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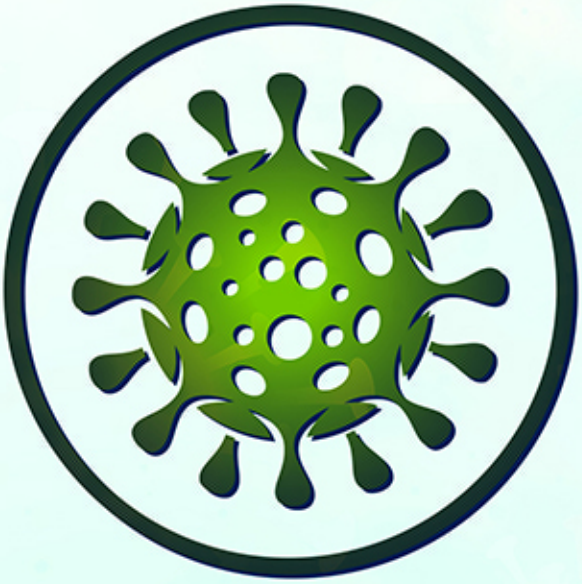
INTERNATIONAL INSTITUTE OF INNOVATION AND TECHNOLOGY



COVID-19 PANDEMIC

2ND WAVE

DH-6/24, Street No: 0317, Action Area-1D, Newtown, Kolkata-700156.

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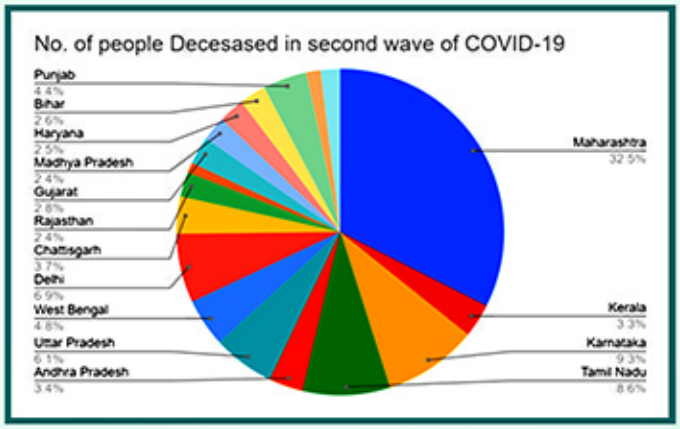
Background/ statistics of COVID-19 Second wave: Did you know?

K. Srinath Reddy, president of the Public Health Foundation of India said "We completely let down our guard and assumed in January that the pandemic was over—and **COVID** surveillance and control took a back seat,". But "there were still a fairly large proportion of people in the big cities, but also in smaller cities and villages, who were not exposed to the virus last year, who were susceptible", as cases declined from September 2020 to mid-February 2021. But the picture changed drastically when India began recording a dramatic increase in new cases from April 15 onward, with more than 200,000 cases daily.

Health ministry data for the last two weeks of May found that as many as 66 percent of districts with a test positivity rate of 10 percent or more were rural.

Analysis of deaths certified/ registered by the Kolkata Municipal Corporation shows that excess deaths were as high as 6.87 times the officially recorded COVID-19 fatalities during the Second wave.

That Kolkata is affected more than other metros indicates the severity of the COVID-19 second wave in the city in the last two months. This could be the result of elections conducted over eight phases in West Bengal, which registered a sharp spike in cases and deaths during the second wave.



Data on jobs, income, household income, consumer sentiment and demand show that the second wave has had a devastating impact on India's economy, especially on poorer citizens and smaller businesses. Even rural areas that were a saving grace during the first wave have been deeply affected this time. the State Bank of India (SBI) slashed the country's FY22 growth forecast to 7.9 percent from the earlier 10.4 percent. Several international banks and ratings agencies have also slashed India's growth for the currentfinancial year in view of the devastation caused by the second Covid-19 wave. India's economy contracted 7.3 per cent in FY21 — the sharpest ever in the country's history.

According to the Centre for Monitoring Indian Economy (CMIE), In the week ended 16 May, 2021, rural unemployment doubled to about 14 percent within a week, and remained closer to 14 percent a week later.

Institute for Health Metrics and Evaluation (**IHME**), an independent global health research center at the University of Washington, says India's daily COVID-19 cases are now double the number in the previous peak in September 2020. The institute predicts the **COVID-19** death toll in India will likely double to 665,000 by August 1, 2021.

Why was the second wave in India, the worst in the world.

The second wave of Covid-19 had a devastating impact on India. It wouldn't be wrong to say that although the country was prepared for the second wave, the magnanimity and intensity of the deadly disease caught the nation unawares. The sudden spike in cases brought the nation's healthcare system to an all-time low. Suddenly there were no hospital beds, no oxygen, no medicines. To make matters worse, there were the variants.

During the past few weeks, news channels and social media has been inundated with news of dwindling oxygen supplies, physicians watching helplessly as patients perished and people watching their hapless relatives dying before their eyes. Overwhelmed crematoria had to work round-the-clock to keep up with the pace of the bodies; furnaces melted down from overuse and additional funeral platforms had to be built outside. Such were the heartbreaking messages and haunting images that highlighted the formidable second wave of the coronavirus pandemic that raged through the country.

At its peak, India broke all world records for coronavirus cases surpassing United States which had earlier held the record for the most number of cases. In just over two weeks, India's second wave became disastrous. A country which saw less than 15,000 cases a day in March , saw more almost 400,000 infections a day in May. The wave which started mainly in Maharashtra and Gujarat, engulfed the whole nation by April. By then the whole country was reeling under the devastation of the deadly disease. Delhi saw a surge of 900% in infections.

Across the country this unprecedented and sudden rise in infections had brought India's health infrastructure to its knees.

Several Indian states were running short of oxygen supplies and this led to numerous deaths. Indian social media was flooded with tragic appeals for oxygen support, ICU beds and beds with ventilators. Patients were even advised to try and find cylinders and machines to oxygenate themselves at home.

The second wave in India has proved deadlier than the first wave as deaths were recorded at an unprecedented rate.

A shortage of key healthcare equipments, oxygen, hospital beds and drugs worsened the situation and made the second wave in India the worst in the world.

Delta Variant and the massive effect

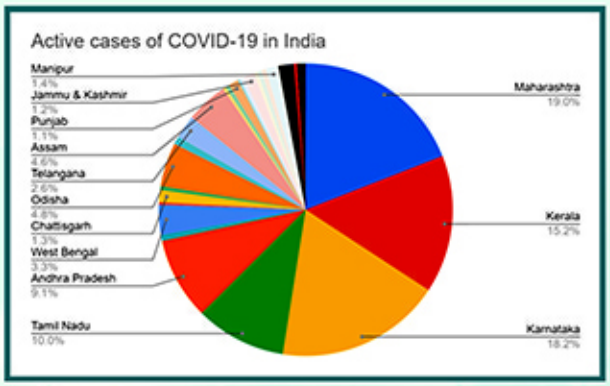
The B.1.617.2 delta variant is becoming the dominant variant globally because of its significantly increased transmissibility. WHO said that the Delta variant is now being reported in about 92 countries around the world. It was first detected in India around October 2020.

Dr. Mike Ryan, executive director of the WHO's health emergencies program, said Delta Variant, first identified in India, has the potential "to be more lethal because it's more efficient in the way it transmits between humans and it will eventually find those vulnerable individuals who will become severely ill, have to be hospitalized and potentially die,"

The UN Health agency has categorized the Delta Variant strain of COVID-19 as " Variant of Concerns" or VOC. According to the health organization delta variant is more contagious and more resistant to vaccines and treatments. The variant was predominantly reported among adolescents above 12 years of age (81 per cent) compared to children (19 per cent).

According to the scientists the Delta Variant (B.1617.2) is mutated to form Delta Plus Variant(AY.1). Delta Plus variant has been found in 197 samples across 11 countries - Britain, India, Canada, Japan, Nepal, Poland, Portugal, Russia, Switzerland, Turkey, and the United States.

India's health ministry said "The mutation K417N has been present in the Beta variant(B.1.351 lineage), which was reported to have immune evasion property," Around 40 cases of the Delta plus variant have been observed in the states of Maharashtra,Kerala and Madhya Pradesh.The health ministry says the Delta plus variant, first found in India in April.The earliest case in India is from a sample taken on April 5.



Tarun Bhatnagar, a scientist of Indian Council for Medical Research said "The mutation itself may not lead to a third wave in India — that also depends on Covid-appropriate behaviour, but it could be one of the reasons," .

New names proposed for Covid variants

Country/region	Scientific name	WHO name
Kent, UK	B.1.1.7	Alpha
South Africa	B.1.351	Beta
Brazil	P.1	Gamma
India	B.1.617.2	Delta

The World Health Organization (WHO) said "WHO is tracking this variant as part of the Delta variant, as we are doing for other Variants of Concern with additional mutations,".

Delta Plus is not yet classified as a Variant of Concern (VOC). As of now, it is a Variant of Interest (VoI). India's health ministry says studies showed that the Delta plus variant - also known as AY.1 - spreads more easily, binds more easily to lung cells and is potentially resistant to monoclonal antibody therapy, a potent intravenous infusion of antibodies to neutralise the virus.

Importance of D-Dimer test in Covid-19

https://www.diagnosticcentres.in/healthcare-article/importance-of-d-dimer-test-in-covid-19

In the concerning hours of pandemic, we all should be aware of the parameters which when diagnosed at the correct time can lead to reduction in severe fatalities or mortalities, a surge which has been observed spiking significantly in the turn of events of the Second wave. D-dimer test, CRP, CBC, Interleukin-6 tests are beneficial for monitoring the patient's progression to Covid-19 related cytokine storm and help in timely medical intervention to reduce fatality.

What is the D-dimer test?

D-dimer is actually a protein fragment that uses itself soon after the degradation of a blood clot and thereby is indeed one of the most genuine biomarkers for the severity of any disease and consequently helps in proper intervention approaches to prevent mortality. In brief, D-dimer is known as a product of cross-linked fibrin, which stays present in the blood in case of blood clotting. To be more specific, people with blood clotting disorders should mandatorily go for a D-dimer test. The necessities of this test are,

- This test can help to assess the severity of the disease.
- This test helps to easily assess the risks of pulmonary complications.

In the wake of the pandemic and specifically in the second wave of surging COVID cases and increased fatality rates, D-Dimer has become one of the most indispensable tests /measurable components at the current juncture.

How can the D-dimer test be useful in Covid-19?

As we all know, the deadly SARS-nCOV2 virus can form a colony in the lungs and can consequently lead to various pulmonary and associated defects in the long run of infection and even post recovery. Rare symptoms like blood clotting are also being seen and this is the major reason why the D-dimer test is undeniably important. D-dimer test appropriately shows the presence of blood clots in the patient's body, even in lungs, who are having severe forms of COVID-19. In such conditions, the patient may face shortness of breath.

In a word, the D-dimer test in COVID has become significantly essential. If the test reports show the presence of a higher level of D-dimer in the body, it means there are so many blood clots present in the body. The higher the D-dimer levels are, the more the patient will be needing oxygen because the amount of blood clotting is also that

high. Moreover, repeated D-Dimer tests are necessary as it might give a better indication of risk factor that a patient might face even after recovery as an underlying or consequent effect of COVID-19 infection.

Fortunately, D-dimer test price is not really too high and the facilities of D-dimer blood test is widely available now.

Self medication and its effects on Covid-19.

The Covid-19 pandemic has posed challenges to the healthcare systems which were hitherto unknown. Corona requires extremely novel treatment and prevention strategies to continually evolve and deal with the impact of the pandemic. Medical professionals and patients are both dealing with the unknown and left feeling out of control. With no definitive treatment for this infection, a sense of fear and anxiety has set in.

In this scenario of doubt and uncertainty, self medication, which was already a global phenomenon has now increased to catastrophic proportions and has become a major cause of concern among the medical fraternity. The collective confusion over this deadly disease has led to a compulsive, panic-driven behavior and people,especially Indians, are relying on various social media platforms that only lead to misinformation about medications and increased use of self medication, including home remedies, without established safety or efficacy norms.

Generally speaking, self medication is defined as the selection and utilization of medicines to treat self-recognized symptoms or ailments without consulting a doctor. At the moment, people are confined to their homes and are more vigilant about updates on Covid-19 particularly on treatment and preventive measures. In addition, suggestions come from friends,family, neighbours, pharmacists and prescriptions of other Covid-positive patients and this has made this phenomenon take a disastrous turn.

This rampant and irrational use of medication without medical guidance may result in greater probability of inappropriate, incorrect or undue therapy, missed diagnosis, delays in appropriate treatment, pathogen resistance and increased morbidity.

Medicines are being stocked, hoarded and consumed rampantly. These include antibiotics, steroids, antiparasitics and antivirals to name a few. It is dreadful to imagine the number of anxious people who are not even consulting their doctors before starting steroids or even antibiotics or any other prescription medicines. People should remember that doctors are the only professionals who are trained to handle medical issues and the intake of such strong drugs without medical consultation could do more harm than good.

This nervous response to the pandemic is also leading to the patients compelling the doctors to start steroid or plasma therapy or remdesivir even when not indicated. The collective compulsive panic behavior is leading to self medication, seeking hospital admission when not needed and choking the system of both medicines and hospital beds. It is better to protect oneself by following the SOPs and taking a protein-rich diet and consuming Vitamin C and Zinc tablets. Even increased iron, Vitamin C or Zinc can have bad effects or consequences leading to increased susceptibility to other co-morbidities.

By avoiding self medication, we can prevent various serious diseases to affect us.Thus, there is a dire need to control and manage appropriate self medication practices by applying strong legislation and involving healthcare professionals and policy makers.

I3T INTERVENTIONS IN THE SURGE OF 2ND WAVE OF THE PANDEMIC

International Institute of Innovation and Technology, a unit of Pradip and Kumkum Ghosh Family Foundation is a public health development institute whose sole focus is to aware the community through academic and social advocacies and community outreach and also to create interventional platforms to implement the necessary changes in the society and within the community.

With these ideals, **I3T** wishes to create various endeavours to help the people in the community tocombat the surge of cases in the 2 nd wave and to keep them prepared for the predicted and upcomingscenario of the 3 rd wave.

Dr. Pradip K. Ghosh and his team at I3T has tried to create interventions through

a) Distribution of 350 oxygen concentrator units in different areas of West Bengal with the help of several organisations, safe homes and also with the help of the State Health Department.

b) Scaling up testing numbers in the rural districts and areas through ICMR approved and WHO recommended Rapid Antigen Testing, and with strong support of AIIMS Kalyani.

c) Conducting health camps to identify and diagnose co-morbidities for post **COVID** or susceptible group of people in the neighbouring community to strengthen the public healthcare system.

I3T and an upcoming University: the proposed International University of Public Health and Technology (**IUPHT**) are dedicated to work with determination and fervour to combat any epidemic /pandemicmanagement, to further and better the health delivery system with their proposed plans of mobilehealth services, focused for palliative patients and geriatric care. Their team of Healthcare Assistants are the perfect bridge in rural and peri-urban belts between patients and physicians.

A holistic approach for betterment of healthcare services, healthcare delivery system, healthcareinfrastructure and management is what I3T aims for in the upcoming days and specifically in the postpandemic era.

Preparations for the Third Wave.

Only last month, India had reached the peak of the second wave of coronavirus. Lakhs were affected and thousands lost their lives. The nation hit an absolute low both economically and emotionally. Several states imposed lockdowns, wearing of masks were made mandatory and people were forced to follow social distancing. Stringent measures by the governments and self-imposed restrictions by the citizens finally yielded results and the count dropped drastically in the last few days.

However, the risk is not yet over. Already India and several other countries are gearing up for the third wave. In fact, several doctors in India have warned that if we let down our guards at this stage, the third wave will hit us in about 6 to 8 weeks. The severe second wave had overwhelmed the health infrastructure and underlined the importance of preparing well for the third wave.

Then what could be the possible methods of reducing the effects of the third wave?

1) The pace of vaccinations will matter most in determining whether or not there is a nationwide third wave.Vaccination is the most important method of controlling the disease.The more people are vaccinated, lesser the chance of the disease spreading at an alarming rate. At the moment, the vaccination drive has got a good momentum. If more and more people can be vaccinated, the third wave can, hopefully, be controlled to a large extent.

2) The testing facilities need to be expanded.. By timely testing and isolating the infected patients, the infections can be contained. Timely testing depends on the facilities available. Paid and free tests would also make a difference especially for the poor.

3) People, especially the poor, need to be encouraged to seek medical advice.The economically backward classes are most reluctant to seek medical advice both due to financial constraints and also due to lack of awareness.Given the fact that Covid-19 begins with common symptoms such as fever and cold, a behavioural change is required when it comes to suspected patients seeking early testing and treatment.

4) There is an immense financial burden of health expenditure due to Covid-19 infections. Household finances have been devastated. People have had to take loans, sell assets, borrow from friends etc. Due to this, people are often afraid to disclose their illness or take proper treatment. The governments have to take more responsibility and provide more financial benefits to patients of Covid-19.

5) Finally, it can be safely assumed that expanding health insurance cover will help as three-fourth of hospitalization cases in India involved individuals who were not covered by health insurance. Ironically the richer people have bigger insurances and so the economically weaker were apprehensive of seeking hospitalization and other medical facilities.

All the above measures are now being seriously considered and even implemented to a large extent. Thus, we can hope and pray that the third wave remains under control and does not destabilize the nation like the second wave did.

We are into one and half years of Covid-19 and there are questions which are still unanswered.

Who are at the risk of suffering from “long covid”?

This is a question which still requires a lot of research and the answer is not yet clear.

Who is at risk of developing long-hauler COVID and how can this be prevented?

There is no fixed data on this but studies are underway to see if vaccination has an effect on long COVID. However, long –hauler COVID patients should get vaccinated at the earliest. It has been seen that patients with long COVID was resolved of his symptoms after vaccination.

How much immunity is enough for COVID and how can we measure this?

Antibodies can be measured after infection and it seems that after vaccination T cells are probably more important. However, scientists feel that immunity might persist for years.

What do we know now about the wide variety of human responses to the virus?

The amount of virus one is exposed to is not important. When a person is infected one can’t tell if it’s a big dose or not. So it does not matter how much virus one is exposed to.

Can a vaccinated person be exposed to a huge dose of virus and get infected?

It’s definitely possible.

Apart from COVID-19, do vaccines offer protection from other types of coronaviruses?

Maybe to a certain extent but this vaccine has been specifically created for **COVID-19.**

Do vaccinated people need to wear masks?

Although it is believed that vaccinated people do not spread the virus, it is better to wear masks in crowded places especially if you have high-risk people living around you.

What do we know about myocarditis or heart inflammation in some teens after vaccination?

There doesn't seem to be a direct link. Cases have been mlld land could be resolved with medicines and rest. The risk of myocarditis is more after COVID so it is always better to be vaccinated.

Can different vaccines be taken in separate doses?

There is no reason to believe that this can't be done but the efficacy will always be greater if the same vaccines are given.

Where are we on the theory of COVID-19's origin?

There are many versions and beliefs and no conclusive evidence has yet been found.