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INTERNAL MEMO

Date:	5 November 2020		
To:	**Minister ZL Mkhize,** **Honorable Minister of Health**	From:	**Ministerial Advisory Committee** **(MAC) on COVID-19**

AN EPIDEMIOLOGICAL ASSESSMENT OF THE
LIKELIHOOD OF A SECOND WAVE OF COVID-19

Problem statement

- This advisory provides an epidemiological assessment of the likelihood of a second COVID-19 wave, as well as recommendations regarding COVID-19 surveillance and response activities
- Following introduction of COVID-19 into South Africa in early March 2020, and the peaking of cases during the week 5-11 July 2020 (over 13,000 cases daily), the daily case load has declined to below 2000 cases per day, with <10% positivity rate.
- Many countries where COVID was initially contained through public health interventions are now experiencing a 'second wave' of COVID infection
- The Ministerial Advisory Committee (MAC) was tasked in late August 2020 with responding to the question 'What does 'being ready for the 'COVID-19 second wave' 'mean in terms of prevention, detection and response activities?
- In doing so, the MAC sought to define a second wave and associated epidemiological features, investigate epidemiological factors associated with a second wave in countries where these have occurred, delineate surveillance activities to support detection and monitoring of a second wave, and finally to make recommendations regarding prevention detection and response activities.
- An earlier draft of the advisory was shared with the NDoH IMT on 16 September 2020 and were considered during the development of the NDoH National Resurgence Plan.

MAC considerations:

- There are no standardized definitions of a second wave or resurgence. A working definition of a 'second wave' and related changes in the epidemic curve are suggested below:
  - <u>End of wave</u>: A period (currently one day) where the case load is at or lower than 15% of the peak incidence or case load.
  - <u>An uptick</u>: An increase in cases or test positivity for 5 consecutive days
  - <u>An upswing</u>: An increase in cases or test positivity on 6 of 8 previous days
  - <u>A resurgence</u> when a previously declining or roughly stable level of incidence and test positivity changes to a consistently increasing trend. In practical terms a resurgence is identified when an uptick occurs within an upswing either before the end-of-wave threshold has been reached (a midwave resurgence) OR that exceeds the most recently met end-of-wave threshold (a post-wave resurgence).
  - <u>Start of wave</u>: A period (currently 1 day) where case load returns to a 30% of the previous peak case load or incidence AFTER the end-of-wave threshold has been met
- In an analysis of 113 countries that have more than 1 million inhabitants and a COVID-19 incidence of >10 cases /million population, 49 had concluded their first wave; of which 24 had one or more additional waves (as of 19 September 2020). To date, half of these 24 countries experienced a larger second wave than the first.
- Ten countries were analysed in more detail - all had seroprevalence rates under 10%. The decline in cases in these countries leading to the end of the first wave may have been driven by non-pharmaceutical interventions (restrictions such as lockdown) imposed to curb the spread of the virus and aggressive contact tracing with quarantine of contacts and isolation of cases. Further, the rapid infection amongst those at highest risk leaving behind those at lower risk may have contributed.
- Available serological data are from South Africa from convenience samples and their extrapolation needs to be carefully interpreted. If widespread transmission over the period of first surge has left South Africa with substantial population-level immunity - albeit unevenly distributed - this could influence the scale of the second surge. Since transmission levels could well be substantially less or more than the current surveys suggest – interpretations of current antibody protection levels should be treated with caution until more representative survey data are available – noting that a national household survey is underway to generate this information.
- The factors driving the decline in incidence in South Africa are not fully understood and may differ from factors driving the decline in the case study countries. SA's decline may have been driven in part by population-level immunity or by non-pharmaceutical interventions or a combination of both.
- Resurgences are expected and a second wave may occur. One school of thought is that SA is at risk of a second wave at any time and that this risk may increase markedly when large-scale population movement occurs and/or when NPI compliance declines. Another school of thought is that SA has antibody-mediated immunity levels that make it unlikely that a second wave will occur within the next

4-6 months. Regardless, changes in behaviour in NPI use or immunity (or the protection conveyed by it) are likely to be the 3 key factors impacting the risk of a second surge.

- o Consideration should be given to the possibility that travel during December may introduce the virus into naïve populations which could precipitate a resurgence or second wave
- o If a second wave does occur, it is expected to peak at a lower level than the first wave if prior immunity impacts the risk of re-infection or the severity of re-infection. If the second wave is less severe, as expected, health services are less likely to be overwhelmed.
- o Reduced adherence to nonpharmaceutical interventions, waning immunity, and seasonality of transmission could increase the risk of a second wave or a substantial post-wave resurgence as we move into winter of 2021.

- Regarding surveillance and responses
  - o COVID-19 surveillance methodologies that are currently underway in South Africa have strengths and weaknesses; but can be meaningfully used at national, provincial and district levels of the health system to assess the resurgence. Briefly these include
    - Reported Cases: (i.e. passive surveillance based on testing following on from patients presenting to health facilities who meet the 'suspected' case definition and are found to test positive for COVID-19 by RT-PCR (or antigen testing)
    - Testing of sentinel populations: (site surveillance for clinical syndromes compatible with COVID-19, eg. inclusion of SARS-CoV-2 testing into pre-existing influenza-like illness and severe respiratory illness surveillance)
    - Molecular surveillance (conducted by NGS-SA https://www.krisp.org.za/ngs-sa/) to identify emergence of new strains
    - Waste-water surveillance (conducted by SACCESS network)
    - Seroprevalence surveys (variously planned by HSRC and NICD)
  - o A number of factors that could be informative to identify 'at risk' communities include local (subdistrict or ward-based) data on 1) the number of laboratory-confirmed cases per population to date, 2) the number of tests performed per population to date, 3) the degree to which wards are connected to other wards through population mobility (e.g., as can be measured through mobile phone data), and 4) cumulative test positivity. Population density and social vulnerability are important factors impacting risk. Synthesizing data across these parameters may provide sufficient context to help identify areas of relatively high and low risk.

Recommendations

1. That current surveillance activities be continued and that slight modifications of indicators contained in the IMT Resurgence Plan be made.
2. That daily interpretation of the surveillance indicators (end-of-wave, uptick, upswing, resurgence, new wave etc) listed above be undertaken by national and provincial

epidemiology teams and that these data be used at all levels of the health system to guide preparedness and response activities

3. That testing criteria be aligned nationally and implemented provincially to ensure representative testing across at-risk areas

4. That a COVID-19 surveillance forum lead by the NICD/NDoH/IMT, including all institutions/stakeholders doing surveillance, provincial DOH and academics, be established to correlate and interpret surveillance data.

5. That data collection methodology at the point of specimen collection be strengthened to ensure accuracy and improved data quality. This includes the use of electronic data capture at point of specimen collection and inclusion of additional data elements (e.g. origin of specimens such as outbreak investigations in schools, institutions, workplaces and care facilities) to facilitate identification of localised outbreaks.

6. That immediate and ongoing investment be made in IT and business intelligence data systems to support national and provincial surveillance and response activities.

7. That national, provincial and district teams endorse, support and communicate the benefits of COVIDConnect to the general population and health care workers to ensure uptake, and that contact tracing teams integrate COVIDConnect into contact tracing and responses.

8. That cause of death data from death notification forms be made available timeously to national and provincial health departments.

9. That provinces develop resurgence action plans with clear terms of reference. Plans should include a surge response team with named personnel to support COVID-19 containment efforts should a second wave require additional human resources. These surge response teams should include epidemiologists, public health specialists, data analysts, health system analysts, communication specialists, behaviour change experts as well as clinicians, community health workers, contact tracers, and case investigation leads. Response plans should take into account differing urban and rural health systems by accommodating traditional community and religious leaders where appropriate.

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

Kind regards,

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DATE: 5 November

CC:
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» **Dr T Pillay**
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