



DAILY NEWS BULLETIN

LEADING HEALTH, POPULATION AND FAMILY WELFARE STORIES OF THE DA
Wednesday 20201023

Woman's life

India's first precision stenting procedure saves woman's life (The Tribune: 20201023)

<https://www.tribuneindia.com/news/health/indias-first-precision-stenting-procedure-saves-womans-life-159565>

India's first precision stenting procedure saves woman's life

Kamlesh (58), a diabetic patient with a history of chest pain, underwent a successful procedure of precision angioplasty with advanced Optical Coherence Tomography (OCT) imaging technique at a Delhi hospital. This came after a complex arterial blockage had caused a massive heart attack which could have been life threatening

She is the first Indian patient to successfully undergo a stenting procedure using OCT imaging with Ilium 4 trial. While coronary angioplasty remains the first line of treatment for such massive heart attacks, in synchronisation with the OCT technique, the precision of stenting has also improved the outcomes with a better quality of life in her case.

"The latest advancements are also helpful in determining the functional significance in some tricky situations which otherwise would be seemingly borderline lesions. Making use of Optical Coherence Tomography (OCT) techniques not only helps in treating the patients effectively, but also improves their quality of life," said Balbir Singh, Chairman, Cardiac Sciences, Max Hospital, Saket.

He added, "With the technical expertise available to us for such complex procedures, we have a success rate of over 95 per cent. This Ilium 4 is an important and landmark study that will bring paradigm changes in the way stenting is performed in future. With lot of in-depth understanding, it could lead to much better outcomes in patients undergoing coronary stenting."

Modern advances made in the field of cardiology have assisted well in decision making and better treatment outcomes for patients with heart blockages and even end-stage heart diseases.

"Angioplasty for treatment of heart attacks saves lives by rapidly stopping a coronary blockage and re-establishing bloodstream to the heart. Patients undergoing angioplasty using OCT have a quicker recovery time and can get back to normal life within 2 days of the procedure. Apart from being the best treatment option for angioplasty also treats patients with serious coronary illness including acute heart attacks," added Singh. IANS

COVID-19 vaccine

Moderna completes enrollment in its large COVID-19 vaccine study (The Tribune: 20201023)

<https://www.tribuneindia.com/news/health/moderna-completes-enrollment-in-its-large-covid-19-vaccine-study-159543>

Company says, over 25,650 participants have so far received their second shot of the vaccine candidate

Moderna completes enrollment in its large COVID-19 vaccine study

Photo for representational purpose only.

Moderna Inc said on Thursday it had completed enrolling 30,000 participants in a late-stage study testing its experimental coronavirus vaccine.

Over 25,650 participants have so far received their second shot of the vaccine candidate, mRNA-1273, the company said.

Moderna said its study includes more than 11,000 participants from minority communities in the US, representing 37 per cent of the study population. Reuters

New Cases

US case trajectory surpasses India's (Hindustan Times: 20201023)

<https://epaper.hindustantimes.com/Home/ArticleView>

US case trajectory surpasses India's

Jamie Mullick

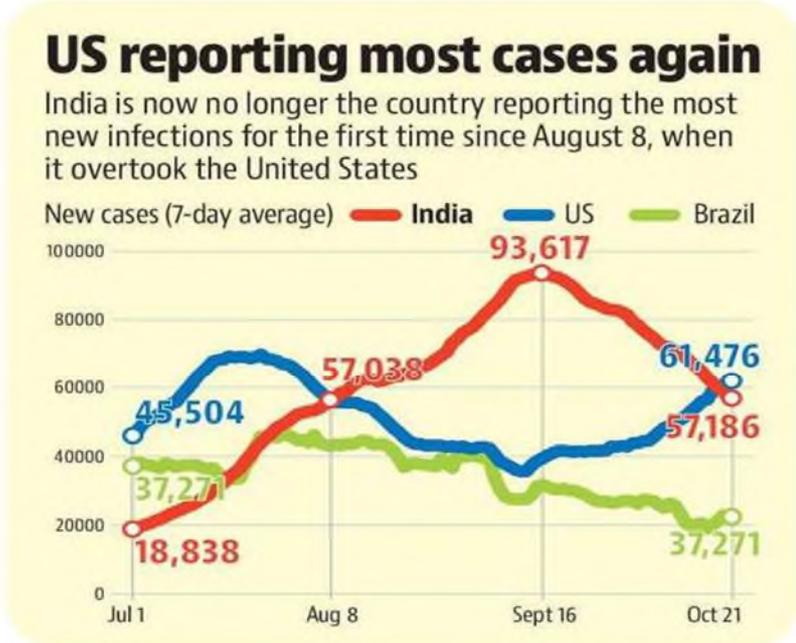
jamie.mullick@htlive.com

NEW DELHI: The trajectory of new cases of the coronavirus disease (Covid-19) in the United States, which has been climbing with the start of a third wave of infections, has surpassed that of India's, which has been dropping steadily in the past five weeks.

This means that India is no longer the country reporting the most new infections in the world for the first time since August 8, when it overtook the US to become the world's largest source of daily Covid-19 cases.

In the week ended Wednesday, the US reported 430,333 new Covid-19 cases (an average of 61,476 cases every day) against 400,299 cases in India (an average of 57,186 daily cases) — the highest and second highest number of daily cases globally, according to worldometers.info and HT's Covid-19 dashboard.

While the US reported more daily cases than those in India as early as October 15, single-day figures generally fluctuate due to drop in testing over weekends. The seven-day average is a better, and universally accepted measure of a new-case trajectory as it takes into account the week-end drop in numbers and other



daily fluctuations.

India's case trajectory eclipsed the US's for the first time on August 8, and on August 29, India's trajectory became the steepest ever recorded by any country, when its seven-day average hit 70,741, eclipsing the peak infection rate in the US during the country's second wave.

In the past month, the US has been seeing a resurgence of cases in what experts are calling

the third wave of infections in the country. The second wave peaked in the US on July 25 with 69,887 daily infections. It then bottomed out to 35,585 new cases every day around the middle of September, and started rising again.

This was incidentally around the same time that the first (and so far only) wave in India peaked. Infections in India have

continued on →17

bacteria-killing' therapy

Delhi lab tests for 'bacteria-killing' therapy (Hindustan Times: 20201023)

<https://www.hindustantimes.com/delhi-news/delhi-lab-tests-for-bacteria-killing-therapy/story-vD5nxThnGKXyse8rEeo9cO.html>

In a first, Delhi-based Dr Dang's Labs has started testing patients for their susceptibility to bacteriophage, a type of virus also referred to as "bacteria eater" because of their ability to infect and kill bacteria.

The therapy is an alternative for infections resistant to antimicrobial drugs currently in use.

The test will be available at all major cities across the country and will cost only ₹850. This will make it easier to access the therapy provided by Eliava Phage Therapy Centre in Georgia. So far, Indians with bacterial infections resistant to multiple drugs had to either go to the centre for the therapy or send their samples there for testing which would take at least a couple of weeks.

"The test is done from the site of the infection. It will tell us what the bacteria is, which medicines it is resistant to, and which phages are likely to work. Once the patients have the test reports, a copy of which we also send to Eliava, they are sent the phages. It is a water-like solution which can easily be administered by a local physician or by the patient themselves. How to administer it depends on the site of the infection – if it is an ear infection it is to be taken in the form of ear drops, if it is an infected burn, it has to be administered on the affected area," said Dr Navin Dang, founder, Dr Dang's Laboratory.

"Antimicrobial resistance is a real problem and people are working to, first of all, reduce it and conserve the existing drugs. There are people looking for newer antibiotics and alternatives like bacteriophage and certain chemicals. There is an institute in Meerut that looked at bacteriophages and their role in keeping the Ganga water clean. But I would not recommend it as a therapy yet," said Dr. Shobha Broor, former head of the department of microbiology at AIIMS.

Coronavirus pandemic

Coronavirus pandemic: What it takes to get to herd immunity (Hindustan Times: 20201023)

<https://www.hindustantimes.com/health/coronavirus-pandemic-what-it-takes-to-get-to-herd-immunity/story-1LxvYJW2id93yyqP9LMg3J.html>

The term “[herd immunity](#)” appears to have first been used in its modern sense in a December 1916 article in the Journal of the American Veterinary Medical Association with the curious title, “The Present Status of the Abortion Question.”(2) The abortion in question was an infection causing cattle to give birth prematurely to stillborn or ailing calves. U.S. Department of Agriculture researchers Adolph Eichhorn and George Potter observed “there is a constant tendency for the disease to die in an infected herd,” which they attributed to acquired immunity.(1) To take advantage of this “herd immunity,” they advised, cows that contracted the disease should be returned to the herd after an isolation period because in most cases they were able to give birth successfully the next time around, and “the animals which have required a resistance are more valuable, in an infected herd, than newly introduced, susceptible animals.”

Over the next few years, as described in an educational (and paywall-free) article published last month in medical journal The Lancet, the term made its way into human medicine, usually but not exclusively in the context of vaccination. What percentage of a population needed to be immune to an infectious disease, epidemiologists struggled to determine, to cause it to begin to die out?

The answer delivered by the susceptible-infectious-recovered mathematical model first outlined in 1927, and developed into something like its present form in the 1980s, is simple. The key is the basic reproduction number, or R_0 (with the zero usually spoken aloud as “naught”), which represents how many other people the average person with the disease is likely to infect, in a fully susceptible, fully mixed population going about its business in normal

fashion. In this model, herd immunity is reached when the share of the population immune to the infection equals $1 - 1/R_0$.

Which brings us to Covid-19. It is impossible to know yet how complete and long-lasting the immunity conferred by infection with the new coronavirus, or vaccination against it, will be. It does not appear to be universal, given that there have been several documented cases of reinfection. And it's almost certainly not eternal, possibly falling somewhere between the several months of immunity that seem to follow infections with the four coronaviruses that cause common colds and the two or more years that follow infections with the more-severe and also-coronavirus-caused Sudden Acute Respiratory Syndrome and Middle East Respiratory Syndrome.

Still, that's not nothing, and the hope that enough people could soon become immune to Covid-19 to thwart its spread has been broached by optimistic sorts since early in the pandemic. This month, three outside-the-mainstream (at least on this issue) epidemiologists issued a declaration urging an approach to managing the disease that "balances the risks and benefits of reaching herd immunity," and the White House appeared to embrace it.

The simple herd-immunity model

How many people would have to develop immunity to Covid-19 for us reach herd immunity? There's the simple answer — the model-derived immunity percentage described above — and at least three more-complicated ones.

First, the simple model: Estimates of the R_0 of Covid-19 vary, but I'll go with the range of 3.3 to 3.8 estimated by the Robert Koch Institute, Germany's equivalent of the U.S. Centers for Disease Control and Prevention. Plug those numbers into the $1 - 1/R_0$ formula described above, and what comes out is that 70% and 74% of a population would have to be immune to Covid-19 to keep it from spreading.

This explains the Covid-19 herd-immunity thresholds of two-thirds, 70% or more that one often sees cited in the media. These are a lot higher than the threshold for the disease with which Covid is most often compared, influenza. Even the pandemic H1N1 influenza of 2009 had an R0 estimated at 1.5 or less, and ended up infecting about 20% of the U.S. population from April 2009 through April 2010, according to the CDC. There was, to be sure, a vaccine that came out in autumn 2009, but cases had begun to decline in the U.S. even before it was widely available.

There's no reliable tally of how many Americans have been infected so far with Covid-19. The number of confirmed cases amounts to only 2.5% of the U.S. population, but that is universally acknowledged to represent a major undercount. Guesstimates based on antibody surveys and informed extrapolation have put it somewhere between 10% and 17% of the population. So far the disease has killed 221,083 people in the U.S., according to the Johns Hopkins University Covid-19 dashboard, and nearly 300,000 if you go by the CDC's excess-deaths estimates. Bringing the infection percentage up to 70% of the population would, if the fatality rate remains the same, lead to more than 700,000 additional deaths.

The resulting total would still be significantly less than the 2.2 million U.S. deaths researchers at Imperial College London famously forecast in March if Covid-19 were allowed to spread unchecked. That's mainly because, while early in the pandemic the U.S. fatality rate seems to have been right around the 0.8% of infections the Imperial College team assumed, it appears to have fallen since then. Going by data scientist Youyang Gu's sadly just-discontinued Covid-19 Projections infections tracker, the source of the 17% infection-rate estimate cited in the preceding paragraph, the fatality rate has been 0.42% overall. Still, it would have to fall by quite a bit more for reaching the 70% threshold via infection in the U.S. not to result in hundreds of thousands more deaths.

The risk of overshoot

That's the simple and not-very-encouraging answer to the question of what it will take to reach herd immunity. The first of the more-complicated answers is even less encouraging. "The herd

immunity threshold is kind of like the low-fuel light on your car. It's not the empty-tank light," says Georgetown University biologist Shweta Bansal. "It's not the maximum number of individuals that will be infected. It's the point where the epidemic begins to slow down."

If a population reaches the herd immunity threshold via vaccination, then the disease may not spread much beyond that. If it gets there by way of a raging epidemic in which, say, 15% of the population is still infectious when the threshold is reached, then it's a different story.

Here's what happened when I created a simulated epidemic with an R_0 of 3.5 on the Covid-19 Scenarios site created by scientists at the University of Basel in Switzerland and the Karolinska Institute in Sweden. According to the $1-1/R_0$ formula the herd immunity threshold is 71%, and in my simulation new infections peaked even before then, but 97% of the population still got the disease:

The benefits of heterogeneity

The other two complications at least have the potential to drive the threshold down instead of up. One is that an average measure such as R_0 hides a lot of differences in how a disease spreads and who spreads it. Such heterogeneity is usually much less important for respiratory ailments than for sexually transmitted diseases and those spread by "vectors" such as mosquitoes. But Covid-19 seems to share some characteristics of the latter. Most people who get it don't infect anyone, but some infect dozens via super-spreading events.

If people with a high propensity to spread the disease hang out with one another, and those with a low propensity do the same, then a population could reach herd immunity at a lower threshold than if everyone were the same. If the people with a high propensity to spread are also less susceptible to dying from the disease than those with a low propensity to spread, then that threshold could be reached with far less misery and death than in the scenario I outlined above.

A simple illustration: At an R0 of 2, 500 people in a population of 1,000 would need to be immune to reach herd immunity. Split that 1,000 into 500 people with an R0 of 1.5 and 500 with an R0 of 2.5 — still an average R0 of 2 — and you get to herd immunity with 167 people in the first group and 300 in the second, which adds up to 467.

The bigger the differences between the groups, the bigger the effects: If the R0s are 1.1 and 2.9, then herd immunity is reached at 373 of the 1,000. Scientists with much more complex models than that have come up with theoretical Covid-19 herd-immunity thresholds lower than 20%.

Cool, no? “I will not disagree with you that theoretically it’s a cool idea — I have built my career on it,” says Bansal, who studies how social behavior and population structure shape infectious disease transmission. “But in the absence of having really high confidence in that threshold, I don’t know how we could build policy around that.”

The role of T-cells

Meanwhile, several studies published this summer reported that as many as half of people not infected with the new coronavirus had infection-fighting T-cells that react to it, probably because of past coronavirus-caused colds. This led some to argue that 50% of the population might have already been immune to Covid-19 before the pandemic, implying we could be much closer to the herd immunity threshold than previously thought. That may have been mostly wishful thinking, though.

For one thing, if Covid-19 spread as fast as it did early this year in populations of which half were already immune, then its R0 must be twice what it was thought to be, meaning one would have to subtract that 50% from a higher herd immunity threshold of 85% to 87%. More important, subsequent studies on the role of pre-existing T-cells in fighting Covid-19 indicate they reduce the severity of infections rather than prevent them outright, and may misfire in older people. The contribution T-cells are making is probably “baked in,” researchers

from the Harvard T.H. Chan School of Public Health and La Jolla Institute for Immunology wrote in Nature Reviews Immunology this month, meaning it's "already accounted for by the empirical observational data available and factored into epidemiological models of spread and herd immunity."

Real-world herd immunity

Looking at the actual trajectories of Covid-19 epidemics around the world, there doesn't seem to be enough evidence yet to make confident pronouncements about what the real-world herd immunity threshold is, other than that it's almost certainly not below 20%. In London and Madrid, where antibody surveys indicated 18% and 11% of the population, respectively, were infected with the new coronavirus during the first wave earlier this year, that clearly wasn't enough to prevent big new outbreaks this fall. In Manaus, a Brazilian city on the Amazon River, the epidemic seemed to fade at an infection rate that estimates based on antibody surveys put at 66% of the population, but has sparked up again recently. In Iquitos, a Peruvian city farther up the Amazon, a government-sponsored survey this summer found that 71% of the population had antibodies suggesting they had been infected, while news reports at the time indicated another 22% of the city's residents still had the disease.

"Probably, once you get perhaps 30%, 40% of your population immune, you're going to see a very different dynamic," says Adam Kucharski, an epidemiologist at the London School of Hygiene and Tropical Medicine. But that dynamic will depend on other things besides just the immunity percentage. A disease's effective reproduction number is the product of four variables that Kucharski dubs DOTS, for:

A higher proportion of immune people reduces the S in DOTS. Individual behavior changes and government mandates can reduce O and perhaps T (a mask reduces the probability of transmitting the disease when you cough). Pre-existing differences in social structure also affect O — for example, people living alone make up more than 40% of households in the Nordic countries and Germany, but just 12% in Brazil and 13% in Peru. Weather appears to affect O, T and probably S as well. Having more people with immunity can definitely slow the

spread of Covid-19, but given all the other things that are going on, herd immunity is something of a moving target.

(1) The term was previously used in the Report of the Committee on Animal Food to the annual convention of the U.S. Veterinary Medical Association in 1893 but was said to be brought on by 'hygienic surroundings, proper exercise, proper food, and by practising the principles of breeding.' So ... not the same idea.

(2) Eichhorn and Potter, who both left the USDA around the time the article was published (Eichhorn for Lederle Labs in suburban New York, Potter for the Kansas Cooperative Extension Service), attributed the disease to the brucella abortus bacteria. Subsequent research has found that many cattle abortions are also caused by the infectious bovine rhinotracheitis virus.

India's active Covid-19 cases

India's active Covid-19 cases drop (Hindustan Times: 20201023)

<https://www.hindustantimes.com/india-news/india-s-active-covid-19-cases-drop-below-7-lakh-total-tally-mounts-to-7-76-million/story-rBrVlo2HZh6y35eFzifceI.html>

India's active Covid-19 cases drop below 7 lakh, total tally mounts to 7.76 million

Maharashtra, Kerala and Karnataka are reporting maximum cases and recoveries. West Bengal has replaced Kerala in reporting maximum number of deaths, followed by Maharashtra and Karnataka.

Continuing the trend of active Covid-19 cases dropping, India on Friday reported 6,95,509 active cases — the number of people infected with the virus at present. In the last 24 hours, 54,366 new cases and 690 deaths have been registered.

The number of active cases has been witnessing a steady decline in the current week. On Tuesday, the number was 7,48,538, on Wednesday 7,40,090, and on Thursday it was 7,15,812.

The health ministry on Friday said India's cumulative positivity rate is 7.81 per cent while the daily positivity rate is 3.8 per cent. 14 states and Union territories, including Delhi, West Bengal, Sikkim, Arunachal Pradesh, Chhattisgarh, Ladakh, Andhra Pradesh, Karnataka, Goa, Chandigarh, Nagaland, Kerala, Puducherry and Maharashtra, are reporting positivity rate higher than India average. "This indicates a need for aggressive and widespread testing," the ministry said.

The maximum number of new cases are being reported from Maharashtra, Kerala and Karnataka. These three states are also reporting the maximum number of daily recoveries.

However, Kerala is not reporting as many deaths as the other two top states are. Instead, West Bengal is third state reporting highest number of deaths, following Maharashtra and Karnataka.

Antibodies

Coronavirus neutralising antibodies (Hindustan Times: 20201023)

<https://www.hindustantimes.com/india-news/iavi-serum-institute-sign-deal-with-merck-to-develop-coronavirus-neutralising-antibodies/story-xs1WK3KbwACbnKGORpTKkK.html>

IAVI, Serum Institute sign deal with Merck to develop coronavirus neutralising antibodies

The antibodies have been co-invented by IAVI and Scripps Research, a non-profit American biomedical research facility, as innovative interventions to rein in the global spread of the Covid-19 pandemic

International AIDS Vaccine Initiative (IAVI), a non-profit organisation, and Serum Institute of India (SII), the world's largest vaccine producer by volume, on Thursday announced an agreement with Merck, a leading American multinational pharmaceutical company, to develop SARS-CoV-2 neutralising monoclonal antibodies (mAbs).

SARS-CoV-2 is the virus that causes [coronavirus disease \(Covid-19\)](#).

The antibodies have been co-invented by IAVI and Scripps Research, a non-profit American biomedical research facility, as innovative interventions to rein in the global spread of the Covid-19 pandemic.

“The agreement builds on the advanced antibody discovery and optimisation expertise of IAVI and Scripps Research gained from years of experience in HIV (human immunodeficiency virus) neutralising antibody research and development and on Merck’s and SII’s significant capabilities in design and scaling up of accelerated manufacturing processes for mAbs production...” stated a press release.

The three organisations are working in tandem for the global development plan.

If the highly potent and broadly cross-reactive SARS-CoV-2 neutralising antibody candidates make progress and are shown to be efficacious in clinical trials, either as a single antibody or a potential combination of both candidates, then Merck will take the lead in commercialisation of the breakthrough research in developed countries.

SII will take the lead in global manufacturing and also commercialisation in low-and middle-low-income countries, including India.

““We’re acutely aware of the tremendous potential for monoclonal antibodies to be used in Covid-19 response. By combining the scientific achievements of IAVI and Scripps Research with our partners’ development, manufacturing, and distribution expertise, we are hopeful that this partnership will result in globally accessible antibodies that are available to all, who can benefit from them,” said Mark Feinberg, president and chief executive officer (CEO), IAVI, in a statement.

Belén Garijo, vice-chairman, executive board and deputy CEO, Merck, said, “Together with IAVI and SII, we look forward to demonstrating the potential application of these monoclonal antibodies in the management of Covid-19. We share a common purpose to accelerate this

promising science and deliver effective solutions that address global challenges presented by this pandemic.”

Neutralising mAbs against SARS-CoV-2 are widely considered to be promising candidates for Covid-19 treatment and prevention.

“...Given the breadth and scale of our technology and our long-standing devotion to improving health especially in low-income countries, I am confident that we and our partners are on a productive path that will lead to a much-needed, globally available tool for Covid-19 treatment and possibly prevention,” said Adar Poonawalla, CEO, SII.

Encouraging results for Covid-19 antibody treatment have emerged from preclinical research and also initial clinical trials.

“mAbs have the potential to play an important complementary role to Covid-19 vaccines both for treatment and potentially for prevention, especially for those individuals who, due to age or medical conditions, may not benefit from vaccination,” the release added.

Coronavirus Vaccine

Coronavirus Vaccine: India's first Covid-19 vaccine (The Times of India: 20201023)

[HTTPS://TIMESOFINDIA.INDIATIMES.COM/LIFE-STYLE/HEALTH-FITNESS/HEALTH-NEWS/CORONAVIRUS-VACCINE-INDIAS-FIRST-COVID-19-VACCINE-CANDIDATE-APPROVED-FOR-PHASE-III-TRIALS-HERES-EVERYTHING-YOU-NEED-TO-KNOW-ABOUT-IT/PHOTOSTORY/78808903.CMS](https://timesofindia.indiatimes.com/Life-Style/Health-Fitness/Health-News/Coronavirus-Vaccine-Indias-First-Covid-19-Vaccine-Candidate-Approved-for-Phase-III-Trials-Heres-Everything-You-Need-to-Know-About-It/Photostory/78808903.cms)

Coronavirus Vaccine: India's first Covid-19 vaccine candidate approved for phase III trials, here's everything you need to know about it

1.1.1 01/5 Everything you need to know about Covaxin, India's first vaccine candidate



The alarming rise in the number of coronavirus cases in India has surely raised a lot of concern amongst people. Amidst all this chaos, Covaxin, the vaccine candidate developed by Bharat Biotech India Limited (BBIL) in collaboration with Indian Council of Medical Research (ICMR), has received approvals from India's drug control authority for the initiation of the final phase of trials.

Almost three months back in July, BBIL was allowed to hold phase I and phase II of the human clinical trials. Since then, the number of coronavirus cases in India has risen up to 7.5 million, making India the second highest affected country in the world.

With the approvals at hand, the phase III trials are likely to start next month. The committee reviewing the vaccine candidate met on Tuesday and gave the approvals suggesting minor changes to the process.

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1.1.2 02/5 What is Covaxin and how was it developed?



Covaxin is the first indigenous vaccine candidate by India to fight against the novel coronavirus, developed by Bharat Biotech India (BBIL), Hyderabad-based biotechnology firm working closely with the Indian Council of Medical Research (ICMR) and the National Institute of Virology (NIV).

Covaxin falls under the category of inactivated vaccines, which means the virus pathogen is 'deactivated' and has no possibility of infecting a person or multiplying in number, as it is already dead.

According to the firm, "The SARS-CoV-2 strain was isolated in NIV, Pune and transferred to Bharat Biotech. The indigenous, inactivated vaccine was developed and manufactured in Bharat Biotech's BSL-3 (Bio-Safety Level 3) High Containment facility located in Genome Valley, Hyderabad, India."

Therefore, the vaccine just serves the immune system as a dead virus and mounts an antibody response towards the virus.

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1.1.3 03/5Phase I and II



Having undergone a series of pre-clinical trials and testings on animals, the pharma company approached the drug control authorities i.e. CDSCO, for an approval to proceed to the next level of testing, consisting of human clinical trials.

In July, BBIL conducted its Phase I and Phase II of the trials on humans. Doctors at Institute of Medical Sciences and SUM Hospital, faculty of medical sciences collected blood samples of volunteers who were infused with the experimental shot of Covaxin. One of the doctors responsible for conducting the trials, Dr E Venkata Rao, recorded a spike in the production of antibodies in the participants, soon after receiving the dose. Lab samples also found that participants did not suffer from any side-effects after the inoculation.

While there were no possible side effects to the vaccine candidate, the drug authority control has therefore allowed BBIL to conduct the final phase of trials.

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1.1.4 04/5Covaxin: Phase III of the trial



With the clearance of Phase I and II, Phase III is scheduled to take place in the coming month. Phase three is usually the most difficult stage where thousands of people are involved. However, although the vaccine is approved at stage three, the battle is not over yet. The vaccine will be under close observation and its use on patients will be heavily monitored.

Reportedly, almost 28,500 people are expected to enlist for the trials in India. It is said, that the volunteers will receive two doses of the experimental vaccine in a gap of 28 days.

According to the firm, the trial would cover 28,500 subjects aged 18 years and above and would be conducted in 19 sites, including Delhi, Mumbai, Patna and Lucknow, across 10 states.

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1.1.5 05/5What's next?



The reports of Covaxin being side-effect free is indeed good news, while it promises a higher chance of effectiveness in the long runs. Therefore, if and when the phase III trials are successfully completed, Bharat Biotech will be targeting a manufacturing capacity of 300 million doses.

Being one of largest vaccine producing country in the world, if India is in fact successful in producing an indigenous vaccine, it will not only help contain the spread of the virus in India but also on a global scale.

Coronavirus: (The Times of India: 20201023)

<https://timesofindia.indiatimes.com/life-style/health-fitness/health-news/long-covid-who-has-the-highest-risk-of-developing-post-covid-symptoms/photostory/78807533.cms>

LONG COVID: WHO HAS THE HIGHEST RISK OF DEVELOPING POST COVID SYMPTOMS?

1.1.6 01/9 Long COVID is the newest problem puzzling people

More than COVID-19 recovery, developing long COVID is the new looming fear disturbing patients. From anxiety, persisting cough, breathlessness, dreary fatigue, insomnia to degraded quality of life, COVID 'long-haulers' are coming forward and sharing their painful experiences. So much so, a lot many post COVID clinics have also opened in cities. All this because there are people who go on to experience symptoms of the disease four to five months after recovering from it.

1.1.7 02/9 Recovering from COVID-19 can depend on these factors

While COVID recovery requires utmost care and importance, lingering symptoms of post COVID can depend on a lot of factors- from your age, treatment and severity of the infection. Newer studies have also thrown light that even though anybody can get post-COVID, some are more likely to suffer from severe symptoms than others.

1.1.8 03/9 The study

A study by King's College, London, which based its survey on the symptoms entered by recovered patients on a COVID symptom study app found that while long COVID can strike anyone, there are certain factors which increase the risk of long-lasting consequences.

It was also observed, according to the study that 1 in 20 people complained of severe side-effects post undergoing COVID and 1 in 7 complained of feeling "ill" for upto 4 weeks.

1.1.9 04/9 Why does long COVID happen?

SARS-COV-2 virus can not just attack your respiratory system, but also impact the vital functioning of the body, which could leave long-lasting impacts on your health. Even after making a successful recovery from the infection, the virus can continue to linger and deposit in the body for a long time. In its most infectious stage, the virus also destabilizes your immune response, which could be one of the reasons why your body can take such a long time to really recover from the virus.

(Image used for representational purposes only)

1.1.10 05/9 What qualifies as long COVID?

While there is no clear distinction for long COVID, experts suggest that recovered patients who experience five or more symptoms in the first-week post testing negative are much more likely to be long haulers.

According to recent findings, here are three particular factors which can raise the risk for long COVID:

1.1.11 06/9 Those with underlying respiratory conditions

While no pre-existing medical problems have been flagged with a higher long COVID risk, it was observed that those patients, who had a higher risk of respiratory problems, lung infections face a higher risk of suffering post virus symptoms. It should be noted that COVID-19 causing virus is primarily a respiratory germ, and causes the most severe damage to the respiratory tract by scarring the linings and impairing functioning as well in some cases. For the same reason, breathlessness, lingering cough remain to be some of the most commonly reported post COVID symptoms weeks after the viral load clears away.

1.1.12 07/9 Old age

Senior citizens remain to be one of the most vulnerable categories to face a high COVID-19 infection risk, and mortality rate as well. Frail, or diminishing immunity, and the likelihood of developing co-morbidities also consequently slow down the recovery time. Hence, those over 55 can have a longer battle dealing with COVID symptoms, with fatigue, body ache, brain fog and breathlessness being the most common ones.

1.1.13 08/9 Females

Gender also has a role in influencing your COVID outcome. While men face a higher risk of developing severe illness and mortality, females, unfortunately, face a higher risk of suffering from post COVID syndrome. According to studies, women of all ages were more likely to suffer from symptoms like hair loss, fatigue, impaired sense of smell or taste and brain fog. Past studies out of Italy also predicted that COVID+ women had a higher risk of developing mental health problems, including anxiety, stress and Post Traumatic Stress Disorder (PTSD).

1.1.14 09/9 Obesity

Obesity and unmanaged weight lower the body's metabolism. Increased inflammation can also spike the risk of developing co-morbidities, prolong recovery and make patients continue to experience lingering symptoms for months at a stretch. Hence, it's crucial that any extra weight is controlled in a holistic manner.

Coronavirus: (The Hindu: 20201023)

<https://www.thehindu.com/sci-tech/health/coronavirus-us-gives-full-approval-to-antiviral-remdesivir-to-treat-covid-19/article32924346.ece>

Coronavirus | U.S. gives full approval to antiviral remdesivir to treat COVID-19

1.2 THE DRUG WAS FIRST DEVELOPED TO TREAT EBOLA, A VIRAL HEMORRHAGIC FEVER

The U.S. Food and Drug Administration on Thursday granted full approval to the antiviral drug remdesivir as a treatment for patients hospitalized with COVID-19, after conditional authorization was given in May.

Gilead said the drug, sold under the brand name Veklury, was the only specific treatment for COVID-19 approved so far under a more rigorous process.

However, other treatments have received authorization for emergency use, though that approval can be revoked once the public health emergency sparked by the coronavirus pandemic is over.

Other medications, like the steroid dexamethasone, are also being used in the fight against Covid-19.

Gilead's shares on the New York Stock Exchange jumped four percent soon after the announcement.

“The FDA is committed to expediting the development and availability of COVID-19 treatments during this unprecedented public health emergency,” said FDA Commissioner Stephen Hahn.

“Today's approval is supported by data from multiple clinical trials that the agency has rigorously assessed and represents an important scientific milestone in the Covid-19 pandemic.”

Europe and other countries such as Canada also have granted temporary approval for the use of remdesivir.

Remdesivir, which is administered by an injection, was one of the first drugs to show relative promise in shortening the time to recovery in some coronavirus patients.

But its efficacy in reducing the mortality rate is unproven.

It can be administered to adults and children over the age of 12 who weigh more than 40 kilos (88 pounds) who require hospitalization for the treatment of Covid-19, the illness caused by the novel coronavirus.

The drug can only be given to patients in a hospital or equivalent setting.

Emergency approval has been granted for its use on pediatric patients under the age of 12 weighing at least 3.5 kilos.

President Donald Trump, who tested positive for the coronavirus early in October, was treated with remdesivir at a military hospital outside Washington, among other drugs.

1.3 FASTER RECOVERY TIME

The drug was first developed to treat Ebola, a viral hemorrhagic fever.

In February, the U.S. National Institute of Allergy and Infectious Diseases (NIAID) announced it was dusting off remdesivir to investigate against SARS-CoV-2, the pathogen that causes COVID-19, because it had shown promise in animal testing against fellow coronaviruses SARS and MERS.

Its study involving more than 1,000 people, the results of which were released in April, found that patients on the drug had a 31 percent faster time to recovery than those on a placebo.

Since the medicine is complex to manufacture and is administered via injection, rather than a pill, there have been questions about whether supply could initially be limited.

The United States bet early on remdesivir's success, rushing to preorder nearly all of Gilead's summer production.

Gilead has set the price at \$390 per vial in developed countries, or \$2,340 for six vials used over the normal five-day course, though US private insurers will pay \$520 per vial.

Coronavirus: (The Hindu: 20201023)

<https://www.thehindu.com/sci-tech/health/coronavirus-active-covid-19-cases-remain-below-10-of-total-caseload/article32917257.ece>

Coronavirus | Active COVID-19 cases remain below 10% of total caseload

1.4 THE DAILY POSITIVITY RATE HAS ALSO BEEN MAINTAINED AT LESS THAN 5% OVER THE PAST THREE DAYS.

Active [cases of COVID-19](#) in India have remained below 10% of the total caseload for the last three days suggesting that only 1 in 10 cases are active coronavirus patients, the Union Health Ministry said on Thursday.

The daily positivity rate has also been maintained at less than 5% over the past three days.

Also read: [Coronavirus | 70% of COVID-19 fatalities in men, says Health Ministry](#)

There are 7,15,812 active cases of coronavirus infection in the country which comprises 9.29% of the total caseload, the data stated.

“Registering another milestone, the daily positivity rate has also been maintained to less than 5 per cent over the past three days indicating that the spread of infection is being effectively contained through focussed strategies and actions of the Centre and the states and UTs,” the Ministry said.

Also read: [Coronavirus | Festive events only outside containment zones: Health Ministry](#)

The daily positivity rate is reported to be 3.8%.

“The decrease in the daily positivity rate is simultaneously mapped by the falling active cases, which continue to be under 7.5 lakh as on date,” the Ministry said.

“India’s trend of steadily decreasing active cases of coronavirus infections continues and they have sustained below 10% of the total caseload for the last three days suggesting only 1 in 10 cases are active COVID-19 patients across the country,” the ministry said.

Also read: [Coronavirus India lockdown Day 210 updates | October 22, 2020](#)

The total recovered cases are close to 69 lakhs and exceed active cases by 61,58,706.

A total of 79,415 patients have recovered and discharged in a span of 24 hours whereas 55,839 infections were reported during the period. The national recovery rate has progressed to 89.20%, the ministry said.

Eighty-one per cent of the new recovered cases are observed to be concentrated in 10 states and UTs. Maharashtra has contributed more than 23,000 to the single day recovery.

A total of 55,839 new infections were recorded in a span of 24 hours, 78% of which are from 10 states and UTs. Maharashtra and Kerala are still reporting a very high number of new cases with more than 8,000 cases each followed by Karnataka with more than 5,000 cases. A total of 702 case fatalities have been reported in a span of 24 hours. Of these, nearly 82 per cent are concentrated in ten states and UTs.

More than 25% of new fatalities reported are from Maharashtra (180 deaths).

The COVID-19 caseload mounted to 77,06, 946 with 55,839 new infections being reported in a day, while the death toll climbed to 1,16,616 with 702 new fatalities, the data updated at 8 am showed.

Coronavirus: (The Tribune: 20201023)

<https://www.tribuneindia.com/news/health>

IAVI, Merck KGaA, Serum Institute join hands to develop monoclonal antibodies for COVID-19

Non-profit scientific research organisation IAVI, vaccine major Serum Institute of India and global science and technology firm Merck KGaA have entered into an agreement to develop monoclonal antibodies to fight COVID-19 and to ensure their prompt and equitable global access.

The agreement is "to develop SARS-CoV-2 neutralising monoclonal antibodies (mAbs) co-invented by IAVI and Scripps Research as innovative interventions to address the COVID-19 pandemic", the partners said in a statement on Thursday.

The agreement builds on the advanced antibody discovery and optimisation expertise of International AIDS Vaccine Initiative (IAVI) and Scripps Research, and on Germany's Merck KGaA's and Serum Institute's significant capabilities in design and scale up of accelerated manufacturing processes for mAb production, it added.

If the SARS-CoV-2 neutralising antibody candidates being advanced through this partnership are shown to be efficacious in clinical trials, either as a single antibody or a potential

combination of both candidates, Merck KGaA will lead commercialisation in developed countries, read the statement.

Serum Institute will lead global manufacturing as well as commercialisation in low and middle-low-income countries, including India, it added.

"We're acutely aware of the tremendous potential for monoclonal antibodies to be used in COVID-19 response. By combining the scientific achievements of IAVI and Scripps Research with our partners' development, manufacturing, and distribution expertise, we are hopeful that this partnership will result in globally accessible antibodies that are available to all who can benefit from them," said IAVI president and CEO Mark Feinberg. On the agreement, Merck KGaA vice chair of the executive board and deputy CEO Belén Garijo said: "Together with IAVI and Serum Institute, we look forward to demonstrating the potential application of these monoclonal antibodies in the management of COVID-19."

We share a common purpose to accelerate this promising science and deliver effective solutions that address global challenges presented by this pandemic, he added.

"I am extremely pleased that we have joined forces with IAVI and Merck KGaA, Darmstadt, Germany in the fight against COVID-19 with the aim of developing monoclonal antibodies for global access," said Serum Institute of India CEO Adar Poonawalla.

Under IAVI's agreement with Merck KGaA and Serum Institute, the partners will conduct an accelerated, integrated programme of preclinical and clinical research to evaluate the antibodies for treatment of COVID-19. A Phase I clinical trial is expected to start early in 2021, read the statement.

Should the mAb candidates being developed prove safe and efficacious, Merck KGaA and Serum Institute will help ensure that the therapy is rapidly and widely available and accessible, it added.

Joining the partners in this development effort are contract research and manufacturing firm Syngene International and bioengineering company ATUM, the statement added.

India's first precision stenting procedure saves woman's life (The Tribune: 20201023)

<https://www.tribuneindia.com/news/health/indias-first-precision-stenting-procedure-saves-womans-life-159565>

Kamlesh (58), a diabetic patient with a history of chest pain, underwent a successful procedure of precision angioplasty with advanced Optical Coherence Tomography (OCT) imaging technique at a Delhi hospital. This came after a complex arterial blockage had caused a massive heart attack which could have been life threatening.

She is the first Indian patient to successfully undergo a stenting procedure using OCT imaging with Iumen 4 trial. While coronary angioplasty remains the first line of treatment for such massive heart attacks, in synchronisation with the OCT technique, the precision of stenting has also improved the outcomes with a better quality of life in her case.

"The latest advancements are also helpful in determining the functional significance in some tricky situations which otherwise would be seemingly borderline lesions. Making use of Optical Coherence Tomography (OCT) techniques not only helps in treating the patients effectively, but also improves their quality of life," said Balbir Singh, Chairman, Cardiac Sciences, Max Hospital, Saket.

He added, "With the technical expertise available to us for such complex procedures, we have a success rate of over 95 per cent. This Iumen 4 is an important and landmark study that will bring paradigm changes in the way stenting is performed in future. With lot of in-depth understanding, it could lead to much better outcomes in patients undergoing coronary stenting."

Modern advances made in the field of cardiology have assisted well in decision making and better treatment outcomes for patients with heart blockages and even end-stage heart diseases.

"Angioplasty for treatment of heart attacks saves lives by rapidly stopping a coronary blockage and re-establishing bloodstream to the heart. Patients undergoing angioplasty using OCT have a quicker recovery time and can get back to normal life within 2 days of the procedure. Apart from being the best treatment option for angioplasty also treats patients with serious coronary illness including acute heart attacks," added Singh. IANS

SARS-CoV-2

Spiraling pollution can have 'serious consequences' on SARS-CoV-2, may lead to 'higher mortality': AIIMS Director (New Kerala: 20201023)

<https://www.newkerala.com/news/2020/186161.htm>

By Joymala Bagchi, New Delhi [India], October 22: Rising air pollution combined with coronavirus infection and lung complications can possibly lead to serious consequences, and therefore, higher mortality, Dr Randeep Guleria, Director of the All India Institute of Medical Sciences (AIIMS).

Speaking with ANI, Dr Guleria stated that escalation of particulate pollution during the winter may not always be fatal but might have serious consequences, meaning that patients may need ICU or ventilator assistance, leading to higher mortality.

Experts broadly have sighted ample examples that identified that the number of all respiratory viruses shoot up during the winter months and have observed that SARS-CoV-2 is primarily a respiratory virus.

"Swine flu also shows a spike during winter months and it is likely that COVID-19 would also do the same. Coming to air pollution, there is data that shows air pollution may also lead to a higher prevalence of COVID-19. This is based on the study being done in the last few months in Italy and China," Dr Guleria said.

The study in Italy found a positive correlation between PM 2.5 concentration and higher deaths due to COVID-19.

"If people are inhaling pollutants into the airways, that itself causes airways inflammation and leads to worsening of underlying respiratory conditions. In such a situation, if people get Covid infection, they may have a more severe infection which might lead to higher mortality because of this combination," he said.

While explaining the correlation between rising cases, winter and air pollution, Dr Guleria said, "This is particularly related to two things. Firstly, due to the fall in temperature, viruses can survive for longer periods of time in the environment, unlike summer. Secondly, due to winter people tend to stay indoors, in crowded and poorly-ventilated rooms (to conserve heat) which maximises person-to-person spread of the virus."

With the Air quality Index (AQI) oscillating between 'poor' to 'very poor' category, it has already come under notice that coronavirus cases have started spiking in Delhi.

The Central Pollution Control Board (CPCB) in its latest bulletin (4 pm) on AQI, showed that with 296 and 215 index values in Delhi and Gurugram's, air quality rests in the poor category whereas in Faridabad, Ghaziabad, and Greater Noida it looms into very poor category.

Healthcare needs

COVID-19 interventions can cut virus infections, severe outcomes and healthcare needs (New Kerala: 20201023)

<https://www.newkerala.com/news/2020/185853.htm>

Non-pharmaceutical interventions such as voluntary shelter-in-place, quarantines, and other steps taken to control the COVID-19 can reduce the peak number of infections, daily infection rates, cumulative infections, and overall deaths, a new study suggested.

The study was published in the journal PLOS ONE.

"High compliance with voluntary quarantine - where the entire household stays home if there is a person with symptoms or risk of exposure in the household - has a significant impact on reducing the spread," said Pinar Keskinocak, the William W. George Chair and professor in the H. Milton Stewart School of Industrial and Systems Engineering (ISyE) and director of the Center for Health and Humanitarian Systems at the Georgia Institute of Technology. "Shelter-in-place (SIP) puts the brakes on the spread for some time, but if people go back to 'business as usual' after SIP, the significant impact is lost, so it needs to be followed up by voluntary quarantine and other physical distancing measures."

Utilising data from the state of Georgia, the study determined that a combination of non-pharmaceutical interventions, with various levels of compliance that change over time, could in some instances cut cumulative infections in half and reduce the peak number of infections to about a third of what could have been seen, "flattening the peak" to avoid overwhelming a state's healthcare system.

The study compared actual statistics to revised models of what could have happened in the state during the past seven and a half months without the physical distancing. As COVID-19 cases increase toward what may be a new peak this fall, the study could help public health officials evaluate the benefits of potential intervention strategies, for example, in the debate around K-12 school closure.

The study modelled the number of COVID-19 infections and resulting in severe outcomes, and the need for hospital capacity under social distancing, particularly, school closures, shelter-in-place, and voluntary quarantine.

"As one would expect, there is variation across the state in the observed data, which depends in large part on people's behaviours," said Nicoleta Serban, who is the Joseph C Mello chair and professor in ISyE. "For example, mobility increased faster in some counties compared to others, which is likely to be correlated with increased physical and social interactions, and therefore faster spread of the coronavirus."

The team, including Georgia Tech ISyE PhD students Buse Eylul Oruc and Arden Baxter, developed and used an agent-based simulation model to project the infection spread. "This is a sophisticated mathematical model which mimics what might happen in practice - under different scenarios - by capturing the progression of the disease in an individual, as well as the interactions between people in the household, in peer groups such as schools or workplaces, or in community groups such as grocery stores," Oruc said.

The model utilises parameters specific to COVID-19 and data from Georgia on population interactions and demographics. The study covered a period starting February 18, evaluating different social distancing scenarios, including baselines in which no intervention would have taken place or the only intervention would have been K-12 school closure, comparing them to combinations of shelter-in-place and voluntary quarantine with different timelines and compliance levels.

Outcomes were compared at the state and community level for the number and percentage of cumulative and daily new symptomatic and asymptomatic infections, hospitalisations, and deaths; COVID-19-related demand for hospital beds, ICU beds, and ventilators.

The number of hospitalizations in Georgia turned out to be fewer than models last spring had forecast, but "models accurately predicted which hospital regions of the state that would have the largest gaps between the number of people with severe outcomes and available care capacity - and therefore face potential shortages of ICU beds, hospital beds, and ventilators," Baxter said.

The results suggest that shelter-in place followed by voluntary quarantine reduced peak infections to less than a third of what we would have seen if no intervention had taken place and to less than a half if only schools had been closed. The models predicted correctly that the interventions would delay the peak from April to sometime between late July to mid-September, reducing the daily strain on health care systems.

According to the study, increasing shelter-in-place duration from four to five weeks yielded between 2 per cent to 9 per cent and 3 per cent to 11 per cent decrease in cumulative infection and deaths, respectively. Regardless of the shelter-in-place duration, increasing voluntary quarantine compliance decreased daily new infections and cumulative infections by about 50 per cent. The cumulative number of deaths ranged from 6,660 to 19,430 under different scenarios.

As infection rates rise in the United States during late October, the study could help public health officials select the best techniques for addressing the viral threat. Georgia's total population is approximately 10.5 million, and Covid-19 related deaths have exceeded 7,600.

"The study further highlighted and quantified the impact of how compliance with public health measures impact infectious disease spread," Keskinocak said. "The takeaway message is that each of us has the power to control our health by making the right choices."

"As individuals and as a nation, we often expect technological or medical fixes or cures to health problems, whereas many of these problems, whether they are at the individual level or the public health level, are caused by or exacerbated by our choices and behaviours," Keskinocak said. "For many of them, we don't need a new fancy device, drug, or technology to make things better. As individuals, or households, or communities, we have the power and the responsibility to impact and improve our own health, and the public health, by making healthy choices."

Cholesterol drugs

Cholesterol drugs linked to lower cancer-related deaths in women (New Kerala: 20201023)

<https://www.newkerala.com/news/2020/185542.htm>

Among women with breast cancer, colorectal cancer or melanoma, those who are taking cholesterol-lowering medications are less likely to die from cancer, researchers said.

The analysis, published in the British Journal of Clinical Pharmacology, included 20,046, 11,719 and 6,430 women in Australia who have been diagnosed with breast cancer, colorectal cancer and melanoma, respectively.

According to the researchers, the women had been prescribed cholesterol-lowering medications such as statins before their diagnosis.

The research team tested the hypothesis that adherence to this drug is associated with reduced cancer-specific mortality in a homogeneous population who had used this drug before cancer diagnosis.

The more consistently women took these medications in the year after being diagnosed with cancer, the lower their likelihood of dying from the disease, suggesting that the drugs may have anti-tumour effects.

The reductions in cancer-specific mortality were more pronounced for women who adhered to statins in all three cancers although not statistically significant for melanoma.

"If this inverse adherence-response relationship is confirmed, cholesterol-lowering medications -- primarily statins -- could be repurposed as adjuvant therapy to improve cancer prognosis," said study co-author Jia-Li Feng from the QIMR Berghofer Medical Research Institute in Australia.

Cholesterol drugs linked to lower cancer-related deaths in women