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EVIDENCE BRIEF

(ARCHIVED) Community non-medical and medical mask use for reducing SARS-CoV-2 transmission

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Key Messages

- The scientific literature supports mask-wearing in community settings as an effective means of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) source control with an overall reduction in transmission risk when both source and contact are appropriately wearing masks.
- Experimental data support 3-layer/multilayer non-medical masks (NMMs), medical masks (MMs) and respirators (i.e. N95s) as providing better filtering efficiency, which may translate to a reduction in SARS-CoV-2 transmission. The evidence comparing NMMs and MMs is largely limited to experimental studies evaluating filtering efficiency and is not based on clinical or real-world settings.
- Based on a jurisdictional scan of current mask guidance and policy (with a focus on MMs and respirators) for community settings in the context of the Coronavirus Disease 2019 (COVID-19) pandemic, most jurisdictions highlight that regardless of type, individuals should wear a mask that is well-fitting (i.e., tight fit that covers nose, mouth and chin) and comfortable.
- Some jurisdictions (Germany, Denmark, Austria and France) recommend that the public wear MMs or respirators in community settings. Other jurisdictions recommend that MMs only be worn in community settings by those at risk of severe infection (i.e., older adults, individuals with confirmed COVID-19 or symptoms, individuals with underlying medical conditions).
- Considerations for the type of mask used (i.e., NMM, MM or respirators) for source control and personal protection should include filtration efficiency, fit, breathability, comfort and adherence to optimize the protection of those around the mask wearer.

Issue and Research Question

The use of masks for the public is one of several Coronavirus Disease 2019 (COVID-19) pandemic mitigation strategies, within a layered approach that emphasizes vaccination and includes symptom screening, physical distancing, ventilation/filtration, hand hygiene and contact tracing. Mask use may reduce individuals' exposure to respiratory particles from the wearer (source control) and masks (as personal protective equipment) may also reduce the risk of virus exposure to the wearer.[1] Several studies demonstrate that mask-wearing provides source control and public mask-wearing mandates have led to reduced daily COVID-19 case counts.[2-5]

Non-medical masks (NMMs) are masks comprised of least two layers of tightly woven fabric (e.g., cotton) and may include a third layer with a filter-type fabric such as non-woven polypropylene.[6] Medical masks (MMs) include surgical and procedure masks made with standardized (e.g., American Society of Testing and Materials [ASTM]-rated) materials. Respirators such as N95s are designed for filtering virtually all respired air for the wearer and have typically been used by fit-tested workers in healthcare and other occupational settings.[7]

Recently, public use of MMs and respirators in the community have been reconsidered in light of the emergence of Delta, role of aerosols, anticipated increase in indoor gatherings and activities in the fall and winter seasons relevant to the Northern Hemisphere, and the wider availability of previously scarce mask types. The New and Emerging Respiratory Virus Threats Advisory Group (NERVTAG) in the United Kingdom (UK) is suggesting that in some circumstances, NMMs are not sufficient for the prevention of SARS-CoV-2 transmission and that MMs and respirators are required along with other mitigation efforts to prevent close range transmission.[8]

The evidence review section of this document summarizes: 1) evidence on mask use and effectiveness in reducing of SARS-CoV-2 transmission in community settings, and 2) evidence on mask-filtering efficiency and mask characteristics (referred to as "experimental studies"). Within the evidence review section, we highlight additional areas of interest, including NMMs versus MMs versus respirators in preventing transmission, along with pertinent differences of mask use and effectiveness in pediatric and adult populations. The environmental scan portion of this document aims to summarize jurisdictional approaches to policies and guidance for mask-wearing in community settings, with a focus on MMs and respirators. Policies and guidance related to mask-wearing guidance for healthcare settings and settings specific to children (e.g., daycare, school) were out of scope.

Methods

Evidence Review

In considering feasibility, scope, and a need for responsiveness, we chose a rapid review as an appropriate approach to understanding community use of NMMs and MMs for the lowering of SARS-CoV-2 transmission. A rapid review is a knowledge synthesis where certain steps of the systematic review process are omitted in order to be timely (e.g., duplicate reviewer screening of articles). For this evidence brief, we concentrated on highlighting existing Public Health Ontario (PHO) knowledge products where appropriate and then performed targeted searches to fill gaps between literature searches. We conducted supplemental literature searches on October 27, 2021 in PubMED and Google Scholar for English-language peer-reviewed and non-peer-reviewed records that described mask-wearing. We restricted the search to articles published after January 1, 2020. This rapid review

concentrated on evidence from existing PHO knowledge products, systematic reviews and meta-analyses, supplemented by primary literature where appropriate. We reviewed citations from included articles to identify additional research.

Jurisdictional Scan

A rapid environmental scan of MM-wearing guidance in community settings in select international jurisdictions was conducted. We examined government mask guidance from the United States (US), Israel, UK and select continental Europe jurisdictions, as well as guidance from international health and public health agencies. Records were obtained through online searches conducted between October 26 and October 27, 2021 of recent policies, media articles, government websites, official press releases and reports. Healthcare settings and settings specific to children (e.g., daycare, school) were out of scope.

Main Findings

Evidence Review

For more information on masking, please refer to PHO's Syntheses *Wearing Masks in Public and COVID-19 – What We Know So Far* and *Mask Wearing in Children and COVID-19 – What We Know So Far* .[1,9] We highlight findings from these syntheses for our evidence review, and present larger studies as examples of the latest or most comprehensive research.

REDUCTION IN SARS-COV-2 COMMUNITY TRANSMISSION

The body of evidence supports mask-wearing in public as effective for source control with possible added benefits of personal protection for the wearer if both the source and contact are appropriately wearing well-fitted masks, especially when the vast majority of the population are wearing masks. The majority of studies directly evaluating the isolated effectiveness of mask-wearing in the community concentrated on the adult population. We include school-based studies here since these are the only studies concentrating on children and mask-wearing. In addition, most of the studies examined did not consider mask-wearing in settings where variants of concern (VOCs) were circulating or considered the type of mask used.

The largest study on the topic of community mask use was a randomized controlled trial (RCT) performed in Bangladesh (Abaluck et al. 2021, Preprint).[10] From November 2020 to April 2021, 600 rural villages in Bangladesh, which included a population of 342,126 adults, were assigned to either no intervention (control, n = 300 villages, n = 163,838 adults) or community-level mask promotion (intervention, n = 300 villages, n = 178,288 adults). The intervention group was cross-randomized to mask promotion strategies at the village and household levels, including cloth (n = 100 villages) and surgical masks (n = 200 villages). The authors used pairwise randomization of unions within the same sub-districts for similarity of COVID-19 case data, population size, and population density.[11] In the pooled analysis of surgical and cloth mask treatment groups, symptomatic seroprevalence was reduced by 9.3% (adjusted prevalence ratio [aPR] = 0.91; 95% confidence interval [CI]: 0.82– 1.00; control prevalence = 0.76%; treatment prevalence = 0.69%). In the subgroup analysis of surgical masks, the relative reduction of symptomatic seroprevalence was 11.2% (aPR = 0.89; 95% CI: 0.78–1.01; control prevalence = 0.80%; surgical mask treatment prevalence = 0.71%). The benefit of surgical masks was driven by reduction of symptomatic seroprevalence in persons over 50 years (age 50–60 years: aPR = 0.77; 95% CI: 0.59– 0.95; p = 0.011; >60 years: aPR = 0.65; 95% CI: 0.46–0.85; p = 0.001). Wearing a surgical mask did not have a significant effect on reducing symptomatic seroprevalence in persons 40–

50 years (unadjusted symptomatic seroprevalence was 0.95% in controls versus 0.94% in the surgical mask treatment arm; p = 0.984) or <40 years (unadjusted symptomatic seroprevalence 0.55% in controls versus 0.52% in the surgical mask treatment arm; p = 0.618). In the subgroup analysis of cloth masks, the relative reduction of symptomatic seroprevalence was 5.0% (aPR = 0.95; 95% CI: 0.79–1.11; p = 0.54; control prevalence = 0.67%; cloth mask treatment prevalence = 0.62%).

Overall, Abaluck et al. (2021) provides epidemiological evidence to support universal community mask use as an effective public health measure for COVID-19 especially in lower middle-income countries where vaccines may not yet be as readily available. The authors demonstrated the effectiveness of their intervention to increase mask use in rural villages in Bangladesh, and that this increase in mask use was not associated with less physical distancing. They also highlight that ongoing intervention is necessary to maintain mask adherence over time. The authors demonstrated significant population-level protective effects of universal mask-wearing which are likely to be underestimates for jurisdictions with higher mask adherence.

In a community-based, unblended RCT in five regions in Denmark (April 3 to June 2, 2020), Bundgaard et al. 2021) assessed if recommendations for wearing surgical masks outside the home in adults (≥18 years) would protect wearers from acquiring SARS-CoV-2 infection.[12] SARS-CoV-2 infection was detected in 42/2,392 (1.8%) versus 53/2,470 (2.1%) individuals in the mask-wearing (intervention) and non-mask-wearing (control) groups respectively, with a between-group difference of −0.3% (95% CI: -1.2 to 0.4; p = 0.38), odds ratio (OR) = 0.82 (95% CI: 0.54–1.23; p = 0.33). The authors performed a pre-specified per protocol analysis excluding mask group participants who reported non-adherence (7%), as well as an analysis excluding those without baseline SARS-CoV-2 results (n=18), with similar primary outcome results. In addition, the authors performed pre-specified subgroup analyses with no statistically significant interactions identified. 19.3% of study participants were lost to follow-up. Post-hoc, the authors performed multiple imputation accounting for this loss to follow-up, which yielded similar results. The authors concluded that recommendations to wear surgical masks to supplement other public health measures did not significantly reduce the SARS-CoV-2 infection rate among wearers by more than 50% in a community with modest (2%) infection rates, beyond other public health measures. However, based on the 95% CIs they could not exclude a range of effects compatible with a 46% reduction to a 23% increase in SARS-CoV-2 infections.

Several systematic reviews and meta-analyses report that mask-wearing (general mask-wearing, specific masks not mentioned) in the community reduces the risk of SARS-CoV-2 transmission. In a systematic review and meta-analysis of 4 observational studies with 7,688 participants, Tabatabaeizadeh (2021) reported a significant reduction in infection with mask use (pooled relative risk [RR]: 0.12; 95% CI: 0.06–0.27; p < 0.001).[13] In a meta-analysis of 2,647 patients, Chu et al. (2020) reported that mask use reduced the risk of SARS-CoV-2 infection (aOR: 0.15; 95% CI: 0.07–0.34); protection from infection was higher for N95/similar respirators (aOR: 0.04; 95% CI: 0.004–0.30) compared to other masks (aOR: 0.33; 95% CI: 0.17–0.61).[14] In a systematic review and meta-analysis of 6 studies and 1,233 participants, Li et al. (2021) reported that wearing a mask was associated with a significantly reduced risk of SARS-CoV-2 infection (OR: 0.38; 95% CI: 0.21–0.69).[15] In a systematic review and meta-analysis of 8 studies and 3,820 participants, Liang et al. (2020) reported that mask-wearing in non-healthcare workers reduced the risk of respiratory virus transmission 47% (OR: 0.53; 95% CI: 0.36–0.79).[16] Brainard et al. (2020), in a systematic review of non-COVID-19 studies, noted that mask-wearing likely reduces the risk of respiratory infection by 6–15%; this estimate took into account that RCTs underestimate mask effectiveness for the prevention of respiratory infection and observational (i.e., cohort, case-control, cross-sectional) studies overestimate the effectiveness of mask-wearing.[17]

Several studies found that mask mandates in schools have been associated with lower incidence of SARS-CoV-2. Currently, there is no evidence directly comparing the effectiveness of NMMs versus MMs for preventing SARS-CoV-2 transmission in pediatric community settings. Using data from across the US (576,051 respondents), Lessler et al. (2021) reported a trend to a lower risk of SARS-CoV-2 infection in household adults when children were required to wear a mask while attending in-person learning compared to virtual or homeschooling (self-reported) for COVID-19-like illness (CLI) and confirmed SARS-CoV-2 infection; aOR: 0.89; 95% CI: 0.79–1.01 and aOR: 0.91; 95% CI: 0.83–1.00, respectively.[18] In Florida primary and secondary schools (schools, n ≈ 6,800; students, n = 2,809,553), Doyle et al. (2021) reported that the rate of school-related cases in schools with mask mandates for children and staff indoors (1,171 per 100,000 population) was significantly lower than in schools without a mask mandate (1,667 per 100,000) ($p < 0.01$).[19] In a meta-analysis of 26 studies, Yuan et al. (2021 preprint) reported that mask-wearing and physical distancing in school children was associated with a decreased risk of SARS-CoV-2 infection in schools (aOR: 0.22; 95% CI: 0.17–0.29).[20] Jehn et al. (2021) found that in July through August 2021 when Delta was circulating, the odds of a school-associated COVID-19 outbreak in Arizona schools with no mask requirement was 3.5 times higher than in schools with an early mask requirement.[21] Hobbs et al. (2020) investigated risk factors for COVID-19 infection in a case control study of hospitalized children (2 to 17 years; case-patients, n = 154; control patients, n = 243) in Mississippi, US (September to November 2020). In children who attended childcare or school during the 2 weeks before the SARS-CoV-2 test, the risk of a positive SARS-CoV-2 test was reduced when all children and staff self-reported wearing masks inside facilities (aOR: 0.4; 95% CI: 0.2–0.8).[22]

MASK FILTERING EFFICIENCY AND CHARACTERISTICS (EXPERIMENTAL STUDIES)

Experimental data supports higher quality masks, such as multilayer NMMs, MMs and respirators as providing superior filtering efficiency. By inference, these higher-quality masks should reduce the potential for SARS-CoV-2 transmission. A consistent finding is that mask fit is critically important to filtering efficiency, just as the specific materials used to make the masks are important to filtering efficiency. Most of the evidence comparing NMMs and MMs in community settings is limited to experimental studies evaluating filtering efficiency and is not based on clinical or real-world settings. NMMs are highly variable in design/material and may lead to ill-fitting masks and masks with variable filtration efficiencies that can be less effective for source control.[23-29]

Young and Otten (2021) performed a rapid review on the characteristics of effective NMMs in reducing the risk of SARS-CoV-2 transmission.[25,30] Experimental simulation studies have found that NMMs were more effective for source control (i.e., preventing the spread of SARS-CoV-2 if worn by an infectious person) than preventing infections in the person wearing the mask. NMMs reduced the distance respiratory droplets travelled during indoor talking, coughing and sneezing. The filtration efficiency of NMMs (with variable designs and fabrics) ranged from less than 10% to more than 95% in 42 studies. The efficacy of NMMs depended on: 1) filtration efficiency, 2) breathability, and 3) fit. When NMMs were made from high quality fabrics consisting of multiple layers and snug fit, they reduced the expulsion of respiratory particles, although to a lesser extent than MMs. Several characteristics of NMMs contributed to reducing the risk of spreading or contracting SARS-CoV-2. Tight-fitting, double-layer masks with different material types (e.g., combed cotton and polyester) or masks made from one type of material but with greater than 2 layers exhibited similar source reduction efficiencies as MMs (>90%). Loose-fitting NMMs reduced filtration efficacy by more than 50% in some studies. Multiple-layer NMMs improved filtration efficiency, but masks with more than three layers reduced breathability. Fabrics should be of high-quality and tightly woven, including hydrophobic fabrics (e.g., polyester, spunbound polypropylene, polyaramid); fabrics that can capture charged particles (e.g., polyester, silk); or fabrics with hydrophilic properties that increase comfort and longevity (e.g., cotton). The filtration

efficiencies of most household fabrics were higher for larger, low-velocity respiratory droplets. Overall, a triple-layered mask made of a hydrophobic exterior, blended non-woven fabric middle, and hydrophilic interior was the ideal combination for source reduction and potential personal protection.

In several experiments and modelling, Duncan et al. (2021 investigated aerosol particle penetration and total inward leakage through face masks (i.e., re-usable, fabric two-layer masks, re-useable fabric multi-layer masks, disposable procedure/surgical masks, KN95 masks and N95 filtering facepiece respirators [FFR]).[31] The goal of this research was to assess masks as a means of personal protection. The authors calculated a mean fabric protection factor (FPF) for each mask, a metric taking into account the penetration of particles and filter efficiency. The higher the mask's FPF, the higher the relative protection. For each mask type, the geometric mean FPF (geometric standard deviation [GSD]) was reported: 2-layer: 1.8 (GSD: 1.22); multilayer: 3.6 (GSD: 1.57); procedure: 9.7 (GSD: 1.17); KN95: 145 (GSD: 1.71); N95 FFR: 69.8 (GSD: 2.23). The combined penetration of aerosol particles (through gaps between the mask and face or through the mask material) was measured as the total inward leakage (TIL) of aerosol particles into the facial cavity of a mask worn by a test subject. The total inward leakage protection factor (TILPF) was calculated as 1/TIL, with higher values representing relatively higher protection. For each mask type, the geometric mean TILPF was reported: 2-layer: 1.4 (range: 1.1–2.8); multilayer: 1.8 (range: 1.1–4.9); procedure: 2.3 (range: 1.3–8.3); KN95: 6.2 (range: 3.4–14.7); N95 FFR: 166 (range: 92.3–319). Modelling a viral concentration of 0.01% and particle size of 0.3 µm, the percent reduction in viral penetration, compared to a 2-layer mask, was 99.2% for N95 FFRs, 96% for procedure masks, and 59% for multi-layer masks. The median quality factor (not presented in the study for N95 FFRs due to different face velocities) was highest for KN95 masks (≈0.095 Pa^{-1}), followed by procedure masks (≈0.07 Pa^{-1}), multi-layer masks (≈0.035 Pa^{-1}) and 2-layer masks (≈0.01 Pa^{-1}). The authors concluded that N95 FFRs were the only masks investigated that provided both high FPF and TILPF. Further, the authors concluded that N95 FFRs are the best option to protect individuals from exposure to aerosols in high-risk settings. Notably, KN95s had higher filtering efficiency than NMMs and MMs, and TILPF was more similar to NMMs and MMs than fit-tested N95 FFR, although appreciably higher than the 2-layer, multi-layer or surgical/procedural masks.

Brooks et al. (2021) performed an experimental simulation study using masked dummy headforms using different configurations and modifications with three-ply MMs and three-ply cotton masks to evaluate source control on a source model and protection afforded to a receiver under controlled conditions.[24] For source control, 'double-masking' or 'knot and tuck' on the source blocked more particles generated during a simulated cough compared to using a three-layer cotton mask alone or a three-layer MM alone (85.4% and 77.0% versus 51.4% and 56.1%, respectively). For exposure protection, 'double-masking' or 'knot and tuck' modifications of a MM compared to unmodified MMs used on both source and receiver, reduced wearer exposure by 96.4% and 95.9% compared to 84.3%, respectively. For caveats on this work, please refer to PHO's synopsis of this research.[26]

Jurisdictional Scan

This section summarizes briefly the findings from a jurisdictional scan on guidance and policies for the general public on the use of MMs and respirators in community settings. A full summary of all relevant guidance and policies on use of NMMs, MMs or respirators in community settings can be found in **Appendix A**.

Some jurisdictions (Austria,[32,33] Denmark,[34,35] France,[36] Germany[37]) recommend that members of the general public use of MMs or respirators in community settings where it is difficult to maintain physical distancing (i.e., large gatherings, public transit, in retail settings). Other jurisdictions (Ireland[38] and

Italy[39-41]) and international public health agencies such as the European Centre for Disease Prevention and Control (ECDC),[42] US Centers for Disease Control and Prevention (CDC),[43,44] and World Health Organization (WHO)[45] only recommend the use of MMs or respirators in community settings for specific populations that are at increased risk of exposure or COVID-19 disease severity (i.e., older adults, people with underlying health conditions, people with confirmed COVID-19 or symptoms). Finally, Israel,[46,47] Finland,[48,49] England,[50,51] and Norway[52,53] recommend or require mask use in certain community settings but do not recommend the use of MMs or respirators over NMMs.

More details on jurisdictional guidance and policies related to masking in community settings can be found in Appendix A. This information in Appendix A is summarized according to: mask type, settings in which masks are required, and other details (e.g., special populations for which MM or respirators are required, whether masks are provided to residents, etc.).

Discussion and Conclusions

The scientific literature supports mask-wearing in community settings as an effective means of source control with an overall reduction in transmission risk when both source and contact are appropriately wearing masks. Experimental data supports higher quality masks, such as multilayer NMMs, MMs and respirators as providing superior filtering efficiency and possibly more reduction in SARS-CoV-2 transmission; however, most of the studies of MMs and respirators were performed in healthcare settings, with limited studies of mask effectiveness in community settings. There is limited real-world evidence to indicate which mask type is best for general community use. There may be improved filtration with MM and respirators although the incremental benefit this provides with all the other prevention layers in place remains unclear. In addition, there may be trade-offs if the higher-level filtration mask is less comfortable and leads to decreased adherence or use. Mask use efficacy in community settings depends on mask construction (material), tightness of fit and consistent use.

A scan of other jurisdictions and agencies highlights guidance on the importance of mask fit (i.e., comfort, coverage of nose and mouth) and mask-wearing behaviours (i.e., how to clean or dispose of the mask) for the prevention SARS-CoV-2 transmission. Several jurisdictions and agencies (CDC, ECDC, WHO, Ireland and Italy) recommend that individuals who are at an increased risk of exposure or severe infection may consider using a MM or respirator. With the emergence of more transmissible VOCs, several European countries (e.g., France, Denmark, Austria and Germany) recommend or require MMs or respirators in some community settings. Finally, some jurisdictions (Israel, Finland, England and Norway) recommend or require mask use in certain community settings but do not recommend the use of MMs or respirators over NMMs.

As masks potentially become adopted for societal use longer-term, there are discussions on how to make longer-lasting, better-fitting and effective masks. The Center for Health Security (John Hopkins' Bloomberg School of Public Health) provides some general principles concerning the future of masks, including: 1) improved masks should block respiratory droplets and aerosols, with better fit, communication, reusability, shelf life, and/or supply-chain reliability; 2) masks should be multipurpose and multihazard, providing source control and protecting against respiratory pathogens; 3) combine ease of use and wearability, while providing high-level protection; and 4) masks should shift to those that are reusable, especially in healthcare settings.[54]

Implications for Practice

- Vaccination remains the most effective measure to reduce morbidity and mortality in the context of the highly transmissible Delta variant, and the most important part of the multi-layer approach to reduce transmission. A comprehensive approach also includes screening and self-isolation, physical distancing, ventilation and filtration in indoor environments, and hygiene (personal and environmental), in addition to masking for source control.

- In the community setting, there is limited real-world data to support a preference for wearing a 3- or multi-layer NMM, MM or respirator. The mask should fit well, completely cover the nose and mouth and be comfortable enough to wear for long periods to improve adherence. Considerations in choosing a mask may also incorporate the relative risk of the mask wearer (e.g., higher risk due to older age or severe immune compromise). MMs and respirators have benefits of improved filtration and fit. The additional personal protection benefits of KN95 and N95 respirators will be dependent on the degree of fit and inward leakage and may not be achieved in the absence of fit-testing and seal-checking procedures.

- With the variation in masks, situations and adherence that is expected in real-world settings, the primary objective of masking in the community is typically considered as source control. Optimizing adherence of masking at the population level and particularly around those who are unable to be vaccinated or likely to experience severe outcomes is expected to have the greatest public health impact.

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Appendix A

Table 1 below summarizes the findings from a jurisdictional scan on guidance and policies for the general public on the use of non-medical masks (NMMs), medical masks (MMs) and respirators in community settings. This information is summarized according to: mask type, settings in which masks are required, and other details (e.g., special populations for which MM or respirators are required, whether masks are provided to residents, etc.).

Table 1. Medical mask (MM) and respirator guidance for community settings from select jurisdictions

Jurisdiction or Agency	Mask Type Recommended for Community Settings	Community Settings where Masks are Required	Other Details
Austria[32,33]	Filtering facepiece (FFP) FFP2 mask	Required for everyone on public transport and in essential businesses such as supermarkets, pharmacies, gas stations and banks. Required for people who are unvaccinated, and recommended for vaccinated or people who have recovered from COVID-19 in retail and museums.	In Vienna only, a FFP2 mask is required in all shops, theatres, and cinemas. Media reporting states that the government provided older adults and low-income households with free FFP2 masks in January 2021, but it is unclear whether this continued.[55]
Denmark[34,35]	Type I MM or high-quality NMMs. Disposable masks are recommended to be medical or surgical quality.	Recommended at large gatherings where distancing is difficult, and where close contact is unavoidable for 15 minutes or more at a distance of less than 1 metre. Required at airports, but not on public transportation. Masks not required in restaurants, clubs, retail stores or personal service businesses; however, businesses are allowed to make their own requirements if they choose.	Type II MMs and respirators (FFP2, FFP3, etc.) are only recommended for use in the healthcare and elder care sectors.

Jurisdiction or Agency	Mask Type Recommended for Community Settings	Community Settings where Masks are Required	Other Details
European Centre for Disease Prevention and Control (ECDC)[42]	ECDC does not recommend a certain mask type over another. However, MMs may be considered in certain circumstances.	Masks recommended in confined public spaces and crowded outdoor settings in areas with community transmission.	MMs recommended in households for people with symptoms or confirmed COVID-19 and for the people they live with; and in community settings for those at risk of severe COVID-19 infection (i.e., older adults, underlying conditions).
England[50,51]	England does not recommend a certain mask type over another. Masks should securely covers the nose and mouth. Cloth or disposable masks work best if they are well-fitting and are made with at least 2 layers.	As of July 19, 2021, no legal requirement to wear a mask in indoor settings or on public transport, but are still recommended in crowded or enclosed spaces.	Surgical/medical masks are only intended for health care workers. Bandanas or religious garments may be used but are likely to be less effective if they do not fit securely around the face.
Finland[48,49]	Finland does not recommend a certain mask type over another. Individuals may use a disposable mask, reusable cloth mask or homemade masks. Individuals are recommended to try on different masks to find a model that suits your face and that you can breathe through.	Masks recommended on public transport and indoor spaces where distancing cannot be maintained. Masks recommended outdoors in crowded situations of long duration in which movement is difficult. It is also recommended that the following individuals always use a face mask indoors: (1) individuals older than 12 years that are not fully vaccinated or who have not had a COVID-19 infection in the past six months; (2) individuals on their way to get tested for COVID-19 or who are waiting on results.	Mask guidance highlights the need for a well-fitting mask and instructs the general public on how to safely remove, clean or dispose of masks. Finnish residents can deduct the cost of masks in their income taxes.[56] The Finnish Health Authority also notes that municipalities should provide masks free of charge to low income residents.[48]
France[36]	Members of the public are recommended to wear a surgical mask or category 1 fabric mask (i.e., those that provide filtration greater than	Wearing a mask is mandatory in particular in enclosed public spaces, at work, on public transport or, by decision of the local authorities, in outdoor areas with a high density of people. Masks are	The guidance notes that FFP2 masks will not be made compulsory and are not recommended for use in the general population.

Jurisdiction or Agency	Mask Type Recommended for Community Settings	Community Settings where Masks are Required	Other Details
	90%). Masks should cover the nose, mouth and chin regardless of type.	recommended when physical distancing cannot be maintained.	Certain populations are eligible for free masks: recipients of particular government medical assistance programs, medically vulnerable people at risk of severe COVID-19, people with confirming COVID-19, people identified as contacts of confirmed cases.[57]
Germany[37]	General MMs or FFP2 masks	Masks mandatory for the general public on public transport and when shopping.	Mask requirements are reviewed every four weeks. In January 2021, the German government distributed millions of FFP2 masks to people over the age of 60 and those with chronic conditions. It is unclear of the provision of masks continued.[58]
Ireland[38]	Any mask which covers the nose and mouth with no visible gaps. MMs are recommended for certain groups.	Masks are mandatory in retail, banks, in all forms of public transport and for customer-facing workers in cafés, bars and restaurants. Masks also recommended in crowded workplaces, places of worship, crowded outdoor spaces, in circumstances where two metres distance cannot be maintained.	MMs recommended for the following members of the public: (1) Medically vulnerable, (2) Adults over the age of 70, (3) People with confirmed COVID-19, (4) People with symptoms of COVID-19, (5) Close contacts of a confirmed case of COVID-19.
Israel[46,47]	Any mask type is permitted provided that the mask is comfortably fit the face, fully covering the nose and mouth. Reusable cloth masks are suitable as long as they are not frayed or torn.	Masks required in all indoor settings, except for permanent place of residence, and is recommended during large outdoor gatherings.	None specified.

Jurisdiction or Agency	Mask Type Recommended for Community Settings	Community Settings where Masks are Required	Other Details
Italy[39-41]	Disposable masks, reusable/washable masks, and homemade masks can be used. Masks should be multi-layered, comfortable, have adequate shape and adherence, and cover the nose, mouth and chin.	All regions in Italy are in the White Zone (i.e., lowest risk level). In the White zone, masks must be worn in indoor public places such as bars, restaurants, museums and public transport. Masks are not mandatory outdoors.	The use of a mask is strongly recommended for frail and immunosuppressed individuals and for members of their household, and for non-cohabiting people in workplaces.
Norway[52,53]	Recommend use of MMs or NMMs/cloth masks that meet the requirements of the European agreement document for cloth masks (2 classes for cloth masks based on filtration ability, must be at least 70% or 90% of 3µm particles). Masks should not have an inhalation or exhalation valve. Emphasis is placed on masks fitting snugly around the edges and covering the mouth and nose well.	There are no longer national recommendations for the use of face masks in public. Face masks may be recommended to use in addition to but not instead of other public health measures. As of October 18, face masks are no longer required on domestic flights.	In municipalities with increased or high rates of COVID-19, local authorities may recommend use of face masks in enclosed spaces where distancing is impossible or where there will be close contact (e.g., public transport, personal services).
United States Centers for Disease Control and Prevention (CDC)[43,44]	Cloth masks/NMMs, MMs and respirators approved by the National Institute for Occupational Safety and Health (NIOSH) are suitable for use in the community.	Masks required in indoor public spaces in an area of substantial or high transmission (as defined by the CDC). Masks also required on all public transportation across the US.	Masks should have two or more layers, covering nose and mouth, snug fit without gaps, nose wire. Fit testing is noted as the best way to determine fit for respirators.
World Health Organization (WHO)[45]	MMs recommended for certain groups at higher risk of severe COVID-19 infection.	No specific settings mentioned for medical mask wearing.	Groups at higher risk of severe COVID-19: People aged 60 or over, and people of any age with underlying health conditions (i.e., chronic respiratory disease, cardiovascular disease, cancer, obesity, immunocompromised and diabetes mellitus).

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