Controlling COVID-19: To slay the Coronavirus-Goliath

CDDEP-Princeton-Johns Hopkins researchers estimate a mammoth hospitalisation problem from COVID-19 in India. Pushing out the peak,i.e. delaying its occurrence through lockdowns, seems the only workable strategy till a vaccine or cure appears.

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Researchers associated with the Center for Disease Dynamics, Economics & Policy (CDDEP), Johns Hopkins University and Princeton University project peak COVID-19 infections in the country at 15.9 crore, against 13.6 crore each in the hard and moderate lockdown scenario and 9.7 crore in a hard lockdown + continued social distancing/isolating cases scenario. The underlying assumption is that the 21-day lockdown that started March 25 was a hard lockdown in which the transmission rate (R0) was pushed down to 1.5 (i.e. each infected individual infects 1.5 others) from an R0 of 2.66 in the baseline scenario of no lockdown, no social distancing and other interventions, or a moderate lockdown that pushed down R0 to 2.

In both cases, transmission resumes at R0 = 2.4 after the lockdown ends. In the hard lockdown + social distancing/isolation scenario, the falls to 1.5 because of the effect of the lockdown and resumes only at 2 after the lockdown, because social distancing is practised and symptomatic individuals are isolated for two weeks. While the hard lockdown doesn't push down the peak (reduce the number of infected relative to the moderate lockdown scenario), it pushes the peak out, i.e. it delays the peak, giving the government much needed time to ramp up infrastructure.

Against the availability of just over 7 lakh beds at government hospital facilities in India, the peak COVID-19 hospitalisation demand in the country could be as high as 18.7 lakh in a hard/moderate lockdown scenario. In the scenario of a hard lockdown with social distancing and isolation of symptomatic individuals, there will be 13.5 lakh cases at the peak of the outbreak in the country that will require hospitalisation.

Given, even in the best-case scenario, the hospitalisation demand will overshoot the entire private and public sector capacity in the country, the focus has to be on delaying the peak— multiple, focused lockdowns to could be one way to do this, with the chance that the peak also gets pushed down.

While the research isn't peer-reviewed, given the disease is fast-moving with many uncertain parameters, there are many such works being put in the public domain by researchers. Policy response can be rationalised around such projections, especially worst-case ones, so that governments are not caught on the back-foot, having to fire-fight.

A lot depends on how the most affected states respond. Based on data from covidindia.org, the top-10 worst affected states (by number of cases reported, descending) are Maharashtra, Delhi, Tamil Nadu, Rajasthan, Madhya Pradesh, Gujarat, Telangana, Uttar Pradesh, Andhra Pradesh and Kerala. While the Tablighi Jamaat event in the national capital was responsible for the explosion of cases over a short period in most states that are reporting high numbers, the fact is that an expansion of testing protocol on March 20, to include the testing of hospitalised cases with symptoms of Severe Acute Respiratory Illness (SARI), also led to a jump in reporting of cases.

An analysis of testing of nearly 6,000 SARI patients for COVID-19 by researchers at the Indian Council of Medical Research (ICMR) shows that 40 of the 104 detected to be COVID-19 positive had no reported contact with positive individuals apart from no history of international travel, suggesting community infection. These cases were from 36 districts in 15 states, and the ICMR has advised prioritising these districts and states for COVID-19 containment efforts.

With the government having again expanded testing on April 9, chances are that there could be a spurt in reporting of COVID-19 cases if there is community infection among the people requiring to be tested. The COVID-19 threat for the large states is quite significant. The CDDEP-Johns Hopkins-Princeton researchers estimate a peak hospitalisation demand of 1.8 lakh in Maharashtra in the moderate lockdown scenario with 1.32 crore peak infections.In the hard lockdown + social distancing + isolation (HL/SD/I) scenario, the peak hospitalisation demand falls to 1.31 lakh and peak infected cases reaches just under a crore (0.94 crore). In the case of the national capital, Delhi, a moderate lockdown sees a peak hospitalisation demand of 27,289, which falls to 19,762 in a HL/SD/I scenario.

Neighbouring Uttar Pradesh could see a demand for 3 lakh beds and 2.12 lakh beds in the respective two scenarios. Juxtapose this against the fact that Uttar Pradesh has just over 76,000 beds in government hospitals, Delhi over 24,000 and Maharashtra nearly 51,500 beds (as per data from the National Health Profile 2019). The yawning gap between the number of government hospital beds and the projected peak demand means that most of the Covid19 patients requiring hospitalisation at the peak of the outbreak in the states may have to go without this—even with ramped up capacity (including by the private sector), there may not be enough. This underscores the need to not just push down the peak, but also push it out so that the government and the private sector get enough time to maximise capacity, even through temporary facilities.

This, in turn, would suggest the need for an extended or multiple lockdowns. While there have been some suggestions to look at developing herd immunity as part of the response strategy—given a smaller proportion of the population is aged over 65% (the elderly and those with underlying co-morbidities have the greatest risk of dying) —this may not work. One, even in an overly young population, it is hard to account

for the proportion for whom childhood deprivation and undernutrition would likely have meant deficient development, including that of the immune system. Also, poverty, given the high out-of-pocket expenditure incurred in India for healthcare, would likely be a key factor behind a large incidence of undiagnosed underlying illness in a significant chunk of the population. In such a scenario, banking on herd immunity may have devastating social consequences.