

The spread of the virus in India has been relatively slow so far, with the number of cases small when seen in the context of its population and compared to the contagion in other countries.

## Opinion | Governments need to move fast if we're to stop the coronavirus

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That is our best hope to contain the viral outbreak and avert getting overwhelmed by a possible jump in the number of cases

It is often said that India's administrative system performs poorly under normal conditions, engaged more in serving itself rather than the public, but performs remarkably well—sometimes not always—when there is a natural disaster. The Bhuj earthquake of 2001, cyclones Phailin (2013) and Fani (2019) in Odisha, and the drought last year are some examples. The robust response of the Central and state governments to the coronavirus pandemic is perhaps another example.

The virus has spread like wild fire. There were just a handful of cases in Wuhan at the end of December. By 13 March, when the World Health Organization declared a pandemic, there were 132,536 confirmed cases across 123 countries though just ten countries—China, South Korea, Iran, Italy, Spain, Germany, France, Switzerland, Japan and USA—accounted for over 90% of the confirmed cases. Much of the spread occurred through international travel-related imported transmission. Hence, the Central government has focused on containing such transmission. It introduced thermal monitoring and quarantining at borders and airports, progressively cancelled visas, banned flights first from the worst affected countries, then from most other countries. It has closely coordinated with state governments on containment measures, including quarantining, social distancing and testing, and placed emergency orders for 1 million additional testing kits. State governments, led by Kerala, have quickly expanded the number of testing and quarantine facilities, introduced contact-tracing, quarantining of all potential patients and treatment of those who have tested positive. Many states are in quasi lock-down with closure of schools, colleges, malls, cinema halls, gyms, and banning of all events requiring large gatherings of people till end-March.

Advisories have also been issued to increase social distancing, contain visits to crowded places and events, and ensure personal protection through frequent hand-washing, use of sanitizers and masks when in crowded environments. The media too has helped a great deal through exhaustive coverage of the spread of the virus in India and abroad, the steps being taken and expert views on what needs to be done to contain the pandemic. As a consequence of such containment measures, the spread of the virus in India has been minimal so far. A total of only 166 positive cases and four deaths (as of 19 March) is not even a drop in the ocean.

But this could change. If India moves on from this phase of international travel-related transmission (direct or indirect) to local community transmission—or phase 3—the number of daily new cases would grow exponentially. Such an exponential increase in infections would quickly overwhelm our weak healthcare infrastructure, resulting in a huge number of deaths, especially among the elderly and those with other ailments that weaken the immune system.

Assessing the risks and potential consequences requires sifting through the massive outpouring of discussions, articles and statistics, some of them ill-informed and contradictory. This is not an easy task. Fortunately, on 13 March Dr. Devi Shetty, India's iconic heart surgeon, circulated a compelling article by Stanford data scientist [Tomas Pueyo](#), which I strongly recommend as essential reading for a reasonable, evidence-based assessment. Meanwhile, a few salient points relevant for India are summarized below.

First, without containment measures in the initial stages, the virus spreads at an exponential pace. This was first seen in Wuhan, and the Hubei province, where the spread had already peaked by 26 January. Then, the exponential rise of new cases took place in South Korea from around 21 February, followed by Italy and Iran. By end-February, the number of daily new cases in these three countries was higher than in China. By now, an exponential increase in daily new cases was also taking place in a large number of other countries in Europe and in the US. By 6 March, over a dozen countries, mostly in Europe, had the number of new cases doubling every two days.

Second, the reported number of confirmed cases can grossly underestimate their true number because an infected person may remain asymptomatic, though contagious, for up to two weeks. Hence, the number of confirmed cases on a given day actually reflects the incidence of infections that prevailed two weeks ago. In Wuhan, for which there is the most information

available, 21 January was when the phase of exponential rise began, with the reported positive cases increasing by 100 that day. But the Chinese Center for Disease Control and Prevention has estimated that the exponential increase of the number of cases had begun a week earlier, and that the true number of new cases on 21 January was actually 1500, not 100. But they didn't know this at the time. When Wuhan was locked down on 23 January, the official number of new cases that day was 400, but the true number of new cases is now estimated to have been 2,500 that day. Cumulatively, there were 444 reported cases by then but the true number of cases had grown to 12,000.

Third, the virus spread can be sharply curbed through quick, stringent measures, including lockdown, social distancing, mandatory extended holidays, etc. By 24 January, in addition to Wuhan, another 15 cities in the Hubei province were locked down and stringent restrictions were imposed in the rest of China. The true number of new cases immediately started declining. The curve of new cases in all provinces of China had flattened out by around 10 February. Though the Covid-19 is still spreading at an exponential rate in many western and middle-east countries—doubling every two days in many cases—several Asian countries such as Singapore, Thailand, Hong Kong and Taiwan have successfully pre-empted the explosive growth of new cases through stringent measures, flattening the expansion curve. Two distinct approaches can be discerned. The Wuhan, or Chinese, strategy of lockdown versus the South Korean strategy of maximum testing. Both approaches, of course, require quarantining of potential vectors, social distancing and treatment of confirmed cases, and they have been very effective in curbing the spread of the virus.

Finally, if early containment pre-empts the healthcare system getting overwhelmed by the explosive spread of the virus, providing appropriate treatment to those who need it can save thousands of lives. Of all the confirmed cases, only a small percentage of around 20% will be serious and require hospitalization; of the hospitalized cases, only a small fraction will be critical; and only a fraction of those critical cases will result in death. Thus, in the Hubei province, which was unprepared for the virus when it first appeared, the fatality rate (deaths per number of confirmed cases) was around 4.8% compared to only 0.84% in the rest of China, which was affected later when it was better prepared. Similarly, unprepared Iran and Italy are converging towards a fatality rate of around 3-4% while South Korea—which quickly got its act together after the initial shock—has contained the fatality rate at only 0.6%.

Given this backdrop, how well is India coping with the crisis? Because of limited testing and the two-week time lag when infected patients are contagious but asymptomatic, the true number of positive cases is probably much larger than the reported 166 as of 19 March. According to Pueyo's rule of thumb—of 1 death per 800 cases—the true figure may be around 3,200 cases. That is still very small for a country with a population of over 1.3 billion, and the confirmed positive cases are not yet growing at an exponential rate. All confirmed cases seem to be of imported transmission, directly or indirectly travel-related, and the government has moved strongly and pro-actively to contain such imported transmission. That is good news.

The bad news is that testing has been very limited so far. South Korea-style mass testing is not an option for India given our large population. Our only option is to follow the China strategy—the lockdown of high density urban areas combined with social distancing to minimize the risk of community transmission. Meanwhile, testing needs to be stepped up in line with the availability of kits to reduce the information gap on community transmission. According to reports, India has a stock of only 1.5 lakh test kits and another 1 million have been ordered. This is being rationed for about 6000 tests a day, mainly for travel-related symptomatic cases. This is the right approach if testing capacity and availability of testing kits is limited since the highest risk is from imported transmission. But the information gap on community transmission remains a large risk. Officials at the Indian Council of Medical Research have indicated that private laboratories are being added to public testing centres to quickly expand testing capacity, and that a small sample of respiratory illness patients are also being tested. If any patient from the sample tests positive—indicating community transmission—testing capacity will be strengthened in those areas and testing extended even to asymptomatic persons to contain transmission in those clusters. This is a sound strategy under the circumstances, but the risk of community transmission cases slipping through undetected remains.

If that were to happen, and the virus begins spreading exponentially, India's weak health infrastructure could be overwhelmed, resulting in a large number of deaths. As against 3.8 hospital beds and 1.8 doctors per 1000 population in China—size being the only real comparator for India—we have only 0.7 hospital beds and 0.8 doctors per 1000 population. Availability of some anti-HIV drugs now being tried in severe cases of Covid-19 patients is limited. Ventilators and Extra-Corporeal Oxygenation machines required for critical patient care are also in short supply. These capacity constraints cannot be removed in a few days or

weeks. State governments are also progressively strengthening lockdown measures as their main strategy. But they need to move fast. Moreover, absent China's command-and-control administrative system, enforcement of lockdown and social distancing measures is a challenge.

Preventing the community transmitted exponential increase of Covid-19 patients despite these constraints is the main battle our health workers are fighting along with the public. The next 15-30 days will tell whether India has won or lost the battle.

Tailpiece: As India and the world battle the Covid-19 pandemic, there is much discussion about how it will affect the economy. It would be premature, even irresponsible, to hazard a quantitative forecast since the pandemic is still evolving and we do not know how long it will last. But we know that this mega shock has hit India when the economy was already slowing down, amid other economic shocks in the financial, real estate and small-medium enterprises sectors, the oil price collapse and socio-political tensions, both within and outside India. The economy is in the midst of a perfect storm. It is almost certain that India along with the global economy will experience a major recession—something the world has not seen since the Great Depression of 1929.

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