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The Colleges of Medicine of South Africa NPC

Nonprofit Company (Reg No. 1955/000003/08)
Nonprofit Organisation (Reg. No. 009-874 NPO)
Vat No. 4210273191

27 Rhodes Avenue, PARKTOWN WEST, 2193

Tel: +27 11 726 7037; Fax: +27 11 726 4036

**College of Public Health Medicine
Under the CMSA**

Website:

www.cmsa.co.za

Guidance Document 1

Reducing the transmission of COVID-19 when using public ground transport: informing public health recommendations (22 March 2020)

Rapid review of research evidence¹

- COVID-19 spreads from person-to-person through respiratory droplets produced when an infected person coughs or sneezes, and from touching contaminated surfaces.
- WHO declared COVID-19 a pandemic on March 11, 2020 and in South Africa President Ramaphosa announced that the COVID-19 outbreak had been declared a national state of disaster in terms of the Disaster Management Act.
- Interventions implemented include international travel bans, school closures, encouragement to work from home, bans on large social gatherings and events over 100 persons, and social distancing, where the public is recommended to avoid contact with other individuals.

Risk of transmission of respiratory viral infections in public transport

A barrier to achieving social distancing is the widespread use of public ground transit such as buses, taxis, and trains. Large numbers of people are in close proximity to each other, often in overcrowded conveyances. The risk of transmission is associated with:

- seating proximity to an index case
- duration spent aboard
- inadequate ventilation and the consequential recirculation of virus droplets in air

Reducing risk of transmission of respiratory viral infections in public transport

The rapid review of the current research evidence (up-to-date on 21 March 2020) on interventions for reducing the risk of viral infection while using public ground transport, included four studies (one systematic review, one case-control study and two modelling studies). It found that:

- The use of public transportation in the 7 days prior to symptom onset was associated with a significantly higher frequency of influenza A (H1N1) in 2009.
- Rail transport was important in accelerating the spread of influenza to new areas in the 1918 Influenza A (H1N1) pandemic and transmission to persons in previously unaffected destinations from arriving long-distance rail passengers was observed in China during the Influenza A (H1N1) 2009 pandemic.
- From modelling studies, filtering air being circulated within a bus can reduce transmission of influenza between passengers and improving ventilation to a train can decrease risk of influenza infection.

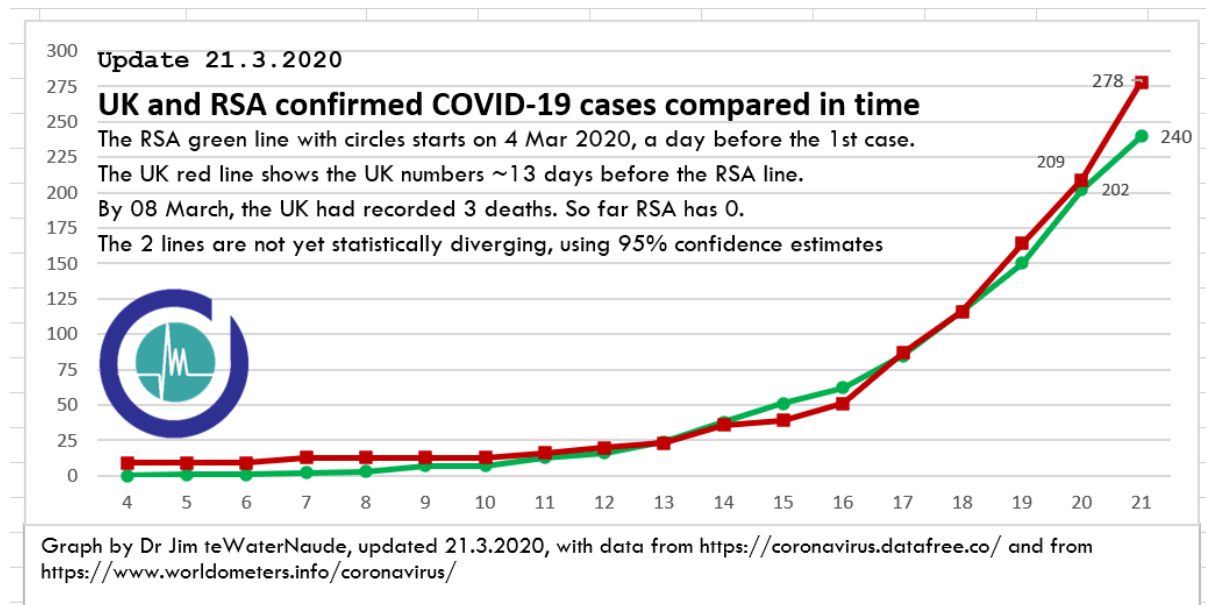
¹ Zhen J, Chan C, Schoonees A, Apatu E, Thabane L, Young T. 2020. Transmission of respiratory viruses when using public ground transport: a rapid review to inform public health recommendations during the COVID-19 pandemic

Risk reduction strategies from international and national guidance

- Minimize the use of public transport.
- If sick, do stay at home.
- Where using public transport is unavoidable:
 - Environmental control: Surface cleaning, avoid touching handrails, doorknobs and touching face, and ensure adequate ventilation.
 - Respiratory etiquette: When coughing and sneezing cover mouth and nose with flexed elbow or tissue.
 - Hand hygiene: Hand washing or use of hand sanitizers, if water and soap not available, as often as possible before, during and after using public transport
 - Masks are not useful for those who are healthy.
- Active communication and information sharing to ensure the public is informed.

Recommended interventions to reduce the risks of transmission of COVID-19 when using public transport – South Africa

Due to the high volume of citizens who travel in minibus taxis, buses and trains, we can infer that transmission of COVID-19 is likely to be rapid within communities once local spread increases. Using other country epidemic profiles as guidance, South Africa will transition to widespread community transmission within the next two weeks. See below.



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

1. Minimize use of public transport

- *Complete closure of workplaces and public transport*
 - Industry and workplaces are closed. This could be implemented for a 2-week period to coincide with nation-wide school closures.
 - All citizens to be strongly encouraged to stay at home and to reduce all non-essential travel and to only leave home for shopping or medical needs.

- May require government to promulgate new regulations and enforcement capacity.
- *Social distancing measures*
 - Industry and workplaces are strongly encouraged to transition to work-from-home (remote work) where this is possible; where this is not possible, staggered work shifts to be implemented to permit citizens to travel on public transport avoiding peak traffic periods (this will reduce crowding).
 - Workplaces and industry to ensure all employees over 60 and those with comorbidities are working remotely or released from duties (ideally facilitated under special leave coverage to reduce income disruption).
 - Citizens to stay at home if sick, and to call NICD hotline or healthcare provider if displaying symptoms of COVID-19 (cough, fever, shortness of breath)

2. Infection prevention and control measures

- *At public transport hubs*
 - Widespread information-sharing via public address system regarding hygiene in all modes of public transport and in bus stations, train stations and at taxi ranks: wash hands or sanitize before and after travel, avoid touching handles and rails, cough and sneeze etiquette
 - Community healthcare workers or similar (e.g. Non-government organization staff) to be deployed to central taxi ranks, bus stops and train stations to advise passengers:
 - Queuing strategies (passengers to stand in staggered lines so that no-one is closer than 2 m from another person)
 - Advise passengers to board vehicle while clasping hands together to avoid touching handles and rails
 - Provide information regarding hygiene practices
 - Screen passengers for COVID-19 symptoms and advise against travel if any symptoms present, and facilitate referral to designated healthcare provider for COVID-19 testing; if temperature checks are done with scanners, these should use no-contact techniques. Screening especially important for long-distance travel to avoid sick passengers travelling and possibly spreading the virus to unaffected areas
 - Disseminate graphic information leaflets with text translated to appropriate language. Include the NICD hotline number or local provincial hotline
 - Mobile hand-washing and hand sanitizer to be available at all transport hubs and designated staff to ensure adequate supplies and refill constantly
 - Trains, taxis and busses to be cleaned overnight according to NICD guidelines (sodium hypochlorite – bleach solution)
 - All surfaces in stations and waiting ranks (e.g. rails) to be cleaned hourly with soap and water
- *In the taxi, bus and train*
 - Ventilate – regulations required to ensure windows *on both sides* of vehicle or conveyance are open to allow air to ventilate through
 - Regulate for no more than 50% of carrying capacity for vehicle
 - Provide adequate quantities of hand sanitizers in the vehicle for passengers to use
 - If possible, hourly cleaning of window ledges, handles and backs of seats
 - Conductors of conveyances which have manual doors (e.g. taxis) to open and close doors to reduce passengers touching handles

A note on masks and gloves: *There is no evidence on the usefulness of face masks worn by healthy or asymptomatic persons as a mitigation measure, therefore it is not recommended. Gloves are not effective unless discarded after each use, and should not replace regular hand-washing. In resource-constrained settings, masks and gloves should be retained for healthcare workers and those caring for those who have COVID-19.*

3. Monitoring implementation of interventions

General principles of epidemic surveillance should accompany the implementation of any interventions during this period. We therefore recommend that a repeated random cross-sectional survey of passengers travelling through central transport hubs is immediately conducted to identify passengers with the presence of symptoms or ideally with COVID-19 test-kits to provide the prevalence of the disease in the commuting population (which is a likely good representation of the majority of people living in South Africa).

Such a survey, repeated at regular intervals, will give us the best means to monitor the epidemic, to evaluate the success of implemented interventions, and to inform when we implement further restrictions or lift these. There is good epidemiological evidence to suggest that the South African experience will be similar to, or worse than, other countries due to underlying vulnerabilities in our communities. For this reason, it is likely that we will need to make decisions regarding interventions for several months into the future and repeated survey data will be informative. The Ethics approval and funding for this can be expedited if testing kits are available.

Summary statement

The rapid review of evidence-based interventions provides practical guidance for reducing transmission in public transport by using mitigation measures. These include reducing the need for travel by workplace closure and social distancing measures such as remote working and staggering work shifts. When travel is required, infection prevention and control practices at transport hubs include regular cleaning of surfaces and provision of facilities for hand-washing and sanitizers, and social distancing practices such as staggered queuing; in vehicles, ventilation and prevention of overcrowding are key to reducing viral transmission, as is regular cleaning and limiting opportunities for passengers to touch surfaces.

Implementation of the above recommended measures will require inter-sectoral collaboration with engagement with public transport organizations, municipalities, taxi operators and community health workers. Implementation of any interventions aiming to reduce transmission should be monitored by conducting repeated cross-sectional surveys of the prevalence of SARS-CoV-2 to evaluate effectiveness and to guide future decisions.

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Contact: Dr Nandi Siegfried, CPHM Fellow nandi.siegfried@gmail.com
Prof Taryn Young, CPHM Fellow tyoung@sun.ac.za