

Summary Report

Global COVID-19 Network Webinar Learning Series

Global Responses on Diagnostics & Testing for COVID-19

Moderator

- [Dr. Subhash Hira](#)

Professor of Global Health, University of Washington, Seattle; Sambodhi/ISRN New Delhi

Speakers

- **Mr. Vinay Sahasrabuddhe**
Member of Parliament (RS)
President, Indian Council of Cultural Relationships, New Delhi, India
Vice Chair, Indian Social Responsibility Network, India
- **Dr. Por Ir**
Associate Professor and Deputy Director,
National Institute of Public Health, Pnom Phen, Cambodia
- **Professor Dr. Sarman Singh**
Director & CEO, AIIMS, Bhopal, India

Discussion Summary

The third webinar session of the Learning Series explored the theme of 'Global Responses to Diagnostics and testing for COVID-19'. National 'best practice' responses from India and Cambodia were presented. In India, COVID-19 infection and mortality rates have been kept low with lockdown and personal protections, while in Cambodia no new COVID-19 cases have been detected post April 24, 2020 despite the absence of lockdown. Bringing to light both technical knowledge on testing mechanisms and their validity, intermittent shedding of the coronavirus raising false alarms of "reinfection" or "relapse", as well as the actual use and distribution of these methods on the ground, speakers shared learnings on the best practices for appropriate diagnosis and detection of the infection.

Dr. Sahasrabuddhe, Member of Parliament (RS) and President of the Indian Council of Cultural Relations, spoke on the various government measures unique to the Indian experience of dealing with COVID-19. Stressing the importance of balancing lives with livelihoods, he discussed challenges that the socio-economic diversity of India could pose for a single approach for prevention. Given these disparities, a 'one size fits all' solution might not be appropriate and different sections of society will have to be approached commensurately.

Dr. Por Ir, Associate Professor and Deputy Director of the National Institute of Public Health in Cambodia, shared concerns pertaining to diagnosis and testing in the region, particularly highlighting the management plan adopted by the government to safely admit migrant workers from foreign countries. Confirming that there were no known cases of reinfection, he highlighted the several measures aiding the resumption of daily activities including sensitizing and educating people on safety measures. The

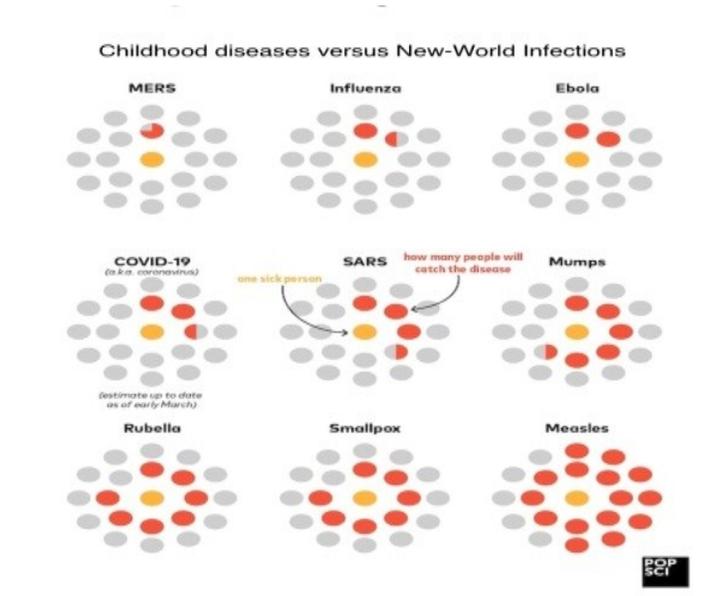
advantages and limitations of molecular testing were also raised, along with the concerns surrounding antibody tests for diagnosis.

Dr. Sarman Singh, Director of AIIMS Bhopal in India, brought to the fore finer details of the coronavirus at the cellular level. He shared findings from studies conducted on the duration of infectiousness of the virus since the first symptoms begin to emerge in patients, and how these observations are translating into policies in various countries including India. He also compared the reliability of different testing mechanisms, echoing Dr. Por's concerns over the use of antibody tests which can be used for Surveillance exercise but are to be avoided for use in diagnosis and prognosis.

Dr Subhash Hira

Key takeaways

- The Infectious Disease formula ($R_0=Bcd$) that is used to calculate the speed of spread of an infectious disease continues to be used since 1980.
- The speed of spread of childhood infections R_0 , for rubella, mumps, and measles is at 5.5, 7, and 15, respectively as shown in the slide. The yellow dot represents an index case that infects number of other contacts shown as red dots.
- The new-world infectious diseases such as Ebola, SARS, and COVID show R_0 rate of 2, 3.5, and 2.5, respectively. It is only when R_0 rate falls below 1, such as MERS with R_0 rate of 0.75, that MERS epidemic died off after few spurts in Middle East countries during 2014-2017.
- Variables such as economic and travel linkages of a place to high COVID prevalence area affects R_0 adversely (Jai Mrug, Mumbai)



[Slide 1]

Dr Vinay Sahasrabuddhe

Key takeaways

- India is a country with different levels of literacy, and education may not have made very deep inroads into certain remote or tribal areas. Yet, in India, there has not been any mass creation of panic or paranoia due to COVID-19. People have faced the situation in a very dignified manner.
- There is migration happening. Dedicated vehicles and trains are being organized. The nation is working towards opening up the lockdown after 55 days, and as the Prime Minister indicated, we are here to save lives but also provide livelihood opportunities in requisite numbers to those likely to face unemployment. Balance is being struck in a very planned manner within this Indian approach of handling the pandemic.
- Along with the government, all state and local government bodies have contributed significantly in handling the situation. Largely, rural areas have remained free from the pandemic. We need to make sure that cities do not export the infection to the rural areas.
- People are facing different kind of situations. Those in forests, those who are salaried, those who are daily wage earners – everybody is facing different challenges. One size may not fit all. Our antennas will have to remain sharp towards the sensibilities of the disadvantaged and deprived sections of society.
- [0:29:43] – The significant feature about how India has handled this pandemic is the balance we have struck between individuality and collectiveness. People can easily feel isolated in these times, as they do in other countries. However, the nation has been proactive in fostering and preserving the collective spirit of India in a unique, individual way.
- [0:32:53] – Balancing lives and livelihoods entails very difficult choices. We can't fully ignore one or the other. This has to be balanced.

Dr Por Ir

Key takeaways

- **0:04:15** – Cambodia has a very effective system of contact tracing. It has involved military and police intelligence to identify suspected COVID-19 cases. Contact tracing is the single most critical task that public health personnel cannot carry out alone.
- **0:06:21** – A special plan has been devised for migrant workers returning from abroad. Migrant workers are considered as a potential source of community transmission that may be harder to control. Hence, they have been identified as a high-risk group and are being prioritized for intervention.
- **0:07:50** – For persons with negative test results but having a history of contact with confirmed cases, we still place them in 14 days quarantine. If they become symptomatic during this time, we do the requisite tests. Else, we only do two tests in the last 48 hours and discharge them if they are negative.
- **0:11:57** – Although the border between Cambodia and Thailand is closed, the Cambodian government has still made arrangements for the migrant workers to return. An App has been devised and implemented to manage their return.
- **0:12:39** – The management plan for migrant workers returning from abroad is broken up into 4 levels: At the border, at the provincial level, at the district level, and at home.
- **0:15:26** – While there is still discussion surrounding the scientific proof behind different testing measures, the fever scan has been found to be quite insufficient.
- **0:19:05** – WHO recommends molecular diagnostic tests for COVID-19. But these also have limitations in terms of the quality, specimen collection, and laboratory procedures. Molecular tests render cases 'false positive' due to low specificity. In South Korea, for example, it is being reported that reinfection cases are being tested false positive. However, molecular tests are the most feasible and practical at the moment. Antigen tests also show some potential, though we are still waiting for them to be ready. If antigen tests become reliable, they will open up an additional means of testing for us. [Slide 2]

Last words about Covid-19 tests

- While RT-PCR and antigen-based immunoassay detect current infection (active cases), antibody immunoassay detects past infection
- By now (12/05/2020), the only WHO recommended diagnostic test for Covid-19 is molecular test
- None of the immunoassay (antibody or antigen-based test) is approved for diagnostics;
- However, they are commercialized in many countries for different unclear purposes, in different prices with difference performance;
- With limitations of current molecular methods, this immunoassay:
 - Antigen-based test has a strong potential use for diagnostic
 - Antibody-based test:
 - has a strong potential for public health/research purpose (as a serosurvey);
 - in RT-PCR negative cases with strong epi link to Covid-19, it can be used as paired serum samples to support diagnosis
- The newly developed (near) point-of-care molecular testing should be further explored

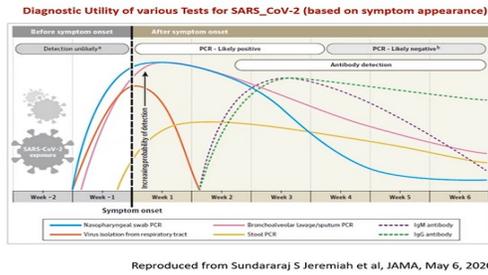
[Slide 2]

- 0:23:44 – based on my experience, while restaurants and markets have not been closed, ensuring social distancing has mainly helped through education, encouragement, providing media training, and public awareness.
- **0:26:10 – The big question that no one seems to have an answer to, is when we can re-open schools. We will look at the situation globally in other countries such as Singapore and Thailand and make a decision based on careful assessment from their experiences.**

Dr Sarman Singh

Key takeaways

- 0:32:54 – There are many other coronaviruses in animals. Wild animals harbor various kinds of viruses, coronavirus being one of them. There are several reasons that pandemics like this can emerge, but environmental invasion is a large one.
- 0:34:56 – It's very important to understand how the virus spreads from one person to another. The nuclei of the droplet travels differently while coughing and sneezing. These droplets are the size of 5 nanometers, and travel upto 2 feet. Bigger droplets, bigger than 10 micrometers, settle earlier within radius of 3-6 feet. This is why people must maintain physical distance.
- 0:38:00 – In order for viruses to become active, they must come into contact with the living machinery of an organism.
- **0:41:12 – More than 80%% of cases, even if they are infected, they will not develop any symptoms. Only 2-5% of cases develop critical conditions.**
- 0:51:00 – Molecular tests are reliable at the time of contact as well as when symptoms begin to emerge. The time of sampling is very important. [Slide 3]



[Slide 3]

- 0:52:30 – Most of the testing kits are being produced by China and South Korea.
- 59:55 – The government of India is using the GeneXpert kit to diagnose coronavirus infection at the district level. The Health Ministry has announced that all districts in India will soon have these tests to diagnose coronavirus infection because all districts have GeneXpert machines and trained lab staff under RNTCP.
- 1:03:00 – It has been reported that even in RT-PCR positive cases, the virus cannot be culture isolated after the 8th day of symptom, therefore indicating poor or no infectivity beyond the 8th day of the illness. This could justify the revised guidelines in India and some other countries to discharge all patients after the 10th day of hospitalization.
- 1:04:00 – It is being noted that the same patient is sometimes positive and sometimes negative. This is because of the intermittent shedding of Corona in samples. This is a common feature.
- 1:07:00 – Antibody tests are a big NO for diagnosis and prognosis. Only utility is for serosurveillance. Only 27.8% of cases are found to be positive through IgM+IgG antibody tests from a specimen pool of all RT-PCR positive cases. [Slide 4]

IC assay for IgM and IgG antibodies using COVID-19–positive serum specimens.

	Total N = 139	Time from symptom onset to specimen collection		
		<1 week n = 90	1–2 weeks n = 25	>2 weeks n = 24
IgM	60 (43.2 %)	25 (27.8 %)	12 (48.0 %)	23 (95.8 %)
IgG	20 (14.4 %)	3 (3.3 %)	2 (8.0 %)	15 (62.5 %)
IgM + IgG	60 (43.2 %)	25 (27.8 %)	12 (48.0 %)	23 (95.8 %)

Imai K, Tabata S, Ikeda M, Noguchi S, Kitagawa Y, Matsuki M, Miyoshi K, et al. Clinical evaluation of an immunochromatographic IgM/IgG antibody assay and chest computed tomography for the diagnosis of COVID-19. *J Clin Virol*. 2020 Apr 30; 104393. doi: 10.1016/j.jcv.2020.104393 [Epub ahead of print]. PMID: 32191278

[Slide 4]

- 1:12:30 - There are no reinfection or relapse cases of COVID-19 so far.

