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Guidance Document 3
Reducing community transmission of COVID-19 through medical masking: informing public health recommendations (13 April 2020)

Background

- COVID-19 is caused by the SARS-CoV-2 virus and spreads from person-to-person through respiratory droplets produced when an infected person coughs or sneezes, and from touching contaminated surfaces.
- Close contact with infected people should be avoided, and the risk of transmission mitigated by using infection prevention and control measures, including personal protective equipment (PPE) such as face masks.
- The pandemic has led to a global shortage of PPE, including masks and respirators. Masks are critical in healthcare settings to protect healthcare workers from becoming infected, and are being widely promoted in community settings to prevent transmission in the general population. This is particularly relevant with SARS-CoV-2, since transmission prior to symptom onset is thought to be important.
- Guidance from global oversight bodies is not consistent at this stage[1], and is in flux. In recent weeks, guidance has changed in some instances from "avoid wearing masks for people who are well", across the spectrum of "use cautiously", to advocating mask use for the general population[2].

Risk of community transmission of SARS-CoV-2 in South Africa

As South Africa entered into its COVID-19 lockdown on March 27, confirmed cases climbed above 1,000, and the outbreak is reaching the stage of local transmission and of clustered and community transmission where it is no longer a majority-imported disease.

The World Health Organization (WHO) categorises the coronavirus and the disease it causes (COVID-19) into four categories: Stage 1 - imported by travellers; Stage 2 - clustered transmission; Stage 3 - local transmission, and Stage 4 - widespread community transmission. At 1,845 positive cases as at 8 April 2020, South Africa is now between Stage 2 and Stage 3 transmission.

Community transmission is of particular concern in densely populated informal settlements with limited water supply and sanitation, where engineering and administrative infection prevention and control measures are challenging.

[1] Feng S, Shen C, Xia N, Song W, Fan M, Cowling BJ. 2020. Rational Use of face masks in the COVID-19 pandemic. The Lancet Respiratory Medicine. DOI: https://doi.org/10.1016/S2213-2600(20)30134-X
[2] https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/cloth-face-cover.html

Evidence of effectiveness of medical masks for preventing community transmission

A rapid review[3] of the current research evidence assessed the effects of medical masking for preventing transmission of SARS-CoV-2 in the community and household settings. No trials of preventing SARS-Cov-2 were identified. Indirect evidence from trials of influenza-like illnesses, found:

IN COMMUNITY SETTINGS:

- Two cluster trials evaluated the effectiveness of medical masks versus no masks for protecting wearers from acquiring influenza-like infection among university students
- Together these trials provide evidence that medical masks may make little or no difference to the chance of infection compared to no masks (RR=0.98 (95%CI 0.81-1.19) (*low certainty evidence*)). This effect may range from a reduction of 19% to a 19% increased probability of infection.

IN HOUSEHOLD SETTINGS:

- Five cluster trials evaluated the effectiveness of medical masks versus no masks for protecting household members from acquiring infection from a household member who was ill with influenza-like illness.
- Together these trials provide evidence that medical masks may slightly reduce the chance of infection by 19% compared to no masks (RR = 0.81 (95% CI 0.55- 1.20) *(low certainty evidence))*. This effect may range from a reduction of 45% to a 20% increased probability of infection.

In summary, there is low certainty evidence that using medical masks may make no difference in transmission when in community settings (*"my mask protects you, your mask protects me")* but these results are specific to university settings and may not reflect broader community settings. When worn inside the household by individuals who are ill (*"my mask protects you"*), medical masks may provide some protection to other household members. None of the trials evaluated masks in combination with eye protection.

Additional factors to consider for the possible use of medical masking for preventing community transmission

Considering the low certainty of the evidence for the use of medical masking in the reduction of community transmission, the following were also taken into account in developing the guidance:

- We develop guidance using the overriding ethical principle of "first do no harm".
- Overarching benefits vs harms are assessed whilst also taking into account uncertainties and unknowns.

Combination interventions:

- Most single intervention measures will be insufficient to contain the spread of SARS-CoV-2; but combinations of measures may reduce the reproduction number to below 1[4], i.e. <1 additional case of a disease each infected person will cause during their infectious period, which would bring the epidemic to an end.
- Should facemask use become widespread, there may be a de-emphasis of other measures of prevention including hand hygiene, respiratory hygiene and physical distancing

[3] CPHM COVID-19 Evidence-based Guidance Task Team, Cochrane South Africa and SAMRC Health Systems and Research Unit. Should medical masks be used by the general public for preventing transmission of SARS-CoV-2? A rapid review to inform public health recommendations during the COVID-19 pandemic. 12 April, 2020. Not yet peer reviewed.

[4] Jefferson T, Jones MA, Al-Ansary L, Bawazweer GA, Beller EM, Clark J, Conly JM, Del Mar C, Dooley E, Ferroni E, Glasziou P, Hoffmann T, Thorning S, van Driel M. 2020. Physical interventions to interrupt or reduce the spread of respiratory viruses. Part 1 - Face masks, eye protection and person distancing: update of a systematic review and meta-analysis. doi.org/10.1101/2020.03.30.20047217. Pre-print. Not yet peer-reviewed.

Specific population or setting challenges:

- Water, sanitation and hygiene are not equally accessible and social distancing measures are not feasible in many communities, thus alternative additional options would be important to consider in these communities
- Other high-risk transmission settings where physical distancing is difficult include public transport, queuing (such as for shopping and grant collection), and waiting areas (such as at health facilities and in public transport hubs). See our CPHM Guidance on Public Transport See https://www.cmsa.co.za/view_news_item.aspx?NewsID=149

Cultural and Behavioural factors:

- Societal norms and possible stigmatisation with use, or not, of facemasks[5] is an important consideration and may operate in both directions.
- Incorrect use of masks (such as mask not covering nose, worn inside-out, worn when wet or moist, repeated touching of the mask) would not only reduce the potential benefits, but may cause harm in being a nidus of infection when worn by those with confirmed or asymptomatic infection.

Transmission factors:

- Consideration of pre-symptomatic and asymptomatic transmission, which may or may not be prevented by the wearing of facemasks[6].

Recommendations regarding medical masking to reduce community transmission of COVID-19 – South Africa

The rapid review has informed the suite of options and combinations of options outlined below:

1. Medical Masks & N95 respirators must be prioritised for particular categories

- This is particularly imperative in resource-constrained settings.
- N95 respirators should only be used by health care workers.
- Medical masks should be primarily used by frontline workers (e.g. police, military) and by those caring for those who have COVID-19. This is to protect those at higher risk of infection.

2. General Infection prevention and control measures must continue

- Hand-hygiene (regular hand washing with soap and water for 20 seconds)
- Respiratory hygiene (sneeze and cough into your bent elbow, away from other people)
- Physical distancing (no physical contact, remain 2 arms-lengths away from other people)
- Isolation for individuals who are confirmed COVID-19 positive
- Quarantine for contacts of individuals who are confirmed COVID-19 positive
- Reduction in gathering and congregation of people
- Disinfecting and sanitisation of surfaces

3. Medical masking for community use may be implemented with caveats

- Masks *alone* are unlikely to have significant effect in interrupting spread of influenza-like illnesses. However, when used in conjunction with other infection prevention and control measures in high-prevalence environments and in scenarios with limited access to water and sanitation, and where social distancing measures are not feasible, there may be some benefit.

[5] Feng S, Shen C, Xia N, Song W, Fan M, Cowling BJ. 2020. Rational Use of face masks in the COVID-19 pandemic. The Lancet Respiratory Medicine. DOI: https://doi.org/10.1016/S2213-2600(20)30134-X

[6] Leung CC, Lam TH, Cheng KK. 2020. Mass masking in the COVID-19 epidemic: people need guidance. The Lancet. DOI: https://doi.org/10.1016/S0140-6736(20)30520-1

- Should medical masking be advised for community use, it would be imperative to be implemented only in conjunction with particular and clear messaging around obtainment and safe-use, including donning, doffing, not touching your face / mask while wearing, cleaning, disinfecting and disposal, as well as rigorous emphasis on other hygiene measures. In other words: "Masks + Message".
- Medical masks may be slightly beneficial in preventing the transmission from individuals who are ill in the household setting and consideration should be made for provision of these, without reducing PPE resources to healthcare workers.
- Medical masking should only be considered should sufficient supplies be available for all healthcare workers and frontline workers such as community health workers, cleaning staff, persons with COVID-19 and persons caring for those with COVID-19 as a priority. Equitable access to all communities, especially vulnerable communities, must be ensured.

4. Further Research

- Urgent research to determine the effectiveness of medical masking to prevent transmission in a community setting, and to quantify the protection of medical masks in a household setting under pandemic conditions, should be undertaken. Additional measures such as provision of eye protection and hand-sanitisers should also be tested in combination with masks.

Summary statement

- There is low certainty evidence that using medical masks may slightly reduce the chance of infection when worn inside the household *("my mask protects you"*).
- There is low certainty evidence that using masks may make little to no difference to reducing transmission in community settings *("my mask protects you, your mask protects me"*).
- Medical masks and N95 respirators must be reserved primarily for particular categories, viz. all healthcare workers and frontline workers such as community health workers, cleaning staff, persons with COVID-19 and persons caring for those with COVID-19
- Medical masking may have benefit when used in conjunction with other infection prevention and control measures in high-prevalence environments and in scenarios with limited access to water and sanitation, and where physical distancing measures are not feasible.
- Should medical masking be advised for community use, it would be imperative to be implemented only in conjunction with particular and clear messaging around obtainment and safe-use, including donning, doffing, not touching your face / mask while wearing, cleaning, disinfecting and disposal, as well as rigorous emphasis on other hygiene measures. In other words "Masks + Message".
- Medical masking should only be considered should sufficient supplies be available for priority workers, and equitable access to all communities, especially vulnerable communities, must be ensured.
- Further research to determine the effectiveness of mass medical masking in a community setting and in households under pandemic conditions is recommended.

Released by the College of Public Health Medicine COVID-19 Evidence-based Guidance Task Team[7] & the CEO for the CMSA, Prof Eric Buch
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