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South African National response to COVID-19

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To date, the number of reported infections of 2019 Novel Coronavirus (2019-nCoV) worldwide is around 1,8 million since the outbreak that began in Wuhan, China on the 19th of December 2019, after the first reported case. Has South Africa curtailed the exponential rate of infections and will this lead to a further declining rate of infections?

The exponential curve

South Africa is amongst the countries that have been able to stem the outbreak by flattening the exponential curve far ahead of countries such as the UK and Italy. The country follows the trajectory seen in Japan and Singapore as they steady the rate of growth in the number of infections.

The rate of new infections is calculated on a daily infection rate, once a country reaches 100 new cases from the time the infected individuals develop clinical illness and seek medical care. In a country where the virus has entered the country via travellers from another country there are three waves of infection that contribute to the way the virus will spread:

The first wave starts with travellers entering the country and has acquired the virus abroad, secondly; nosocomial infections which occur when the travellers are spreading the virus in hospital and non-hospital settings, which leads to the last wave; community infections which result in the exponential rate of infections expected in the normal trajectory seen worldwide.

The reason for the South African plateau

South Africa has a unique trajectory. Once we reached the 100 cases mark, there is a turn and decline in the number of reported cases, and we see the rates plateau.

Objectively, there are many factors to take into consideration when looking at the steadied rate of infection in South Africa as compared to the rest of the world.

Professor Salim Safurdeen Abdool Karim, epidemiologist and infectious diseases specialist, a leading medical expert working with the South African government as the ministerial advisory chairperson, presented his findings and hypothesized the following as contributing factors:

1. Rate of testing

The question to ask is whether there is simply not enough testing happening, and thus skewing the figure because of the lack of medical cases documented and measured. However, the number of tests completed in the public and private sector have increased substantially. Health Minister Dr Zweli Mkhize announced in a press conference, on the 18th of April, the number of people tested for COVID-19 is at 108,021 and the number of tests completed is over 123,000.

"We have been increasing the number of people being tested. When we started, 98% of tests were being done in the private sector. About two weeks ago, in the public sector, we could have been testing up to 1000 tests per day,".

"But, as time went on, we have come to a point where we are testing more than 5,000 per day. Today, in the last 24 hours, we have done 7194 tests…We have to keep pushing the number up." - Dr Zweli Mkhize

The number of tests currently conducted on people is not entirely accurate a measure for the number of cases being confirmed. It takes more than one test to confirm that a person has the virus in the duration of treatment.

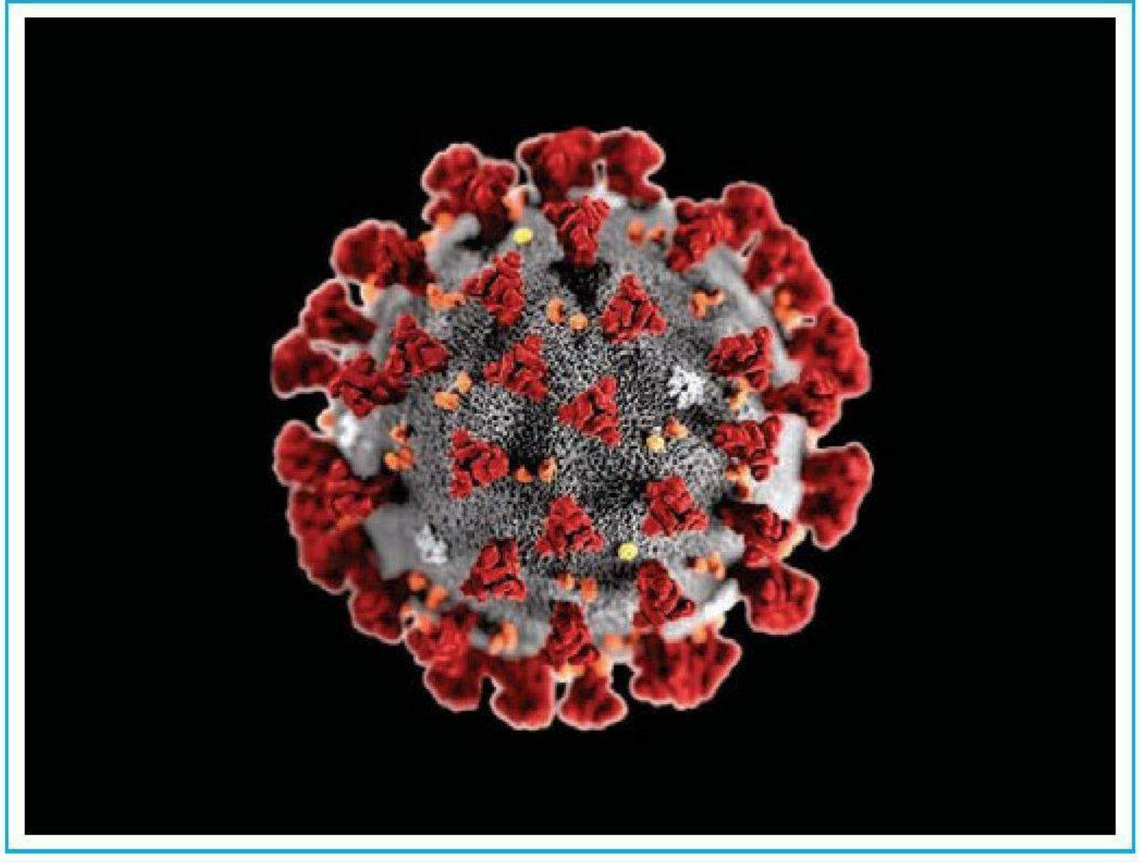
2. Disproportional testing statistics

Are disadvantaged communities disproportionately accounted for in the number of tests being conducted? The NHLS has shown more tests being conducted in the public sector within the last two weeks, to begin with, the numbers were showing the private sector dominating in the number of tests being conducted. On average, there is a steadied increase in the efforts to conduct mass community screenings to account for the more disadvantaged communities in the country.

3. Implementation of the Lockdown

Can we say definitively that the State of Disaster declared by the government has resulted in the diminished rates of community infections? Unfortunately, this is not the case as the infection takes 7–10 days to become infectious in the individual who has acquired the virus and takes 2 weeks for any symptoms of infection to materialize.

"The first two weeks of cases that we see after lockdown actually occurred before the lockdown. The third week of lockdown is probably our best indicator of infections that occurred straight after the lockdown," - Professor Salim Abdool Karim.



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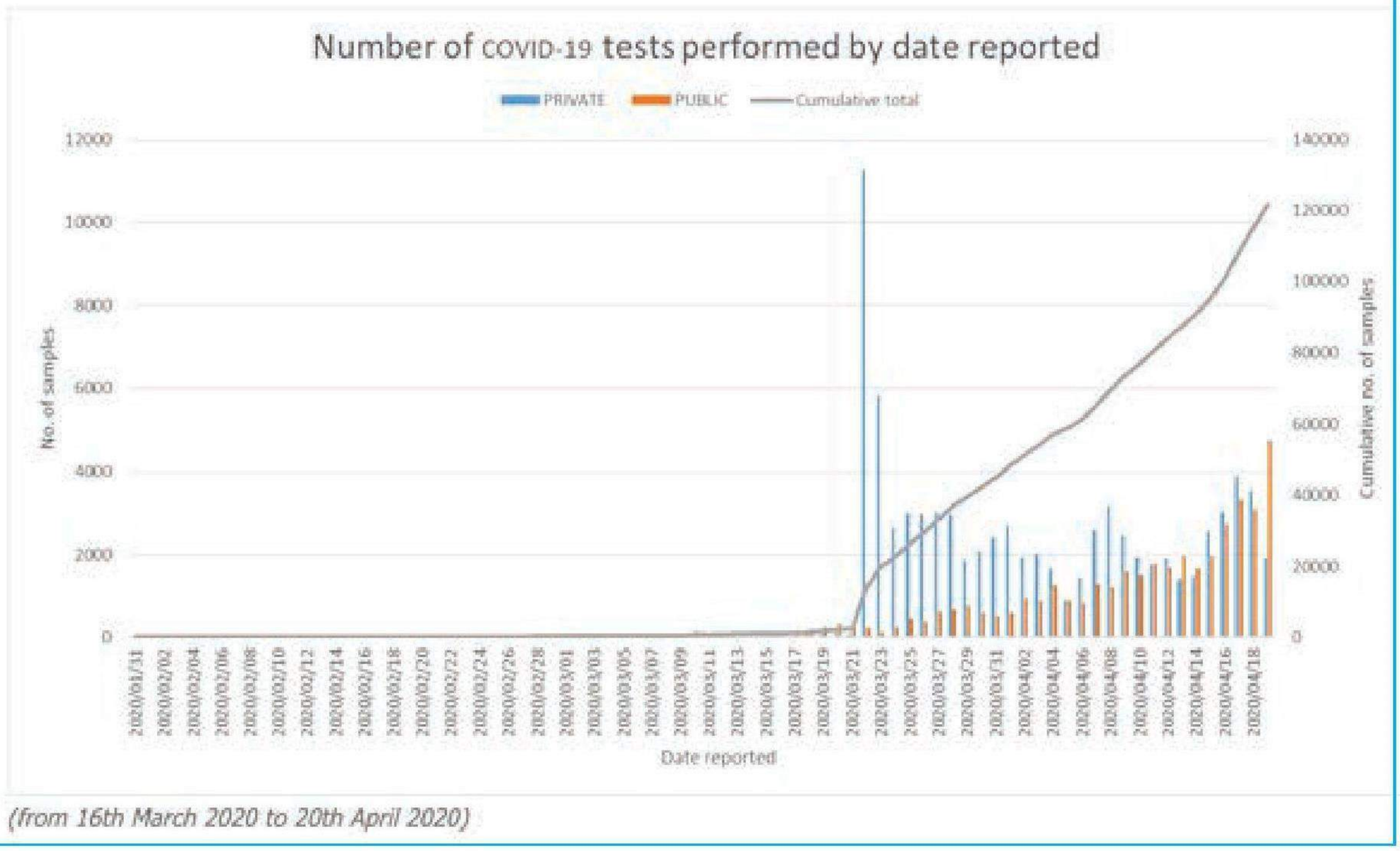

(from 16th March 2020 to 20th April 2020)

(NHLS Testing Data 2020)

South Africa's intervention plan

The response South Africa is embarking upon is phased in order to ensure the virus does not grow unchecked in a community that has no immunity and is at high risk of infection. In Professor Salim Abdool Karim's presentation, he outlined the following 8-stage plan:

Stage	Intervention
Stage 1 - Preparation	The National Institute for Communicable Diseases is a resource responsible for the circulation of relevant and factual information and scientific knowledge to the government, ensuring community education and continued interim guidance as it becomes available.
Stage 2 - State of Disaster	The primary prevention implemented to ensure the country was safe from the first wave of infections required cross border travel to be suspended. To ensure social distancing, schools and public gatherings have been suspended.
Stage 3 - Lockdown	This stage required an intensified curtailing of social interactions to combat the spread in communities.
Stage 4 - Surveillance and active case-finding	Surveillance and active case-finding. Deployment of community-wide screenings, house-to-house visits and over 20 000 active health workers finding cases in an active approach to combating community transmissions.
Stage 5 - Hotspots	The identification of "hotspots" will be imperative in dealing with the identified high-density hubs, namely; Johannesburg, Cape Town and eThekwini.
Stage 6 - Medical Care	There are efforts to establish triage zones and field hospitals in designated areas to ease the hospitals of non-critical patients. Two pre-dominant concerns in this stage are related to the flu epidemic coming upon the country at this time of the year and the additional burden of immune-compromised HIV and TB patients. The focus is then on making sure staff and hospitals are equipped and ready for the exponential curve that may come after the lockdown by equipping them with ventilators and personal protective equipment as well as escalating the access to medical response with ambulances.
Stage 7 - Bereavement and aftermath	The government is looking at effective measures to deal with the social, economic and mental health impact of the Lockdown.
Stage 8 - On-going vigilance	The medical community is tasked with identifying any cases and where there is a high density of possible community transmissions. To take a proactive approach the government will conduct national surveillance days in schools, big corporations, mines and prisons using the latest testing methods such as self-taken swabs while finding new ways to diagnose patients.

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Conclusion

It is unlikely that South Africa will escape the exponential infection rate seen by other countries around the world once the Lockdown has been lifted. The best route would entail a systematic easing of the Lockdown with the lowest risk to the highest risk individuals remaining in Lockdown until September. It is with the efforts of the medical community that the country will manage the expected and unavoidable rise in infections. It is up to the country and government to prepare for months to come until a vaccine is discovered and made available to the public.

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