Preparing for autumn: Use of face masks in public settings

(10)(2e) IPC/Clinical team, PHE support group

Joint Meeting for National Focal Points for Preparedness and Response & National Focal Points for Threat Detection, 27 August 2020

Aim

- What is the role of policies for use of face masks in the community, especially in anticipation of the autumn and winter months
- What considerations need to be addressed when considering the implementation of a face mask policy

Outline

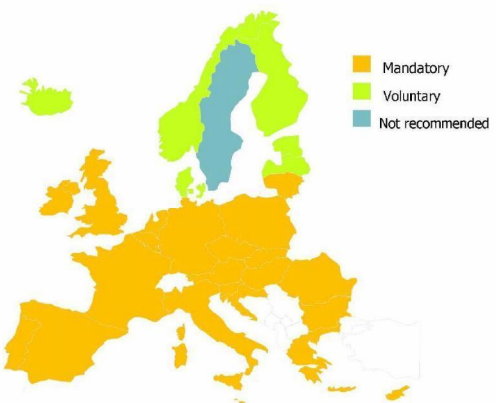
- Rationale
- Evidence
- Current recommendations
- Considerations for implementation
- Ventilation
- Conclusions

What are current policies in EU/EEA?

- Voluntary
- Mandatory

- Scope
  - National
  - Local

- Settings
  - Indoor public spaces
  - Public transport
  - All public spaces
  - Workplace
  - Specific occupations



https://www.ecdc.europa.eu/en/publications-data/download-data-response-measures-covid-19

Rationale for face mask use in public settings as a control measure for COVID-19

Transmission route
Respiratory droplets including aerosols in confined indoor spaces

Infectivity period
Asymptomatic, pre-symptomatic and early symptomatic period

Protection of self
filtering of air and preventing droplets from reaching mouth and nose

Protection of others (source control)
barrier to expelled respiratory droplets

Howard J. *PrePrints* 2020. Available from: https://www.preprints.org/manuscript/202004.0203/v1

Types of face masks

	Medical mask (or 'surgical')	Respirator (FFP, N95 etc)	Non-medical or 'community' mask
User	HCW and public	Mostly HCW, ? Public	Public
Filtering	Average to high	Highest (>95%)	Low to high
Indication	Source control when used by HCWs and sick persons and protection against droplets and splashes	Protection against droplets and aerosols	Mostly source control ? Self protection
Evidence for HCWs	Strong for self-protective effect	Strong for self-protective effect	Weak and conflicting for protective effect
Evidence for the public	Weak and mostly indirect for protective effect and source control	Not available	Weak indirect for protective effect and source control

What is the evidence?

High transmission settings (households, colleges, healthcare)	Small number of studies out of healthcare Small protective or no effect Caveats: often underpowered, methodological problems (adherence, inappropriate controls), most evidence from influenza
Basic science experimental studies	Medical and some non-medical face masks: Filter a large proportion of respiratory droplets Decrease the amount of expelled droplets Caveats: indirect evidence
Natural experiments	Introduction of face mask use in populations linked to decreased COVID-19 incidence (city of Jena in Germany, various states in the US) Caveats: effect of other concurrent measures

MacIntyre CR, *BMJ* 2015; Chu DK, *Lancet* 2020; Jefferson T, *MedRxiv* 2020; Greenhalgh T, *CEBM* 2020; Howard J, *PrePrints* 2020; Norwegian Institute of Public Health, 2020;

Original research

BMJ Global Health

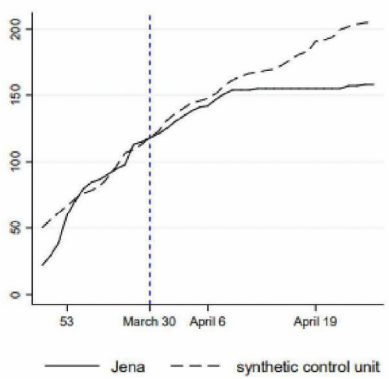
Reduction of secondary transmission of SARS-CoV-2 in households by face mask use, disinfection and social distancing: a cohort study in Beijing, China

Yu Wang,[1] Huaiyu Tian,[2] Li Zhang,[1] Man Zhang,[3] Dandan Guo,[4] Wenting Wu,[1] Xingxing Zhang,[3] Ge Lin Kan,[1] Lei Jia,[1] Da Huo,[1] Baiwei Liu,[1] Xiaoli Wang,[1] Ying Sun,[1] Quanyi Wang,[1] Peng Yang,[3] C. Raina MacIntyre[5-7]

Table 4 Risk factors for SARS-CoV-2 household transmission: multivariable analysis

Risk factor	Adjusted OR	95% CI	P value
Primary case has diarrhoea	–	–	–
No	–	–	Ref
Yes	4.10	(1.08 to 15.60)	0.04
Close contact at home with primary cases (within 1 m or 3 feet) (times)	–	–	–
0	–	–	Ref
1–3	3.30	(1.05 to 10.40)	0.04
≥4	18.26	(3.93 to 84.79)	<0.001
No of family members (including primary case) wearing a mask at home before the primary case's illness onset date	–	–	–
None	–	–	Ref
1 or more	0.21	(0.06 to 0.79)	0.02
Frequency of chlorine or ethanol based disinfectant use for house cleaning	–	–	–
Once in 2 or more days	–	–	Ref
Once a day or more	0.23	(0.07 to 0.84)	0.03

Wang Y et al. *BMJ Global Health* 2020;5:e002794. doi:10.1136/ bmjgh-2020-002794



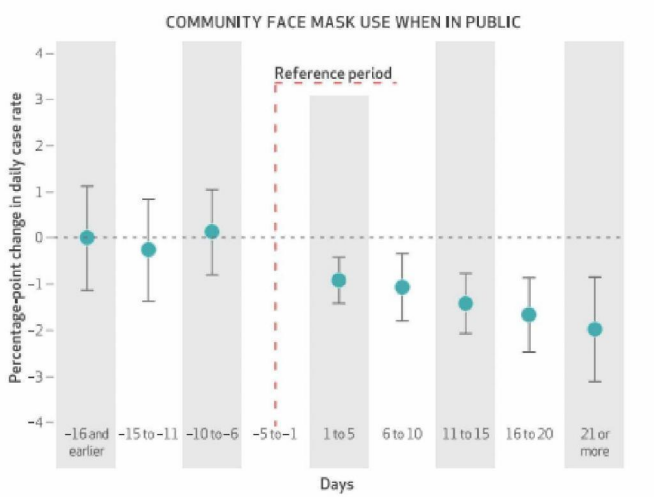
- Reduction in the average daily growth rate of the total number of reported infections: 1.32%
- Reduction of the number of new infections over the next 20 days: 25%

http://ftp.iza.org/dp13319.pdf

COVID-19

By Wei Lyu and George L. Wehby

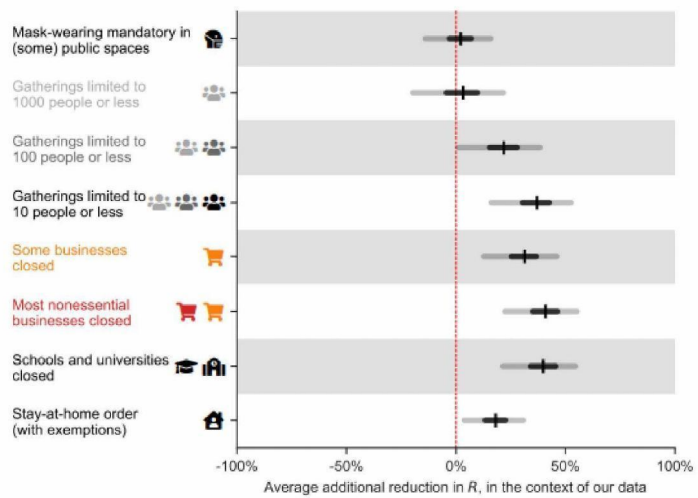
Community Use Of Face Masks And COVID-19: Evidence From A Natural Experiment Of State Mandates In The US



Luy W., *Health Affairs* 39, NO. 8 (2020): 1419–1425
https://www.healthaffairs.org/doi/pdf/10.1377/hlthaff.2020.00818

The effectiveness of eight nonpharmaceutical interventions against COVID-19 in 41 countries

- Analysis of the effect of non-pharmaceutical interventions on R
- Bayesian hierarchical model
- Mandatory use of face masks in the public had a very small (2%) and non-significant effect but at the same period countries had already introduced physical distancing measures



https://www.medrxiv.org/content/10.1101/2020.05.28.20116129v3.full.pdf

Ongoing trials on use of face masks in the community

Title	Location	Participants	Status	Completion date
Reduction in COVID-19 Infection Using Surgical Facial Masks Outside the Healthcare System	Denmark	6 000	Completed	June 2020
Locally Produced Cloth Face Mask and COVID-19 Like Illness Prevention	Guinea-Bissau	66 000	Enrolling	November 2020

Source: ClinicalTrials.gov

Arguments against the use of face masks in the community

Face mask shortage	Medical face masks are prioritised for use in healthcare Use of non-medical face masks Increased availability
Wearing a face mask may create a false sense of security (risk compensation)	Has not been supported by data Use of protection measures has been associated with less risky behaviour and better compliance with other measures
Improper use may lead to increased risk of infection	Has not been supported by data May reduce touching the mouth and nose

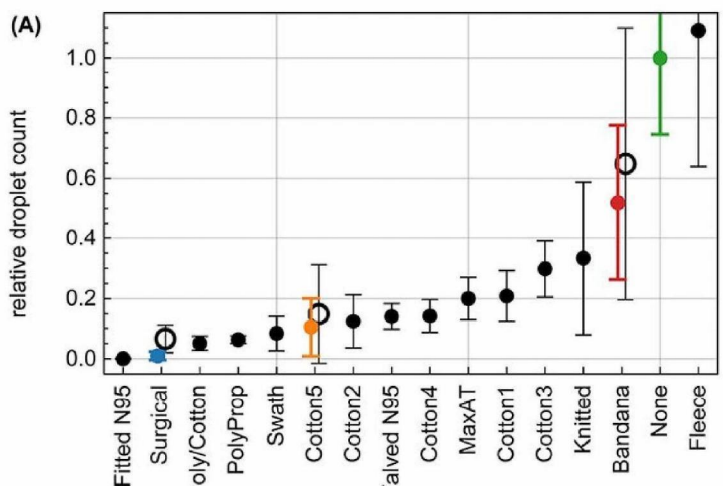
Howard J. *PrePrints* 2020 (https://www.preprints.org/manuscript/202004.0203/v1)

When to consider the use of face masks in the community

- When physical distancing cannot be guaranteed
- Indoor settings (e.g. supermarkets, shops, public transport, workplace)
- In overcrowded outdoor situations
- By persons in vulnerable groups
- In areas with community transmission of COVID-19

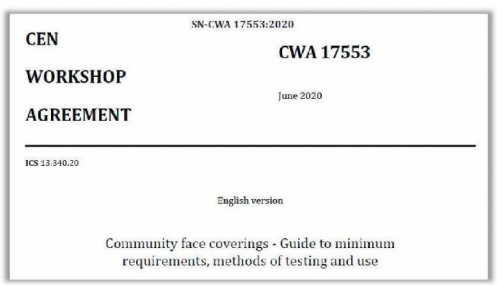
RRA Coronavirus disease 2019 (COVID-19) in the EU/EEA and the UK – eleventh update: resurgence of cases, ECDC ; 10 August 2020
https://www.who.int/publications-detail/advice-on-the-use-of-masks-in-the-community-during-home-care-and-in-healthcare-settings-in-the-context-of-the-novel-coronavirus-(2019-ncov)-outbreak

Medical vs. non-medical (community) face masks



Fischer EP et al. *Science Advances* 07 Aug 2020: eabd3083 DOI: 10.1126/sciadv.abd3083

Standards for community face masks


SN-CWA 17553:2020

CEN WORKSHOP AGREEMENT

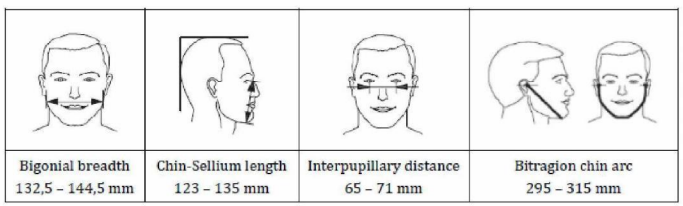
CWA 17553

June 2020

ICS 13.340.20

English version

Community face coverings - Guide to minimum requirements, methods of testing and use



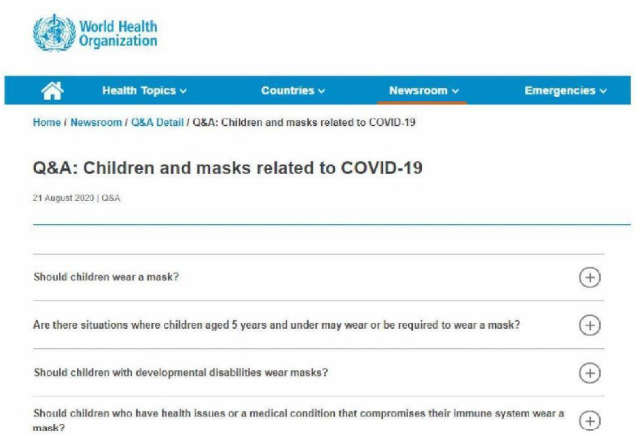
Bigonial breadth	Chin-Sellium length	Interpupillary distance	Bitragion chin arc
132,5 – 144,5 mm	123 – 135 mm	65 – 71 mm	295 – 315 mm

Construction
Filtration efficacy
- 70% or 90% for 3µm particles

Material
Packaging

European Committee for Standardisation (CEN): ftp://ftp.cencenelec.eu/EN/ResearchInnovation/CWA/CWA17553_2020.pdf

Face masks in children



Should not be required in children **under the age of 5**

For children **aged 6-12** a number of factors should be accounted for, such as impact on learning

Children **aged 12 and older** may use masks in the same situations as adults

https://www.who.int/news-room/q-a-detail/q-a-children-and-masks-related-to-covid-19

Considerations for implementation

Acceptability, feasibility, barriers

- Discomfort or difficulty breathing
- Fatigue
- Communication difficulties, especially for people with impaired hearing
- Availability
- Adherence
- Stigmatisation especially when face masks are recommended only for sick persons
- Environmental impact

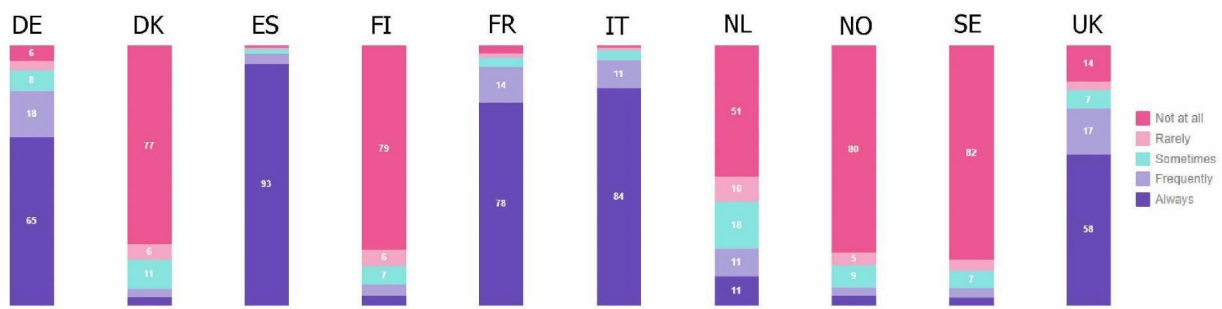
Facilitators

- Information and educational campaigns (risk perception and appropriate use)
- Mandatory policies (Betsch C, *PNAS* 2020)
- Monitoring the implementation of the policy

Howard J, preprints 2020;

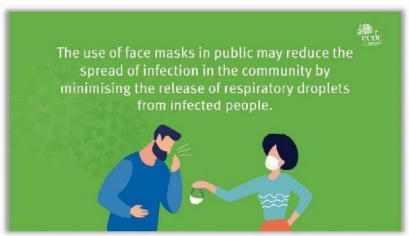
Monitoring face mask use

I have worn a mask outside my home (Week: August 3 – August 9)



Source: Imperial College London (coviddatahub.com)

Educational campaigns



https://www.ecdc.europa.eu/en/publications-data/infographic-using-face-masks-community

Ventilation

Ensure air exchange in line with applicable building regulations
Ensure sufficient fresh air through natural or artificial ventilation
Minimise recirculation of air
Filtering and other technologies such as UV radiation under study

https://www.ecdc.europa.eu/sites/default/files/documents/Ventilation-in-the-context-of-COVID-19.pdf

Conclusions

- Face mask use in public settings is a measure to be considered especially in indoor settings when physical distancing cannot be guaranteed
- It is not clear what is the effect on top of other non-pharmaceutical interventions
- It is unclear if face mask use in public settings is sufficient to significantly reduce transmission without the implementation of other measures
- Addressing barriers, such as availability and adherence, and facilitators, such as educational campaigns, is key for a successful face mask use policy
- Monitoring the implementation of the strategy is a means to identify gaps and guide further actions

Thank you

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PHE Communications Team

https://www.ecdc.europa.eu/en/publications-data/using-face-masks-community-reducing-covid-19-transmission