Coronavirus vaccine

When coronavirus vaccine will be available, at what price: Adar Poonawalla, CEO, Serum Institute of India, explains (The Tribune: 2020703)


“Thus far the AstraZeneca-Oxford vaccine has shown positive results in on-going trials, and has moved to Phase-III trials”

When coronavirus vaccine will be available, at what price: Adar Poonawalla, CEO, Serum Institute of India, explains

Adar Poonawalla, CEO of the Serum Institute of India

Interview by Sushil Manav

Covid-19, or SARS CoV-2, caused by coronavirus has thrown an unprecedented public health challenge before the world. With cases and deaths increasing by the day and no immediate solution in sight, people are eagerly looking forward to the much talked about ‘herd immunity’, which public health experts believe can save people from infection.

‘Herd immunity’ can be obtained in two ways: with a large number of population getting infected, which is fraught with the risk of a huge number of deaths, or by vaccination of people against the virus.

Though over a hundred vaccine candidates are in the field, ever since Serum Institute of India, the world’s largest vaccine manufacturer, has announced that the Covid-19 vaccine developed by the University of Oxford will hit the Indian markets by October this year, millions of people across the country are looking forward to this vaccine.
At the beginning of June, AzstraZeneca and Serum Institute of India (SII) had reached a licensing agreement to supply 1 billion doses of the Oxford University vaccine candidate against Covid-19 to middle and low-income countries, including India.

To begin with, by this yearend both companies had committed to provide 400 million doses.

The Tribune reporter Sushil Manav spoke to Adar Poonawalla, CEO of the Serum Institute of India, about the vaccine, its possible launch time, the results of trials so far, among other issues.

Excerpts:

Your company said last month that the vaccine will be available in the market by October. Are you still sure that people will get the first vaccine for coronavirus by October?

Based on the ongoing clinical trials, we are expecting the AstraZeneca-Oxford vaccine to be available towards the end of this year.

Some scientists have said that any coronavirus vaccine is at least a year away.

Usually it takes about 4-5 years to develop a vaccine. Currently there are more than 100 vaccine candidates at different stages of trials. Each will take their own time, and as I said, we are hoping that the AstraZeneca Oxford vaccine will be available towards the end of the year.

The Oxford University vaccine has completed Phase-I of human trials. When can we expect the results of those trials?

The AstraZeneca-Oxford vaccine has already progressed to the Phase-III trials stage, and based on the results we are expecting to mass produce the vaccine soon.

How sure are you about favourable results of Phase-I trials?

Thus far, the vaccine has shown positive results in the on-going trials. We are optimistic that it will be an efficacious and effective vaccine for Covid-19. We will conduct these trials in India as well.

What is the production capacity of the Serum institute of India? How many vaccines per month are to be produced in the coming months?

Our facility is well-equipped with state-of-the-art technology and is ready to manufacture the Covid-19 vaccine. We plan to start production in nearly two months and have invested more than $100 million in this facility to meet the demand.

In terms of the production of vaccines, we will start making a few million of doses, and stockpile at a personal risk. Furthermore, as per our deal with AstraZeneca, we will start making 1 billion doses for India and other low- and middle-income countries.

India has a vast population of 130 crore, and most would be in a hurry to be vaccinated. Would you be able to cater to the huge demand?

Over the past 50 years, SII has built significant capability in vaccine manufacturing and supply in India as well globally. We have partnered with various institutions to manufacture their
respective Covid-19 vaccine candidate. And in addition all our facilities are equipped with state-of-the-art technology to meet the vaccine's demand domestically and globally.

Oxford University said in April that the vaccine would be made available on a not-for-profit basis. Can we expect the cost of vaccines to be within the reach of common people?

It is too early to comment on the price of the vaccine at this point. Once the development of the vaccine commences, we will be able to take a decision in the coming months. However, we are certain that it will be affordable, and hopefully will be procured and distributed by governments without charge.

Another manufacturer, Bharat Biotech, has announced indigenous vaccines and is in the process of starting Phase-I trials. Will your vaccine come ahead of theirs?

International and national health authorities, and institutions across the world are coming together to develop a vaccine against Covid-19. While all of us are in a race against time, there is no contention amongst companies. Whosoever makes and develops the vaccine will need multiple partners to manufacture the vaccine. I hope that whichever company develops the vaccine does not hide behind patents and makes it available based on royalties or a commercial understanding to manufacturers across the world to make billions of dosages at a fast pace.

Do you think you have taken a risk by betting on an unproven vaccine?

Since, we are not a listed company, we are not accountable to investors in terms of profits and returns. So we took the decision to manufacture at our own personal risk.

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**Anti-Covid drug**

**Govt launches Drug Discovery Hackathon to develop anti-Covid drug (The Tribune: 2020703)**


Science and Technology Minister Harsh Vardhan and HRD Minister Ramesh Pokhriyal Nishank on Thursday launched the first of its kind national initiative to support drug discovery process for Covid-19.

The Drug Discovery Hackathon will be open to researchers from the areas of computer science, chemistry, pharmacy, medical sciences, basic sciences and biotechnology.

The three-phase hackathon consists of challenges posted as problem based on specific drug discovery topics which are open to the participants to solve. Government’s MyGov portal will be used for the challenge and any Indian student can participate along with professionals and researchers from across the world.
Track 1 launched on Thursday will deal with drug design. Track 2 will deal with designing and optimising new tools and algorithms which will have an impact on expediting the process of in-silico drug discovery and third track called “moon shot” allows for working on problems which are ‘out of the box’ in nature.

Harsh Vardhan said, “We need to establish the culture of computational drug discovery in our country. In this initiative, MHRD’s innovation cell and AICTE will focus on identifying potential drug molecules through the hackathon while CSIR will take these identified molecules forward for synthesis and laboratory testing for efficacy, toxicity, sensitivity and specificity.”

“The objective is to identify drug candidates against SARS-CoV-2 by in-silico drug discovery through the hackathon and follow up by chemical synthesis and biological testing,” he said.

The government said while it pursued clinical trials of few repurposed drugs for Covid-19 it was important to find other suitable repurposed drugs and specific new drugs against Covid-19.

K Vijay Raghavan, Principal Scientific Adviser to the government, and Chairman of the hackathon organising committee said that the challenge would help India establish a new model to expedite drug discovery process.

“It will have three phases of three months each and the whole exercise is projected to be completed by April-May 2021. At the end of each phase, successful teams will be rewarded. The lead compounds identified at the end of phase 3 will be taken forward for experimental level at CSIR and other interested organisations,” said Raghavan.

**COVID-19 antibody**

**Weak evidence for accuracy of COVID-19 antibody tests: Study (The Tribune: 2020703)**

Only four studies included outpatients and only two evaluated tests at the point of care

A review of studies has found major weaknesses in the evidence base for diagnostic accuracy of COVID-19 antibody tests, particularly for point-of-care tests performed directly with a patient, outside a laboratory, and does not support their continued use.

Serological tests to detect antibodies against COVID-19 could improve diagnosis and may be useful tools for monitoring levels of infection in a population, but it is important to formally evaluate whether there is sufficient evidence that they are accurate, the researchers said.

The study, published in The BMJ, set out to determine the diagnostic accuracy of antibody tests for COVID-19.

The researchers, including those from Harvard Medical School in the US and University of British Columbia, Canada, searched medical databases and preprint servers from January 1 to April 30, for studies measuring sensitivity and specificity of a COVID-19 antibody test compared with a control test.

Sensitivity measures the percentage of people who are correctly identified as having a disease, while specificity measures the percentage of people who are correctly identified as not having a disease, they said.

Of 40 eligible studies, most (70 per cent) were from China and the rest were from the UK, US, Denmark, Spain, Sweden, Japan and Germany.

The researchers noted that half of the studies were not peer reviewed and most were found to have a high or unclear risk of bias—problems in study design that can influence results.

Only four studies included outpatients and only two evaluated tests at the point of care, they said.
When sensitivity results for each study were pooled together, they ranged from 66 per cent to 97.8 per cent depending on the type of test method used, meaning that between 2.2 per cent and 34 per cent of patients with COVID-19 would be missed, according to the researchers.

Pooled specificities ranged from 96.6 to 99.7 per cent, depending on the test method used, meaning that between 3.4 per cent and 0.3 per cent of patients would be wrongly identified as having COVID-19, they said.

The study found that pooled sensitivities were consistently lower for the lateral flow immunoassay (LFIA) test compared with other test methods.

The LFIA test is the potential point-of-care method that is being considered for 'immunity passports.' The researchers explained that, if an LFIA test is applied to a population with a COVID-19 prevalence of 10 per cent, for every 1,000 people tested, 31 who never had COVID-19 will be incorrectly told they are immune, and 34 people who had the disease will be incorrectly told that they were never infected.

Pooled sensitivities were also lower with commercial test kits (65 per cent) compared with non-commercial kits (88.2 per cent) and in the first and second week after symptom onset compared with after the second week, they said.

The researchers point to some limitations, such as differences in study populations and the potential for missing studies.

However, study strengths include thorough search strategies and assessment of bias, they said.

"These observations indicate important weaknesses in the evidence on COVID-19 serological tests, particularly those being marketed as point-of-care tests," the researchers said.

"While the scientific community should be lauded for the pace at which novel serological tests have been developed, this review underscores the need for high quality clinical studies to evaluate these tools," they added. PTI

Sanitisers may contain lethal methanol

Punjab FDA finds 60% samples of various brands substandard (The Tribune: 2020703)

Forget protecting yourself from Covid-19, the hand sanitisers you use may contain nothing but a lethal chemical, methanol, known to cause life-threatening ailments in pregnant women, the elderly, alcoholics, individuals having poor-quality diet and persons on certain medication.

Punjab’s Food and Drug Administration (FDA) has found this during an analysis of over 60 sanitisers being sold in the state.

According to the FDA, the biggest shock came on Wednesday when, while testing samples gathered over the past two months, it was found that a popular sanitiser had 95 per cent methanol in it. Around 60 per cent of the samples didn’t comprise constituents as written on the wrapper. A majority contained lesser ethanol than mentioned. Several were found adulterated with water or other substances. Any hand sanitiser should contain 80 per cent ethanol or 75 per cent isopropyl alcohol, as per the WHO standards.

After the outbreak of Covid-19 in March, the state government had allowed distilleries to produce sanitisers.

Kahan Singh Pannu, FDA Commissioner, said most of the violations were of colour or lesser content. “Four samples contained methanol instead of ethanol. This falls in the category of adulteration and we have launched action against the violators,” said Pannu.

Methanol, also known as methyl alcohol, is a chemical with the formula CH3OH. It is a light, volatile, colourless, flammable liquid with a distinctive alcoholic odour similar to that of ethanol. It is a toxic alcohol used industrially as a solvent, pesticide and alternative fuel source.

The WHO has established that methanol is irritating to the eyes, skin and respiratory tract. Acute oral and inhalation exposures and, to a lesser extent, percutaneous (through skin) absorption of high concentrations of methanol have resulted in central nervous system depression, blindness, coma and death.
Plasma bank

Delhi gets country’s 1st plasma bank at ILBS to aid Covid fight
LAUNCHED: Those who donate blood often face weakness, but no such signs are seen in those who donate plasma, says Kejriwal (Hindustan Timers: 2020703)

https://epaper.hindustantimes.com/Home/ArticleView
New Delhi : Chief minister Arvind Kejriwal opened on Thursday the country’s first plasma bank at the Institute of Liver and Biliary Sciences (ILBS) in south Delhi’s Vasant Kunj. The bank has been set up to pool in plasma from people who recovered from Covid-19 so that moderately ill patients can have better access to therapy using it.

The CM laid out the criteria for donors and said the plan will be a success only if people who have recovered from Covid-19 turn up in big numbers to donate plasma since the rules possibly leave only a small proportion eligible.
“We have not got a vaccine for Corona yet. Till the time we do not get a vaccine, plasma therapy will prove to be helpful for the treatment of Covid-19 patients. People were finding it difficult to get plasma and the situation got quite chaotic in Delhi. We hope the situation will improve with the opening of this plasma bank,” he said.

Blood and plasma donations require specific matching of blood groups, which often makes the sourcing of plasma difficult at short notice. Plasma therapy, a technique that essentially involves delivering virus-fighting antibodies to a person fighting the infection to bolster their immune response, has been on at select hospitals in the capital since April 22.

The chief minister said the rules for donors is strict. “So, even as 59,992 people have recovered in Delhi from Covid-19 so far, the number of people who will actually be eligible to donate their plasma will be far lower. I request those who fit the required parameters to come and donate their plasma. Those who donate blood often face weakness, but no such signs are seen in those who donate plasma. So, people should not fear anything as there are no complications involved in this,” Kejriwal said.

The conditions include the following: The donor should be a person who tested positive for Covid-19 through a swab test; the person should not have had any Covid-19 symptoms for 14 days; and a donor will need to be between the age of 18 and 60.

“You cannot donate plasma if - your weight is less than 50 kg. Women who have ever been pregnant; you are diabetic on insulin; your blood pressure is more than 140 and diastolic less than 60 or more than 90. You cannot donate plasma if you have uncontrolled diabetes or hypertension with a change in medication in last 28 days, if you are a cancer survivor, or if you have chronic kidney/heart/lung or liver disease,” Kejriwal said.

The chief minister launched the helpline 1031 where people can call to get registered for plasma donation. Registration can also be done by sending a message on the WhatsApp number 8800007722 or through the government’s delhifightscorona.in website.

As per the CM, Covid patients in need of plasma should not register through these channels. For those seeking the therapy, no personal calls by the patients or his family to ILBS or the helpline number will be accepted, he said. According to protocol, the hospital that prescribed plasma therapy for a patient will have to contact ILBS hospital for plasma on behalf of the patient.

For recovered Covid-19 patients wanting to donate their plasma, the registration form has been kept simple where the age, gender, address and blood group of the person is asked for. Prospective donors are also asked to state when they tested positive.

People who register to be donors will be reached out to by doctors authorised by the Delhi government who will assess the person for whether they meet the conditions. Once cleared, they will need to come into ILBS for which the government will arrange transportation or reimburse costs if needed.

A confirmatory negative test, in case the donor never had a second test, will be carried out and the process at ILBS is expected to last 45 minutes to an hour.

When asked by reporters about opening more such banks, Kejriwal, during his visit to ILBS in the afternoon, said it would depend on the success of the first.

Dr Puneet Mishra, professor of community medicine at AIIMS said having a plasma bank would streamline the entire process of getting plasma for hospitals and families of patients. “Opening one centralised plasma bank is a good idea, but before opening more plasma banks,
the government should wait till the ICMR comes out with its final result of their plasma trials,” he said.

Covid-19:
Covid-19: What you need to know today (Hindustan Timers: 2020703)
https://epaper.hindustantimes.com/Home/ArticleView
We are getting better at saving the lives of those infected with the coronavirus disease. It’s either that, or the disease itself is becoming less virulent. That’s something that’s been known to happen to flu viruses particularly, although the Sars-CoV-2 virus, which causes Covid-19, has ended up proving everyone wrong about almost everything. Sure, it’s a flu virus, but it turns out that it affects the heart, kidney, liver, even the brain. It also emerges that at least some
of those who recovered after being ill enough to be hospitalised will bear the physical and psychological scars of their ordeal for months, perhaps years (and in some cases, forever).

Still, I digress.

The main point, and it’s a cheerful one to begin July with, is that the pandemic seems to be killing fewer people even as it continues to rage through the world.

According to the World Health Organization, every day in the week to July 1, saw at least 160,000 new cases of Covid-19 around the world. And 40% of all coronavirus cases until now were recorded in June. July may be no different. The first day of the month saw in excess of 215,000 new cases.

But the trend is different when it comes to deaths. Only 26% of all deaths from Covid-19 we have seen so far were recorded in June. That’s a statistic which is remarkable enough to be repeated another way — just around one in four people who succumbed to the coronavirus disease so far, around the world, died in June. Or, in still another way, around 380,000 of the 510,000 Covid-19 casualties so far were recorded before the beginning of June.

That’s entirely understandable: we now know more about the coronavirus disease, how it infects people, and how it affects, even kills them. And research has also pointed us in the direction of medicines that work. For instance, remdesivir appears to work on people with mild or moderate infections if given early on; dexamethasone on people with severe infections who are on oxygen support if given late; plasma therapy seems to work in some cases (and it should; the science is a proven one and very old) although more data on its efficacy is needed.

And so, even as the number of cases has increased, the number of deaths has dipped. The trend line of daily cases (global) and daily deaths (again, global) clearly indicates that. But there are riders. Countries may not be recording deaths accurately — either as a deliberate act or because their systems are shot. Many of the new cases in June, for instance, were in Latin America, and there have been reports that some of the countries in that region (notably Peru and Brazil) may be underreporting the number of deaths. The trend may still hold — after all, investigations by the New York Times and the Financial Times found that many western nations were also undercounting the number of dead, and many of those deaths date back to March, April and May — but it is always good to understand the caveats.

What about India?

Unfortunately, India continues to see no decline in the number of daily deaths, which has inched up steadily. The five-day average at the end of May 31 was 221, and the five-day average on June 30 was 421. In absolute terms, India recorded 65% of its cases and 68% of its deaths in June, although the second proportion is skewed by the 2,004 deaths the country recorded on June 16 when both Delhi and Maharashtra decided to reconcile their backlog of deaths. P.S: As always, much of this column has been possible because of the data collected, maintained, and analysed by HT’s Jamie Mullick. I’m 96 not out because he has been happy to run many singles.
Anxiety, anticipation

Anxiety, anticipation in rapid test centres across ‘red zones’ QUICK RESULTS: Tests take place in community halls, offer result in less than 30 mins (Hindustan Timers: 2020703)

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

The antigen tests were rolled out on June 18 in community halls, schools and banquet halls across the city. HT PHOTO

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New Delhi : It is largely quiet at the local community hall in Sarita Vihar’s Block A, one of Delhi’s 445 containment zones, as people queue up for a 30-minute test that will determine whether they picked up the Sars-Cov-2 virus. Outside, all businesses are shut and access to the neighbourhood of around 750 families is extremely restricted – as is the exit. In a sudden flutter of activity, officials in bodysuits gather around and ask people to spread out as a woman, in her mid-thirties, finds out she is positive, almost immediately breaks down.
The scene reflects the tense wait common to the hundreds of antigen testing centres around the capital, which have now become equally important as the web of dozens of diagnostic labs that together carry out tests for Covid-19.

The antigen tests, rolled out on June 18 in community halls, schools and banquet halls across the city, offer a result in less than 30 minutes, removing a significant bottleneck in what is the first of the three crucial steps to contain the epidemic: test, trace and isolate.

“We are encouraging people to get tested, and the response has been positive so far. We conduct around 100 Covid-19 tests every day, of which only three or four test positive,” a health department official, who asked not to be named, said outside the Delhi Development Authority (DDA) community hall in the area.

Pocket A houses around 750 families, all of whom are holed up in their DDA-built flats. The colony’s gates are blocked by Delhi Police barricades, cops stand guard outside while health workers keep a close watch on the streets inside the block. Essential service work and deliveries, such as groceries, are allowed only after application for passes are checked by the district magistrate. There were at least eight positives cases on the day the government issued the sealing order. Officials at the spot, who did not wish to be named, said there could be around 20 cases, many with mild or no symptoms.

“It smells like a hospital here,” said Rakesh, a civil defence volunteer deployed in the area to monitor the containment area.

The community hall, which earlier hosted bustling crowds for weddings and birthday parties, is now swarming with health officers in personal protective equipment (PPE) suits and sanitation workers who disinfect every inch of the main hall.

“They have asked me to wait for half an hour. It reminds me of our school days when we waited for the results after the exams. Only this time, it is more serious and the consequences could be fatal,” said Arjun K, a local resident. The collection of the sample – a health worker uses a cotton-tipped bud to swab the insides of the nose and the throat – takes a quick minute, but it takes another 20 for the stick-like kit to show whether the sample has the virus.

“I know I do not have the virus but I still came to take the test because ours is a containment zone. One may admit or may not admit it, but everyone here is scared,” said Gopal Singh, 35, while for his turn in what was quickly turning into a warm, humid hall as the sun rose higher in the hot afternoon.

The facility is centrally air-conditioned but officials have kept all doors and windows open in order to minimise the risk of indoor spread of the virus, which has been established to spread the air-conditioning flow.

According to government records, until June 26, of 99,274 people across Delhi surveyed using the rapid antigen method, 7,414 have tested positive, suggesting a positivity rate of 7.46% among them.

“The ICMR [Indian Council of Medical Research] has said the sensitivity of the antigen test is 50-80%. Suppose there are 100 positive cases, and if you apply gold standard tests then all 100 will test positive. But if you apply a test that has 80% sensitivity, that means it will be able to detect 80 such cases. There may be some false-negative cases. But on the positive side, you get results quickly,” said Dr Puneet Mishra, professor of community medicine at the All India Institute of Medical Sciences, New Delhi, welcoming the antigen testing campaign and urging as many people as possible to get tested.
“To some extent, this will help contain the virus. There is no harm in getting tested. The government is also doing it for free. But again, until there is a cure, people must maintain social distancing and wear masks,” he added.

Pawan Rohail, a civil defence volunteer says, says he has to take the test once a week. “We work in containment zones for almost 12 hours a day. I can understand what residents must be feeling because we take tests every week and go through the same nervousness. This nervousness has become routine now.”

People like him were previously involved in other civil assistance work. A fellow civil defence volunteer, Pankaj Kumar, was a marshal on DTC buses to ensure women’s safety. “In the morning we were helping officials ensure social distancing. Now I am back to showing the sanitation worker every inch of space that people had used in the morning. The virus could be anywhere. Our job is to kill it,” he said.

Modern Medicine (The Asian Age: 2020703)

Pregnancy

Women with high blood pressure during pregnancy may develop heart diseases later (New Kerala: 2020703)


According to an international team of researchers, women who experience high blood pressure during pregnancy are more likely to develop heart disease and heart failure in later life.

Between 1-6 per cent of all pregnancies in Western countries are affected by high blood pressure, which usually returns to normal after giving birth.
This condition is known as gestational hypertension, or pregnancy-induced hypertension. Clinicians increasingly recognise that women who have had gestational hypertension are more likely to develop cardiovascular disease in later life.

However, studies of different kinds of cardiovascular diseases, such as heart disease and heart failure, have found mixed results.

To examine these links further, an international team of researchers conducted a systematic review and meta-analysis of 21 studies involving a total of 3.6 million women, 128,000 of who previously had gestational hypertension.

This type of study is a way of combining data from all existing relevant studies, allowing researchers to compare and consolidate results from often-contradictory studies to reach more robust conclusions.

The results are published in the Journal of the American Heart Association.

The researchers found that women who experienced high blood pressure during their first pregnancy were at 45 per cent higher risk of overall cardiovascular disease and 46 per cent higher risk of coronary heart disease compared to women who did not have high blood pressure in pregnancy.

Women with one or more pregnancies affected by high blood pressure were at 81 per cent higher risk of cardiovascular disease, 83 per cent higher risk of coronary heart disease and 77 per cent higher risk of heart failure.

When we looked at all the available research, the answer was clear women who develop high blood pressure during pregnancy -- even when it doesn't develop into pre-eclampsia - are more likely to develop several different kinds of cardiovascular disease, said senior author Dr Clare Oliver-Williams from the Cardiovascular Epidemiology Unit, Department of Public Health and Primary Care, University of Cambridge.

The study adds to growing evidence of the relationship between pregnancy and subsequent risk of cardiovascular events. Recurrent miscarriages, preterm birth, fetal growth restriction and pre-eclampsia have all previously been linked with a greater risk of heart disease.

The researchers say it is not entirely clear why gestational hypertension is associated with heart disease in later life. However, they suggest it may be that high blood pressure in pregnancy causes lasting damage that contributes to cardiovascular disease.

Alternatively, women who develop gestational hypertension may have a pre-existing susceptibility to cardiovascular disease that is revealed due to the large demands that pregnancy places upon women's bodies.

Dr Oliver-Williams said It is important that women know that it is not their fault that they developed high blood pressure in pregnancy and developing heart disease is not a foregone conclusion. Women who have experienced gestational hypertension may have been dealt a tough hand, but it is how they play those cards that matters the most.
Small positive changes can really help. They can be as simple as eating more fruit and vegetables, small bouts of regular exercise and finding time to unwind, if that is possible with kids around, Dr Williams added.

**Sensory hearing cells**

**Researchers reveal simpler way to generate sensory hearing cells (New Kerala: 2020703)**


Washington D.C., July 2: A team of researchers is revealing the secrets of a simpler way to generate the sensory cells of the inner ear. Their approach uses direct reprogramming to produce sensory cells known as hair cells, due to their hair-like protrusions that sense sound waves.

Led by scientists from the USC Stem Cell laboratories of Neil Segil and Justin Ichida, the results of study were published in the journal eLife.

We've succeeded in directly reprogramming a variety of mouse cell types into what we're calling 'induced hair cell-like cells, or iHCs. This allows us to efficiently generate large numbers of iHCs to identify causes and treatments for hearing loss, said PhD student Louise Menendez, the study's lead author.

The scientists successfully reprogrammed three different types of mouse cells to become iHCs. The first two types were embryonic and adult versions of connective tissue cells, known as fibroblasts. The third was a different type of inner ear cell, known as a supporting cell.

To achieve reprogramming, the scientists exposed fibroblasts and supporting cells to a cocktail of four transcription factors, which are molecules that help convey the instructions encoded in DNA. The scientists identified this cocktail by testing various combinations of 16 transcription factors that were highly active in the hair cells of newborn mice.

The four key ingredients turned out to be the transcription factors Six1, Atoh1, Pou4f3, and Gfi1, said Menendez.

The resulting iHCs resembled naturally occurring hair cells in terms of their structure, electrophysiology, and genetic activity. The iHCs also possessed several other distinct characteristics of hair cells, including vulnerability to an antibiotic known to cause hearing loss.

Hair cells are easy to damage, and currently impossible to repair in humans, said Segil, a professor in the Department of Stem Cell Biology and Regenerative Medicine, and the USC
Tina and Rick Caruso Department of Otolaryngology - Head and Neck Surgery, and one of the corresponding authors of the study.

Aging, loud noises, and certain chemotherapy drugs and antibiotics can all lead to the permanent loss of hair cells, which is the leading contributor to hearing loss worldwide, Segil added.

iHCS have the potential to accelerate hearing loss research in at least two important ways, according to Ichida, who is the John Douglas French Alzheimer's Foundation Associate Professor of Stem Cell Biology and Regenerative Medicine at USC, and the other corresponding author of the study.

In the near term, researchers can use iHCS to screen large numbers of drug candidates that might prevent or treat hearing loss, said Ichida, who is also a New York Stem Cell Foundation-Robertson Investigator.

And further in the future, it could become possible to directly reprogram supporting cells in the inner ear of a deafened individual, as a way to restore hearing, added Ichida.

Yoga and physical Fitness

Exercise may help prevent vision loss: Study (New Kerala: 2020703)


Exercise may help prevent vision loss: Study

Exercise can slow down or prevent the development of macular degeneration and may also help reduce other common causes of vision loss, such as glaucoma and diabetic retinopathy, say researchers.

The study, published in the Investigative Ophthalmology iamp; Visual Science, found that exercise reduced the harmful overgrowth of blood vessels in the eyes of lab mice by up to 45 per cent.

This tangle of blood vessels is a key contributor to macular degeneration and several other eye diseases.

"That is basically the most sophisticated study that has been done. This study offers hard evidence from the lab for the very first time," said study researcher Bradley Gelfand from the University of Virginia in the US.

However, the research found that the bar for receiving the benefits from exercise was relatively low -- more exercise didn't mean more benefit.

"Mice are kind of like people in that they will do a spectrum of exercise. As long as they had a wheel and ran on it, there was a benefit. The benefit that they obtained is saturated at low levels of exercise," Gelfand said.
An initial test comparing mice that voluntarily exercised versus those that did not found that exercise reduced the blood vessel overgrowth by 45 per cent.

A second test, to confirm the findings, found a reduction of 32 per cent. The scientists aren't certain exactly how exercise is preventing the blood vessel overgrowth. There could be a variety of factors at play, they say, including increased blood flow to the eyes.

The researchers noted that the onset of vision loss is often associated with a decrease in exercise.

"It is fairly well known that as people's eyes and vision deteriorate, their tendency to engage in physical activity also goes down. It can be a challenging thing to study in older people," Gelfand said.

The researchers already have submitted grant proposals in hopes of obtaining funding to pursue their findings further.

"The next step is to look at how and why this happens, and to see if we can develop a pill or method that will give you the benefits of exercise without having to exercise," the authors wrote.

**WHO: Covid-19**


A senior official of the World Health Organization (WHO) has said that the global Covid-19 pandemic has hit the lives and livelihoods of the people, besides causing fear and depression in them.

"Besides hitting lives and livelihoods, the pandemic is causing fear, anxiety, depression and stress among the people. Social distancing, isolation and coping with perpetually evolving and changing information about the virus have both triggered and aggravated the existing and pre-existing mental health conditions, which need urgent attention," said Poonam Khetrapal Singh, Regional Director, WHO, South-East Asia Region.

According to a statement issued by the WHO, the South-East Asia region accounts for 39 per cent of the global suicide mortality figures.
Singh emphasised that as the Covid-19 pandemic is still accelerating and impacting people in multiple ways, it is essential for countries in the South-East Asia region to pay greater attention to mental health and suicide prevention.

Citing WHO South-East Asia Region's Suicide Prevention Strategy, Singh said that it is important to work towards providing comprehensive, integrated and responsive mental health and social-care services in community-based settings.

She insisted that the stigma associated with Covid-19 may also lead to feelings of isolation and depression. Citing the issue of domestic violence during the pandemic, Singh said that another precipitating factor impacting mental health amid Covid-19 could be domestic violence, which is reported to have increased during lockdowns in the region.

"Early identification of mental health conditions, recognition of suicidal behaviours and appropriate management through a multi-sectoral approach is important, even as we continue to focus on arresting further spread of the pandemic," said Singh.

According to the WHO, almost 800,000 lives are lost due to suicide every year globally, which is also a major cause of death among the young people aged between 15 and 29 years.

"Evidence shows that for each adult who dies of suicide, there are more than 20 others attempting suicide. The impact of suicide on families, friends and communities is devastating and far-reaching," said the WHO statement.

**Managing allergies during Covid-19**

**Managing allergies during Covid-19 (New Kerala: 2020703)**


In this unprecedented global crisis, health should be a top priority. With the onset of the monsoons and the rise in indoor pollution, allergies are on the rise - along with Covid-19 itself - and have a direct impact on body's respiratory system.

The common cold and flu is also rampant to add to the misery. It is necessary to understand seasonal allergies, its symptoms in order to distinguish them from the symptoms of the common cold, flu, and Covid-19. Even though there could be few similarities, there are distinguishing features that separates them. It is imperative to understand this in order to manage it and avail treatment options.

If you have bouts of sneezing, a runny and stuffed nose with watery and itchy eyes, then you are suffering from an allergy, Dr Sanjay Sachdeva Director, ENT for Head and Neck Surgery at Max Healthcare Limited, New Delhi told IANSlife.

"Fever, shortness of breath and cough defines the symptoms of Covid-19. In both cases, sore throat, fatigue and headaches are prevalent but look for the differentiating symptoms to
understand your ailment. Allergies can last up to months while a common cold or flu usually lasts for 7-14 days. Cough is a symptom of Allergy only if it is associated with Bronchial Asthma.

"Fever, body aches and pains are not signs of seasonal allergies. The key to managing allergies are prompt treatment. Even though you are not venturing out, online consultation and tele-medicine options are available. When the symptom appears, you must consult a doctor, prolonged delays can aggravate the situation leading to asthma, bronchitis and other respiratory diseases," the expert said over email.

Allergy Rhinitis is an inflammation of the nose as a result of one’s immune system overreacting to allergen. Being confined at home, indoor pollution due to prolonged exposure is impacting our system especially if the environment is air conditioned. Rugs, duvets, curtains, carpets contribute and so does dampness and moisture - more so in the monsoon. Excessive growth of molds on moist surfaces is also a common allergy trigger.

It is crucial to know your allergies and avoid these triggers, along with seeking medical intervention. Allergies can be managed and treated with right approach and educated early response.

Allergies in children

In children, allergies have a severe impact as they are more prone to and are highly susceptible due to a developing immune system. While allergic rhinitis shares symptoms with common cold, such as frequent or continuous sneezing, runny nose, itchy, watery eyes, and nasal congestion, it is important to consult your pediatrician to understand the differences. Allergies can impair cognition and psycho-motor development as well.

Identifying allergies and responding quickly to the symptoms will help improve your child's quality of life, reduce the number of missed school days and increase their activity levels. Take control of the situation and consult an allergist immediately when you observe such symptoms, says Dr Krishan Chugh, Director and HOD, Paediatrics and PICU at Fortis Memorial Research Institute, New Delhi.

We must remember that if not controlled at an early stage itself, stronger medicines may be required and those may not be safe to take during this Covid-19 pandemic.

The immune system of children is in the developmental stage, lungs are still developing, and their bodies are less able to metabolize and detoxify toxicants present in air pollution. Children inhale more air per unit of body weight than adults, hence the exposure to allergens is more in proportion to adults.

Exposure to air pollution can harm normal growth of lung function in the womb, during childhood and right up to the late teens. Recurrent allergic responses and exposure tend to have long-term physical, cognitive and psychological impact on children.

According to a new WHO report 'Air pollution and child health prescribing clean air', every day around a staggering 93 percent of the world's children below 15 breathe air that is so polluted it puts their health and development at serious risk.
Precautions to better manage allergies

Few precautions that need to be taken are keep indoors clean and dust free, identify causes of allergy, especially during seasonal changes, use clean cooking sources with exhaust systems and ensure children wear masks while outdoors. New-generation medicines and lifestyle management is a must to treat allergies and keep them in control. The right approach with lifestyle modifications and treatment is the key to manage your allergies especially during the pandemic.

**Brest feeding**

**Exercise increases benefits of breast milk for babies: Study (New Kerala: 2020703)**


Exercise increases benefits of breast milk for babies: Study

> Even moderate exercise during pregnancy increases a compound in breast milk that reduces a baby's lifelong risks of serious health issues such as diabetes, obesity and heart disease, say researchers.

> "We've done studies in the past that have shown that maternal exercise improves the health of offspring, but in this study, we wanted to begin to answer the question of why," said study lead author Kristin Stanford from Ohio State University in the US.

> "Because there is evidence that breast milk plays a major role, we wanted to isolate the effects of breast milk on offspring health," Stanford added. For the findings, published in the journal Nature Metabolism, the research team studied mice born from sedentary mothers and fed them milk from mothers who were active throughout pregnancy.

They found that the health benefits from fit moms transferred to the pups, proving that they were, in fact, passed through breast milk and not simply inherited genetic traits. Researchers also followed about 150 pregnant and postpartum women using activity trackers and found that those who had more steps per day had an increased amount of a compound known as 3SL in their breast milk, which they believe is responsible for these health benefits.

> "The increase in 3SL were not necessarily related to exercise intensity, so even moderate exercise like a daily walk is enough to reap the benefits," said Stanford. "Exercise is also great for your overall health during and after pregnancy, so anything you can do to get moving is going to benefit both you and your baby," Stanford added.

Because many women are unable to breastfeed or experienced complications that require bed rest, researchers are examining if they can isolate this beneficial compound found in the breast milk of active moms and add it to infant formula.
"This human milk oligosaccharide had a significant impact on offspring healthy. Being able to add this into formula could provide benefits for babies when women aren't able to breastfeed," Stanford noted.

Mental health

Doctor's Day: Tackling mental health while treating people amid pandemic (New Kerala: 2020703)

July 1: After over three months of being in the crosshairs of the Covid-19 pandemic, the crisis has become a definite test for one's mental health.

Treating COVID-19 patients at proximity, watching the disease claim the lives of people - it only takes a second of thought to realise how much doctors around the globe have put their own life in jeopardy and how the situation can take a toll on their mental health.

However, to understand more about how the doctors are coping with the situation in detail, ANI spoke to a few health care professionals who like many other experts are on working relentlessly to save people's life amid the pandemic.

Apart from seeking help from family and friends, Dr Gauri Aggarwal, Infertility and IVF Specialist, Founder of Seeds of Innocence and Genestrings Lab, ensures that she takes "small breaks in between and a stroll inside the corridor of the hospital" to unwind, while taking care to adhere to all public health protocols.

"Moreover, we have a highly motivated team. That is the one thing that makes these tough times enjoyable," Dr Aggarwal added.

COVID-19 has revealed situations that are unforeseen and unusual, even for doctors. Such exposure to new, yet vulnerable condition, that calls for a constant need to be aware of the latest medical advances and medical procedures are certainly adding to doctors' mental pressure.

"We get various patients with several other co-morbidities and we must be extra cautious when we prescribe medicines to them after considering all the health conditions. At times, it pushes us to our limits. Also, the highly infectious disease has made us revisit our working protocols - for example, deliveries continue even in the lockdown and we have to revamp our standard protocol to add safety measures. This was challenging initially - we are used to interacting with new mothers personally - now, our touch is layered in gloves, and our faces covered with PPE," Dr Aggarwal said.

Regardless of the workload, almost every day is stressful when it comes to keeping up with the latest medical updates, and also the job becomes tougher when the public are being careless and not following proper hygiene and social distancing protocols, said Dr. P Hanumantha Rao - Senior Consultant Orthopaedic, Apollo TeleHealth.
"I try to focus on doing things with care and detail, and that in itself helps deal with the stress. Indoor exercises like yoga and running on the treadmill help me improve my mood and sleep quality," Dr Rao said while explaining ways to tackle the mental pressure amid these trying times.

Dr Rao also tries to stay in touch with the family even during duty, as the doctor says, "making sure they are alright is something that helps me get through the day."

However, to maintain the "calm and composure" in front of patients, Dr Rao says he has to make conscious efforts.

"Letting them know you are stressed will make them more worried, which will, in turn, add to your stress. So that is something I consciously avoid," the doctor said.

Apart from the rising number of COVID cases, and the fear of contracting the disease, one another condition that adds to doctor's exhaustion is wearing the preventive requirements, including PPE kits and other necessary precautions, said Dr Gaurav Maheshwari, Chief Surgical Gastroenterologist, Paras Hospitals, Panchkula.

Doctors across the globe are voluntarily isolating themselves from their dear ones to avoid the danger of spreading coronavirus. However, Dr Gaurav Maheshwari says "isolation is difficult, but it is an essential practice. We must try to shield the vulnerable family members like the elderly and people with comorbidities."

Practising mind-calming exercises such as meditation, mindfulness, and yoga are some of the key measures Dr Maheshwari tries to adopt to avoid stress during such unprecedented times.

COVID-19 pandemic has kept the world in a tough, yet, required lesson about staying mindful of health and hygienic practices. Doctors, along with other frontline warriors are relentlessly serving the nation to put a halt to the spreading virus.

On National Doctor's Day (July 1), we are bound to honour every selfless doctor and extend our contribution to shifting the narrative by bringing more number of recovery rates during the pandemic.

**Blood test**

**Blood test can predict severity of Covid-19: Study (New Kerala: 2020703)**


Clinicians can examine Covid-19 patients' blood to identify those at greatest risk of severe illness and to pinpoint those most likely to need a ventilator, according to a new study.
The discovery could lead to new treatments to prevent deadly "cytokine storms" seen in severe cases of Covid-19. It also may help explain why diabetes contributes to worse outcomes in patients with the coronavirus.

The researchers from the University of Virginias (UVA) found that the levels of a particular cytokine in the blood upon diagnosis could be used to predict later outcomes.

Cytokines - proteins produced by immune cells - are responsible for severe overreactions by the immune system, known as cytokine storms, associated with Covid-19 and other serious illnesses.

"The immune response that we discovered to predict severe shortness of breath in Covid-19 is known in other pulmonary diseases to cause damage," said study researcher Bill Petri from the UVA.

"So this could lead to a novel way to prevent respiratory failure in individuals infected with the new coronavirus, by inhibiting this immune cytokine. We plan to test this in a model of Covid-19 prior to considering a clinical trial," Petri added.

For the findings, the research team identified 57 Covid-19 patients treated at UVA who ultimately required a ventilator.

They then tested blood samples taken from the patients within 48 hours of diagnosis or hospital admission.

The research team compared the results with those from patients who did not wind up needing a ventilator.

Cytokine storms, in which the immune system spirals out of control, are typically associated with an established group of cytokines.

But the best predictor of Covid-19 outcomes was an "underappreciated" cytokine more associated with allergies, the researchers reported.

High levels of that cytokine, IL-13, were associated with worsened Covid-19 outcomes regardless of patients' gender, age or other health problems.

The researchers also identified two more cytokines associated with severe outcomes, though the duo had less ability to predict the need for a ventilator.

In addition, the researchers found that levels of two other cytokines were significantly higher in patients with elevated blood sugar.

This "pro-inflammatory response," they said, may help explain why diabetes is associated with worse Covid-19 outcomes. In short, the body is primed to respond too strongly to the infection.

The researchers said the discovery could become part of a scoring system to let doctors flag at-risk COVID-19 patients for closer monitoring and personalized interventions.

The finding also identifies cytokines doctors could target as a new treatment approach
देश का पहला ज्वाला बैंक दिल्ली में शुरू । अप्रैल के माहमें अभी ज्वाला बैंक का चरण । ज्वाला बैंक के साथ हेतु भी केंद्र सरकार की राजनीतिक वैमानिक नीति के अंतर्गत यह लॉन्च किया जा सकता है।

पहले दिन दस लोगों के लिए ज्वाला दान किया गया।

ज्वाला बैंक के संस्थापक भावनेन्द्र जुड्डी के अनुसार, यह एक सरकारी उद्योग है। ज्वाला बैंक को सारी ज्वाले के लिए एक विविधतावादी वित्तीय प्लानिंग के साथ बनाए जाएगा। यह ज्वाला बैंक के लिए एक नए उद्योग के रूप में देश के साथ हेतु भी है।

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