



## Editorial

# Indian COVID Crisis- A call for action

### Abstract

The second surge of the pandemic is currently ravaging its way through India, having caught the country off-guard after being mostly spared from devastation during first wave. In the last two weeks of April 2021, India has seen world-beating statistics for new cases and deaths by official estimates. The real numbers are likely to be much higher as the testing infrastructure remains inadequate and unprepared to deal with this exponential rise in cases. The triple whammy of mass gatherings, lack of administrative and infrastructure preparedness and low vaccination rates is probably to blame.

The humanitarian catastrophe that is played out so visually in heart-wrenching stories across the interconnected digital world is of scrambling for oxygen, scarcity of hospital beds, lack of medication and the incessant burying or cremating of the dead. The desperation in the eyes of the people as they queue outside of locked hospital gates, the oxygen cylinders supplying minutes of life to patients in cars or auto-rickshaws as they wait, is heart breaking. For members of the Indian diaspora these pictures hurt deep and one is bound to feel helpless.

Yet, through all this there is hope. The Gurudwaras with their oxygen *langars*, the elderly vacating beds for the younger and often sicker patients, the journalists who are using every social media access to request oxygen and essential drugs, the volunteers who ferry, bury and burn the abandoned dead are testimony of the good that exists in humanity. The world is rising to the call of India including efforts by the Indian diaspora. There are lessons to be learnt, but first let us help and heal.

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According to the World COVID meter India crossed 400k daily new cases detected, 3k official daily deaths and a total of over 212k total death toll on the first of May 2021 from the COVID-19 pandemic [1]. India is second only to the United States of America in this dubious honour. From a 'cases per million' population perspective, India ranks at 114, well below many other nations. However, at 200k per million, India is also 115<sup>th</sup> in world rankings of the number of tests conducted, indicating that the real numbers may be considerably higher. At 152 deaths per million, India sits at 118 in the world coronavirus mortality league tables. Even if the official infrastructure is unable to record the 'true'

number of deaths as is claimed by many statisticians, and the 'real' figure is 10x higher at 1500 deaths per million, India would sit below France (1598), USA (1774), UK (1871) and Brazil (1891). Hungary unfortunately holds the prize at 2874 deaths per million population. So, if statistics are anything to go by, India is not in the top 100 in the league of worst-performing nations. Therefore, one can be accused of fanning sensationalism if one were to believe the Twitter trends of #IndiaCOVIDCrisis. The Indian authorities have urged the world to view matters in perspective, and until very recently Indian leaders were vocal in

their proclamations that India has defeated coronavirus.

In January 2021, as many parts of the world braved a second surge of cases, India recorded its lowest daily figures, puzzling public health scientists.

*"It's the million-dollar question. Obviously, the classic public health measures are working: Testing has increased, people are going to hospitals earlier and deaths have dropped," says Genevieve Fernandes, a public health researcher with the Global Health Governance Programme at the University of Edinburgh. "But it's really still a mystery." [2]*

Yet, on April 22 2021, India logged more than 314,000 new coronavirus infections, the highest number of single-day cases reported globally since the start of the pandemic, according to The New York Times. The previous record was set by the U.S. on Jan. 8 2021 with a single-day count of 300,669 new coronavirus cases. [3] Several records have

since been broken as the deluge of new cases keeps rising.

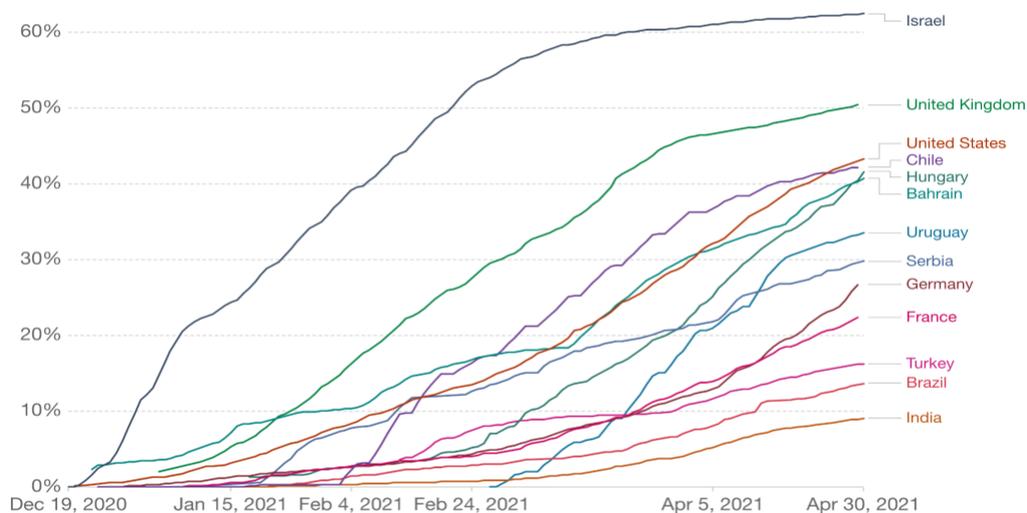
What went wrong? The World Health Organization has said India's deadly COVID-19 second wave was caused by a "perfect storm" of mass gatherings, low vaccination rates and more contagious variants.[4]

### Vaccination

A view of vaccination rates is illustrating (figure 1), [5] as India lags behind other countries with vaccination programmes in place. Yet the Serum Institute of India (SII) is the largest manufacturer of vaccines (figure 2)[6] in the world and now of the Oxford-AstraZeneca vaccine. India has demonstrated its humanitarian soul by supplying vaccines to many countries during the January-March 2021 period, a policy contrasting with the restrictive or defensive policies of many other nations.

Share of people who received at least one dose of COVID-19 vaccine

Share of the total population that received at least one vaccine dose. This may not equal the share that are fully vaccinated if the vaccine requires two doses.

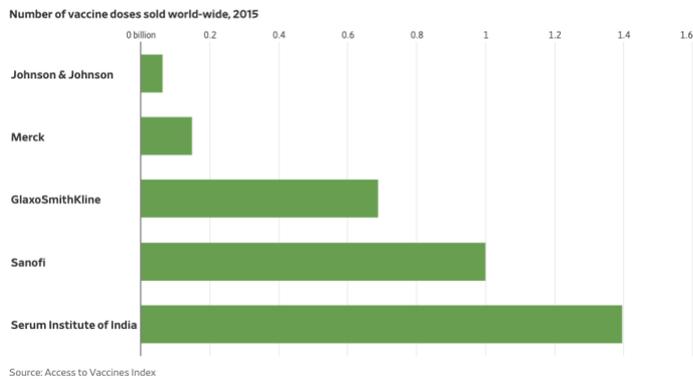


Source: Official data collated by Our World in Data

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In an interview in June 2020, Adar Poonawalla, the CEO of SII said that he decided to invest tens of millions of dollars in glass vials alone and produce four different coronavirus vaccines, including the Oxford-AstraZeneca one. And that was before clinical trials proved any of them would work. [7] SII will have a capacity to make over 2.5 billion doses of vaccines a year as it is currently upscaling

the capacity from over 1.6 billion doses. It has accepted orders from the COVAX Alliance, the vaccine alliance of a public-private global health partnership and mainly funded by billionaire Bill Gates who plan to vaccinate over three billion people worldwide with affordable COVID-19 vaccines in over 90-120 countries.[8]



Yet, the vast Indian public health infrastructure for vaccination which has been an exemplar for the world in eradicating smallpox and polio, is facing unprecedented instability in vaccine supply, distribution and reach to its vulnerable population. Growing vaccine nationalism in major producers including India is hitting the world's most disadvantaged nations the hardest, leaving them waiting for millions of doses promised through the COVAX Alliance.[9]

*"Our preparation has been such that vaccines are fast reaching every corner of the country," India's Prime Minister said on Jan. 22. "On the world's biggest need today, we are completely self-reliant. Not just that, India is also helping out many countries with vaccines."*

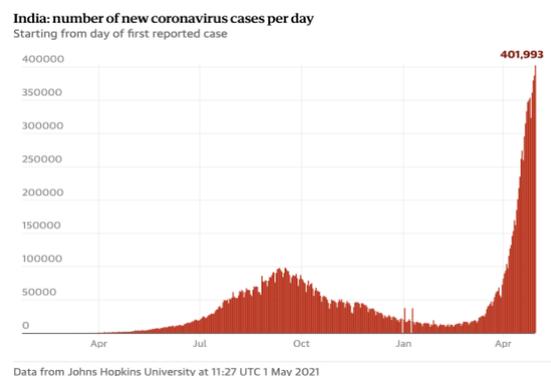
External Affairs Minister S Jaishankar told Rajya Sabha the way it reached out to nations in the midst of a global crisis and supplied vaccines to 72 nations, through the "Vaccine Maitri" initiative. [10] Just over three months later, that initial promise has evaporated, and the government's plans are in disarray. India has fully vaccinated less than 2% of its 1.3 billion-strong population, inoculation centres across the country say they're running short of doses and exports have all but stopped.[11] While there are several states in the Indian Union have exhausted their vaccine supplies, the Indian government has announced the extension of the vaccination eligibility to all citizens above the age of 18 years, a colossal task.

### Mass gatherings

Official case numbers in India started to decline steeply from September 2020. It could have been an

opportunity to consolidate the country's healthcare system and build vaccination infrastructure ahead of a larger second wave of the kind that other countries had witnessed, and which many scientists were warning was inevitable. India had largely relaxed its social distancing and quarantine measures by March 2021 – a decision now viewed as a profound political misjudgement.[12] The Indian economy was climbing back to its normal state of activity in the autumn and winter months of 2020. While the global north was in the throes of a second surge in the months of January to March 2021, India witnessed several mass congregations for religious and political rallies. Social distancing rules were largely ignored.

What followed was predicted and considered inevitable by scientists across the world (figure 3). [13]



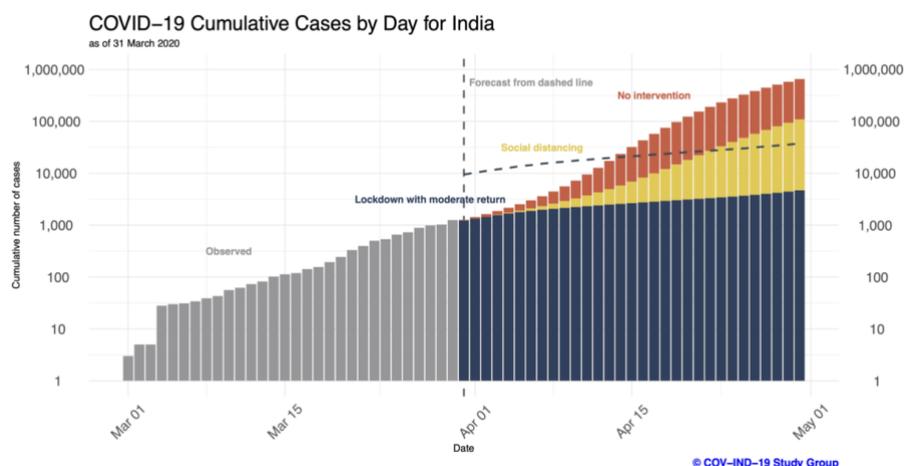


Dr Bhramar Mukherjee, a professor of biostatistics, epidemiology and global health at University of Michigan, Ann Arbor, USA. has charted India's second surge. She has outlined how social distancing in an inherently community-based culture like India, with a population of 1.3+ billion people and intergenerational extended families, might be difficult. [14] However, Professor Mukherjee and others feel that it is time for the Indian government to declare another lockdown, allowing the vaccination programme to continue and thereby containing the virus.

*'In my opinion, we have no choice but to stop the virus and then revive the economy.'* Professor Bhramar Mukherjee argues.

The COV-IND-19 study group agrees that the pandemic crisis is a complex problem requiring a

multi-pronged, long-term, systems-based approach instead of discrete tactical moves. The mathematical forecasting models cannot capture the devastating consequences a lockdown may have on the lives of people[15]. Management and execution of a lockdown for a country of its size has to balance between the collateral damage due to the lockdown and the efficacy of the lockdown itself to stop the virus. From a public health perspective, if a lockdown had to be imposed at some point during the course of this pandemic, it is best to do it early. The price for not implementing a lockdown now is being enacted with the devastating human consequences of an overrun health infrastructure as is being played out across several states in India. The COV-IND-19 group shows the predicted impact of different measures in case numbers in the month of May 2021 (figure 4). [15]



### **Mutations**

When a virus is widely circulating in a population and causing many infections, the likelihood of the virus mutating increases. The more opportunities a virus has to spread, the more it replicates – and the more opportunities it has to undergo changes. [16] The COVID-19 vaccines that are currently in development or have been approved are expected to provide at least some protection against new variant strains because these vaccines elicit a broad immune response involving a range of antibodies and cells. Therefore, mutations in the virus should not make vaccines completely ineffective. In the event that any of these vaccines prove to be less effective against one or more variants, it will be

possible to change the composition of the vaccines to protect against these variants. Research groups have carried out genomic sequencing of the COVID-19 virus and shared these sequences on public databases. This global collaboration allows scientists to better track how the virus is changing. WHO recommends that all countries increase the sequencing of the COVID-19 virus where possible and share data to help one another monitor and respond to the evolving pandemic.

Hyderabad's Centre for Cellular and Molecular Biology has been sequencing SARS-CoV-2 viral genomes since the COVID-19 pandemic began – initially as part of its own research program and since December 2020 as part of the Indian SARS-

CoV-2 Genomics Consortium (INSACOG), a group of ten labs the government put together to ramp up sequencing across to India. Since the pandemic began, several new variants of the virus have shown up worldwide. Among them are B.1.1.7, a highly contagious variant first reported from the UK, the B.1.351, a variant that first emerged in South Africa and is known to diminish the efficacy of some vaccines, and B.1.1.28, a variant from Brazil. Large outbreaks in Maharashtra and Kerala today have raised the question of whether the so-called 'Indian variant' B.1.167 could be driving them [17]. Rigorous genomic surveillance for emerging variants and careful clinical and laboratory studies to assess the ability of these strains to evade immune attack is urgently needed.

### ***Disruption to Health Services***

The second round of a World Health Organization "pulse survey" reveals that over one year into the COVID-19 pandemic, substantial disruptions persist, with about 90% of countries still reporting one or more disruptions to essential health services, marking no substantial global change since the first survey conducted in the summer of 2020. Within countries, however, the magnitude and extent of disruptions has generally decreased. In 2020, countries reported that, on average, about half of essential health services were disrupted. In the first 3 months of 2021, however, they reported progress, with just over one third of services now being disrupted.[18] Since the outbreak of COVID-19, repurposing of health workers, cancellation of elective care, closure of outpatient services, insufficient personal protective equipment, and changes in treatment policy have significantly impacted delivery of essential services. Additionally, changes in health-seeking behaviour, constrained physical access and financial hardship have also limited the service uptake. [19] A rapid

assessment of 25 essential services carried out by WHO in May 2020, showed significant disruptions to essential health services across the world. Routine immunization, both outpatient and in-patient services for non-communication diseases such as diabetes, high blood pressure, heart diseases, cancer etc, have been greatly affected. The most affected services have been mental health, family planning, antenatal care and institutional childbirth services which have been reduced significantly, impacting maternal and neonatal mortality. WHO has previously highlighted the chronic underfunding of mental health: prior to the pandemic, countries were spending less than two percent of their national health budgets on mental health, and struggling to meet their populations' needs. And the pandemic has increased the demand for mental health services. Bereavement, isolation, loss of income and fear are triggering mental health conditions or exacerbating existing ones. Many people may be facing increased levels of alcohol and drug use, insomnia, and anxiety.[20]

### ***India cannot breathe***

One of the most catastrophic sequences from India's current surge has been the devastation wreaked by a crisis of medical oxygen supply to the overburdened hospitals in New Delhi National Capital Region and several states. India has a daily production capacity of at least 7,100 tonnes of oxygen, including for industrial use, which appears to be enough to meet current demand, figure 5.[21] India's total medical oxygen demand was just 3,842 tonnes as of April 12, as the surge in cases took hold. This week, the government allocated 6,822 tonnes of liquid oxygen per day to 20 of the country's worst-affected states, compared to their combined demand of 6,785 tonnes, yet supplies reached their destination often too little and too late. [22]

## INDIA'S OXYGEN EMERGENCY

How long could reserves last?

Daily medical oxygen requirement*	8000 MT
Daily total oxygen production*	7200 MT
Oxygen exempted for use in nine industries**	2500 MT
Daily oxygen shortfall, if industrial use continues	3300 MT
Daily oxygen shortfall, if all oxygen is diverted to medical use	800 MT
Oxygen reserves***	55000 MT
Duration the reserves will last at current demand^^	2-8 weeks

Source:

\*Submission made by central government official in Delhi High Court on April 21

\*\*Interview with official in-charge of monitoring use of oxygen

\*\*\*Statement made by the health ministry on April 15

^^ This is an estimate calculated on the basis of the rate at which oxygen reserves could get depleted to meet varying levels of shortfall.

Liquid oxygen is transported as a liquid in specially insulated tankers in bulk for economies of scale. Herein, even a litre of liquefied oxygen is equivalent to 840 litres of gaseous oxygen at atmospheric pressure and 20 °C. These tankers are used to refill the liquid oxygen storage containers, for hospitals and other institutions that need large volumes of pure oxygen gas. Other Industries in competition with oxygen usage: Iron ore smelting alone uses approximately 55% of commercially produced oxygen worldwide apart from other small industry uses like plastic. Delhi and many adjacent populous states faced an unprecedented demand for beds and oxygen which the infrastructure was not designed to cope with. Hence, the news channels were carrying harrowing tales of patients and families scurrying between hospitals and having to pay black market prices for securing often a few hours of oxygen. Hospitals shut their doors or asked next of kin to find independent sources of oxygen. A hospital in the state of Madhya Pradesh, confirmed that 24 patients in ICU died during a leak of oxygen for 40 minutes.

Medical oxygen is available but often several thousands of miles away with no infrastructure for timely delivery. Hospital managers and frontline health staff were taking to social media begging for oxygen to save lives. A Gurudwara in Indirapuri near New Delhi set up oxygen *langar* for patients in need. In a response to the rising demand for medical oxygen in April 2021, the Indian central government restricted the use of oxygen in essential industries only and channelled all oxygen to hospitals.

In addition to the demand for oxygen and beds, people have been scouring for drugs such as ivermectin, remdesivir and tocilizumab as well as plasma. There is no steady or adequate supply for hospitals and people have been reportedly waiting in line for hours and days in the hope for supplies. The question about the efficacy of these drugs and protocols for efficient usage are beyond the reach of common people and there does not appear to be a universally agreed management protocol.

### ***What can one do?***

The news coverage of the catastrophe unfolding in India has touched many lives and several nations across the world have responded to India's cries for help. The Indian diaspora have come together via social networks to source oxygen concentrators, personal protective equipment and medication for transportation to India, sometimes in small quantities. National governments have started transporting liquid oxygen containers, trucks, oxygen generating equipment and vaccines in large quantities to Indian airports. The Indian Armed forces have been mobilised to transport oxygen. Some states such as Kerala and Maharashtra have set up triaging cells to source beds and oxygen to the hospitals in need. Helplines have been set up and managed to guide the population. Some states have implemented partial lockdowns with immediate effect on case numbers.

However, there are areas including the NCR where the diabolical situation continues unabated, and the administration appears to have failed to demonstrate any leadership or disaster preparedness. There is much more to do.

The top 5 priorities from the lessons learned in the UK are;

- Lockdown
  - As predicted by scientists and biostatisticians across the world an immediate 21 day lockdown should be imposed on all states in the rising stage of the second surge except for essential services
  - All states should provide for food and essentials to all migrant workers or those below the living wage threshold
- Vaccination
  - Vaccination should be prioritised according to vulnerability and exposure
- Bed management
  - The government needs to take over all hospital beds and provide care to COVID and non-COVID patients for free using a triage system
- Oxygen & Drugs
  - The manufacture and distribution of medical oxygen to the hospitals across the country needs to be managed and led by armed forces command and control mechanism
  - Dexamethasone, anticoagulation and remdesivir should be made available as per agreed guidelines
- Workforce
  - The healthcare workforce needs to be distributed according to demand and interim registration should be issued to all 60k doctors and nurses due to qualify later this year
  - Healthcare staff should be returned to practice from recent retirement and those who are not in clinical practice from academic or scientific facilities to frontline duties
  - Healthcare staff should be given Bootcamp style educational modules to prepare them for personal protection, diagnosing and managing COVID-19 patients

- Telemedicine consultation using smartphones should be available in all areas so patients with home oximeters have access to medical help and guidance on a daily basis. There is a huge number of medical and nursing staff across the world who can provide this service. An example is the scheme set up by voluntary professional organisations in the UK such as British Association of Physicians of Indian Origin and their partners. [23]

India is in a humanitarian crisis and many other countries have just come through one (thus have lessons to share) or some that are due to experience what is the most catastrophic Indian spring so can watch, learn and prepare. The time for an autopsy of what went wrong and who did or didn't do the right things will come later, but millions of lives are in need of saving, which must be the first priority of all across the world. In its hour of most need, the world (including the Indian diaspora) needs to stand with India and its people.

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