

National Public Health Emergency Team

NPHET Discussion Paper

Medical face masks for over 70s and the medically-vulnerable

30 July 2020

Action required

- For noting
- For discussion
- For decision

Introduction

In an effort to mitigate the spread of covid-19, many countries have now made the wearing of masks or face coverings mandatory in indoor settings and on public transport, especially where maintaining a distance of 2m between individuals may prove difficult. Mask grades include respirators (classified as PPE, designed to also protect against aerosols), medical (or “surgical”) face masks and non-medical or cloth masks.

Respirator masks are predominantly reserved for use by health workers, when performing aerosol-generating procedures and will not be discussed further in this paper.

Medical masks comprise three or four layers of fine to very fine-woven fibres. These single-use masks are tested for their ability to block droplets (3 micrometres in size; EN 14683 and ASTM F2100 standards) and particles (0.1 micrometre in size; ASTM F2100 standard only). Medical masks are regulated medical devices and categorised as PPE.

Non-medical masks may be made from a number of different materials and a minimum of three layers is required, depending on the fabric used. A non-medical mask standard has been developed by the French Standardization Association (AFNOR certification), to define minimum performance and, a comparable standard has been developed for non-medical “barrier” masks by the National Standards Authority of Ireland (NSAI).

Context

A review of the benefit to wearing face masks in the community was conducted by HIQA and published on the 9th of July, 2020 (HIQA, 2020). The review looked at papers published in peer-reviewed journals, as well as non-peer-reviewed pre-print research articles up to the 24th of June 2020. It identified four observational studies concerning covid-19 transmission and fifteen further articles considering influenza, influenza-like illness or SARS. Its conclusion was that:

“There is limited, low certainty evidence based on four observational studies conducted during the COVID-19 pandemic that face masks may reduce the risk of transmission of SARS-CoV-2. Studies from previous pandemic settings and for other respiratory viruses also provide low certainty evidence that the wearing of face masks in community settings reduces the risk of transmission of respiratory pathogens.”

The extent of the use of face coverings by the general public in Ireland was low during the initial phases of the pandemic, as their benefit in the community setting was uncertain and their use was not officially recommended. On 10 July 2020 the Minister for Health signed the Health Act 1947 (Section 31A – Temporary Restrictions) (Covid-19) (Face Coverings on Public Transport) Regulations 2020 requiring the mandatory wearing of face coverings on public transport, except where a person:

- cannot put one on, wear or remove a face covering because of any physical or mental illness, impairment or disability or without severe distress
- needs to communicate with another person who has difficulties communicating
- removes the face covering to provide emergency assistance or to provide care or assistance to a vulnerable person
- removes the face covering to take medication.

The Regulations do not apply to children under the age of 13.

On the 14th of July, NPHE recommended that it be mandatory for face coverings be worn in all indoor retail environments. This recommendation was accepted by Government and work is ongoing to amend the regulations accordingly.

Medical masks are vital supplies and it is recommended they be prioritised for:

- healthcare workers
- people in self-isolation who cannot keep a distance of 2 metres between themselves and other people in their household

ECDC and WHO recommendations

The European Centre for Disease Control (ECDC) recommends: “The use of face masks (of any type) in the community could be considered, especially when visiting busy, closed spaces, such as grocery stores, shopping centres, or when using public transport”.

The World Health Organisation (WHO) currently recommends that the use of a mask alone is insufficient to provide an adequate level of protection or source control, and other personal and community level measures should also be adopted to suppress transmission of respiratory viruses. Whether or not masks are used, compliance with hand hygiene, physical distancing and other infection prevention and control (IPC) measures are critical to prevent human-to-human transmission of COVID-19. The WHO has, however, recently updated its guidance to advise 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 SARS-CoV-2 transmission.

The WHO recommends the following groups use medical masks:

- Health workers
- Anyone with symptoms suggestive of COVID-19, including people with mild symptoms
- People caring for suspect or confirmed cases of COVID-19 outside of health facilities

Medical masks are also recommended for these at-risk people, when they are in areas of widespread transmission and they cannot guarantee a distance of at least 1 metre from others:

- People aged 60 or over
- Immunocompromised patients and people with comorbidities, such as cardiovascular disease or diabetes mellitus, chronic lung disease, cancer and cerebrovascular disease.

This paper considers the potential costs, benefits and feasibility of recommending medical face masks be worn by all individuals over the age of 70 and by all those deemed “medically vulnerable”, when they are in areas of widespread transmission and they cannot guarantee a distance of at least 1 metre from others (e.g. on public transport); this closely follows WHO advice, albeit with a higher age threshold.

Considerations

1. Is there evidence to support the use of medical masks by certain groups in the community?

There is currently no strong evidence demonstrating a significant benefit to the wearing of medical masks over non-medical masks in the community. One case-control study, currently published as a pre-print, demonstrated in unadjusted analyses, that wearing a medical mask was associated with a significantly-reduced risk of infection compared with not wearing a mask, (OR 0.25, 95% CI 0.12-0.53) (Doung-ngern et al., 2020). Wearing non-medical masks (OR 0.78, 95% CI 0.32-1.90) or alternating between medical and non-medical masks (OR 0.46, 95% CI 0.13-1.64) were not associated with a reduced risk of infection compared with not wearing masks. The numbers in the

latter two groups, however, were substantially smaller, resulting in greater levels of uncertainty around the estimates.

2. Should medical masks continue to be reserved for health workers?

The higher specifications and improved performance of medical masks, on an individual basis, mean that they are essential components of PPE, worn by health workers in order to protect the wearer from getting infected, as well as preventing those who have symptoms from spreading them. A shortage of these masks would place frontline staff at higher risk of infection and transmission.

3. What are the recommendations adopted by other countries?

- The mandatory use of some form of face covering by the general public in certain settings is becoming increasingly common
- Most countries in Western Europe, Canada and the USA recommend that the general public use non-medical grade face coverings (excerpts from individual countries' recommendations are provided in Appendix 1)
- There is widespread acknowledgement that medical-grade mask provision should be prioritised for health workers, in order to avoid depleting supplies

4. What would the logistics of supplying medical-grade masks, as per WHO recommendations, entail?

The setting of the "high-risk" threshold to 60 years of age and above by the WHO is a global recommendation. Due to the differing health profile and demographics of the population of Ireland, a threshold of 70 years and above may more appropriately identify those at higher risk of severe covid-19 infection.

The WHO defines "medically-vulnerable" individuals as those with one or more of the following conditions:

- Immunocompromised patients
- Cardiovascular disease
- Diabetes mellitus
- Chronic lung disease
- Cancer
- Cerebrovascular disease.

Based on an age cut-off of 70 years, and adopting the above criteria as the definition of a “medically-vulnerable” individual, it is estimated that approximately 1.5 million people in Ireland would be recommended to wear a medical-grade mask when in areas of widespread transmission or where they cannot guarantee a distance of at least 1 metre from others (e.g. on public transport). Sources of information and calculations are detailed in Appendix 2.

Medical masks are designed to be single use; it is conceivable, therefore, that each individual may require more than one every day. The impact that this would have on current supply lines for healthcare workers could be substantial. Other issues including identifying target populations, defining arrangements for masks to be provided under State schemes (e.g. medical card) and related costs, and logistics of procuring and distributing a supply of masks also pose significant challenges.

Recommendation

It is recommended that the WHO’s recommendation of the wearing of medical masks by vulnerable individuals, when in areas of widespread transmission or where they cannot guarantee a distance of at least 1 metre from others, not be adopted at the present time but that it be kept under review.

The reasons for this recommendation are:

- There is no strong evidence indicating significant additional benefit to the wearing of medical masks over non-medical masks for the purposes of infection control and prevention on a population level
- Many other European countries, Canada and the USA have not adopted the WHO’s recommendation
- The provision of millions of medical masks to eligible groups of the general public will incur a significant cost and may also jeopardise supply for health workers
- Recommending that different groups of the population wear different masks may risk confusing the public message, leading to lower compliance with mask-wearing in general
- The wearing of medical masks by “high risk” members of the population may lead to social stigmatisation
- The potential discarding of at least 1.5 million single-use face masks each day will have a significant environmental impact

References

- DOUNG-NGERN, P., SUPHANCHAIMAT, R., PANJAGAMPATTHANA, A., et al. 2020. Associations between wearing masks, washing hands, and social distancing practices, and risk of COVID-19 infection in public: a cohort-based case-control study in Thailand. *medRxiv*.
- HIQA 2020. Draft Evidence summary for face mask use by healthy people in the community. Health Information and Quality Authority.
- HPSC 2020. Guidance on cocooning to protect people over 70 years and those extremely medically vulnerable from COVID-19

Appendix 1

International recommendations for mask wearing in the community:

England: In England, you must by law wear a face covering in the following settings:

- Public Transport
- Shops and Supermarkets

You can buy reusable or single-use face coverings. You may also use a scarf, bandana, religious garment or hand-made cloth covering but these must securely fit round the side of the face. In June 2020, the British Retail Consortium released a specification for Textile Barrier Face Coverings designed for both disposable and reusable coverings.

Wales: Face coverings should be made up of three layers, as set out by the World Health Organisation, but do not need to be medical-grade face masks. Three-layer face coverings should be encouraged in situations where social distancing and hygiene measures are difficult to maintain.

Scotland: In enclosed spaces, where physical distancing is more difficult and where there is a risk of close contact with multiple people who are not members of your household, you should wear a face covering. People must by law wear a face covering in shops and on public transport and public transport premises such as railway and bus stations and airports.

A face covering can be any covering of the mouth and nose that is made of cloth or other textiles and through which you can breathe.

Northern Ireland: It is recommended that you should think about using face coverings in particular circumstances - short periods in enclosed spaces where social distancing is not possible. You must wear a face covering on public transport. A face covering is a covering of any type which covers your nose and mouth.

Victoria state, Australia (during surge): If you live within metropolitan Melbourne or Mitchell Shire, you must wear a face covering whenever you leave your home. A face covering needs to cover both your nose and mouth. It could be a face mask or shield.

A face mask is the recommended face covering. A face mask includes any paper or textile covering designed or made to be worn over the nose and mouth to protect the wearer. It does not have to be medical grade and you can make your own. If a face mask is not available other forms of face covering may be used such as a scarf or bandana. While the Chief Health Officer recommends a

mask made of three layers of a mix of breathable fabrics to ensure adequate protection, any face mask or covering is better than none.

A face shield means any film made from plastic or other transparent material designed or made to be worn like a visor, covering from the wearer's forehead to below the chin area and wrapping around the sides of the wearer's face, to provide the wearer protection.

People who have a medical condition, including problems with their breathing, do not have to wear face coverings.

The requirement to wear face coverings applies when people are outside of their home. It does not apply to aged care residents or other group homes residents while they are in the facility. However, it does apply to the facility's staff and visitors inside the facility and when a resident leaves the facility.

USA: CDC reviewed the latest science and affirms that cloth face coverings are a critical tool in the fight against COVID-19 that could reduce the spread of the disease, particularly when used universally within communities. CDC recommends that people wear cloth face coverings in public settings and when around people who don't live in your household, especially when other social distancing measures are difficult to maintain. Cloth face coverings are not surgical masks or respirators. Currently, those are critical supplies that should continue to be reserved for healthcare workers and other medical first responders, as recommended by current CDC guidance.

Canada: Wearing a homemade non-medical mask/facial covering in the community is recommended for periods of time when it is not possible to consistently maintain a 2-metre physical distance from others, particularly in crowded public settings, such as:

- stores
- shopping areas
- public transportation

Medical masks, including surgical, medical procedure face masks and respirators (like N95 masks), must be kept for health care workers and others providing direct care to COVID-19 patients.

Appendix 2

Calculation of the eligible population:

Projected 70+ population in 2020 from CSO.ie: 495,929

(Projected from 2016 population, taking TFR to remain at its 2016 level of 1.8 for the lifetime of the projections AND Net inward migration continuing at more moderate levels +20,000 per annum in 2017/2051)

From draft paper (unpublished) "A Discussion Paper on Developing Risk Stratification and Population Health Management in Ireland", produced as part of work for Dr Orlaith O'Reilly, National Clinical Lead and Group Lead Health and Wellbeing:

Individuals with 1+ diagnosis (CVD, Asthma, COPD, Diabetes)			
Age 18 - 49		Over 50s	
Est. percentage	Est. total no. in projected 2020 population	Est. percentage	Est. total no. in projected 2020 population
10%	216225	54%	853389
Total number in population over 18		1069614	

N.B. this list does not include Immunosuppression, Cancer or Cerebrovascular disease which are additional condition listed by the WHO.

In 2018, 5.8% of the population was participating in the Long-Term Illness Scheme (LTIS) in Ireland. This percentage was growing by approximately 0.3% p.a. over the previous few years. Therefore, an estimated 6.4% of the population would be participating in the LTIS in 2020.

Projected total population in 2020 = 4,946,406.

Therefore **316,570** estimated on LTIS in 2020. This scheme does not, however, cover many of the conditions listed by the WHO. Conditions covered are listed in Appendix 3.

The Irish Health Survey 2015 (CSO.ie) asked a sample of respondents, over the age of 15, whether they had suffered with a “long-standing illness or health problem” for over 6 months:

Self-reported "longstanding illness"		
Age group	Prevalence (%)	Total number within est. 2020 population
15 - 24	18	112231
25 - 34	18	110395
35 - 44	24	183611
45 - 54	33	220673
55 - 64	48	261743
65 - 74	53	220172
75+	59	179651
Total		1288475

Using this last table, and combining it with the projected population over the age of 70, a rough calculation may be performed:

Number of 15-69 year-olds with “long-standing illness”:

$$\text{Totals of age groups 15-64} + (0.5 * \text{65-74 age group}) = \mathbf{998738}$$

Total projected 2020 population aged 70+: **495929**

Therefore, potential total number needing medical masks: **1,494,667**

Appendix 3

Conditions covered by the Long-Term Illness Scheme in Ireland:

- Acute leukaemia
- Cerebral palsy
- Cystic fibrosis
- Diabetes insipidus
- Diabetes mellitus (does not include Gestational Diabetes)
- Epilepsy
- Haemophilia
- Hydrocephalus
- Intellectual disability (mental handicap)
- Mental Illness - under the age of 16 years
- Muscular dystrophy
- Multiple sclerosis
- Parkinsonism
- Phenylketonuria (PKU)
- Spina bifida
- Thalidomide conditions