

Synopsis of AAPI Webinar – June 14, 2021

A Special Tribute to COVID-19 Healthcare Heroes

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Objectives of the Presentation:

- Discuss Differences in epidemic compared to last year
- Discuss differences in clinical presentation compared to last year
- Discuss common treatment practices for COVID-19 and Clinical Impact
- What is SHARE INDIA doing to address the COVID-19 situation in India

Difference in Epidemic Compared to Last Year: As a clinician involved in the care of patients with COVID 19 illness since early 2020 the following are my observations: In 2021 compared to 2020, we see an enormous increase in number of patients and often entire families affected simultaneously with no one left as a caregiver. A larger proportion of infected individuals are progressing from milder to severe illness in a shorter time frame (Telescoping). Recovery is taking place over an exceptionally long time with persistent elevation of markers of inflammation (CRP) and frequent recurrence of symptomatic illness in people a few days after stopping anti-inflammatory medicines.

Differences in Clinical Presentation Compared to Last Year: Many individuals are presenting after one dose of vaccine and some soon after second dose of vaccine. Even post recovery, some individuals have chest syndrome (pleuritic, pericarditis pain), tachycardia, disabling fatigue with a few expiring due to sudden death (cause unknown). Explosive increase in demand for High-Resolution CT (HRCT). There is an explosive increase in demand for Remdesivir, and an epidemic of treatment with questionable regimens (doxycycline; ivermectin; high dose vitamin C, vitamin D, zinc, high dose steroids, antibacterial, proton pump inhibitors). There is collapse of public hospital systems, which are not consistently providing dexamethasone and anticoagulants to patients who require supplemental oxygen.

COVID-19 vs. Previous Coronavirus Outbreaks: COVID 19 is clearly different in both clinical manifestations and epidemic dynamics as compared to SARS and MERS in having a greater transmissibility despite lower case fatality rate. The number of infected (larger denominator) has a greater socio-economic impact. COVID 19 has a greater propensity to evolve into genetically heterogeneous populations best described as, viral quasispecies evolution (1). This explains the emergence of the Alpha, Beta, Gamma, Delta variants we have been seeing and will continue to see.

India vs. United States: The difference between India and the United States in morbidity and mortality has been attributed to differences not only in the demographics of the population, but also social mores, and access to advanced medical care. Fortunately, most vaccines have efficacy (albeit somewhat lower than before) against the newer variants of interest. This has implications for how we address the pandemic in India and also how we plan for the eventuality of similar emerging pandemics.

Role and Work of SHARE India: SHARE INDIA (Society for Health Allied Research & Education India) was formed and registered in 1986 as a research society and recognized as Scientific and Industrial Research Organisation (SIRO), by Ministry of Science & Technology, Government of India. The vision of SHARE is to strive to create healthy population by innovation and increasing, imparting and applying knowledge. The objective is to provide comprehensive, effective, affordable health care to people and build capacity for innovation/research to address health care challenges of today and the future. In 2020 at SHARE INDIA, we developed a projection of the spread of infection in the Telangana State population using the SIR model ($R_0=3$), According to our projection, an estimated number 11,910,208 individuals (36% of the population) of Telangana State would have COVID-19 infection, which we submitted for publication and pre-print

is available online (2). Our projections were perhaps overly optimistic and the R_0 of 3.0 was an underestimate. As of June 11, 2021, the actual epidemic numbers as reported by Johns Hopkins are clearly much greater than expected.

Using the logistic map equation $X_{n+1} = rX_n(1 - X_n)$ and revised R_0 , it is far more likely that the epidemic will be cyclical with the periodicity of the peaks and troughs yet to be determined, with an R_0 between 3 and ≈ 3.44949 , from most initial conditions the population will approach permanent oscillations between two values. The implications of this concept are:

1. We probably will see the epidemic numbers decline in few weeks followed by an inevitable rise in cases within a few months of the decline. The only significant change in the dynamics of epidemic is possibly the ability to vaccinate over 75% of the population (including children) within the next 6 months. There are significant concerns about the safety of vaccines in children due to a more robust immune response in younger children. It is important to understand that in India, children (0-14 years) constitute $\sim 28\%$ of the population. We have seen that children easily acquire and transmit respiratory tract infections with mild illness, but serious illness when transmitted to adults. Both mycoplasma and chicken pox are classic examples. This has serious implications for schooling, in India, and relying on distance learning (internet) is not widely available.
2. We need to prepare to take care of the affected people in the community rather than in hospitals for 3 reasons:
 - a) In India $\sim 65\%$ of the population is rural with negligible access to adequate medical care.
 - b) We do not have enough capacity in public hospitals to handle the burden (private hospitals are not an option for the average citizen) even in urban areas.
 - c) Concentrating large numbers of infected people in small areas (particularly poorly ventilated areas) increases the risk of transmission to other people particularly health care providers and increases the probability of emergence of yet newer variants (mutants) of the virus that may be more contagious and capable of causing more serious illness. Many decades ago, Paul Ewald suggested that all populations of living organisms always evolve strategies for perpetuation of the species regardless of consequences to the host (3).

3. We need to have a plan to address not only the acute illness caused by COVID-19 infection but also:
 - a) Economic impact of illness on the patient and family
 - b) Socio-economic impact of "Lockdown" etc.
 - c) Long term complications of COVID-19: Lung damage, infections like tuberculosis, fungal infections ("Black Fungus")
 - d) Long term complications of inappropriate treatment regimens of COVID-19 (overzealous use of high dose steroids, tocilizumab, remdesivir, Ivermectin, convalescent plasma)
 - e) Long term disability caused by COVID-19 and consequent loss of ability to earn a livelihood.

SHARE INDIA has been supporting the response to the COVID-19 pandemic in India through multiple programs:

- A) Continuity of care despite the disruptions caused by lockdowns for:
 1. HIV infected individuals on anti-retroviral therapy
 2. Individuals with MDR/XDR tuberculosis particularly in the slums of Dharavi
- B) Capacity building in laboratory diagnosis for COVID-19
- C) Infection Prevention and Control in Government Hospitals
- D) Epidemic intelligence and response support for the Maha Kumbh (April 7 to May 15, 2021)

SHARE INDIA has proposed a decentralized comprehensive approach to the pandemic: **COCOM HAPPEN INDIA (Community Outreach Program to Reduce Risk of Hospitalization and Hypoxia)**

- Each Outreach Worker (ORW) should be armed with **Pancha Astra** (Five Instruments)
- Masks
- Hand sanitizer
- Oximeter
- Dexamethasone (no more than 8 mg daily)
- Rivaroxaban (10 mg daily)
- While doing battle in the field each ORW should be able to monitor the following **Pancha Guna (Five Characteristics)**
 - Symptoms and signs suggestive of COVID-19
 - Oxygen saturation at rest and with exertion (6 min walk) respiratory rate
 - Body weight (BMI)
 - Random blood glucose
 - Blood pressure

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- In addition, use **photovoice** to record:
- Personal perspective of illness
- Family perspective of illness
- Impact on daily life activities
- Impact on livelihood
- Any other symptoms consistent with PASC (Long Haul COVID)

Recorded Webinar Presentation: A recorded video of this webinar presentation can be accessed in the following link https://www.youtube.com/watch?v=rfG-eql_lfo&t=3s

Disclosure: The author is the head of Infectious Diseases and Public Health at SHARE India (www.shareindia.org), while being a Clinical Professor of Medicine and Surgery at the University of Illinois at Chicago, Illinois, USA.

References:

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