

Addressing Immediate Challenges in Controlling COVID-19 in India

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Words: 2442

Introduction

Corona Virus Pandemic has to date spared India from a massive onslaught of death and destruction, similar to what we see in China, Europe, and the United States of America. As on date, India has reported 3072 COVID-19 cases and 91 deaths¹. The Government of India (GOI) has taken many proactive steps to control the epidemic, including the total lockdown of the nation to flatten the epidemic curve and reduce the case fatality rate. India has chosen a strategy of large-scale quarantine and limited testing and not extensive testing and limited quarantine. This is because we have a large population of 1.3 billion, and many states in India have the comparatively limited testing capacity to deal with a large-scale epidemic. The timeline that we get by flattening the curve should be urgently utilized to plan and implement interventions that help preventing further spread of the disease. This is important as we will need to withdraw before long the nation-wide lockdown to reduce the economic impact and resultant suffering of the poor and vulnerable population of our country.

The containment efforts in the country started with the testing of foreign travellers and their contacts. Subsequently, persons with severe respiratory infections were also included in the testing strategy. While contact tracing is a significant task which some states in India seem to have done better than others. Data indicates that the infected individuals currently hail from 170 of the 640 districts of India. Within these districts, based on the number of infected persons/or frequency, 27 high burden districts can be identified as hotspots (see Exhibits 1 to 3). About 4% of districts account for 43% of the burden, require immediate and focused attention¹.

In this setting, what we do in the immediate future has to be based on the existing spread of the disease and projections based on mathematical modelling. Three main factors need to be taken into consideration as we plan future strategy: (a) Even if we may decide to extend the nation-wide lockdown for some more time, it cannot be extended for an indefinite period as the economic consequences of a prolonged shutdown will be too high. (b) The pattern of the spread of the virus is not uniform across the nation but concentrated in select hot spots in the country. (c) The countrywide lockdown has produced some very unfortunate consequences due to massive-scale migration of population across the country with resultant human

suffering and a potential threat to the spread of the virus in the source and destination of these migrant populations. (d) Even though an effective vaccine is a long way away, there is some indication that Hydroxy Choloroquine (HCQ) and BCG vaccination may provide some benefit to reduce the infection, severity and virus load².

At this point, incident data on COVID-19 cases suggests that India has succeeded to some extent to flatten the epidemic curve. However, it seems inevitable in the light of large scale conglomeration of migrants in many places; there will be a need to monitor the situation continuously to determine geographical areas and districts which emerge in the future as high-risk regions in the country particularly at the source and destination points of migrants.

Differential Approach to Social Distancing and Testing Strategies

The efficient use of preventive strategy, as seen in other health programs, will require differential allocation of resources and focus based on the disease spread rather than across the nation. The monitoring of high burden districts based on prevalence needs to be continued to identify and designate hot spots in the country. The degree of the lockdown and social distancing can be graded after the lockdown period. As migrant infections rise as expected over the next few weeks, additional hotspots may arise in source and destination points. It is anticipated, therefore, that three levels of social distancing strategy need be adopted to tackle the epidemic while allowing some degree of economic activity to be initiated in shallow prevalent areas of the country to mitigate the economic consequence of the epidemic. The disease burden in each hotspot may show different timeframes, based on the cumulative effect of the viral spread. In such situations, it will be essential to keep a flexible approach in terms of timeline and how long do the district admin/health staff need to monitor the epidemic. As time goes, we will be required to define the sort of an endpoint/threshold that would enable us to return to routine work. At the same time, we may need to develop mechanisms or initiate necessary steps to keep watch and try to avert a second wave later in the year using three-pronged strategy:

1. ***In the identified hotspots*** current level of the mandatory shutdown will need to be continued. A wide-spread testing strategy can be initiated in these areas to identify positive cases that need to be quarantined. At the same time, newer diagnostic tests using antibody titre can identify subgroups of the population who have recovered from minor infections, and these can be allowed to perform normal functions within these geographical hotspots. It is essential to ensure the availability of personal protective equipment, ventilators, isolation wards and short-term orientation or training of personnel, etc. It will be important to address the strategy of testing at high-risk districts (hot spots). Given the remoteness of many districts, what level of logistics support required for managing the testing activities? In the next couple of days, it will be important to define the inclusion criteria for the testing and management of these cases at the district/hotspot level, and also what kind of training and facilities may have to be provided, timeframe for monitoring and surveillance in the identified areas.
2. ***Moderate level geographical*** areas can adopt a less stringent lockdown avoiding large gathering, limited movement, and more freedom to initiate economic activity. These populations need to be monitored closely based on a random sampling of the population

to understand the spread of disease and mounting appropriate responses to the epidemic. Indian modelling studies predicted positive benefits of social distancing³ and similar measures were also recommended in other population too^{4,5}. A recent study conducted by Harvard School of Public Health researchers suggests staggered intervals of social distancing may be more beneficial in saving lives than the one-time social distancing in the USA. The team proposed “intermittent” social distancing, in which authorities enforce distancing when cases rise above a set threshold and then lift measures when cases fall below a set threshold⁶.

3. In a large number of very ***low-risk regions*** in the country, regular economic activity can be restored. However, these regions must ensure social distancing norms in all their routine activities, which may need to be continued until herd immunity develops gradually in the population.

There are emerging studies on using newer technologies and methods of disease surveillance in low-risk populations. A study has shown that the heart rate data can be exquisitely helpful for picking up a flu outbreak before it actually happens. There is also a study which suggests using body temperature with a smart thermometer and such cases can be digitally tracked with some probability to pick-up the outbreak before it happens and ensure isolation and prevent that exponential growth in that community⁷. It is also possible to identify the clusters using smart thermometers, social site postings pattern, spurt in low lymphocytes count noted by labs in an area, spurt in bilateral pneumonias noted by Radiologists in an area⁸.

Treatment Options using HCQ and BCG vaccination

Flattening the epidemic has given India some time to initiate some definitive treatment strategies in addition to social distancing. There is some indication that Hydroxychloroquine (HCQ) reduces infection rate, severity, and viral load. The final results of Randomized Control Trials initiated by WHO may be available in 1-2 months. Meanwhile, ICMR has given preliminary clearance for its use in COVID-19 affected individuals in India. FDA has cleared the use in the USA also. BCG vaccination has also been noted to have some protective effect by boosting immunity in individuals. India must get ready to initiate without any delay in both HCQ and BCG in health workers and high-risk populations to reduce the spread and prevent infection as soon as results become available from ongoing studies.

Migrant strategy

Migrant workers, daily wagers, low-income group families have become shelter-less and lost their livelihoods as a consequence of a complete lockdown announcement. With no-access to livelihood and nutritional needs, these groups have no other option but to move out of their current dwelling units in the cities/towns and proceed to their native villages, which are located in faraway places. In the process, several thousands of people congregated on roads, exits points, transit areas and borders, railway stations, so on, and so forth. This has resulted in a chaotic situation, and these groups have faced severe hardships for food, water, and shelter. Unfortunately, if some individuals who are infected with COVID-19 are among these groups, then there is an enormous possibility of exposure to the virus. Therefore, these groups will have to be handled carefully at source, transit, and destination points⁹. Containment and

mitigation efforts need to be taken on a high priority. What could be possible interventions to handle this situation:

- Responding to workers in distress due to the lockdown through the Labour Helpline (1-800-1-800-999)
- Involve the civil society partners participating in the migrant interventions (many of them are part of NACO program for the selected geographical regions¹⁰)
- Prepare a package of COVID-19 impact mitigation services and delivery mechanisms
- Access the database or information available about the migrant populations
- Reach out to the migrants at source, transit, and destination points¹¹
- Use the networks established by the migrant targeted interventions in the NACO Program (TI NGOs) and piggy-back on their efforts to provide the COID19 mitigation package of services.
- Closely monitor the activities through a supervisory mechanism and facilitate coordination among the states/districts etc.
- Provide communication and stigma reduction BCC materials
- Provide counselling services as required

Administration and Coordination of COVID19 Prevention activities

Containment and mitigation strategies need to be simultaneous and well-coordinated. But at present, these efforts by the national and sub-national governments are way below the desired levels. The responsibilities of administrative and programme functionaries and the level and magnitude of preparedness required for such a nation-wide intervention have not been clearly understood. This has resulted in a great deal of confusion and chaos among the population, particularly the migrant workers and their families. Several inter-state border issues have also come up.

What should be the action plan to address these emerging challenges? The administrative units need to work on the following:

- Map and identify high-risk districts which require higher levels of intervention
- Establish a district coordination committee with Collector as the Chairperson
- District Medical and Health Officer (DMHO) should be the convenor.
- Key district officers, civil society representatives, should be the members. We can follow the DAPCU coordination Committee model that was developed in the HIV/AIDS Program¹¹.

It will be important to come up with an essential package of services for current and future COVID19 waves. Once designed, this essential package kicks in whenever there is a semblance of a COVID19 outbreak.

Developing District-wise Model-based Predictions

There is a need to urgently develop mathematical models informing us about the gravity of the situation and, more specifically, identify emerging hot spots and potential spread based on determinants of virus spread identified. Wavelet theory could help predict the future hot

spots, likely spread of infection in a given area in the absence of social distancing or other preventive measures¹¹.

Conclusion

The government has adopted a strategy of largescale quarantine and limited testing to flatten the epidemic curve and reduce the death rate. This note suggests the timeline should be urgently utilized to plan and set in action to prevent further spread (second wave) of the disease. Currently, 49 high burden districts account for 62% of the burden, require immediate and focused attention. The efforts will require significant coordination of administrative activities and exploring and finalising treatment protocols, including HCQ and BCG. District level COVID-19 Prevention Committees (DCPC) using the existing structure of District Aids Prevention and Control Units (DAPCU) may be activated. The role of these units will be significant in behaviour change and communication and various migrant management strategies. Once we have reasonable data on tests and number of cases, wavelet analysis of district data may be considered to inform the prevention and control strategies.

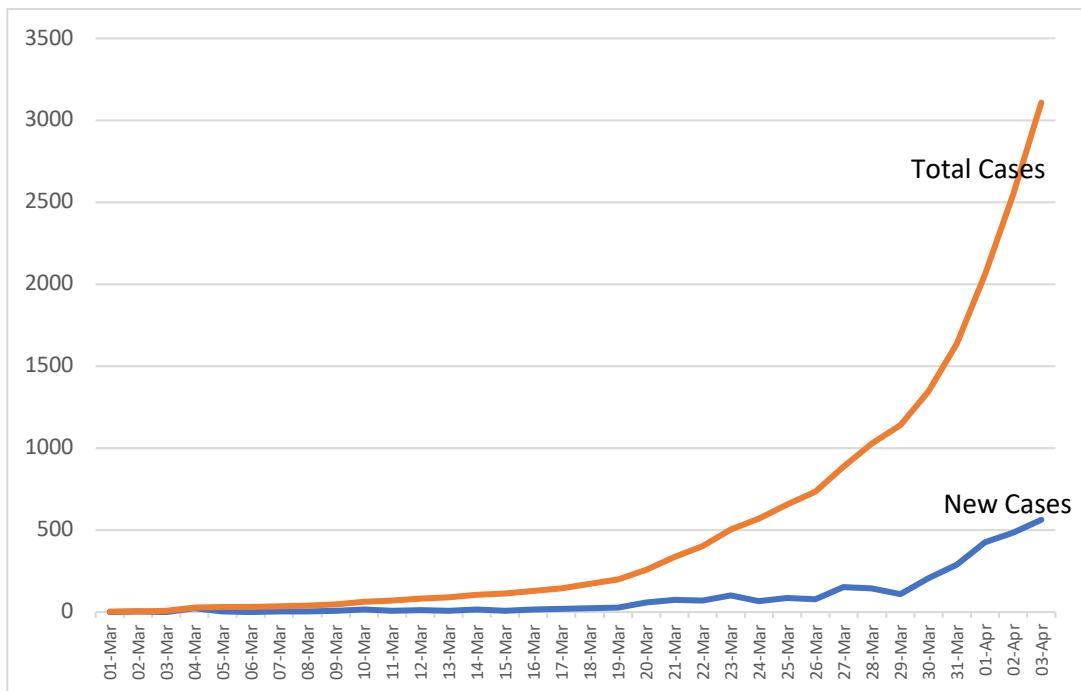


Exhibit 1: Number of New and Total Cases¹

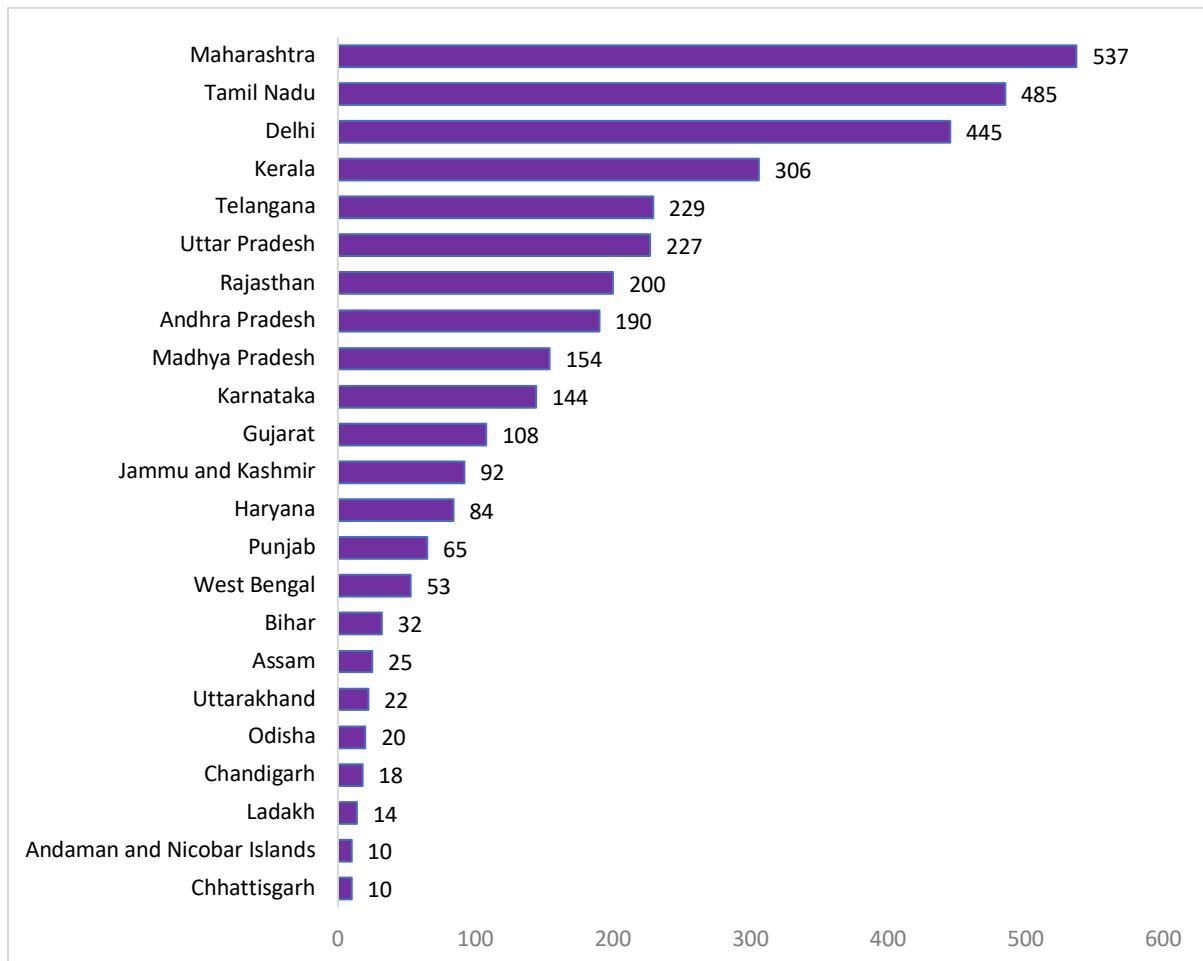


Exhibit 2: State-wise Number of Cases 3494 as on 4th April 2020 09:30pm¹

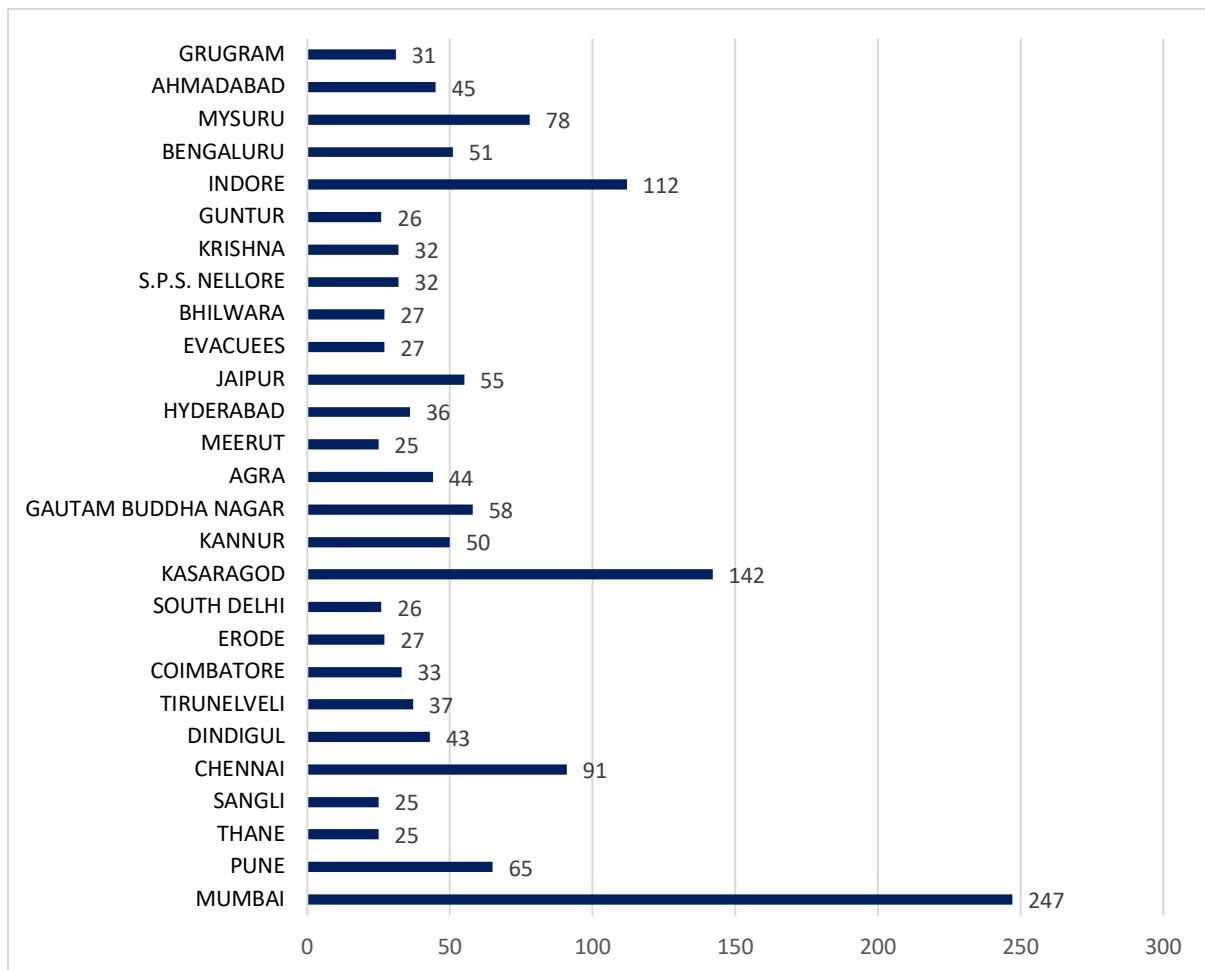


Exhibit 3: District-wise Number of COVID-19 Cases 4th April 2020
27 Districts Account for 1490 Cases (43%) of Total Cases
4% of Districts Account for 42% of Cases¹

References

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- ⁶ <https://www.thecrimson.com/article/2020/3/31/coronavirus-intermittent-distancing-study/>
- ⁷ <https://healthweather.us/?mode=Atypical>
- ⁸ Email Communication from CMAAO IMA HCFI CORONA MYTH BUSTER 29, Dr K K Aggarwal President CMAAO, HCFI and Past National President CMAAO dated 1st April 2020
- ⁹ Many civil society organizations in the field such as Aajeevika Bureau, Shram Sarathi, Basic Health Services, Prayas, INAAF, Saath, Yuva, CRH, and Prabasi Shramik Sahayata Manch have started collaborating on several areas to handle the emerging situation (communication from Pavitra Mohan and Rajiv Khandelwal
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