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Department:
Health
REPUBLIC OF SOUTH AFRICA



Enquiries: Prof S Abdool Karim
E-mail: salim.abdoolkarim@caprisa.org

INTERNAL MEMO

Date:	06 July 2020		
To:	Minister ZL Mkhize, Honorable Minister of Health	From:	Ministerial Advisory Committee (MAC) on COVID-19

THERMAL SCREENING FOR COVID-19

Problem statement

- Thermal screening (i.e. non-core body temperature) is being undertaken as a tool to identify suspected COVID-19 cases in workplaces, schools and other public places such as shops and restaurants. Some workplaces are proposing to undertake 4 hourly staff screening as their COVID-19 risk mitigation strategy. Is there evidence in support of thermal screening in identifying individuals infected with SARS-CoV-2?

Evidence:

1. Implementation and adherence to the combination of non-pharmaceutical interventions of hand-hygiene, social distancing, regular sanitation of commonly touched surfaces, wearing of non-surgical face masks, daily screening for signs and symptoms by questionnaire, testing and isolation of infected individuals, as well as, tracing and quarantine of their close contacts is an evidence-based approach for reducing transmission of SARS-CoV-2.
2. The majority of people with severe COVID-19 will have a fever. However, it may be unlikely that this group will be in public spaces as they will be feeling unwell.
3. It is estimated that approximately two-thirds of those infected with SARS-CoV-2 are asymptomatic and do not have a fever or other signs and symptoms.
4. Pre-symptomatic individuals, who may be highly infectious, present with no signs and symptoms.
5. Individuals under 20 years of age infected with SARS-CoV-2 are even less likely than older individuals to have a fever, since the infection is more likely to be asymptomatic (~80% cases) or only mildly symptomatic compared to older individuals.
6. Both asymptomatic and pre-symptomatic individuals can transmit SARS-CoV-2.
7. Accurately detecting fever requires measurement of core body temperature. Temperature in the rectum and the mouth are most representative of body core temperature.

8. Thermal cameras and infrared thermometers measure heat radiating from a surface, which is surface temperature. Therefore, skin temperatures that infrared thermometers or thermal cameras usually measure in fever screening are not body core temperatures.
9. Human surface temperature is heavily influenced by environmental conditions. In cool environments, surface temperatures can be much lower than body core temperatures. Doing exercise, or being exposed to the sun, can raise the temperature on foreheads above body core temperature. Thermal cameras screen for high skin temperature, which may have little to do with infection.
10. Skin temperature does not rise during the developing phase of a fever. It falls, because warm blood is kept away from the skin, and skin temperature changes in the opposite direction to body core temperature.
11. Thermal scanning relies heavily on correct application of the scanner (pointing at skin directly and for the correct amount of time) and the user being educated as to what is normal, what is abnormal and when a repeat scan is required.
12. In people with COVID-19, not all with symptoms will have a fever, at least on the basis of once-off measurement. Only 31% of patients presenting at New York State hospitals with COVID-19 had fevers.
13. The National Institute for Communicable Diseases (NICD) reports that none of the imported cases in South Africa were identified at the port of entry through thermal screening.
14. Apart from fever screening being of little utility in identifying individuals with SARS-CoV-2 infection, infrared thermometry may pose a risk to thermometer operators who are required to be in close proximity to potentially infected individuals.
15. Successfully passing a fever screen may create a false sense of security, and could undermine adherence to other non-pharmaceutical interventions.
16. However, there may be some secondary value to thermal screening in that it may introduce a social incentive to report symptoms or not present to work if feeling ill.

Reference

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Recommendations

- Thermal screening is not recommended as there is limited added value to thermal screening of the body surface in workplaces, schools, ports of entry and generally to identify individuals who are infected with SARS—CoV-2.
- There is no merit for 3-4 hourly thermal screening of staff in workplaces, or more generally the public.
- Once daily thermal screening may be considered in settings where there is a need for a social incentive to report symptoms or not present to work if a potentially infected individual feels ill.

Thank you for your kind consideration of this advisory from the MAC on COVID-19.

Kind regards,



PROFESSOR SALIM S. ABDOOL KARIM

OVERARCHING CHAIRPERSON: MINISTERIAL ADVISORY COMMITTEE ON COVID-19

DATE: 06 July 2020

CC:

- » **Dr S Buthelezi (Director-General)**
- » **Dr T Pillay (Deputy Director-General: National Health Insurance)**
- » **Dr S Zungu (Project Lead: Sectoral Response to COVID-19)**
- » **Incident Management Team**