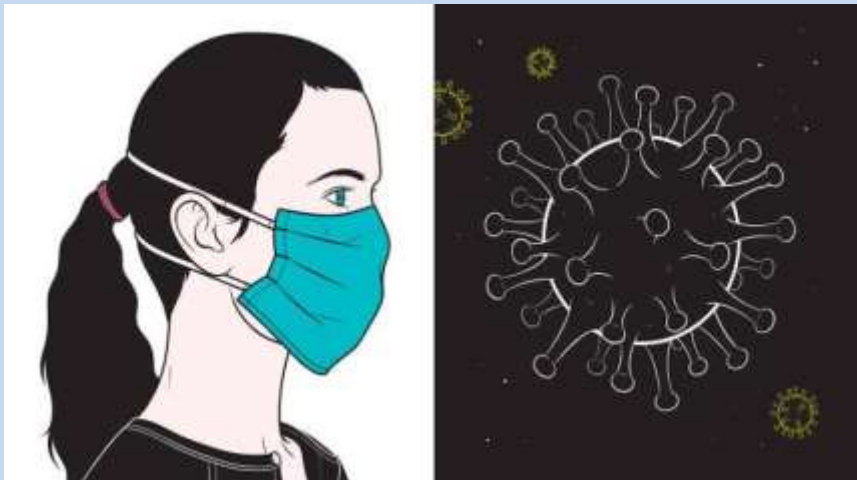


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"COVID-19: THE SCIENCE OF 2ND WAVE, THE NATION IS AT WAR"

INTRODUCTION:

The rise in COVID-19 cases as part of India's 'second wave' has the government and public health authorities truly worried. In many ways, the concern is larger than during last year when there were several more cases. On March 1, concerns of a spike were still on the horizon. In a month, however, the situation appears catastrophic. The number of new active cases added on March 1, around 3,000, has now become nearly nine-fold. Daily deaths too have, in that interval, skyrocketed three-fold — from around 112 to 354. As of this month, India has administered nearly 6.3 crore doses of Covaxin and Covishield and since March 20, has been inoculating a little over 2 million every day. What is apparent is that the States registering a high number of cases — Maharashtra, Gujarat, Karnataka, Kerala and Madhya Pradesh — are also those where many are signing up for their first dose. A notable exception is Punjab. The government is also bearing down on local vaccine companies to prioritize delivery to India over their international commitments as several other vaccine candidates' line up emergency approvals from regulators. So, vaccine hesitancy is not India's most pressing problem.



The nation is at war Covid-19 has come home to India's urban centers, to middle class homes, to the elite, to the working class, in ways that diminish what happened last year when the pandemic first struck. There's a waiting list everywhere and

for everything — for tests, admission to hospitals, even at crematoriums and graveyards (with on-ground reports suggesting a disjunction between official fatality figures and these). And there is a shortage of everything — oxygen, ICU beds, and remdesivir. And everywhere and for everything,

getting care has become dependent on who you know, as public health systems collapse, automatically excluding the majority.

When the coronavirus pandemic began early in 2020, experts wondered if there would be waves of cases, a pattern seen in other virus pandemics. The overall pattern so far has been one of increasing cases of COVID-19, with a surge in the summer and a larger one in the fall. Some locations that saw a high number of coronavirus infections early on, followed by a decline, are having a “second wave” of increased cases.

Since April, India has been witnessing a surge in Covid-19 infections with the country seeing over 3 lakh fresh cases of Covid-19 daily. Amid this massive surge, which has caused a visible strain on the healthcare system, India’s top virologist Dr T Jacob John tells India Today what went wrong and what measures can be taken to tackle the situation.



The armed forces have mobilized their resources to assist the government as the country battles a devastating second wave of Covid-19. While the Indian Air Force has deployed its aircraft to ferry medical equipment from foreign countries, the

Navy has deployed its ships to bring in oxygen containers to address the problem of oxygen shortage. The government was clearly not ready for a Covid emergency and it was clear that the Centre had to marshal all its resources, including the armed forces, to prevent the situation from going out of control. As the shortage of hospital beds and oxygen in Delhi made headlines, the government was found struggling for solutions.

The oxygen crisis, attributed to a shortage of cryogenic containers to transport the life-saving gas, became an added embarrassment for the government, which had been caught napping.

In meetings with military brass, Defence Minister Rajnath Singh had already conveyed that the armed forces need to pitch in a big way and assist in the government’s fight against coronavirus.

These included the setting up of Covid facilities, reaching out to civilian authorities, transporting relief equipment and airlifting medical personnel within the country.

It was, however, the oxygen crisis that prompted the Indian Air Force (IAF) to gear up for international operations.

In hectic meetings held at the top on April 21, it was decided that the Indian Air Force would fly in oxygen containers from abroad to restore the supply. What added to the problems were faulty government assessments of oxygen supply that projected a shortfall of only 213 Metric Tonnes (MT) per day by April 25 and 1,061 MT per day till April 30 in 12 states. The revisions in wake of the calamity meant that over 9,000 MT needed to be supplied to 23 states and UTs.

On the high pressure at present, the air force officer said, “As air warriors, we are trained to maintain focus during high-tempo operations. Since inception, we have been doing it regularly. In this case also, it’s not new.”

The army has set up a cell that will function under the watch of the Vice Chief for coordinating all Covid-related assistance with civil authorities.

With the Army working closely with civil authorities, the need to have a proper mechanism for Covid management was needed. In order to coordinate multiple facets of staffing and logistics support, an exclusive Covid management cell under a Director General rank officer has been established which reports directly to the Vice Chief of Army Staff, the Indian Army said in a statement.

Amid the second wave of Covid-19, healthcare personnel in India have been trying to do their best under these trying circumstances. Stretched to the breaking point, the pressure of work and shortage of material during the second wave may cause deaths that could have been avoidable, India’s top virologist Dr T Jacob John has said.

One of India’s most respected army chiefs, who led the country to victory in Kargil, General Ved Malik, tweeted on Sunday morning, “Our Nation Is At War.” On Saturday, more than twice the number of Indians died due to Covid-19 than were killed in action in Kargil. It did not have to be this way. The government may have made an error of judgment in not anticipating the intensity of the second wave, though there were adequate warnings. But, the current situation does

highlight a clear policy failure on varied counts — from not using the past year to boost India’s health infrastructure enough to deal with current numbers to slipping into business-as-usual mode when it came to events (including large elections), from a painfully slow rollout of the vaccination (only absolute numbers as a proportion of the population, not relative to the rest of the world, matter here) to the delay in imposing curbs. What’s important now is to fix the crisis, and be prepared in case there is another wave after this one (remember the United States’ third wave was its worst, although it came before the vaccine drive began). This requires the State to pump all its resources into beat the second wave. It is war, and nothing short of a war effort is needed.



WHAT IS THE INDIA VARIANT?

Viruses mutate all the time, producing different versions or variants of themselves. Most of these mutations are insignificant - and some may even make the virus less dangerous - but others can make it more

contagious and harder to vaccinate against. This variant - officially known as B.1.617 - was first detected in India in October.

HOW FAR HAS IT SPREAD?

Sample testing is not widespread enough across India to determine how far or quickly the variant is spreading. It was detected in 220 out of 361 Covid samples collected between January and March in the western Indian state of Maharashtra. Meanwhile, it has been spotted in at least 21 countries, according to the GISAID global database.

IS IT MORE INFECTIOUS OR DANGEROUS?

Scientists do not yet know whether this variant is more infectious or resistant to vaccines.

Dr Jeremy Kamil, a virologist at Louisiana State University, says one of its mutations is similar to those seen in variants identified in South Africa and Brazil.

And this mutation may help the virus evade antibodies in the immune system that can fight coronavirus based on experience from prior infection or a vaccine.

WHY IS SO LITTLE KNOWN ABOUT IT?

Much of the data around the India variant is incomplete, scientists say, with very few samples being shared - 298 in India and 656 worldwide, compared with more than 384,000 sequences of the UK variant. And after the first recorded cases in India, fewer than 400 cases of the variant have been detected worldwide.

IS IT DRIVING THE SECOND WAVE IN INDIA?



India has been reporting about 200,000 Covid cases daily since 15 April - well beyond its peak of 93,000 cases a day last year. Deaths too have been rising. "India's high population and density is a perfect incubator for this virus to

experiment with mutations," says Ravi Gupta, a professor of clinical microbiology at the University of Cambridge. However, the wave of cases in India could have been caused by large gatherings, and lack of preventive measures such as mask-wearing or social distancing.

WILL VACCINES STILL WORK?

Scientists believe existing vaccines will help control the variant when it comes to preventing severe disease. Some variants will inevitably escape the current vaccines, according to a paper published in Nature by Prof Gupta and his fellow researchers. As a result, changes to vaccine

design will be needed to make them more effective. However, the vaccinations now available are still likely to slow down the spread of the disease. For most people, these vaccines can mean the difference between little to no disease and ending up in the hospital with a risk of death.

REASONS FOR THE SECOND WAVE

Leading Indian scientists from the most renowned institutes and research centers have suggested that 2 distinctive factors can be used to trace this sudden and sharp rise of active cases in India.

- **Opening of Schools and Colleges**

Although such institutions are following all the COVID protocols reiterated by the government, there has been little control over public transit and the people, many of whom have not been following the necessary COVID protocols. This has led to several asymptomatic carriers transmitting the virus.

- **A New Mutant Strain**

The double mutant variant of the virus has caused a significant rise in the number of infected cases. Scientists believe that this strain is about 70 times more contagious than the previous one.

- **Sharp Rise in Cases**

On 10 February, at the start of the second wave, India confirmed 11,000 cases - and in the next 50 days, the daily average was around 22,000 cases. But in the following 10 days, cases rose sharply with the daily average reaching 89,800.

- **Causes for Spike in Corona Virus Cases**

Human behavior is the major factor. State and Local governments, as well as individual people, differ in their response to the pandemic. Some follow COVID-19 precautions, such as physical distancing, hand-washing and mask-wearing. Others are not as prescriptive in requiring these measures or in restricting certain high-risk activities.

BEDS, HOSPITAL INFRASTRUCTURE, FRONTLINE WORKERS

India's total healthcare spending is a mere 3.5% of Gross Domestic Product, far lower than in countries ranging from the world's wealthiest like France (11.3%) and the UK (10%) to other emerging economies like Brazil (9.5%) and South Africa (8.3%). And only a third of India's

healthcare spending comes from the government, with the rest mostly coming out of citizens' pockets. With a poor infrastructure, India's health system is on the brink of collapse.



Hospitals across the country are running out of oxygen supplies, ventilators and beds. Indians are rushing to buy drugs with prices surging, while labs struggle to process growing backlogs of COVID-19 tests. There is an urgent need to expand healthcare infrastructure by transforming all stadia, large halls, worship places, educational institutes into

temporary COVID care hospitals, the process of which has started, spearheaded more by the civil society. Over 100 journalists and at least 330 health-workers have died while on job.

While there is hardly any major step being taken on behalf of the five crore membership claims of Rashtriya Swayamsevak Sangh, the few lakh-strong Sikh community in Delhi is running Oxygen Langars and has opened up gurudwaras for patients. Maharashtra Chief Minister Uddhav Thackeray has gone on record to thank the Muslims of Mumbai for their yeomen service in opening up mosques, donating plasma and blood, and providing oxygen to the needy.

VACCINATION PRODUCTION, AVAILABILITY, PRICING, EXPORT

Modi's insistence on Atmanirbhar Bharat, the principle of self-reliance, made India slow to approve and purchase foreign vaccines, including Pfizer-BioNTech's, in favor of its own Covaxin. In the meantime, the government was keen to wield its heft as the "Pharmacy of the World," exporting doses even as it vaccinated only 0.2% of its population per day. Today, while the Modi government has gone on back foot and opened up for foreign vaccines, they have no capacity to take immediate orders to supply to India. Only Russian vaccine Sputnik is being taken up by Reddy's Labs to produce in India.

While most nations have given advances to pharma companies to research on and produce vaccines, India did not support Serum Institute and Bharat Biotech initially with any funds. Serum (SII) invested Rs.2,000 crore by itself and got Rs.2,200 crore from Bill & Melinda Gates Foundation. While the US had invested Rs.44,700 crore in vaccines by Moderna, Pfizer, Johnson & Johnson, etc, as early as August 2020, India only on April 19, 2021, as reported by Scroll, gave an advance of Rs.4,500 crore to vaccine makers in India.

Our current monthly vaccine doses need is around 180 million, while production capacity is at best 80 million! Less than half. India placed its first order of vaccines in January 2021 and only for 16 million doses. In the longer term, vaccinations are desperately needed to prevent a third wave. Less than 10% of Indians have had at least one vaccine dose till now, and the current pace of inoculation is too slow. With limited vaccine supply, the most effective way to reduce transmission may be to target hot-spot areas and higher-risk people—which means India needs better data, and fast, and not the rampant data-fudging as is done today.

The Supreme Court took note of different prices of COVID-19 vaccines for Centre, States and the private hospitals and asked the Central government to explain to it the “Rationale and Basis” behind such a pricing policy. Vaccines are available to the Centre at Rs.150 per unit, and being offered to the states at Rs.300 and to the private hospitals at Rs.600 per unit.

The Kerala High Court issued a notice to the Central government on two pleas challenging its “Discriminatory COVID-19 Vaccination Policy”.

The Liberalised Pricing and Accelerated National COVID-19 Vaccination Strategy issued by the Centre recently is violate of Article 14, 19 and 21 of the Constitution. By virtue of the new policy, dual pricing of vaccines has been allowed and states are being forced to contend with private players to purchase the vaccines in the open market, whilst the Central government procures them at a discounted/subsidized rate.

Also, the Centre should adhere to the National Vaccination Policy when it comes to procurement of vaccines. Polio and Small Pox vaccination drives earlier were free and universal, without any discrimination. Earlier, as part of vaccine diplomacy, India has supplied around 65 million doses of vaccines to around 70 countries. The two vaccines which have been supplied to other countries are the Covaxin and Covishield, with claimed respective efficacies at 81% and 70%, respectively.

Covaxin developed by Bharat Biotech is a two-dose whole virion inactivated vaccine, which needs to be given in two doses separated by a duration of 28 days. Covishield, manufactured by SII is a recombinant vaccine against Covid19. It is perplexing that India was carrying out vaccine diplomacy till March 2021 at such a large scale when it is facing shortage of supplies in many of its own states preparation.

Several "Empowered Committees" were last year looking at the preparations needed to tackle the next coronavirus wave, so experts are baffled by the shortages of oxygen, beds and drugs.

"When the first wave was tapering, that's when they should have prepared for a second wave and assumed the worst. They should have taken an inventory of oxygen and [the drug] remdesivir and then ramped up manufacturing capacity," Mahesh Zagade, former health secretary of Maharashtra state.

Officials say India produces enough oxygen to meet the spike in demand but transportation was the problem. Experts say this should have been fixed much earlier.

The government is now running special trains carrying oxygen from one state to another and stopping use of oxygen in industries - but only after many patients died because of a lack of oxygen. The outcome has been that desperate family members are spending thousands of rupees to secure an oxygen cylinder on the black market and then stand for hours in a queue to get it filled. Meanwhile, those who can afford it are also paying hefty amounts to procure drugs like Remdesivir and Tocilizumab.

An executive from a pharmaceutical company which manufactures Remdesivir said "demand had dried up" in January and February. "If the government had placed an order, we would have stockpiled and there wouldn't have been any shortage. We have ramped up production but demand has grown significantly," he said.

THE ALTERNATIVE: WHAT COULD HAVE BEEN DONE TO CONTROL THE SPREAD OF THE VIRUS?

Over the last few months, the country eased out completely from previous restrictions, with all sectors encouraging borders to reopen. But as of April 2, the Maharashtra government had announced a weekend lockdown and night curfew. Whether this has been done to induce a sense

of urgency among the people and to promote COVID-19-appropriate behavior or with the intention to slow the transmission of the novel coronavirus, with several other states contemplating lockdowns we need to ask ourselves why are we here and what the alternatives could be.

First, the best opportunity to fight India's COVID-19 epidemic is gone. The basic principle in infectious disease control is to attack the enemy (virus) when it is weak (low transmission season). India had a good chance of surviving the first wave with distinct advantages, especially its low mortality rate. To sustain the gains, the country should have enforced strict containment measures, including concurrent monitoring of genome sequences with epidemiological investigations and efforts to curtail the transmission.

There was undoubtedly a sense of indifference to the COVID-19 response in people's minds. We have already lost some valuable time to respond appropriately to several issues, including scaling up vaccination by making it more straightforward and expanding our basket of choices. What took many months to peak in last year is happening over a few weeks this year. In fact, with 23 states being in the initial part of the ascending phase, the second waves' peaks will be much higher this time.

The real threat is to overestimate our ability and underestimate the virus. Unfortunately, the current approach appears to be 'business as usual' with no strict compliance to COVID-19-appropriate behavior. Changing this strategy could be pivotal in terms of reducing the adverse impact (the number of cases).

More and more sectors are seeking exemptions from following the required regulations in preventing super-spreader events. For example, Karnataka recently introduced a series of measures to prevent close contacts among crowds within closed spaces by regulating cinema theatres, gyms, schools, colleges etc. The cinema industry is mighty and has successfully garnered public support to continue with 100% occupancy in theatres, done by exerting pressure on the government. Once they were successful in getting exemptions, the association of gym owners and in fact all other groups sought the same measures.

So there appears to be a competition of sorts in seeking incongruous exemptions from following COVID-19-appropriate behaviors. But as a nation, our first step should be to transform this competition into more meaningful behavior. Since December 2020, we have only been artificially

inducing a conducive environment to promote fast spread in close spaces. We need exactly the opposite action to ensure that there is positive reinforcement in a mostly competitive manner to enforce appropriate behaviors. The alternative weapons of choice are relatively complex to implement.

INTERNATIONAL SCENARIO

Coronavirus disease-19 (COVID-19), produced by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has become a global pandemic, giving rise to a serious health threat globally. Several countries have seen a two-wave pattern of reported cases, with a first wave in spring and a second in late summer and autumn. In Spain, the first wave of COVID-19 began in early March 2020, although some isolated cases had been reported in February. As a consequence of the first outbreak, the Spanish Government introduced a series of strict prevention measures, including home confinement, which lasted from 13th March to 4th May, followed by a three-month period of progressively increasing social interaction, work and commercial activity. As of July, life in the country had returned to relative normality, except for the mandatory wearing of a face mask and maintaining a safe social distance. Unfortunately, the number of cases of patients with COVID-19 began to increase towards the end of August and a month later it once again presented numbers similar to those in April. This forced the Government to reintroduce serious restrictive measures, including local and regional lockdowns, closures of bars, restaurants, cultural and sports activities, and a general curfew after 10 pm. The number of cases in Spain has continued to grow since then, with some ups and downs, and at the time of writing this article it seems that it is beginning to stabilize.

The second wave of COVID-19 had been predicted months earlier and had already occurred in other countries. The vast majorities of Western European countries are currently suffering the consequences of this second wave and are taking similar restrictive measures. However, empirical data would suggest that this second wave differs from the first in such factors as age range and severity of the disease. Indeed, it has been suggested that this second wave in Europe might be linked to the appearance of a new variant of the SARS-CoV-2, termed 20A.EU1, which appears to have originated in Spain, from where it then spread to the rest of Europe through tourists who had spent their summer holidays in that area. The similarities and differences between the characteristics of the two waves remain largely unknown. Population comparison is difficult

because the technological and logistical capacity of the countries in detection and diagnosis of asymptomatic patients and those with mild symptoms has improved greatly in the six months since spring, and it is assumed that the incidence of infection in the early months of the pandemic was much higher than had been reported. However, a more accurate comparison of the two waves is feasible through the study of the hospitalized patients for whom disease was confirmed by reverse transcription-polymerase chain reaction (RT-PCR) and severe symptoms.

PRESENT SCENARIO

If you were to believe irresistible mathematical models from different groups, India will witness unprecedented growth in cases, much more than what it saw in the first wave. Even with a conservative estimate of a 100,000 cases each day in the entire country, we will require 5,000-10,000 beds every day for critical care and the corresponding oxygen supply (assuming 5-10% would require hospitalization). At this rate, cases will accumulate faster and will cause the health system to collapse.

So there is not much time available to plan to save lives as the dramatic ascent continues. We should not delay any further in responding to the second wave. We should have had a plan by now for a graded distribution of beds for critical care, when needed, ready to be deployed in a short time. If we don't implement strict active efforts now, the decision-makers will resort to lockdowns – which will essentially be lazy policy options to make up for the inordinate delays.

Much of what we use to manage this pandemic are war terminologies. Some of these phrases are “fight”, “deploy”, “prepare” and “launch”. Continuing with this trend, the right word to describe the current situation is to deploy battle-ready infrastructure and human resources in each state to take on the virus while it attacks the vast population of the country.

A nationwide lockdown at this stage would be akin to using nuclear weapons, which are to be used only as the last resort and whose use will be detrimental to almost every walk of life and sector. The lockdown was a necessity in 2020 mainly because the virus was new and the response was not defined, and there was a pressing need to step up human resources and infrastructure.

THE WAY FORWARD

The government should in effect follow three - as to ace the fight against the second wave. First, acknowledge that the second wave is real and the role of variants by scientific inquiry. Second, adopt a revised control strategy with strict prevention of crowds of all sorts in every possible way. This will also include a revised communication strategy to ensure everyone wears masks everywhere. We may not follow traffic rules but we listened to the honorable Prime Minister Narendra Modi when he asked us to stay home for a few months. We need similar messages from the prime minister and other political leaders to motivate people to maintain appropriate behavior. Third, accelerate containment efforts and the pace of the vaccination. If all three as are integrated and comprehensively scaled up, we won't need a lockdown.

To avoid getting infected, the following precautions must be taken by every individual:

- Wash your hands often with soap and water for at least 20 seconds. Use an alcohol-based hand sanitizer that contains at least 60% alcohol if soap and water are not available.
- Avoid touching your eyes, nose, and mouth with unwashed hands.
- Avoid close contact with people who are sick.
- Cover your cough or sneeze with a tissue, then throw the tissue in the trash.
- Clean and disinfect frequently touched objects and surfaces.
- Maintain at least 1 meter (3 feet) distance between yourself and other people, particularly those who are coughing, sneezing and have a fever.
- Wear cloth face coverings in public settings where other social distancing measures are difficult to maintain.
