| | | | | | | | | persons in the |
| | | | | | | | | general |
| | | | | | | | | community to |
| | | | | | | | | reduce their |
| | | | | | | | | susceptibility. |
| | | | | | | | | However, as with |
| | | | | | | | | hand hygiene, |
| | | | | | | | | face masks might |
| | | | | | | | | be able to reduce |
| | | | | | | | | the transmission |
| | | | | | | | | of other |
| | | | | | | | | infections and |
| | | | | | | | | therefore have |
| | | | | | | | | value in an |
| | | | | | | | | intiuenza |
| | | | | | | | | pandemic when |
| | | | | | | | | nealthcare |
| | | | | | | | | resources are |
| | | | | | | | | stretched." |



Table 10: Summary of Additional Primary Studies³³

This table summarizes five primary studies not included in the systematic reviews described in Table 9, likely because of being published after the systematic review search dates. One study was identified in the May 2020 evidence review (Cheng et al, 2020), and four were identified in this update (Leffler et al, 2020; Lyu & Wehby, 2020; Wang et al, 2020; Zhang et al, 2020). All studies reported lower risk of secondary attack rate (defined as the probability that an infected individual will transmit the disease to a susceptible individual), COVID-19 infection, and COVID-19–related mortality with the use of face masks.

The study by Cheng et al. (2020) was an epidemiologic analysis of the first 100 days of the pandemic comparing the policies of different jurisdictions and subsequent impact on the spread of disease. Leffler et al. (2020) conducted a multivariate regression analyses of potential predictors for coronavirus-related mortality examining traits such as prevalence of smoking and urbanization; we present their results around universal mask use. Another study was a retrospective cohort (Wang et al, 2020) that examined the secondary attack rate within households with a case of COVID-19 and household characteristics (such as use of face masks and hand hygiene) to reduce risk of transmission. Two other studies examined COVID-19 cases in jurisdictions before and after the implementation of universal masking (Lyu & Wehby, 2020; Zhang et al, 2020).

| Author, Year | Methods | Results and Conclusions |
|--|---|--|
| Retrieved Ju | ıne 22, 2020 | |
| Leffler <u>et al,</u> 2020 | Univariate and multivariant linear regression analyses of potential predictors of coronavirus-related mortality in 198 countries, including age, sex ratio, obesity prevalence, temperature, urbanization, smoking duration of infection, lockdown, viral testing, contract tracing policies, and public mask-wearing norms and policies. | Several traits examined were found to impact coronavirus- related mortality. Specifically, the sooner masks were recommended by a country's government, the lower the associated mortality (<i>P</i> < 0.001). |
| | | • The study concluded that societal norms and government policies supporting the wearing of masks by the public contributed to lower mortality. |
| <u>Lyu &</u> <u>Wehby,</u> <u>2020</u> | Collected information on statewide face-covering mandate orders in the United States from public datasets on such policies and from a search of all state orders issued between April 1 and May 21, 2020. Analyzed in the context of a natural experiment: comparing preand post-mandate changes in COVID-19 spread (growth rate in percentage points) in states with face-covering mandates versus states that did not pass these mandates over time. | There was a significant decline in daily growth rate of COVID-19 cases after mandating of face covering in public, and the effect increased over time. Specifically, the daily case rate declined by 0.9, 1.1, 1.4, 1.7, and 2.0 percentage points within 1–5, 6–10, 11–15, and 16–20, and 21+ days, respectively, after the order was signed (<i>P</i> < 0.05). The authors projected that 230,000– 450,000 cases may have been averted by May 22 due to these mandates. Using an event study that examined daily changes in county-level COVID-19 growth rates, the study found that mandating public use of face marks. |
| | | found that mandating public use of face masks was associated with a reduction in the COVID- 19 daily growth rate. |

| Author, Year | Methods | Results and Conclusions |
|--|---|---|
| <u>Wang</u> <u>et al,</u> <u>2020</u> | Retrospective cohort study in China of 335 people in 124 families with at least one laboratory-confirmed COVID-19 case between February 28 and March 27, 2020. Outcome of interest was secondary transmission of SARS-CoV-2 within the family. Characteristics and practices of primary cases, of well family contacts and household hygiene practices were analyzed as predictors of secondary transmission. | The overall secondary attack rate in households was 23%. Face masks were 79% effective and disinfection was 77% effective in preventing transmission, while close frequent contact in the household increased the risk of transmission 18 times, and diarrhea in the index patient increased the risk by four times. The results demonstrate the importance of the pre-symptomatic infectiousness of COVID-19 patients and show that wearing masks after illness onset does not protect close contacts. |
| <u>Zhang</u> <u>et al.</u> <u>2020</u> | Compared pandemic trends and mitigation strategies (including universal masking) in Italy, New York City, and the United States in 2020. Projection of the pandemic trend without implementing face covering in Italy and New York City was performed first by establishing the linear correlation between the infection number and date. Data for both 15 and 30 days prior to the onset of face covering were considered. The slope and the reported infection number were used for the projections. The number of infections avoided due to face covering was determined as the difference between projected and reported values on May 9, 2020. | • The difference in case numbers with and without mandated face covering was a determinant in shaping the pandemic trends in the three epicenters. This protective measure alone significantly reduced the number of infections: by over 78,000 in Italy from April 6 to May 9 and over 66,000 in New York City from April 17 to May 9. Other mitigation measures, such as social distancing implemented in the United States, were insufficient by themselves in protecting the public. The authors concluded that wearing of face masks in public is the most effective means to prevent transmission of COVID-19, and this inexpensive practice, in conjunction with simultaneous social distancing, quarantine, and contact tracing, represents the best opportunity to stop the COVID-19 pandemic. |
| Retrieved Ma | ay 11, 2020 | |
| <u>Cheng</u> <u>et al,</u> <u>2020</u> | • An epidemiological analysis within the first 100 days of the pandemic that compared the incidence of COVID-19 (per million population) in Hong Kong Special Administrative Region (HKSAR) with community-wide masking to that of non-mask-wearing countries (Spain, Italy, Germany, France, United States (USA), United Kingdom (UK), Singapore, and South Korea), which are comparable to HKSAR in terms of population density, health care system, BCG vaccination (for tuberculosis), and social distancing measures but <i>not</i> community-wide masking. | The COVID-19 incidence in HKSAR (129 per million population) was lower (<i>P</i> < .001) than that of Spain (2,983.2), Italy (2,250.8), Germany (1,241.5), France (1,151.6), USA (1,102.8), UK (1,102.8), Singapore (259.8), and South Korea (200.5). Compliance of face mask usage in HKSAR in the general public was 96.5% (range: 95.7% to 97.2%). There were 11 COVID-19 clusters in "mask-off" settings compared with three covident that community-wide mask wearing may contribute to the control of COVID-19 by reducing the emission of infected saliva and respiratory droplets from individuals with subclinical |



Table 11: Select Examples of Guidance on Universal Mask Use³⁴

Figure 1: Example of Guidance on How to Wear a Nonmedical Mask or Face Covering, From Public Health Ontario

How to wear a non-medical mask or face covering

- Clean your hands with <u>soap and water or alcohol-based hand</u> <u>sanitizer</u> for at least 15 seconds.
- Make sure it fits snugly (no gaps between mask and face) to cover the nose and mouth, i.e., from below the eyes to around the chin.
- Secure it with ties or ear loops so that it is comfortable, and doesn't hinder breathing and vision.
- Avoid touching the front of the mask or face covering while wearing it if you do, clean your hands immediately.
- Wear it as long as it is comfortable, and remove when it becomes soiled, damp, damaged or difficult to breathe through.
- Do no share your mask with others.

Source: Public Health Ontario. (2020). Retrieved June 22, 2020.

Figure 2: Example of Guidance on the Proper Way to Wear a Mask, From the US Centers for Disease Control and Prevention (CDC)



Official guidelines on how and when to wear protective masks to guard against the spread of coronavirus n Israel Credit: Health Ministry

Source: US CDC. (2020). Retrieved May 14, 2020.







Table 12: Additional Information

This table summarizes evidence identified from a search of the literature conducted by the Research Analysis and Evaluation Branch, Ministry of Health on September 17, 2020, and from information received through the Evidence Synthesis Network. The studies with the best quality evidence have been presented first: 1) systematic reviews; 2) other types of reviews; and, 3) single studies.

| Author, Jurisdiction Type of Evidence/ Information | | Focus | Summary of Findings and/or Recommendations | Date Published or Recency of Studies |
|---|---|---|---|---|
| | | Systemati | c Reviews | |
| Coclite et al., 2020 Italy, UK | • Systematic review and meta-analysis, preprint (i.e., this study has not been peer- reviewed). | • Effectiveness of face mask use in a community setting and to predict the effectiveness of wearing a mask. | Study findings include: A general consensus toward a reduction of deaths when the population mask coverage is near-universal, regardless of mask efficacy. Filtration efficiency depends on the face mask materials, with studies showing high variability (i.e., levels of protection, in terms of reduction of susceptibility to infection in the wearer, are probably lower for cloth masks, to the extent that they do not effectively protect against infectious aerosols). Overall, findings support the recommendation of using face masks in community settings: home-made masks, may confer a significant degree of protection, albeit less strong than surgical masks or N95 personal respirators. Surgical masks in reducing the | Includes studies to April 22, 2020 Published August 31, 2020 |
| | | | number of microorganisms expelled. | |
| | | Other Types | of Reviews | |
| Iversen et al., 2020 Norwegian Institute of Public Health | Rapid review | • Should individuals in the community without respiratory symptoms wear facemasks to reduce the spread of COVID- 19? | There is evidence of a protective effect of medical facemasks against respiratory infections in community settings. However, study results vary greatly. Non-medical facemasks include a variety of products. There is no reliable evidence of the effectiveness of non-medical facemasks in community settings. Given the low prevalence of COVID-19 currently, even if facemasks are assumed to be effective, the difference in infection rates between using facemasks and not using facemasks would be small. If 20% of people infectious with SARS-CoV-2 do not have symptoms, and assuming a risk reduction of 40% for wearing facemask, 200,000 people would need to wear facemasks to prevent one new infection per week in the current epidemiological situation. | • June 2020 |



| Sunjaya & Morawska, 2020 Australia | • Evidence review and practice recommendation | • Material, design and maintenance of cloth masks | In the current epidemiological situation in Norway (i.e., prevalence of COVID-19 in the general population was very low at the time of writing), wearing facemasks to reduce the spread of COVID-19 is not recommended for individuals in the community without respiratory symptoms who are not in near contact with people who are known to be infected. If the epidemiological situation were to worsen substantially in a geographical area, the authors state that the use of facemasks as a precautionary measure should be reconsidered. Effectiveness: Current evidence suggests filtration effectiveness of cloth masks can range from 3% to 95%. Mask fit greatly affects filtration efficiency, adding an overhead knot or nylon overlay potentially provides the best fit for cloth masks. Design: Multiple layer (hybrid) homemade masks made from a combination of high density 100% cotton and materials with electrostatic charge would be more effective than one made from a single material. Maintenance: There is a paucity of evidence for masks maintenance as most studies are in the laboratory setting, however, switching every four hours as in medical masks and stored in dedicated containers while awaiting disinfection is recommended. Testing Labs: To improve the effectiveness of cloth masks to reduce infection transmission, there is a need for countries to set up independent testing labs for homemade masks made based on locally available materials. This can utilize existing occupational baelth laboratories usually. | • Sept. 2, 2020 |
|---|--|---|---|---------------------|
| | | | occupational health laboratories usually used for accrediting masks and respirators. | |
| | | Single | Studies | A 11.00 |
| De Kai et al., 2020 Hong Kong, France, UK, Finland | Comparison and validation of two theoretical models | SEIR (susceptible- exposed- infectious- recovered) and Agent Based models, empirical validation, and policy recommendations | Findings: Both models demonstrated significant impact when universal masking was; 1) adopted by at least 80% of the population; or 2) adopted early. These effects hold even at the lower filtering rates of homemade masks. The predictions of the two models were validated against an empirical data set that included: 1) whether regions have universal masking cultures or policies; 2) their daily case growth rates; and 3) their percentage reduction from peak daily case growth rates. Results show a near perfect | • April 22, 2020 |



| Mantzari et al | | | correlation between early universal masking and successful suppression of daily case growth rates and/or reduction from peak daily case growth rates, as predicted by the theoretical simulations. Recommendations include: Masking should be mandatory or strongly recommended for the general public when in public transport and public spaces, for the duration of the pandemic. Masking should be mandatory for individuals in essential functions (health care workers, social and family workers, the police and the military, the service sector, construction workers, etc.) and medical masks and gloves or equally safe protection should be provided to them by employers. Cloth masks should be used if medical masks are unavailable. Countries should aim to eventually secure mass production and availability of appropriate medical masks (without exploratory valves) for the entire population during the pandemic. Until supplies are sufficient, medical masks should be reserved for essential functions. The authorities should issue masking guidelines to residents and companies regarding the correct and optimal ways to make, wear and disinfect masks. The introduction of mandatory masking will benefit from being rolled out together with campaigns, citizen initiatives, the media, NGOs, and influencers in order to avoid a public backlash in societies not culturally accustomed to masking. Public awareness is needed that "masking protects your community not just you". | July 2020 |
|--|----------|--|---|-------------------------------|
| <u>Mantzari et al.,</u> <u>2020</u> UK | Analysis | Is risk compensation^r threatening public health in the COVID-19 pandemic? | Key messages: Available evidence does not support concerns that wearing face coverings adversely affects hand hygiene. Evidence from other areas (e.g., helmet wearing) also indicates that risk compensation is not discernible at a population level. The concept of risk compensation, rather than risk compensation itself, seems the | • July, 2020 |

^r Risk compensation is a term widely used but with different interpretations. The central idea is that people have a target level of risk they are comfortable with and they adjust their behaviour to maintain that risk level. From a population perspective, risk compensation should be judged by the average change in an outcome from which the impact of any compensating behaviour can be inferred to follow an intervention—for example, bike injuries and fatalities after mandated wearing of bike helmets (Mantzari et al., 2020).

| | | | greater threat to public health through | |
|---------------------------|--|--------------------------------------|--|-------------------|
| | | | delaving potentially effective | |
| | | | interventions. | |
| | | | Other findings | |
| | | | Six experimental studies conducted in | |
| | | | community settings measured hand | |
| | | | bygiana. One of these assessed the use | |
| | | | of face masks for managing viral | |
| | | | respiratory infections and the remaining | |
| | | | five for managing influenza specifically | |
| | | | Wearing masks did not reduce the | |
| | | | frequency of hand washing or hand | |
| | | | capitizing in any of the six studies | |
| | | | Samusing in any of the six studies. | |
| | | | of hand weaking were higher in the | |
| | | | around allocated to wearing masks | |
| Audia at al. 2020 | Oursettation | Derfermennen of | This study sugging of the median state | Ostahan |
| <u>Aydin et al., 2020</u> | Quantitative | Performance of fabrics for borns | Inis study examined the performance of 11 | • October, |
| US | mechanistic | tabrics for nome- | common nousenoid fabrics at blocking | 2020 |
| | study | made masks | large, high-velocity droplets, to find that | |
| | | against the | most fabrics have substantial blocking | |
| | | spread of COVID- | emciency (median values >70%). Two | |
| | | droploto | T shirt slath, blocks draplets with an | |
| | | ulopiels | afficiency (>0.4%) similar to that of modical | |
| | | | eniciency (>94%) similar to that of medical | |
| | | | hasks, while being approximately twice as | |
| | | | Diediliable. | |
| | | | Overall, the study suggests that cloth lace asyoring a consciently with multiple layers | |
| | | | may help reduce dreplet trapemission of | |
| | | | respiratory infections | |
| Holetal 2020 | • Experimental | Modical maak | This study compared a 2 layer 100% actton | • Sontombor |
| <u>10 et al., 2020</u> | Experimental tosting of mask | | This study compared a 5-layer 100 % collon mask versus surgical masks found 86.4% | |
| laiwan | use in different | wersus collon | and 00 0% filtration officiancy, rapportively | 2020 |
| | use in unerent | nroventing | and 99.9% initiation enciency, respectively. | |
| | seungs | respiratory | | |
| | | transmission in | | |
| | | mioro | | |
| | | onvironmonts | | |
| Davies et al | Evaluation of | | This experimental study found that masks | |
| 2013 | | | made from 100% cotton t shirts had shout | - Augusi, 2013 |
| 2010 | motoriale as | bomomodo | 50% the modian fit factor of surgical masks | 2013 |
| UK | compared with a | maske | Both masks blocked microorganisms | |
| | surgical mask or | 110383 | Bourn masks blocked microorganisms avaalled: however, surgical masks were | |
| | no mask | | three times more effective | |
| | no mask | Studies Planne | d or Linderway | |
| iCare Study | An international | Public adherence | The iCARE Study is an oppoing multi-wave | |
| (International | longitudinal | to behaviour- | international study of public awareness | - Ongoing |
| COVID-19 | study based at | based prevention | attitudes, concerns and behavioural | |
| Awareness and | the Centre | policies | responses to public health policies | |
| Responses | intégré | P | implemented to reduce the spread of | |
| Evaluation) | universitaire de | | COVID-19, as well as the multidimensional | |
| , | santé et de | | impacts of the pandemic on people around | |
| | services sociaux | | the world. | |
| | du Nord-de-l'Île- | | The goal is to link behavioural survey data | |
| | de-Montréal | | with policy, mobility and case data to | |

Ontario 🞯



| (CIUSSS-NIM) | provide behavioural science, data-driven | |
|-------------------|--|--|
| and supported | recommendations to governments on how | |
| by the University | to optimize current policy strategies to | |
| of Quebec | reduce the impact of the COVID-19 | |
| (Montreal) and | pandemic in Canada and around the world. | |
| Concordia | $^{\circ}$ Results of the first survey conducted with | |
| University | 20,537 people between March 27 and | |
| , | April 15, 2020 can be found here. | |
| | ○ A subset of this data from Canada | |
| | (approximately 2.000 respondents) | |
| | reveals the following: | |
| | About 60% of people are wearing a | |
| | facemask most of the time when they | |
| | leave the house | |
| | About 30% of people seem to be | |
| | unaware that there is a mask wearing | |
| | policy, and two-thirds of these people | |
| | do not wear masks | |
| | About 30% of those who know there is | |
| | a policy do not wear masks most of the | |
| | time | |
| | For those not wearing masks: 1) they | |
| | are generally younger male, and live in | |
| | rural areas: 2) those in Ontario and | |
| | Quebec are wearing masks more than | |
| | other provinces: 3) data indicated that | |
| | a focus on how their behaviours are | |
| | a locus of now their behaviours are | |
| | would be metivating (not a focus on the | |
| | bealth consequences of COVID 10 co | |
| | nealth consequences of COVID-19 as | |
| | a molivator, which may be negatively | |
| | impacting benaviour), 4) they leer that | |
| | overall government measures are too | |
| | struct, 5) they acknowledge that they | |
| | are not doing more than others with | |
| | regards to their COVID-19 mitigation | |
| | benaviours; and 6) the most popular | |
| | source of COVID-19 Information is | |
| | regular news channels. ^s | |
| | Intographics to help share findings and | |
| | analyses stemming from iCARE study | |
| | data can be found <u>here</u> . Some highlights | |
| | include: | |
| | In July 2020, people most likely to wear | |
| | masks "most of the time" were women, | |
| | older adults, and those living in | |
| | <u>suburban areas</u> . | |
| | The percentage of Canadians reporting | |
| | wearing facemasks outside their home | |
| | "most of the time" rose from 2% in | |
| | March to 54% in July. | |

^s This preliminary analysis was provided by Simon Bacon, one of the Primary Investigators of the iCARE study.





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