Sys Rev Pharm 2020; 11(3): 818 – 820
A multifaceted review journal in the field of pharmacy
E-ISSN 0976-2779 P-ISSN 0975-8453

# Surveillance Strategies for the COVID-19 Virus in India

Dr.Sagarika Kamath[1], Dr.Rajesh Kamath*[2], Ms.Zinnia Sharma3, Mr.Prajwal Salins[4], Dr.Kamath Madhusudhana[5], Dr. Pai Divya Venkatesh[6], Mr.Rajib Mandal[7], Ms. Reshma M.C. D' Souza[8], Mr. Rajesh Byndoor[9]

[1]Assistant Professor, Manipal Institute of Management, Manipal Academy of Higher Education, Manipal, Karnataka, India-576104.
[2]Assistant Professor, Prasanna School of Public health, Manipal Academy of Higher Education, Manipal, Karnataka, India-576104.
[3]PhD Scholar, Department of Community Medicine, Kasturba Medical College, Manipal academy of higher education, Manipal, Karnataka, India – 576104
[4]Lecturer, Department of health information management, Manipal College of health professions, Manipal Academy of Higher Education, Manipal, Karnataka. 576104.
[5]Associate Professor, Division of Ayurveda, Centre for Integrative Medicine and Research, Manipal Academy of Higher Education, Manipal, Karnataka, India - 576104
[6]Associate Professor, Department of Community medicine, Kasturba Medical College, Manipal academy of higher education, Manipal, Karnataka, India – 576104
[7]Principal, Netra Jyothi Institute of Allied Health Sciences, Udupi, Karnataka
[8]Assistant Professor, Department of Medical Laboratory technology, Manipal College of health professions, Manipal Academy of Higher Education, Manipal, Karnataka. 576104.
[9]MPH trainee, Prasanna School of Public health, Manipal Academy of Higher Education, Manipal, Karnataka, India-576104.

*Article History:* *Submitted: 18.03.2020* *Revised: 19.04.2020* *Accepted: 25.05.2020*

## ABSTRACT

The Covid 19 situation in India holds forth tremendous challenges for the Indian public healthcare system. The current situation is unprecedented. The Covid 19's high infectivity rate coupled with a high case fatality rate have created a situation where India could see between 2 and 25 lakh deaths over the next 12 to 18 months. The final number of fatalities will depend a great deal on several factors of which surveillance is a critical one. Surveillance will determine the extent to which the government is able to mount a data driven response. Surveillance will help in identifying hot spots and clusters. This in turn will help in mounting targeted responses. In the words of the WHO director general: "Test, test, test. A fire cannot be fought blindfolded." India's response has not been satisfactory. This paper discusses the need for a stronger surveillance system and a higher testing rate. If the avalanche of Covid 19 cases requiring hospitalisation comes, the current infrastructure and manpower will be grossly inadequate for it. If India is able to set up a robust and comprehensive surveillance system across urban-rural divides, that might well be a game changer in the covid 19 battle. Failure could mean lakhs more die.

**Keywords:** Covid-19, coronavirus, surveillance

**Correspondence**:
Dr.Rajesh Kamath
Assistant Professor, Prasanna School of Public health, Manipal Academy of Higher Education, Manipal, Karnataka, India-576104,
E mail: rajesh.kamath@manipal.edu

**DOI:** 10.31838/srp.2020.3.113



## INTRODUCTION

Before the 21-day lock down that began on March 25th, mathematical modelling by entities advising the health ministry and the government of India put the number of expected cases of Covid-19 in India between 30 crores and 50 crores by July end. The peak was expected somewhere in April and/or May. This peak was expected to be of 10 crore cases, spread out across a period of 2 to 3 weeks, with 10 % of these cases, amounting to 1 crore cases, requiring hospitalisation. Of these 1 crore cases requiring hospitalisation, 50 lakh cases were expected to recover and 50 lakh cases were expected to need critical care, including ventilator support. The number of deaths was estimated at 10 to 25 lakhs. The lockdown is supposed to reduce those numbers by 80%: with a peak of 2 crore cases, 20 lakh cases requiring hospitalisation, 10 lakh cases recovering, 10 lakh cases needing critical care and 2 to 5 lakh deaths.[1] Even the best case scenario presents a massive disease burden.

## MATERIAL AND METHODS

Review of literature

## DISCUSSION

It is an established scientific fact that the Covid 19 virus will eventually infect the entire population, just like other influenza viruses. Because of its high infectivity and high case fatality rates, the current strategy is to slow down its spread so that the healthcare system does not collapse under the weight of the 5 % of cases that will need critical care. When the peak best case scenario is 10 lakh cases needing critical care including ventilator support, India has only 20,000 ventilators. *That is a shortfall of 98 percent.* The government has said it will have 40,000 more made by June end, which will still be far from sufficient.

The current testing strategy in India is to test[2]:

1. All symptomatic individuals who have undertaken international travel in the previous 14 days.
2. All symptomatic contacts of laboratory confirmed cases.
3. All symptomatic health care workers.
4. All hospitalized patients with Severe Acute Respiratory Illness (fever AND cough and/or shortness of breath).
5. Asymptomatic direct and high-risk contacts of a confirmed case once between day 5 and day 14 of coming in contact with the confirmed case.

Inclusion criteria 1,2 and 5 seem to presume that community transmission is not happening. But inclusion criteria 3 and 4 seem to presume the opposite, that community transmission is happening. This strategy is half hearted, neither here nor there. It has been clear for some time now that community transmission is happening.[1] With community transmission happening, if India is serious about doing its best to reduce the disease burden, then the surveillance system needs to be able to identify and test every person with flu symptoms. It is clear that lockdowns are only going to slow down community

viral transmission, not stop it.[3] The lockdown does 2 things: 1. It buys time for the health system to prepare. 2. It spreads out the distribution of cases over a longer time frame, thereby reducing the number of cases requiring hospitalisation at any given point of time. This reduces the burden on the healthcare system and reduces the probability of it crashing. This is also referred to as flattening the curve. But lockdowns are very expensive and can't go on for extended periods of time. Therefore, the only other strategy to slow down the spread of Covid 19 is comprehensive and effective surveillance. This involves the reporting of suspected cases, their investigation, quarantining of positive cases, contact tracing and testing of all contacts. For this to be comprehensive, all cases with flu like symptoms would need to be investigated, with a special emphasis on the high risk population of those aged above 60 years and under 5 years of age and healthcare workers. Those diagnosed with covid 19 infection can then be given early medical care and attention to reduce morbidity and mortality. The thrust should be on early identification of high risk cases. This can only be done with a pan india comprehensive surveillance system that includes all health care providers including government and private hospitals, private practitioners, clinics, nursing homes and quacks.

The current testing strategy[2] leaves out the overwhelming majority of symptomatic persons. India has a 100 million cases of flu every year. So the background rate of flu is about 2,70,000 cases every day. The only way to tell if a case with flu symptoms is Covid 19 or not is to test. Assuming that 20 percent of these cases are above 60 years and under 5 years of age: that amounts to 54,000 cases per day. Even if the testing strategy limited itself to only those above 60 years of age, the surveillance system would need to test a lot more than it is testing now. Into the final week of March, India was testing about 2,000 cases per day(much higher than the 100 tests a day in mid March). In the first week of April, that had improved to about 10,000 cases per day. India's testing rate on April 4$^{th}$ was 60 per million people. Compare this to the far higher rates 2 weeks earlier on March 20$^{th}$ in South Korea 6000, Germany 2000, U.K. 1000,Iran 1000, France 500 and USA 300.[4] India started testing too late, and tested too little. Going ahead, if India is serious about having a robust surveillance system for Covid 19 in place, then it will need 1. A network of laboratories 2. A reporting network. 3. Capacity to do at least 50,000 tests a day across India. 4. Early medical care and attention to reduce morbidity and mortality in high risk cases. Increased testing will help the population to protect itself. It is extremely important in an epidemic. Increases in official numbers of detected cases could get the population to take a more serious approach to the pandemic in terms of social distancing and other precautions.[5]

India has several factors that favour the spread of Covid 19. India is a densely populated country: 450 people/square km (USA 40, Iran 50, Spain 90, Italy 200). India has a very large population: 1300 million (Spain 50, Italy 60, Iran 80, USA 330). Social distancing is a huge challenge with crowded public places and congested living spaces. Cough hygiene is conspicuous by its absence and is something that India needs to start teaching in school. Hand hygiene is very poor. 16 crore Indians do not have access to clean water. India has high rates of lung diseases like pneumonia and tuberculosis. Diabetes and hypertension worsen Covid 19 outcomes. Hypertension and diabetes have a high prevalence in the Indian population with a prevalence among adults of 25% and 10% respectively. All this makes it even more important for India to have an excellent surveillance and testing system in place.

As it becomes clear that Covid 19, with its high infectivity and high case fatality rates is here to stay, the surveillance response must be guided by long term thinking. All action must be guided by the fact that this is something that will need sustained surveillance, contact tracing, isolation and treatment for the next 18 to 24 months. Once the lock down is lifted, there will be outbreaks again, which will need the same quality of surveillance activity. This will need to continue until one of 3 developments takes place: 1. An effective vaccine is developed. 2. The virus mutates into a more benign version of itself. 3. The population develops herd immunity. We do not when or if any of these 3 developments will take place.[1,5] Until then, surveillance will need to continue. Effective surveillance has many advantages. It will gather reliable data on the disease burden. This will result in a better targeting of resources. Serological surveys will indicate the stage of the epidemic. Research centres must be set up in geographies where large numbers of Covid 19 patients are expected, to study the disease in the Indian context. Areas of research would include the clinical course, naso pharyngeal and stool viral shedding and the dynamics of the infection in malnourished children.[5] India will need to increase collection and testing centres. The health ministry has approved about 30 private laboratories with 17,000 collection centres all over the country to do the testing based on Indian Council of Medical Research (ICMR) guidelines. This is in addition to 100 government laboratories.[6]

An extremely important aspect of the surveillance system will be its coverage of the rural areas. 900 million people (65% of India's population) live in rural areas. With the lockdown induced migration of millions of workers from the cities to their villages, testing and surveillance will have to be ramped up in the rural areas to detect covid 19 importation from the cities and community transmission. This will be a huge challenge because of poor health seeking behaviours and chronic infrastructure and manpower deficiencies. This challenge will be exacerbated in the poorer states. India has just 0.8 doctors per 1000 population (Iran 1.1, USA's 2.6, Italy 4.1, Spain 4.1, China 1.8)[7]. India has just 0.7 hospital beds per 1000 population (USA 2.9, Spain 3, Iran 1.5, Italy 3.4). If the avalanche of Covid 19 cases requiring hospitalisation comes, this infrastructure and manpower will be grossly inadequate for it. If India is able to set up a robust and comprehensive surveillance system across urban-rural divides, that might well be a game changer in the covid 19 battle. Failure could mean lakhs more die.

## ACKNOWLEDGEMENT

None

## CONFLICT OF INTEREST

The authors declare no conflict of interest.

## REFERENCES


1. MOJO STORY. "'If PM Believed the Official Data He Wouldn't Have Drawn a World War Analogy'- Ramanan Laxminarayan." *YouTube*, uploaded by mojo story, 21 Mar. 2020, www.youtube.com/watch?v=FrrsXCxs2xg&t=497s
2. ICMR. Revised strategy of Covid 19 testing in India. Version 3. Dated 20/3/20. Available at: https://icmr.nic.in/sites/default/files/upload_documents/2020-03-20_covid19_test_v3.pdf
3. Singh, Rajesh & Adhikari, Ronojoy. (2020). Age-structured impact of social distancing on the COVID-19 epidemic in India (Updates at https://github.com/rajeshrinet/pyross)
4. COVID-19 data as of 20 March: Total tests performed per million people. (n.d.). Retrieved from https://ourworldindata.org/grapher/covid19-tests-per-million-people?country=AUS+AUT+BRA+COL+FIN+FRA+DEU+IND+IRN+JPN+ZAF+KOR+ARE+GBR+USA+VNM
5. COVID-19 Modeling with IndiaSIM. (n.d.). Retrieved from https://cddep.org/covid-19/
6. India readies massive COVID-19 testing plan. (2020, March 26). Retrieved from https://www.businesstoday.in/sectors/pharma/india-readies-massive-covid-19-testing-plan/story/399260.html
7. Physicians (per 1,000 people). (n.d.). Retrieved from https://data.worldbank.org/indicator/SH.MED.PHYS.ZS