



# DAILY NEWS BULLETIN

LEADING HEALTH, POPULATION AND FAMILY WELFARE STORIES OF THE DAY  
Monday 2020817

## Simple saliva test

### USFDA clears simple saliva test for faster detection of COVID-19(The Tribune: 2020817)

<https://www.tribuneindia.com/news/health/usfda-clears-simple-saliva-test-for-faster-detection-of-covid-19-127018>

'New saliva test would increase efficiency and avoid shortage of crucial test components like reagents'

USFDA clears simple saliva test for faster detection of COVID-19

The US health watchdog has authorised the emergency use of new and expensive saliva-based laboratory diagnostic test for COVID-19

The US health watchdog has authorised the emergency use of new and expensive saliva-based laboratory diagnostic test for COVID-19 that could be a game-changer in the diagnosis of the infection as it will enable rapid testing amongst more people easily.

Stephen Hahn, the Food and Drugs Administration Commissioner, said the new saliva test would increase efficiency and avoid shortage of crucial test components like reagents.

“Providing this type of flexibility for processing saliva samples to test for COVID-19 infection is groundbreaking in terms of efficiency and avoiding shortages of crucial test components like reagents,” he said in a statement.

The agency has previously authorised four other tests that use saliva for sampling, but these yielded varying results. Authorisation of the new test occurs amid ongoing disarray over COVID-19 testing.

The US has been plagued by an inconsistent strategy for detecting the virus, thanks in part to persistent shortages and the use of a variety of different tests that have sometimes yielded unreliable results.

The new method called SalivaDirect is being further validated as a test for asymptomatic individuals through a programme that tests players and staff from the National Basketball Association (NBA).

SalivaDirect is simpler, less expensive and less invasive than the traditional method for such testing known as nasopharyngeal (NP) swabbing.

Results so far have found that SalivaDirect is highly sensitive and yields similar outcomes as NP swabbing.

With the FDA's emergency use authorisation, the testing method is immediately available to other diagnostic laboratories that want to start using the new test, which can be scaled up quickly for use across the nation and, perhaps, beyond—in the coming weeks, researchers said.

A key component of SalivaDirect, the researchers note, is that the method has been validated with reagents and instruments from multiple vendors.

This flexibility enables continued testing if some vendors encounter supply chain issues as experienced early in the pandemic.

“This is a huge step forward to make testing more accessible,” said Chantal Vogels, a Yale postdoctoral fellow, who led the laboratory development and validation along with Doug Brackney, an adjunct assistant clinical professor.

“This started off as an idea in our lab soon after we found saliva to be a promising sample type of the detection of SARS-CoV-2, and now it has the potential to be used on a large scale to help protect public health. We are delighted to make this contribution to the fight against coronavirus,” he said.

Development of SalivaDirect as a means of rapidly expanding SARS-CoV-2 testing was spearheaded this spring by Nathan Grubaugh and Anne Wyllie, assistant professor and associate research scientist, respectively, at Yale School of Public Health.

After finding saliva to be a promising sample type for SARS-CoV-2 detection, they wanted to improve the method further.

“With saliva being quick and easy to collect, we realised it could be a game-changer in COVID-19 diagnostics,” said Wyllie.

With testing urgently needed, the Yale team was determined to decrease both testing times and costs, to make testing widely accessible.

“Wide-spread testing is critical for our control efforts. We simplified the test so that it only costs a couple of dollars for reagents and we expect that labs will only charge about USD 10 per sample. If cheap alternatives like SalivaDirect can be implemented across the country, we may finally get a handle on this pandemic, even before a vaccine,” said Grubaugh.

Grubaugh and Wyllie said that they are not seeking to commercialise the method rather want the simplified testing method to help those most in need.

Testing for SARS-CoV-2 has been a major stumbling block in the fight against the pandemic, with long delays and shortages of testing.

Some experts have said that up to 4 million tests are needed per day and SalivaDirect provides one pathway toward that goal, the researchers said.

“Using SalivaDirect, our lab can double our testing capacity,” said Professor Chen Liu, chair of Yale Pathology, who oversaw the clinical validation of the study.

Globally, coronavirus has infected 20,950,402 people while the disease has killed so far

## **Low-cost emergency ventilator**

### **Scientists invent low-cost emergency ventilator (The Tribune: 2020817)**

<https://www.tribuneindia.com/news/health/scientists-invent-low-cost-emergency-ventilator-127019>

Using standard parts that cost less than USD 400, scientists have developed an emergency ventilator

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Using standard parts that cost less than USD 400, scientists have developed an emergency ventilator which could be an affordable option when more sophisticated technology is not available, or in short supply, an invention that may help save the lives of those suffering from COVID-19.

While in the simplest ventilators, doctors squeeze a self-inflating bag by hand to pump air into the lungs, and high-end automated versions use complex electronics to control multiple parameters, the current innovation, described in a yet-to-be peer-reviewed study in medRxiv, is a cost-effective device with a mechanism that automatically squeezes the self-inflating bag.

"We wanted to build the simplest device that could be effective. Our acute shortage ventilator is exactly that, and we now want to get it into use as quickly as possible," said Martin Breidenbach, a co-author of the study from Stanford University in the US.

The researchers, including those from Stanford University in the US, said ventilators are lifesavers for those who can't breathe sufficiently on their own -- a common problem for those severely affected by COVID-19.

They explained that the device compresses oxygen-rich air and pushes it through tubes into a patient's lungs, expanding them, and helping take up oxygen, following which the lungs contract on their own, pushing the air back out.

The current innovation, according to the scientists, is based on a simple model, with the addition of a mechanism that automatically squeezes the self-inflating bag.

They said the system also incorporates modern, inexpensive electronic pressure sensors and microcomputers with sophisticated software that precisely controls the squeeze.

According to the study, the microcomputers also drive a small control panel, and operators can control the system with that or with a laptop computer.

While several groups across the world have developed low-cost emergency ventilators in recent months, the scientists believe their current invention stands out as a fancier version of the simplest ventilator design.

They said they could build the ventilator at a cost less than USD 400 per unit, compared to USD 20,000 or more for a professional-grade system with field support.

"These qualities should make the ventilator particularly helpful for mid- and low-income countries, where medical resources are scarce," said study co-author Michael Bressack from Stanford University.

While the team or the university does not produce or distribute the ventilator, the researchers said they are offering the technology at no cost to others who want to build the ventilator and deploy it after having obtained regulatory approvals. PTI

## **Mortality**

### **Weight between young adulthood, midlife linked to mortality (The Tribune: 2020817)**

<https://www.tribuneindia.com/news/health/weight-between-young-adulthood-midlife-linked-to-mortality-127011>

Researchers estimate that 12.4 per cent of early deaths in the US may be attributable to having a higher BMI at any point between early- and mid-adulthood.

Weight between young adulthood, midlife linked to mortality

Researchers estimate that 12.4 per cent of early deaths in the US may be attributable to having a higher BMI at any point between early- and mid-adulthood.

Changes in weight between young adulthood and midlife may have important consequences for a person's risk of early death, say researchers.

The study found that participants whose body mass index (BMIs) went from the obese range in early adulthood down to the overweight range in midlife halved their risk of dying during the study period, compared with individuals whose BMIs stayed in the obese range.

On the other hand, weight loss after midlife did not significantly reduce participants' risk of death, the study published in the journal, JAMA Network Open, reported.

The researchers estimate that 12.4 per cent of early deaths in the US may be attributable to having a higher BMI at any point between early- and mid-adulthood.

"The results indicate an important opportunity to improve population health through primary and secondary prevention of obesity, particularly at younger ages," said study author Andrew Stokes from Boston University School of Public Health (BUSPH) in the US.

The research team used data from 1998 through 2015 for 24,205 participants from the National Health and Nutrition Examination Survey. The participants were 40-74 years old when they entered the study, and the data included participants' BMI at age 25, 10 years before they entered the study, and when they entered the study.

The researchers then analysed the relationship between BMI change and the likelihood that a participant died over the course of the observed period, controlling for other factors such as participants' sex, past and current smoking, and education level. They found that study participant whose BMIs went from the obese range at age 25 down to the overweight range in midlife were 54 per cent less likely to have died than participants whose BMIs stayed in the obese range. Instead, these participants with an obese to overweight trajectory had a risk of death closer to that of participants whose BMIs had been in the overweight range all along.

The researchers estimated that 3.2 per cent of deaths in the study would have been avoided if everyone with a BMI in the obese range at age 25 had been able to bring their BMIs down to the overweight range by midlife.

The researchers did not find a similar reduction in risk of death for participants who lost weight later in their lives. They wrote that this may be because weight loss later in life is more likely to be tied to an ageing person's worsening health.

## **COVID-19 patients**

### **COVID-19 patients with underlying heart conditions at higher death risk, study confirms**

#### **Most patients experience only mild illness (The Tribune: 2020817)**

<https://www.tribuneindia.com/news/health/covid-19-patients-with-underlying-heart-conditions-at-higher-death-risk-study-confirms-126933>

COVID-19 patients with underlying heart conditions at higher death risk, study confirms  
Health workers collect swab samples of people for COVID-19 tests, at a dispensary in Patiala, ON Saturday, August 16, 2020. PTI

COVID-19 patients with underlying heart conditions or risk factors may develop cardiovascular complications while hospitalised, and are more likely to die from the novel coronavirus infection, according to a review of studies which could help clinicians identify individuals at higher risk.

While most patients with COVID-19 experience only mild illness, the review research published in the journal PLOS ONE, noted that the disease can generate severe pneumonia and lead to death in others.

According to the researchers from the Magna Graecia University of Catanzaro in Italy, it is crucial for clinicians working with cardiovascular patients to understand the clinical presentation and risk factors for COVID-19 infection in this group.

The findings, according to the researchers, strongly suggests that COVID-19 fatality is influenced by pre-existing heart conditions and/or cardiovascular risk factors.

In the current study, they analysed data from 21 published observational studies on a total of 77,317 hospitalised COVID-19 patients in Asia, Europe and the US.

At the time they were admitted to the hospital, the scientists found that 12.89 per cent of the patients had cardiovascular comorbidities, 36.08 per cent had hypertension, and 19.45 per cent had diabetes.

They said cardiovascular complications were documented during the hospital stay of 14.09 per cent of the COVID-19 patients.

The most common of these complications were irregular heartbeats with a significant numbers of patients also experiencing heart injury, the study noted.

When the scientists assessed the data, they also found that pre-existing cardiovascular comorbidities or risk factors were significant predictors of heart complications, but age and gender were not.

“These findings unveil additional prognostic elements that should be taken into account, in addition to age and gender, to influence the risk prognostication and clinical management of COVID-19 patients,” they noted.

“Cardiovascular complications are frequent among COVID-19 patients and might contribute to adverse clinical events and mortality,” the scientists wrote in the study. — PTI

## Obesity epidemic

### COVID-19 lockdowns may worsen obesity epidemic, say scientists (The Tribune: 2020817)

<https://www.tribuneindia.com/news/health/covid-19-lockdowns-may-worsen-obesity-epidemic-say-scientists-126405>

The scientists added that physical distancing also increases anxiety by limiting people's ability to socially interact

COVID-19 lockdowns may worsen obesity epidemic, say scientists  
Photo for representation only.

Lockdown measures enforced in many countries around the world to curb the COVID-19 pandemic may escalate emotional stress, economic anxiety, and increase the rates of obesity across the population, according to a research which calls for socioeconomic safety nets and community support networks to mitigate these effects.

According to the scientists, including those from the University of Copenhagen in Denmark, locking down society to combat COVID-19 creates psychosocial insecurity that may lead to obesity.

The review of studies, published in the journal Nature Reviews Endocrinology, noted that counter measures are needed to keep the public both metabolically healthy and safe from the coronavirus.

It said the rates of obesity may explode because of measures to limit the spread of COVID-19, adding that investment in obesity research will help inform counter strategies.

"We are concerned that policymakers do not fully understand how strategies such as lockdowns and business closures could fuel the rise of obesity - a chronic disease with severe health implications, but with few reliable treatment options," said study co-author Christoffer Clemmensen from the University of Copenhagen.

In the research, Clemmensen and his team outlined how COVID-19 containment strategies could increase rates of obesity.

They said people with limited economic resources are more likely to eat highly-processed and energy-rich food, which have been shown to stimulate appetite, potentially leading to them eating more calories than they need.

"It is likely that more people will turn to these forms of food, as more people lose their jobs and experience economic hardship," said study co-author Michael Bang Petersen from Aarhus University in Denmark.

The scientists added that physical distancing also increases anxiety by limiting people's ability to socially interact.

They said feelings of loneliness and isolation, combined with confinement within a home setting, can impact food behaviour, causing people to overeat.

This effect, according to the research, is compounded by lower levels of physical activity, as people are urged to work from home and venture out as little as possible.

"Given our review of the potential pathways, however, we expect an emphasis on socioeconomic safety nets and community support networks to be key," the scientists wrote in the study.

Thorkild I.A. Sorensen, another co-author of the study from the University of Copenhagen, said scientists still do not exactly understand how a person's mental health and economic status end up increasing the risk of one developing obesity.

"We know that there are links between obesity and a person's class and mental health, but we don't exactly understand how they make an impact," Sorensen said.

According to the researchers, more studies are needed to uncover the cause and effect behind this process.

But the scientists emphasised that physical distancing and the rising rates of unemployment could lead to increased rates of obesity.

## **Obesity epidemic**

### **COVID-19 lockdowns may worsen obesity epidemic, say scientists (The Tribune: 2020817)**

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## **New low-cost test can diagnose COVID-19**

### **New low-cost test can diagnose COVID-19 in just 20 minutes (The Tribune: 2020817)**

<https://www.tribuneindia.com/news/health/new-low-cost-test-can-diagnose-covid-19-in-just-20-minutes-126395>

The rapid molecular test is highly accurate and easy to use

New low-cost test can diagnose COVID-19 in just 20 minutes

Scientists have developed a new low-cost nasal swab test which can accurately diagnose the presence of SARS-CoV-2 virus that causes COVID-19 in just 20 minutes.

Scientists have developed a new low-cost nasal swab test which can accurately diagnose the presence of SARS-CoV-2 virus that causes COVID-19 in just 20 minutes.

The findings, published in the Journal of Medical Microbiology, show the test called N1-STOP-LAMP, is 100 per cent accurate in diagnosing samples containing SARS-CoV-2 at high loads.

The rapid molecular test is highly accurate and easy to use, making it a prime candidate for use in settings with limited testing capabilities, according to the researchers.

The method involves using a small portable machine, which can reliably detect SARS-CoV-2 from just one nasal swab, they said.

"In the race to control the COVID-19 pandemic, access to rapid, precision diagnostics is key," said Tim Stinear, a professor at the University of Melbourne in Australia.

"We have developed an alternative COVID-19 molecular test that can be readily deployed in settings where access to standard laboratory testing is limited or where ultra-rapid result turnaround times are needed," Stinear said.

This new test uses only one tube and involves only a single step, making it more efficient and lower cost than many of the current tests for SARS-CoV-2.

The N1-STOP-LAMP method was found to be 100 per cent accurate and correctly identified 87 per cent of tests as positive when used to assess 157 confirmed-positive samples.

The results were fast, with an average time-to-positive of 14 minutes for 93 of those clinical samples.

"We see this kind of technology having benefit in settings liked aged care facilities, or overseas laboratories with limited resources and equipment," Stinear said.

"The test requires a small shoebox-sized machine, as well as reagents, but everything is portable," he said.

The researchers noted that STOP-LAMP is what is referred to as a 'near care' test, and is not intended to replace the current gold standard PCR testing.

It's a robust diagnostic test for the specific and rapid detection of COVID-19, but it's important to note that it trades some detection sensitivity for speed and ease-of-use, they said. --PTI

## Vaccine plan

**India eyes global front runners in vaccine plan****KEY MEET TODAY: Expert committee will hold discussions with Indian pharma companies (Hindustan: 2020817)**

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

### PLANNING COUNTRY'S RESPONSE

The govt, which is developing a road map for providing a Covid-19 vaccine in India, is pinning its hopes on these candidates:

Candidate	Name	Vaccine type	Clinical Trial Phase
Oxford-AstraZeneca (UK)	AZD-1222	Non-replicating viral vector (viral gene is carried by another non-replicating virus – like a Trojan horse that tricks body into activating an immune response)	PHASE 3 CLINICAL TRIALS
Moderna-NIAID (US)	mRNA-1273	RNA (introduces viral genetic material that activates an immune response)	PHASE 3 CLINICAL TRIALS
ZydusCadila (India)	ZyCoV-D	DNA (introduces viral genetic material that activates an immune response in body)	PHASE 2 CLINICAL TRIALS
Bharat Biotech-ICMR (India)	COVAXIN	Inactivated (viral particles that have been inactivated, or made non-virulent, are introduced to the body to trigger immune response)	PHASE 1-2 CLINICAL TRIALS

\* Nine other development programmes including the ones in Germany and Israel are under close watch

**WHAT'S NEXT?**

- Members of an expert panel will hold a meeting with vaccine manufacturers today. These include SII, Bharat Biotech, Zydus Cadila
- The committee is likely to discuss procurement and pricing of the vaccine candidates that are in different phases of human trials

Covid-19 vaccines being developed by UK's Oxford-AstraZeneca and United States's Moderna-NIAID are the top candidates India is looking at for possible acquisition discussions,

senior government officials aware of the country's vaccine strategy said, adding that a group of experts spearheading the process will hold a crucial meeting on Monday with the heads of pharma firms involved in the development of some of the candidates.

The government will also closely track the progress of candidates being tested by the Hyderabad-based Bharat Biotech and Ahmedabad-based Zydus Cadila. Pune-based Serum Institute of India (SII) has struck a production and clinical trials deal with AstraZeneca for the AZD1222 vaccine, which has till now been tested in the most number of people among the close to 200 options across the world.

According to one of the officials, India is at present waiting for trial data for the Russian candidate, which last week became the first coronavirus vaccine to be approved in the world. "For now, we are looking at the Oxford-AstraZeneca vaccine, which is in co-production with Serum Institute of India for the Indian market, and the Moderna vaccine, which has also entered phase 3 trials," this person said, asking not to be identified.

Nine other vaccine development programmes — including ones in Germany and Israel — are also being looked at, this person added. These were part of discussions that were held at top government levels.

According to a second official, who too asked not to be named, the National Expert Group on Vaccine Administration will hold its second meeting on Monday and discuss with granular details of procurement processes and pricing with the heads of several pharma firms, including SII, Bharat Biotech and Zydus Cadila .

Headed by Niti Aayog's VK Paul and co-chaired by Union health secretary Rajesh Bhushan, the panel will meet at around 3.30pm, according to the health ministry's meeting notice that was seen by HT. Adar C Poonawalla, CEO of Serum Institute of India, Krishna Ella, MD of Bharat Biotech, and Pankaj R Patel, chairman of Zydus Cadila, have been invited for the meeting. The members of the panel include department of biotechnology secretary, Renu Swarup, director general, Indian Council of Medical Research, Dr Balram Bhargava and department of pharmaceuticals secretary, PD Vaghela.

At present, there are 29 vaccines in clinical trials – a multi-step process to establish safety and efficacy of a shot. There are 138 more that are in pre-clinical phases, which includes development and animal trials. The Covid-19 pandemic has infected 21.7 million people around the world in less than nine months since it first began spreading. At least 770,000 people have died.

The once-in-a-century outbreak has triggered a dash for vaccines, with the first of options expected by early or mid next year. The process usually takes 10-12 years.

According to the first official cited above, the government is closely following data emerging from these candidates. The Russian vaccine, Sputnik V, is in its second phase of trials but little is known about how it performed in the first phase, although Russian President Vladimir Putin said it was safe while announcing it had been approved.

According to an expert associated with trials of the Bharat Biotech vaccine candidate Covaxin, there is steady progress in all 12 sites where shots are being given to people. The All India Institute of Medical Sciences, Delhi, this week also started about six healthy volunteers on 2nd dose of the vaccine candidate. "There is no fixed time line as not all volunteers are given a shot in a single go. The doses are given in batches; once all the doses are administered then only we will be able to run blood tests and analyse the changes. The data analysis will take at least 2-3 weeks and I would say anything concrete can't be said before a month about the safety of the

vaccine candidate. However, there was no immediate adverse reaction observed,” said this person, asking not to be named.

Pharma major Zydus Cadila has also started phase 2 clinical trials to establish efficacy of its indigenously developed vaccine candidate, ZyCov-D. The phase 2 trial began on August 6. Results from the phase 1 trials are not in the public domain yet.

The first official also said that states have been told that vaccine will not be available in the next few months and they should focus on 3Ts—test, trace and treat – to rein in the outbreak and mitigate its spread. “There is no alternative to ramping up testing—as we have done in Delhi—quickly tracking people who have come in contact with the Covid positive patients and ensuring proper treatment for those who have tested positive,” this person said.

In his meeting on August 11 with 10 states that account for more than 80% of India’s active Covid cases, Prime Minister Narendra Modi asked them to follow the NCR model and increase daily testing rates. Delhi has tested 68,532 per million of its population thus far, the highest proportion in the country. India has tested 21,989 per million.

Dr Amita Jain, head, microbiology department, King George’s Medical University (KGMU), Lucknow, said: “A vaccine will be needed to check the disease spread but we don’t know when an effective vaccine be available for use even though all our efforts are being directed towards making it happen as soon as possible. A good vaccine is the most cost-effective way of preventing a disease.”

### **Covid-19:What you need to know today(Hindustan: 2020817)**

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

India’s cumulative coronavirus disease cases crossed the 2.5 million mark on Friday, and the death toll from the viral pandemic crossed 50,000 on Saturday. The number of daily deaths is nearing 1,000. India is adding the most cases a day in the world, but the US and Brazil, #2 and #3 in terms of daily new cases respectively, see more deaths (roughly 50-100 more a day) on average. Even if India’s cases and deaths grow at the same pace, the country will cross the 3 million-case mark early next week, perhaps even by Sunday; and the 100,000-deaths mark by late September or early October. India’s low case fatality rate relative to other countries, just around 2%, is a definite cause for cheer, but the loss of 50,000 lives is still worrying.

The Covid-19 pandemic is now in evidence across India — the peninsula, the hinterland, and the eastern parts of the country have all become hot spots for the disease that was once restricted to a few states, and a few urban clusters within those states. Even as progressive fatality rates come down — doctors in India, just like their peers everywhere, have become better at saving lives — and most infections remain mild (even asymptomatic), it is clear that the caseload across India will continue to rise.

India, much like the US and Brazil, has not been able to break the chain of infection. A 68-day lockdown may have helped flatten the peak and delay it (India is still to see its) even as the health care system readied itself for the onslaught, but it has not broken the chain.

India, the US and Brazil are uniquely similar because of their vast geographical size and population (India has the highest population by a bit and the US, the largest area, again by a bit). And this writer believes the three countries have not been able to control the number of cases partly (and it is a large part) because of how their people have reacted to masks.

Let there be no doubt — masks work. And let there be no doubt — research has shown that wearing masks does not reduce oxygen intake or affect breathing capability, even during exercise. These aren't my opinions — they are facts backed by science.

Yet, the US has a troubled relationship with masks, which have been weaponised by politicians in that country. They are still not mandatory in all parts of the country, and many people believe they have a right to not wear masks. The Trump administration, and the US President himself, have both not emphasised the need for masks adequately (and Trump is seen without one almost as often as he is seen with one).

Brazil's President Jair Bolsonaro, one of the few global leaders to be infected with the virus, has not been a vociferous supporter of masks either, and the relative disregard for rules in that country hasn't helped.

India is different. Prime Minister Narendra Modi has been punctilious about wearing a mask. This writer had an opportunity to observe him from close quarters at an event in Rashtrapati Bhavan on Saturday and his mask etiquette and discipline is exemplary. He was wearing the right kind of mask and wearing it the way it is meant to be.

Unfortunately, this hasn't trickled down. There are many people walking around (or cycling around) without masks (with masks under their chins) in every Indian city. They couldn't care less, or believe WhatsApp forwards about the dangers of wearing masks when exercising or about the superfluity of wearing masks in the great outdoors. There is almost no enforcement — the police clearly have better things to do than enforcing mask discipline. There is no point in trying to educate them because, one, it is a lost cause, and two, it defeats the whole purpose of reducing exposure to them and their exhalations (Survival rule 1 of the pandemic: never argue with a man, or a woman, who isn't wearing a mask).

This is unfortunate, because if everyone wore the right masks the right way, and all the time they are outside their homes, then the number of infections will start declining in a month — community transmission or no community transmission.

Recovery rate (The Asian Age: 2020817)

<http://onlinepaper.asianage.com/articledetailpage.aspx?id=15047138>

# Covid recovery rate in Delhi over 90%

*652 new cases registers in last 24 hours*

**AGE CORRESPONDENT**  
NEW DELHI, AUG. 16

The national capital's Covid-19 tally rose to 1,52,580 on Sunday with 652 fresh cases, while 1,310 people recuperated from the disease in the last 24 hours pushing the recovery rate in Delhi to more than 90 per cent, authorities said.

The death toll due to the disease has increased to 4,196 with eight

more fatalities in the last 24 hours. This was the second time in a week that the number of daily fatalities due to the viral infection has dropped below 10, the Delhi government's health bulletin stated.

On August 11, Delhi had recorded eight Covid-19 deaths, indicating a significant improvement in the pandemic situation in the city. The national capital recorded 14 deaths each on Wednesday and Thursday, 11 on Friday and 10 on Saturday.

The number of fresh cases recorded on Sunday was the lowest after July 27, when Delhi registered 613 cases. The number of recoveries on Sunday was also the highest since July 27, when 1,497 patients had recuperated from the disease.

Of the total Covid-19 cases recorded in the city so far 1,37,561 people have

## Noida: 79 new Covid-19 cases push tally to 6,486

**Noida, Aug. 16:** Uttar Pradesh's Gautam Buddha Nagar on Sunday recorded 79 new Covid-19 cases, pushing the district's case-load to 6,486, official data showed. So far, 43 people have died from the virus in the district. The number of active cases reached 873, up from 867 on Saturday and 826 on Friday, according to the data released by the UP health department for a 24-hour period.

The district currently ranks 14th in the state in terms of active cases, the data showed. Also, 72 more patients got discharged during the period. So far, 5,570 patients have recovered from Covid-19 in Gautam Buddha Nagar, the third highest among districts in UP after Lucknow (9,633) and Kanpur (5,798),

it showed. The district has so far recorded 43 deaths linked to coronavirus and the mortality rate among positive cases dropped to 0.66 per cent from 0.67 per cent on Saturday, according to official statistics.

The recovery rate of patients improved slightly to 85.87 per cent from 85.79 per cent on Saturday, as per the statistics.

The maximum active cases in the state are in Lucknow (7,628) followed by Kanpur Nagar (4,275), Gorakhpur (2,491), Varanasi (2,313), Allahabad (2,290), Bareilly (2,017), Ghaziabad (1,062), Saharanpur (993), Aligarh (971), Azamgarh (970), Ballia (936), Kushinagar (893), and Basti (914), according to the data.

— PTI

recovered or discharged putting the recovery rate at 90.15 per cent. There are 10,823 active cases of coronavirus infection and among them 5,762 are under home isolation.

As many as 3,024 RT PCR, CB NAAT and TrueNat tests, and 7,685 rapid-antigen tests were conducted in last 24 hours.

A total of 13,02,120 tests have been conducted till date that is 68,532 tests per million population, the health bulletin stated.

The case positivity rate in the last 24 hours stood at 6.08 per cent. In the last one week, the number of new infections has grown by less than one per cent everyday.

## Environmental Health (The Asian Age: 2020817)

<http://onlinepaper.asianage.com/articledetailpage.aspx?id=15047543>

ENVIRONMENT | THREAT

Global warming is emerging as a driver of infectious disease like malaria, dengue to Zika

# Climate change could expose new epidemics

Paris, Aug. 16: Long-dormant viruses brought back to life; the resurgence of deadly and disfiguring smallpox; a dengue or zika "season" in Europe.

These could be disaster movie storylines, but they are also serious and increasingly plausible scenarios of epidemics unleashed by global warming, scientists say.

The Covid-19 pandemic that has swept the globe and claimed over 7,600,000 lives so far almost certainly came from a wild bat, highlighting the danger of

humanity's constant encroachment on the planet's dwindling wild spaces.

But the expanding ecological footprint of our species could trigger epidemics in other ways too.

Climate change — already wreaking havoc with one degree Celsius of warming — is also emerging as a driver of infectious disease, whether by expanding the footprint of malaria- and dengue-carrying mosquitos, or defrosting prehistoric pathogens from the Siberian permafrost.

"In my darkest moments, I see a really horrible future for Homo sapiens because we are an animal, and when we extend our borders things will happen to us," said Birgitta Evngard, a researcher in clinical microbiology at Umea University in Sweden.

"Our biggest enemy is our own ignorance," she added. "Nature is full of microorganisms." Think of permafrost, a climate change time bomb spread across Russia, Canada and Alaska that contains three

times the carbon that has been emitted since the start of industrialisation.

Even if humanity manages to cap global warming at under two degrees Celsius, the cornerstone goal of the 2015 Paris Agreement, the permafrost area will decrease by a quarter by 2100, according to the UN's climate science panel, the IPCC. And then there are the permafrost's hidden treasures.

"Microorganisms can survive in frozen space for a long, long time," said

Vladimir Romanovsky, a professor of geophysics at the University of Alaska in Fairbanks.

As ground thaws, once-frozen soil particles, organic material and microorganisms that had been locked away for millennia are carried toward the surface by water flows, he explained.

"That's how thawing can spread these microorganisms into present day environments." There are already examples of ancient, long-frozen bugs coming to life. — AFP



Representational image

— AP

## Ayurveda centres administer treatments

## COVID-19 has changed how Ayurveda centres administer treatments (The Hindu: 2020817)

<https://www.thehindu.com/sci-tech/health/ayurveda-wellness-treatments-administered-with-precautions/article32344121.ece>

There are frequent enquiries about Ayurveda-based 'immunity boosters'  
There are frequent enquiries about Ayurveda-based 'immunity boosters'

Ayurveda centres are taking extra precautions even as they take in patients for mandatory wellness treatments during the Malayalam month of Karkidakam

Call to book an appointment at Kottakkal Arya Vaidya Sala, in Kochi, and the first questions is "Are you from a containment zone?" Although Kerala's Ayurvedic centres, which draw visitors from all over the world for their rejuvenating treatments, have finally reopened, there is nothing relaxed about their processes anymore.

With COVID-19 forcing all business that re-open to be constantly vigilant, a verbal confirmation is not enough. Now, a photo-id card, such as Aadhar card as proof of address too, is mandatory for those seeking Ayurveda treatments in Kerala. Appointments are based on questionnaires that seek detailed travel history and quarantine details, in keeping with Ministry of Ayush guidelines.

The Malayalam month of Karkidakam is important in the treatment calendar of Ayurveda centres. Traditionally this is the time – when the monsoon cools temperatures – for wellness and rejuvenation therapies. "Wellness treatment during Karkidakam has many benefits including immunity building and overall well being of mind and body. This is a good time as

this is when the season changes and hence ideal for such treatments,” says Dr. Rekha Varma, chief physician Nagarjuna Stree Ayurveda Centre, Tripunithura in Kochi.

If walk-ins were encouraged earlier, they are now restricted. “We are very strict now and insist on paperwork and all details. A photo id is proof of address, this way we know where patients are coming from – containment zones and hotspots too. We cannot take this situation lightly,” says Raju UP, Asst. Public Relations Manager of the Kottakkal Arya Vaidya Sala (Kochi). Kottakkal Arya Vaidya Sala does not have a Karkidakam-specific wellness regime as it offers year-round treatment for medical conditions too.

Coronavirus | CSIR moots ‘mega labs’ to boost COVID-19 testing (The Hindu: 2020817)

<https://www.thehindu.com/sci-tech/health/csir-moots-mega-labs-to-boost-covid-19-testing/article32337492.ece>

A health worker holds swab samples for COVID-19 Real-Time Polymerase Chain Reaction (RT-PCR) test, in Gurugram.

A health worker holds swab samples for COVID-19 Real-Time Polymerase Chain Reaction (RT-PCR) test, in Gurugram. | Photo Credit: PTI

CSIR plans to use advanced genome sequencing device.

To speed up testing as well as improve the accuracy of testing for coronavirus (COVID-19) positive cases, the Council of Scientific and Industrial Research (CSIR) is working on developing “mega labs” where large machines, called Next Generation Sequencing machines (NGS), which are also used for sequencing human genomes, will be repurposed to sequence 1,500-3,000 viral genomes at a go for detecting the SARS-CoV-2 novel coronavirus.

Used optimally and with appropriate modifications, these genome sequencing machines can substantially detect the possible presence of the virus even in several instances where the traditional RT-PCR (reverse transcription polymerase chain reaction) tests miss out on them. This is primarily because the RT-PCR test identifies the SARS-CoV-2 virus by exploring only specific sections of the virus whereas the genome method can read a bigger chunk of virus genome and thereby provide more certainty that the virus in question is indeed the particular coronavirus of interest.

Coronavirus | CSIR moots ‘mega labs’ to boost COVID-19 testing

More reliable

It can also trace the evolutionary history of the virus and track mutations more reliably. Unlike the RT-PCR that needs primers and probes — a key hurdle in operationalising such tests on a mass scale early on in the pandemic — the NGS does not need primers and probes, and only needs custom reagents. The CSIR has partnered with the U.S.-based Illumina, a company that specialises in the manufacture of NGS machines. Five such sequencers, costing ₹4 crore each, are currently available in India.

“From our pilot tests so far, we found that 99% of confirmed RT-PCR positive samples were identified so by the NGS method. More importantly, nearly half of the samples that the RT-PCR termed ‘inconclusive’ were identified as either positive and negative. So this can also be used as a confirmatory test,” said Sridhar Sivasubbu, senior Scientist at the CSIR-Institute of Genomics and Integrative Biology (IGIB) and among the leaders of the collaboration.

COVID-19: What are the different types of tests?

Researchers there have also published the results of their analysis on Monday, on bioRxiv, a preprint server where scientific results are up for public viewing. These have not been peer-reviewed.

Scaling up testing

Though India has tested 24 million samples so far, that only works out to about 17,000 per million. With about 7.5 lakh tests per day, the Indian Council of Medical Research (ICMR) says it aims to scale up testing to at least a million per day. NGS could help with that, said Dr. Sivasubbu, but would serve a larger purpose of continuous surveillance. “While RTPCR is 70%-80% accurate and antigen tests 50% so, it implies that there would be a sizeable population that is falsely negative. Regular surveillance of a large pool in, say industrial hubs, commercial establishments or places where an outbreak is likely would help catch new infections,” he said in a phone conversation.

CCMB finds cheaper, more effective RT-PCR method to test COVID-19 samples

Dr. Anurag Agrawal, Director, CSIR-IGIB, said that establishing “hubs” capable of whole genome sequencing would help track significant mutations in the virus and can be repurposed for any kind of outbreak, be they of viral or bacterial origin.

The NGS approach took 11 hours for sequencing 1,536 samples, and using methods such as “pooling”, where batches of samples are optimally chosen and analysed, a single run could be used to double the number of analysed samples. Last month, Prime Minister Narendra Modi announced the launch of three centres that would be able to sequence 10,000 samples a day, but these would be traditional RT-PCR units.

COVID-19 vaccines

Without proper data Russian COVID-19 vaccine’s efficacy, safety unknown: CCMB Chief (The Hindu: 2020817)

CSIR - Centre for Cellular & Molecular Biology (CCMB) Director Rakesh Mishra. File  
CSIR - Centre for Cellular & Molecular Biology (CCMB) Director Rakesh Mishra. File

Director of CCMB, Rakesh K Mishra said if people are “lucky” then the Russian vaccine will work

The efficacy and safety levels of the vaccine developed by Russia for treating COVID-19 patients is not predictable in the absence of data, a top official of the CSIR-Centre for Cellular and Molecular Biology said on Wednesday.

His remarks come in the backdrop of Russian President Vladimir Putin's announcement that his country has developed the world's first vaccine against coronavirus.

Director of CCMB, Rakesh K Mishra said if people are "lucky" then the Russian vaccine will work.

"Both efficacy and safety of the vaccine are still unknown. They haven't conducted proper trials, which is stage-III trials. That is when you get to know the efficacy, when it is tested on a large number of people and should wait for two months to see whether they get a viral infection or not. Doesn't look like they have carried out (large scale testings) because if you have done it, then show us the data. You cannot keep it confidential," Mr. Mishra told PTI.

He noted that the vaccine ought to be carefully evaluated before it goes to people and any country or company not releasing the data with respect to vaccine was bad.

"It (Russian vaccine) is not safe.. normally in any country this should not be allowed unless the vaccine goes to stage 1, 2 and 3 trials.

I think the Russian government passed a law recently, a couple of months back, that they have to fast track the vaccine preparation," the CCMB official said.

CCMB is India's premier research organisation centre.

Asked about the progress of vaccines being developed by Indian pharmaceutical companies, Mr. Mishra said the data pertaining to Stage-I and II are yet to be published and it is expected that they may come by the end of August or first half of September.

"I will not be surprised if this first stage and second stage results are encouraging, because many vaccines have passed it. The real test is in stage-III," he pointed out.

The first dose of the vaccine-Sputnik-V, developed by the Gamaleya National Research Center for Epidemiology and Microbiology of the Russian Healthcare Ministry was administered to Mr. Putin's daughter and she is stated to be 'feeling well.'

Mr. Putin has claimed that the vaccine has proven efficient during tests, offering a lasting immunity from the coronavirus.

Plasma therapy

<https://www.thehindu.com/sci-tech/health/no-benefit-of-plasma-therapy-in-reducing-covid-19-mortality-risk-says-aiims-trial-interim-analysis/article32286000.ece>

**AIIMS Director Dr Randeep Guleria told PTI on Thursday no clear mortality benefit of convalescent plasma therapy was seen during a trial conducted among 30 COVID-19 patients**  
**Convalescent plasma therapy did not show benefit in reducing mortality risk among COVID-19 patients, according to an interim analysis of a randomised controlled trial done at AIIMS here to assess the efficacy of this mode of treatment. (The Hindu: 2020817)**

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The therapy involves taking antibodies from the blood of a person who has recovered from COVID-19 and transfusing those into an active coronavirus infected patient to help kickstart the immune system to fight back the infection.

AIIMS Director Dr Randeep Guleria told PTI on Thursday no clear mortality benefit of convalescent plasma therapy was seen during a trial conducted among 30 COVID-19 patients.

During the trial, one group of patients was given convalescent plasma therapy along with the standard supportive treatment while the other group only received standard treatment. The number of fatalities recorded in both the groups was equal and there was not much clinical improvement in the condition of patients, he said.

“However, this is just an interim analysis and we need to do a more detailed evaluation to see if any sub-group may benefit from plasma therapy,” Dr Guleria said.

He also underlined that plasma has to be tested for its safety and should have sufficient antibody to be useful to COVID-19 patients.

The efficacy of convalescent plasma therapy in moderate to severe coronavirus-infected patients was discussed in the third National Clinical Grand Rounds (CGR) on COVID-19 held on Wednesday.

“Plasma is safe. As far as its efficacy is concerned, we do not have a green signal yet. So the clinical use has to be very judicious and within the ambit of national guidelines,” Dr Monish Soneja, additional professor in the Medicine department at AIIMS, said at the webinar.

Convalescent plasma therapy has been listed as an investigational therapy for off-label use in coronavirus infected patients because as of now there is no conclusive evidence for its efficacy, Dr. Soneja said.

About the initial findings of the randomised controlled trial, Soneja said, “Convalescent plasma is not a magic bullet.”

It may be used particularly in early moderate stage of the disease. There may be a subset of patients with certain characteristics who may benefit from plasma, he said, adding, “This is a work in progress as we do not know those characteristics.”

The findings highlight that relatives of the patients should not insist on plasma therapy until and unless the treating doctor considers the patient fit for it and where he may think that the mode of treatment would be beneficial, Dr Neeraj Nischal, associate Professor in the department of medicine at AIIMS, said.

He said even if the therapy has some role, then that is in the early stage of the disease. But for plasma therapy to be effective, plasma must contain a sufficient amount of neutralizing antibody against that infection, the doctor said.

“This therapy also carries risks such as inadvertent transfer of blood-borne infections and reactions to serum constituents, including immunological reactions such as serum sickness, that may worsen the clinical condition,” Dr. Nischal said.

According to the Clinical Management Protocols for COVID-19 issued by the Union Health Ministry, off-label convalescent plasma may be considered for COVID-19 patients with moderate disease who are not improving, which means oxygen requirement is progressively increasing, despite the use of steroids.

The use of off-label convalescent plasma for treating coronavirus patients in the moderate stage of the illness has been included under “investigational therapies“.

ABO compatibility and cross-matching of the donor plasma is a prerequisite while considering convalescent plasma, the health ministry has said.

The recipient should be closely monitored for several hours after transfusion for any adverse events and its use should be avoided in patients with immunoglobulin A deficiency or immunoglobulin allergy.

“The dose is variable ranging from 4 to 13 ml/kg — usually 200 ml. single dose given slowly over not less than two hours,” the Clinical Management Protocol stats.

## **Ovarian cancer**

### **Researchers explore connections between ovarian cancer and blood cells (New Kerala: 2020817)**

<https://www.newkerala.com/news/2020/145184.htm>

A team of researchers have collaborated to focus and attain a better understanding of the interaction among ovarian cancer tumours, blood vessels, and platelets.

They found that tumours break the blood vessel barriers so that they can communicate with the blood cells, such as platelets. When these tumours come into contact with platelets, they can then metastasize, or begin to spread to other sites in the body.

Dr Abhishek Jain, assistant professor in the Department of Biomedical Engineering and the Department of Medical Physiology in the College of Medicine, collaborated with researchers from the Departments of Gynecologic Oncology and Cancer Biology at MD Anderson Cancer Center for the research that was recently published in the journal *Blood Advances*.

Currently, researchers understand that platelets are one of the initiators of ovarian cancer metastasis but did not know what led to the introduction of the platelets to the tumour cells.

Instead of struggling to view this relationship in animal models, Jain's team brought a new solution to the table organ-on-a-chip research.

Organs-on-a-chip is microfluidic medical devices the size of a USB drive. The team designed on the OvCa-Chip to give researchers an easier window to view the biological processes between tumours and platelets.

In an interview with the International Society on Thrombosis and Hemostasis, Jain explained that "it basically is a microenvironment where ovarian tumour cells can be co-cultured along with their blood vessels, and then they can interact with blood cells. Once we learn about these interactions, we can then move forward to look into how drugs will impact these kinds of interactions."

Viewing the interaction between tumours and blood vessels on the OvCa-Chip led the researchers to an extraordinary result -- the tumour cells systematically broke down the endothelial cells, which are the barrier that lines the interior surface of blood vessels and prevents exterior interaction with blood cells. Once this barrier was gone, blood cells and platelets entered the tumour microenvironment and could be recruited for metastasis.

Harnessing this knowledge could change how clinicians approach ovarian cancer treatment, Jain said, suggesting that anti-vascular drugs could be considered along with anticancer treatments. A benefit of the organ-on-a-chip is that it can also test these novel drug treatments and drug combinations.

Another application of the chips could be diagnostics.

"You have to understand that these are chips that are living. They contain living cells. The advantage is that these are all actually human samples," Jain stated in the interview. "So what we think the future for this technology is, is perhaps we can advance it in the direction of personalized medicine where we could actually take stem cells from patients and other patient-derived cells and make this entire chip from a single patient."

## Depression

### **Social integration key to avert depression, says AIIMS doctor (New Kerala: 2020817)**

<https://www.newkerala.com/news/2020/145160.htm>

Social integration and a close-knit society can play a crucial role in bringing down the number of suicides linked to depression across the country, with the current pandemic having aggravated the situation to a point where many would have found it difficult to cope with the malady, says an expert.

"Social integration is the key to avert depression and bring down cases of suicide. As a caring society, we must make sure that no social stigma is attached to persons with mental illness. The family and friends can play a crucial role in positively dealing with a person suffering from depression or other mental ailments," said Dr Rajesh Sagar, Professor of Psychiatry at AIIMS.

The spurt in suicide incidents at AIIMS in the past two months has also become a cause for concern not just for the AIIMS administration but also for the Health Ministry. In most of the suicide cases AIIMS had seen in the last two months, depression was the main cause.

At least six persons, including three doctors, have ended their life either in the hospital premises or at their hostel or home in Delhi.

The most recent case was reported from south Delhi, where a 40-year-old doctor posted in the Paediatrics Department was found hanging at his residence on August 14. Identified as Dr. Mohit Singhla, he left a suicide note in which he did not blame anyone for his death but said "it is not necessary to live 60 or 70 years of life", indicating he suffered from depression. He resided alone in his rented accommodation for the past many years.

So can early diagnosis of the mental ailment help the person to cope with stress and depression?

"Yes, early diagnosis of the problem and the treatment thereafter can certainly help the patients recover effectively. Most patients discontinue the treatment which often results in deteriorating condition. Loneliness is also one of the major causes for a person to fall in depression," Sagar said.

On July 10, a 25-year-old junior doctor at AIIMS committed suicide by jumping off the 10th floor of the hospital building. According to sources, the doctor was suffering from depression.

On August 10, a second-year medical student committed suicide by jumped off the roof of his hostel inside the AIIMS campus.

On June 5, a 22-year-old man was found hanging from the railing of the second-floor staircase at AIIMS. He too was suspected to be suffering from depression.

On July 6, a 37-year-old journalist, who was undergoing treatment for Covid-19 at AIIMS Delhi, had jumped off the fourth floor of the hospital.

On July 17, a 32-year-old man was found dead in the bathroom of the hospital's emergency wing. A resident of Satna in Madhya Pradesh, he had come to the hospital for a follow-up on his intestinal surgery conducted last year.

Close to 8,00,000 people commit suicide every year around the world. For each suicide, there are more than 20 suicide attempts. Suicides and suicide attempts have a ripple effect that impacts on families, friends, colleagues, communities and societies, said Sagar, saying suicides are preventable and much can be done at the individual, community and national level to prevent them.

## **Osmotic therapy device**

### **Researchers suggest osmotic therapy device for spinal cord injuries (New Kerala: 2020817)**

<https://www.newkerala.com/news/2020/145137.htm>

A team of researchers has found an osmotic therapy device that helps in gently removing the fluid from the spinal cord to reduce swelling after an injury.

Published in *Frontiers in Bioengineering and Biotechnology*, a group led by Marlan and Rosemary Bourns College of Engineering Jacques S. Yeager, Sr. Professor of Bioengineering Victor G. J. Rodgers and UCR School of Medicine biomedical sciences professor Devin Binder have described the new device, which can eventually be scaled up for testing in humans. The testing was now done on rats and has shown good results.

The device consists of a tangential flow module supporting a semipermeable membrane connected to a hydrogel that rests on the exposed spinal cord. Artificial cerebrospinal fluid containing the protein albumin to initiate osmosis passes across the device side of the membrane, transporting water molecules from the spinal cord.

Both fluids drain into a small chamber and cycle again through the device to remove more water. The amount of water removed is small compared to the amount of osmolyte, allowing for recirculation.

The authors have found in previous studies that relatively small increases in the percent of water content can cause significant swelling in the brain. These experiments showed that the osmotic therapy device removed enough water to prevent brain swelling and was capable of removing even more. They also found that removing the excess water quickly enough in brain swelling improved neurological outcomes. This is a key hope for the spinal cord device as well.

The team plans to continue improving the device through longer experiments on rats before eventually moving on to human trials.

Together with biomedical sciences professor Byron Ford, Rodgers is developing a similar device that drains fluid directly from the brain and introduces neuregulin-1, a molecule produced naturally by the body to regulate communication between cells in the brain and heart and promote their growth, to improve treatment and reduce the damage of severe strokes.

## **Immune system**

### **Virus uses decoy strategy to evade immune system: Study (New Kerala: 2020817)**

<https://www.newkerala.com/news/2020/145118.htm>

New Zealand scientists have discovered more about how viruses operate and can evade the immune system.

According to the study, published in the journal mBio, the research team is now using their discovery to help learn more about Covid-19. The recent study specifically looked at the *Oryctes rhinoceros nudivirus* (OrNV) virus, an important biocontrol agent against the coconut rhinoceros beetle, a devastating pest for coconut and oil palm trees in Southeast Asia and the Pacific Islands.

The researchers found the virus used a "decoy" strategy to evade the immune system and explained that these findings are a small step in the bid to better understand infectious disease.

"We have used the same technique to investigate changes in cells infected with SARS-CoV-2 and are continuing work in this area," said study author Dr Mihnea Bostina from the University of Otago.

The research team used electron microscopy to investigate cellular changes occurring during nudivirus infection and found a unique mechanism for how the virus works. The study revealed that the virus acquires a membrane inside the nucleus of the infected cell and it gets fully equipped to infect new cells at this precise location.

According to the researchers, this is in contrast with other enveloped viruses - like coronavirus, which is also an enveloped virus - which derive their membranes from other cellular compartments.

"After it gets fully assembled, the virus uses a clever tactic of passing through different environments, packed inside various membrane structures until it gets released at the cellular membrane," Bostina said.

Study researcher Sai Velamoor said that this strategy implies that many of the viruses released by the infected cells will be enclosed in a cellular membrane while travelling inside the infected organism.

"This means they will be missed by the immune system and they can use this membrane decoy to penetrate any other type of cells, without the need of a virus-specific receptor," she said.

"It shows for the very first time a clever strategy available to insect viruses. It will be interesting to find in what measure other types of viruses - like the ones infecting humans - are also capable of carrying out a similar process," Velamoor added.

The research demonstrates another manner in which viruses are capable of hijacking infected cells and alerts scientists to the novel mechanism of viral transmission.

"Viruses will never cease to amaze us with their indefatigable arsenal of tricks. Only by studying them can we be prepared to adequately respond when they infect us," the study authors wrote.

## **Injection technique**

### **Researchers develop cell injection technique to help reverse vision loss**

<https://www.newkerala.com/news/2020/145109.htm>

A new method has been developed by a team of researchers for injecting healthy cells into vision loss. The technique could point the way toward new treatments with the potential to reverse forms of vision loss that are currently incurable.

The study led by the University of Toronto Engineering researchers has been published in the journal Biomaterials.

Around the world, millions of people living with vision loss due to conditions such as age-related macular degeneration (AMD) or retinitis pigmentosa. Both are caused by the death of cells in the retina, at the back of the eye.

"The cells that are responsible for vision are the photoreceptors, which have an intimate relationship with another type of cell known as retinal pigmented epithelium (RPE) cells," says Professor Molly Shoichet. "In AMD, the RPE die first, and this then causes the photoreceptors to die."

Many researchers have experimented with treatments based on injecting healthy photoreceptors or RPE cells into the eye to replace the dead cells. But integrating the new cells into the existing tissue is a major challenge, and most injected cells end up dying as well.

Shoichet and her team are experts in using engineered biomaterials known as hydrogels to promote the survival of newly injected cells after transplantation. The hydrogels ensure an even distribution of cells, reduce inflammation, and promote tissue healing in the critical early days post-injection. Eventually, they degrade naturally, leaving the healthy cells behind.

In 2015, the team used hydrogels to inject healthy photoreceptor cells into damaged retinas in a mouse model. While the team observed some vision repair, the benefits were limited, so they began to think more carefully about the relationships between RPE cells and photoreceptors.

"RPE and photoreceptors are considered as one functional unit -- if one cell type dies, then the other one will too," says Shoichet. "We wondered if co-delivery of both cell types would have a bigger impact on vision restoration."

As with photoreceptors, many groups had tried implanting RPE cells on their own, but nobody had ever integrated both cell types into a single treatment. Once again, the hydrogels pointed to a solution.

"What other groups have typically done is either inject photoreceptors in a saline solution, which often results in cells clustering together or surgically implant a layer of RPE cells usually grown on a polymer film," says Shoichet.

"Our hydrogel is viscous enough to ensure a good distribution of both cell types in the syringe, yet it also has important shear-thinning properties to facilitate injection through the very fine needle required for this operation," adds Shoichet. "The combination of these properties opened up a new strategy for the successful delivery of multiple cells."

The team tested co-injection in a degenerative mouse model resembling AMD. In a paper recently published in the journal *Biomaterials*, they report that mice who received the co-injection regained about 10 per cent of their normal visual acuity. Those who received either cell type on its own showed little to no improvement.

Co-injected mice were also more active in dark chambers than light ones, showing that these nocturnal animals could once again distinguish light and shadow.

"I still remember the long days of behavioural testing," says Nick Mitrousis, Shoichet's former Ph.D. student and lead author of the paper, now a postdoctoral fellow at the University of Chicago.

"We designed the experiment so that I wouldn't know which mice had received the treatment and which received a placebo. When some of the mice started responding, I kept vacillating between optimism that the experiment might have actually worked, and worry that the recovering mice might just be split between the different treatment groups."

The worries were unfounded it turned out that the co-injection treatment really had an effect. But both Mitrousis and Shoichet caution that there is a very long road between these preliminary results and a trial that could eventually find its way into the clinic.

"First, we need to demonstrate the benefit of this strategy in multiple animal models," says Shoichet. "We'll also need a source of human photoreceptor cells and a way to further improve cell survival, both of which we're working on. Still, we are very excited by these data and always open to collaboration to take the research further."

## **Meditation-relaxation therapy**

### **Study suggests meditation-relaxation therapy to treat sleep paralysis (New Kerala: 2020817)**

<https://www.newkerala.com/news/2020/145042.htm>

Study suggests meditation-relaxation therapy to treat sleep paralysis  
Cambridge [United Kingdom], August 16: A pilot study suggests that sleep paralysis can possibly be treated with a unique combination of meditation-relaxation.

Sleep paralysis is a condition thought to explain a number of mysterious experiences including alleged cases of alien abduction and demonic night-time visits.

The study was published in the journal *Frontiers in Neurology*.

Sleep paralysis is a state involving paralysis of the skeletal muscles that occurs at the onset of sleep or just before waking. While temporarily immobilised, the individual is acutely aware of their surroundings. People who experience the phenomenon often report being terrorised by dangerous bedroom intruders, often reaching for supernatural explanations such as ghosts, demons and even alien abduction. Unsurprisingly, it can be a terrifying experience.

As many as one in five people experiences sleep paralysis, which may be triggered by sleep deprivation, and is more frequent in psychiatric conditions like post-traumatic stress disorder. It is also common in narcolepsy, a sleep disorder involving excessive daytime sleepiness and sudden loss of muscle control. Despite the condition being known about for some time, to date, there are no empirically-based treatments or published clinical trials for the condition. A team of researchers report a pilot study of meditation-relaxation therapy involving 10 patients with narcolepsy, all of whom experience sleep paralysis.

The therapy was originally developed by Dr Baland Jalal from the Department of Psychiatry, University of Cambridge. The current study was led by Dr Jalal and conducted in collaboration with Dr Giuseppe Plazzi's group at the Department of Biomedical and Neuromotor Sciences, University of Bologna/IRCCS Istituto delle Scienze Neurologiche di Bologna, Italy.

The therapy teaches patients to follow four steps during an episode

1. Reappraisal of the meaning of the attack - reminding themselves that the experience is common, benign, and temporary and that the hallucinations are a typical by-product of dreaming
2. Psychological and emotional distancing - reminding themselves that there is no reason to be afraid or worried and that fear and worry will only make the episode worse
3. Inward focused-attention meditation - focusing their attention inward on an emotionally-involving, positive object (such as a memory of a loved one or event, a hymn/prayer, God)
4. Muscle relaxation - relaxing their muscles, avoiding controlling their breathing and under no circumstances attempting to move.

Participants were instructed to keep a daily journal for four weeks to assess sleep paralysis occurrence, duration and emotions. Overall, among the 10 patients, two-thirds of cases (66%) reported hallucinations, often upon awakening from sleep (51%), and less frequently upon falling asleep (14%) as rated during the first four weeks.

After the four weeks, six participants completed mood/anxiety questionnaires and were taught the therapy techniques and instructed to rehearse these during ordinary wakefulness, twice a week for 15 min. The treatment lasted eight weeks.

In the first four weeks of the study, participants in the meditation-relaxation group experienced sleep paralysis on average 14 times over 11 days. The reported disturbance caused by their sleep paralysis hallucinations was 7.3 (rated on a ten-point scale with higher scores indicating greater severity). In the final month of the therapy, the number of days with sleep paralysis fell to 5.5 (down 50%) and the total number of episodes fell to 6.5 (down 54%). There was also a notable tendency towards reductions in the disturbance caused by hallucinations with ratings dropping from 7.3 to 4.8.

A control group of four participants followed the same procedure, except participants engaged in deep breathing instead of the therapy - taking slow deep breaths, while repeatedly counting from one to ten. In the control group, the number of days with sleep paralysis (4.3 per month at the start) was unchanged, as well as their total number of episodes (4.5 per month initially). The disturbance caused by hallucinations was likewise unchanged (rated 4 during the first four weeks). "Although our study only involved a small number of patients, we can be cautiously optimistic of its success," said Dr Jalal. "Meditation-relaxation therapy led to a dramatic fall in the number of times patients experienced sleep paralysis, and when they did, they tended to find the notoriously terrorising hallucinations less disturbing. Experiencing less of something as disturbing as sleep paralysis is a step in the right direction."

If the researchers are able to replicate their findings in a larger number of people - including those from the general population, not affected by narcolepsy - then this could offer a relatively simple treatment that could be delivered online or via a smartphone to help patients cope with the condition. "I know first-hand how terrifying sleep paralysis can be, having experienced it many times myself," said Dr Jalal. "But for some people, the fear that it can instil in them can be extremely unpleasant, and going to bed, which should be a relaxing experience, can become fraught with terror. This is what motivated me to devise this intervention."

## **Cancer cells**

### **Study focuses on genes that help cancer cells to penetrate brain (New Kerala: 2020817)**

<https://www.newkerala.com/news/2020/145035.htm>

ANI | 17 hours ago

Moscow [Russia], Aug 16: An international team of researchers reviewed scientific articles on proteins (and genes encoding them) that help cancer cells enter the brain. The study, that tried to understand the processes that facilitate the formation of metastases in the brain, was published in the journal Trends in Cancer.

Brain tissues are very sensitive to changes in the levels of many substances and to the penetration of microorganisms and immune cells, but they need a large number of nutrients and oxygen. Satisfying the needs of the brain requires a dense network of thin blood vessels, covered with a special shell that lets in essential substances and blocks all other compounds and cells.

This shell, consisting of adjacent endothelial cells tightly connected to each other by special proteins, forms the blood-brain barrier (BBB), which prevents the free exchange of substances between blood vessels and brain tissues.

BBB works very well (letting in less than 2 per cent of the molecules), but it is still not perfect cancer cells sometimes manage to slip through it and trigger the development of metastases; since many drugs cannot get into the brain, this significantly complicates cancer treatment and worsens the prognosis for patients with metastases. The authors of the article decided to find out which genes give cancer cells such a 'superpower'. Metastasis formation is controlled by proteins and genes encoding these proteins. The purpose of this work was to systematise experimentally or clinically proven findings of the proteins and microRNAs that allow migration of tumour cells to the brain. It turned out that their production is typical for a number of metastases, while most of the cell molecules described in the literature are unique for a particular type of tumour.

Thus, the possibility of regulating genes that stimulate the migration of tumour cells to the brain may be a challenge faced by doctors in reducing the formation of intracerebral metastases in the future,' said Ilya Ulasov, one of the authors, a leading researcher at the Institute of Regenerative Medicine, Sechenov University.

Tumour cells are known to enter the brain both through dense contacts between the cells of the tunicae (layers of the blood vessels) and through these cells themselves. In the first case, cancer cells use enzymes and/or microRNAs to disrupt the structure of the dense contacts and increase the permeability of the BBB. One of these enzymes is cathepsin C it destroys the proteins of the dense contacts, and its inhibitors (substances that slow down its action) can suppress the growth of metastases in breast cancer. Two other enzymes - seprase and urokinase-type plasminogen activator - have shown similar effects in melanoma, and some metalloproteinases may be possible targets for anti-cancer therapy. Another protein, placental growth factor, triggers a chain of reactions to facilitate the development of metastases in lung, gastric or colorectal cancer.

MicroRNAs enable communication between cancer cells and their environment, including BBB cells and proteins. For example, miR-105 affects ZO-1 protein, contributing to the formation of metastases in breast cancer, while miR-143-3p can enhance BBB permeability in lung cancer.

The second way - penetration of cancer cells through BBB cells - is possible due to proteins of the cell wall, integrins, and certain groups of enzymes. In several types of cancer, metastasis cells showed an increased content of integrins avb3 and avb8. It is possible that they are involved in the formation of metastases in the brain and can serve as a biomarker of the disease. Another integrin, VLA-4, is produced in the metastases of most melanoma patients and promotes the binding of cancer cells and BBB cells, which opens the way to the brain.

In total, the authors reviewed 44 proteins, described the mechanism of their influence on the formation of metastases and listed the genes encoding them. The study will help scientists work out new ways to prevent and treat cancer, stroke and Alzheimer's disease, which also affect BBB integrity.

## Corona vaccine

**Corona vaccine LIVE: भारत में उपलब्ध होंगे कोरोना के ये टीके, चल रही बात (Navbharat Times: 2020817)**

<https://navbharattimes.indiatimes.com/india/coronavirus-vaccine-latest-news-update-india-eyeing-russia-covid-vaccine-oxford-astrazeneca-azd1222-and-moderna-niaid-tika/articleshow/77582300.cms>

Covid Coronavirus vaccine latest update: भारत सरकार दुनियाभर के टॉप कोविड वैक्सीन (Covid-19 vaccine) कैंडिडेट्स को हासिल करने की कोशिश में है। इसके अलावा, देसी टीकों के ट्रायल पर भी नजर रखी जा रही है।

coronavirus vaccine latest news update india eyeing russia covid vaccine oxford-astrazeneca azd1222 and moderna-niaid tika

Corona vaccine LIVE: भारत में उपलब्ध होंगे कोरोना के ये टीके, चल रही बात

कोरोना वायरस का टीका (Coronavirus vaccine) हासिल करने के लिए भारत सरकार ने कोशिशें तेज कर दी हैं। यूनाइटेड किंगडम की यूनिवर्सिटी ऑफ ऑक्सफर्ड-असत्राजेनेका (Oxford-AstraZeneca) और अमेरिका की मॉडर्न-NIAD (Moderna-NIAID) वैक्सीन पाने की तैयारी है। सोमवार को देश के टॉप एक्सपर्ट्स कुछ वैक्सीन के डेवलपमेंट में शामिल फार्मा कंपनियों से मीटिंग करेंगे। इससे वैक्सीन हासिल करने के प्रोसेस में और तेजी आ सकती है। ग्लोबली टॉप कैंडिडेट्स के अलावा, सरकार देश में बनी दो वैक्सीन के ट्रायल पर भी नजर रखे हुए हैं। भारत बायोटेक-ICMR की बनाई Covaxin और जायडस कैडिला की ZyCov-D फिलहाल फेज 1/2 ट्रायल में हैं। इसके अलावा सीरम इंस्टिट्यूट ऑफ इंडिया (SII) भी असत्राजेनेका के साथ AZD1222 वैक्सीन के ट्रायल की डील कर चुका है। इन वैक्सीन कैंडिडेट्स पर भारत की नजर

सरकारी पैनल जिन वैक्सीन कैंडिडेट्स की तरफ देख रहा है, उसमें Oxford-AstraZeneca और Moderna फेज 3 ट्रायल्स में हैं। इसके अलावा जर्मनी और इजरायल समेत दुनिया के नौ और वैक्सीन प्रोग्राम पर भी सरकार विचार कर रही है। सोमवार को जब नेशनल एक्सपर्ट ग्रुप ऑन वैक्सीन एडमिनिस्ट्रेशन की मुलाकात होगी तो उसमें SII, भारत बायोटेक और जायडस कैडिला के अलावा कई फार्मा कंपनियों के प्रमुख शामिल होंगे।

आज की मीटिंग में कौन-कौन होगा शामिल?

नीति आयोग के वीके पॉल की अगुवाई में बना पैनल आज फार्मा कंपनियों से मुलाकात करेगा। इस पैनल में केंद्रीय स्वास्थ्य सचिव राजेश भूषण भी शामिल हैं। इसके अलावा डिपार्टमेंट ऑफ बायोटेक्नोलॉजी की सचिव रेणु स्वरूप, ICMR के डायरेक्टर जनरल डॉ बलराम भार्गव और डिपार्टमेंट ऑफ फार्मास्यूटिकल्स के सचिव पीडी वाघेला भी इस पैनल का हिस्सा हैं।

रूसी वैक्सीन के ट्रायल डेटा का इंतजार

रूस ने अपनी कोरोना वैक्सीन (Russia Covid vaccine) लॉन्च तो कर दी है मगर भारत उसे फेस वैल्यू पर नहीं लेना चाहता। मीडिया रिपोर्ट्स के अनुसार, भारत को उनकी वैक्सीन Sputnik V के ट्रायल डेटा का इंतजार है। इस वैक्सीन के भारत के उत्पादन की कोशिशें भी चल रही हैं और कई फार्मा कंपनियां रूसी डायरेक्टर इनवेस्टमेंट फंड (RDIF) के संपर्क में हैं। हालांकि बेहद कम लोगों पर ट्रायल के चलते इस वैक्सीन का खासा विरोध हो रहा है।

क्लिनिकल ट्रायल से गुजर रहीं 29 वैक्सीन

-29-

दुनियाभर में इस वक्त 29 कोविड वैक्सीन (एक्सपेरिमेंटल) क्लिनिकल ट्रायल से गुजर रही हैं। इसके अलावा 138 वैक्सीन ऐसी हैं जो प्री-क्लिनिकल स्टेज में हैं यानी जिनका डेवलपमेंट या जानवरों पर टेस्टिंग चल रही है। दुनियाभर के एक्सपर्ट्स का मानना है कि सेफ वैक्सीन आने में अगले साल की शुरुआत तक का वक्त लग सकता है। आमतौर पर किसी वैक्सीन को डेवलप कर बाजार में उतारने में 10-12 साल लगते हैं मगर कोरोना के प्रकोप को देखते हुए इस प्रक्रिया को बेहद तेज किया गया है।

देसी कोरोना वैक्सीन का क्या है स्टेटस?

ICMR-भारत बायोटेक की Covaxin का ट्रायल देशभर में 12 जगहों पर चल रहा है। वॉलंटियर्स को बैच में डोज दी जा रही हैं। एक बार सबको डोज दिए जाने के बाद ब्लड टेस्ट्स किए जाएंगे, तब पता चलेगा कि वैक्सीन कितनी असरदार है। Zydus Cadila की ZyCoV-D का फेज-2 ट्रायल 6 अगस्त से शुरू हुआ था मगर फेज-1 के नतीजे अबतक सार्वजनिक नहीं किए गए हैं।

The King, wearing a purple velvet suit, joined the president in the Oval Office and proceeded to suck up. Elvis claimed the Beatles were a bad influence, and he verily agreed with ...+  
Meghraj Khedkar

Navbharat Times News App: देश-दुनिया की खबरें, आपके शहर का हाल, एजुकेशन और बिजनेस अपडेट्स, फिल्म और खेल की दुनिया की हलचल, वायरल न्यूज़ और धर्म-कर्म... पाएँ हिंदी की ताज़ा खबरें

**Corona (Hindustan: 2020817)**

[https://epaper.livehindustan.com/imageview\\_255670\\_103337326\\_4\\_1\\_17-08-2020\\_0\\_i\\_1\\_sf.html](https://epaper.livehindustan.com/imageview_255670_103337326_4_1_17-08-2020_0_i_1_sf.html)

# सर्वे : कोरोना ही नहीं टीके से भी डर रहे लोग

वाशिंगटन | एजेसी

कोरोना वायरस का दहशत लोगों में इस कदर हावी है कि वे शुरुआती दौर में इसका टीका लगवाने से भी इनकार कर रहे हैं। हाल में हुए सर्वेक्षणों में यह दावा किया गया है।

जॉन हॉपकिंस, हार्वर्ड, सीएनएन, एसोसिएटेड प्रेस-एनओआरसी जैसे कई सर्वेक्षण के अनुसार, अमेरिका, ब्रिटेन और फ्रांस के लाखों लोगों को आशंका है कि जल्दबाजी में तैयार किया गया टीका जानलेवा साबित हो सकता है। राय देने वालों में ज्यादातर उच्च वर्ग के लोग हैं। उनका कहना है कि टीका बनने में दस से 15 साल लगते हैं, छह माह में बना टीका



जानलेवा साबित होगा।

**50 फीसदी की ना :** एसोसिएटेड प्रेस के सर्वे के मुताबिक, 50 फीसदी अमेरिकियों ने संकेत दिया कि वह शुरुआत में वैक्सीन लेने से बचेंगे ब्रिटेन में किंग्स कॉलेज लंदन के सर्वे में भी यही नतीजा निकला।

## इस तरह की आशंकाएं

- जल्दबाजी में बनी वैक्सीन सेहत पर उल्टा असर कर सकती है
- शुरुआती वैक्सीन पानी जैसी, सिर्फ बेचैनी शांत करने के लिए
- लाभ कमाने के लिए फार्मा कंपनियों टीके का दावा कर रही हैं
- जिस तेजी से वैक्सीन बनाई जा रही है उससे लोगों की चिंता बढ़ी

## भरोसा जीतना होगा: सर्वे में

शामिल 57 साल की नर्स सुसैन बैले ने कहा कि वह हर साल फ्लू का टीका लेती हैं। लेकिन टीका उपलब्ध कराने के बावजूद उनका परिवार इससे दूर रहेगा। कई अन्य प्रतिभागियों ने कहा कि वह कम से कम 18 माह तक

## वैक्सीन विरोधी मुहिम

अमेरिका, यूरोप ही नहीं रूस में भी टीका विरोधी समूह मजबूत हो जा रहा है। कई धार्मिक और राजनीतिक समूह भी इसका विरोध कर रहे हैं। एक रायशुमारी में पाया गया है कि न्यूयॉर्क में 42 फीसदी टीके के लिए राजी नहीं हैं। 48 फीसदी अफ्रीकी टीके के पक्ष में नहीं हैं।

टीका का असर देखेंगे फिर निर्णय करेंगे। सोशल मीडिया पर टीकाकरण के विरोधियों पर नजर रख रहे जॉर्ज वाशिंगटन यूनिवर्सिटी के भौतिकविद् नील जॉनसन के अनुसार लोगों का भरोसा जीतना चुनौती होगी।

➤ तो टीका होगा फेल पेज 07

## Corona Infection

कोरोना संक्रमित होने पर सबसे पहले दिखेगा यह लक्षण, क्रम की हुई पहचान(Amar Ujala :2020817)

<https://www.amarujala.com/world/american-scientist-found-the-series-of-symptoms-of-corona-virus-in-human-body?src=hl>

कोरोना वायरस को लेकर अमेरिका के शोधकर्ता को बड़ी कामयाबी मिली है। अमेरिका के शोधकर्ताओं ने अब कोरोना के लक्षणों का क्रम पहचान लिया है, जिसकी सहायता से ये पता लगाना आसान हो जाएगा किसी व्यक्ति को कोरोना है या नहीं। अमेरिकी शोधकर्ताओं ने विश्व स्वास्थ्य संगठन की ओर से बताए गए लक्षणों का क्रम तैयार कर लिया है।

शोधकर्ताओं के कोविड-19 के लक्षणों के क्रम के बारे में जो जानकारी दी वो इस प्रकार है, अगर कोई शख्स कोरोना से संक्रमित है तो सबसे पहले उसे बुखार महसूस होगा, उसके बाद खांसी, मांसपेशियों में दर्द और फिर जी मचलना, उल्टी और दस्त जैसे लक्षण नजर आने लगते हैं। कोरोना वायरस के लक्षणों को जानने से ये फायदा हो सकता है कि अब कोरोना संक्रमित शख्स को इलाज के लिए जल्द अस्पताल में भर्ती करा दिया जाएगा। यह नया शोध फ्रंटियर्स इन पब्लिक हेल्थ नाम की पत्रिका में छपा है, जिसके मुताबिक लक्षणों का क्रम पता चलने से डॉक्टर, मरीज के इलाज की योजना आसानी से बना सकता है।

डॉक्टर्स का कहना है कि क्रम पता चलने से इस बीमारी को समय से पहले भी नियंत्रित किया जा सकता है। अमेरिका के दक्षिणी कैलिफोर्निया विश्वविद्यालय के शोध लेखक पीटर कुन का कहना है कि इस क्रम की मदद से विशेष तौर पर यह जानना आसान हो जाएगा कि हम कोरोना जैसी फ्लू बीमारियों से कब पार हो जाएंगे।

इसके अलावा शोध के अन्य लेखक जोसेफ लार्सन ने कहा कि क्रम पहचानने से मरीज के इलाज के लिए सही दृष्टिकोण मिल जाएगा और इलाज में प्रेशानी नहीं आएगी। बुखार और खांसी अक्सर अलग-अलग सांस की बीमारियों से जुड़े होते हैं, जिनमें मिडिल ईस्ट रेस्पिरेटरी सिंड्रोम (मर्स) और सार्स भी शामिल हैं।

सिर्फ 1,299 रुपये में करें दिल्ली पुलिस कांस्टेबल भर्ती परीक्षा की तैयारी

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