

GMOA Report on Testing for COVID-19 in Sri Lanka



Government Medical Officers' Association

Testing for COVID-19 in Sri Lanka

GMOA has been insisting on two strategies: “aggressive testing” and “test, test, test” concept, for two weeks as a means of controlling the COVID-19 outbreak and to proceed to a “lockout” strategy to restore normalcy. The objective of this paper is to briefly elaborate on the concept and the basic principles of our proposed strategy.

A. Why Aggressive testing?

As the number of cases are rising, and the situation is rapidly evolving, there is an urgent need to scale up aggressive measures.

It is the concept of testing all suspected cases and symptomatic contacts of probable and confirmed cases.

B. Why Test, test, test?

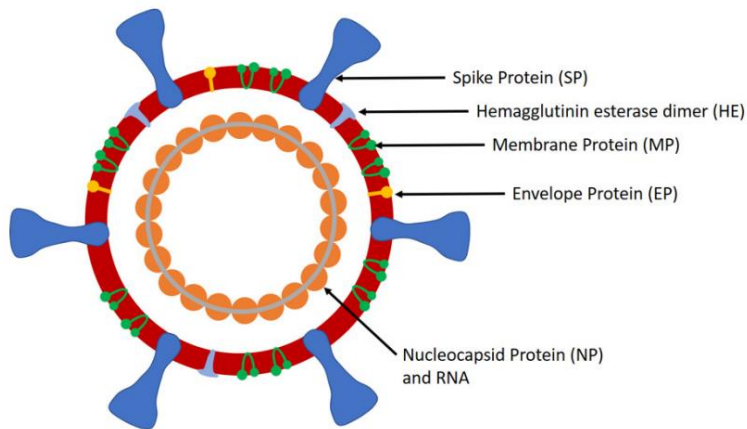
1. Quickly identify who has the disease and arrange the necessary care needed.
2. Isolate known cases, preventing them from coming into contact with others and hence, slowing the rate of transmission.
3. Allow government and health authorities to accurately understand the disease burden (i.e., how prevalent the disease is) and how it is evolving.
4. Detection and tracking of patients who are asymptomatic or with mild symptoms help authorities to make evidence-based decisions to slow the spread of the disease.
5. Identify who has already been exposed to the disease and subsequent development of immunity against the virus.

This is essential to reestablish the normal lifestyle of people, based on a scientific manner, and for people to return to work as quickly and as safely possible in order to kick start our businesses and industry, mitigating the significant economic damage already sustained due to the COVID-19 pandemic.

Being in the category of cluster-based transmission of SARS CoV-2 infection, testing needs to be increased as a strategy to prevent cluster-based transmission converting into a community-wide transmission. Therefore, it is essential to optimize the use of limited resources on focused testing strategies, at this stage of COVID 19 infection in the country, in the background of the current global crisis related to COVID 19 pandemic.

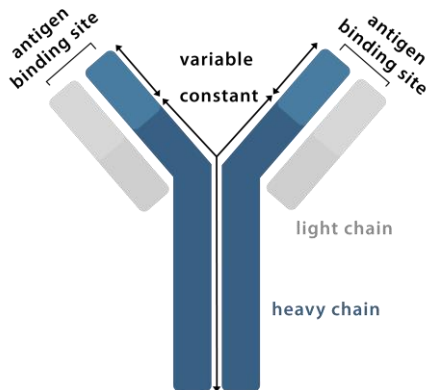
C. What do we test for?

1. Direct measure - Viral particles or its components



Molecular tests (just like Antigen tests) measure viral particles/material directly. Therefore, molecular tests such as RT-PCR will yield positive results when the viral particles are present in the sample being tested. This is seen very early in viral illnesses, typically from 1-2 days prior to developing symptoms to several days after developing symptoms (varies according to each virus).

2. Indirect Measure – antibodies produced in response to the viral infection



Serological testing measures the body's response to the virus in the form of antibodies. Immunoglobulin-M (IgM – early response) and Immunoglobulin-G (IgG –subsequent response).

Serological testing is useful to see who has been exposed to the disease in the past (recent or remote past). Serological testing can also be used as a surrogate marker of immunity against the virus if the reinfection is not possible.

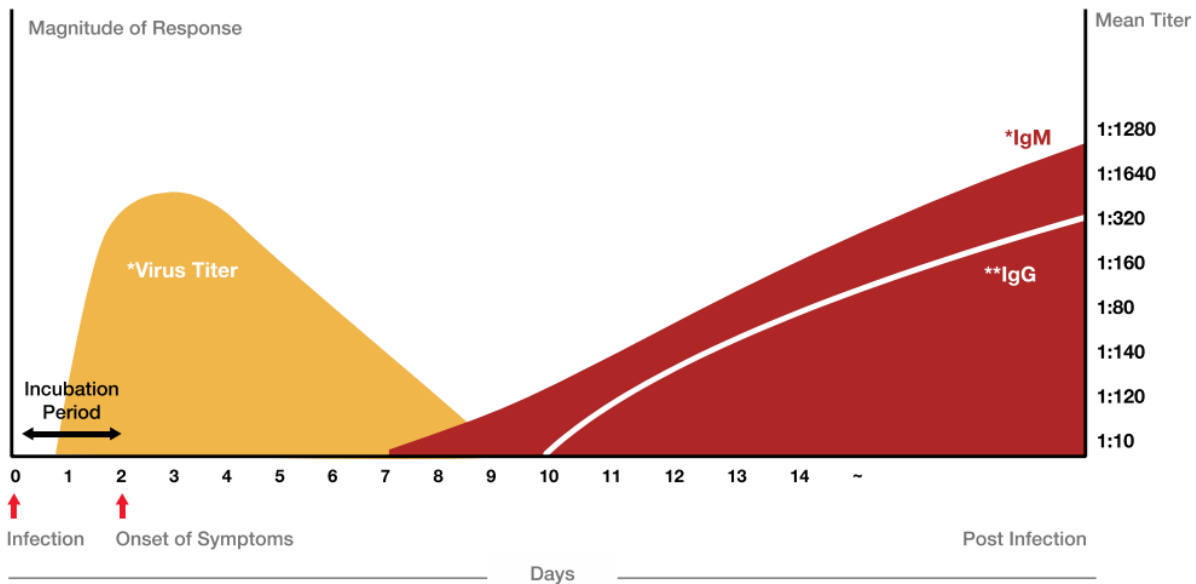
D. What are the tests available?

There are virological and serological testings:

1. Real-Time PCR
2. Serological Tests

E. When to use or combine these tests?

Disease and Reaction Time



Graph 1: The timing and level of antibodies are uncertain after SARS COV-2 and varies between patient populations. The graph depicts one scenario based on the limited published evidence (Royal College of Pathologists Australia)

As explained before, different tests become useful at different times to detect the active disease or to detect people who are exposed and having antibodies for the virus. To understand the use of these tests, it is useful to understand the above graph. It shows:

- the progression of the disease from the time the virus gets into the body of a healthy individual until disease resolution. It takes about 2 to 14 days for the virus to multiply within the body before the disease becomes apparent.
- During this time, the amount of viral particles in the body goes up and, then the amount of virus particles will go down over time. While this is happening, the body starts developing antibodies against the virus, which becomes detectable after 7-12 days.

1. PCR test

Real-Time PCR assays can identify and amplify viral genetic material (DNA or RNA) to sufficient quantities to aid the diagnosis. In the case of RNA viruses such as the coronavirus, Reverse transcriptase

Real-Time PCR technique is used. Several RT PCR protocols have been developed by several authentic institutions in the world to detect SARS CoV-2 RNA at least using two detection targets in the viral genome.

COVID 19 RT PCR is the recommended test for the identification of patients during an early infectious period enabling to implement effective infection control measures and individual patient management. Early detection of acute COVID 19 infection is essential to practice patient isolation, contact tracing, and quarantining process at this stage of cluster-based transmission in the country. This strategy will be helpful to prevent clusters of infection from converting into a wide community spread.

In addition to molecular laboratory-based PCR assays, point of care PCR test kits are also being developed in the world to detect SARS CoV-2 infection with a reduction of processing time. After verification of sensitivity and specificity, such assays might be useful to generate useful, though of relatively low sensitivity, results in resource-limited settings.

2. Serological (IgM/IgG) test

These tests would detect the antibodies (IgM/IgG) in the blood produced in response to the viral infection. Therefore, in the very early stages of the disease where our immune system has not developed antibodies yet, such serological testing may be negative.

Serological testing becomes useful when we need to detect those who are exposed to SARS CoV-2 for surveillance purposes. This will provide the authorities with a true estimate of the spread of the disease and help to predict the spread in the future.

Further, IgM serological assays can be used to detect recent infections but not necessarily acute infections.

COVID 19 serological assays, which are cross-reactive, with antibodies developed against other human coronaviruses in the community, might provide misleading information. Therefore, the use of these assays can be recommended only after a proper laboratory verification process for their sensitivity and specificity.

3. COVID 19 antigen rapid test

COVID 19 rapid antigen test kits also might be available in the future to supplement the PCR based acute diagnosis of SARS CoV-2 infection. But recommendation for the use of such assays should come through a local laboratory verification process as there could be sensitivity and specificity issues in these different assays.

Based on the scientific evidence and the feasibility, expert bodies should conclude the most suitable test methods and strategies that can be used in Sri Lanka in view of controlling COVID-19 (epidemiological purposes) and clinically managing individual patients.

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