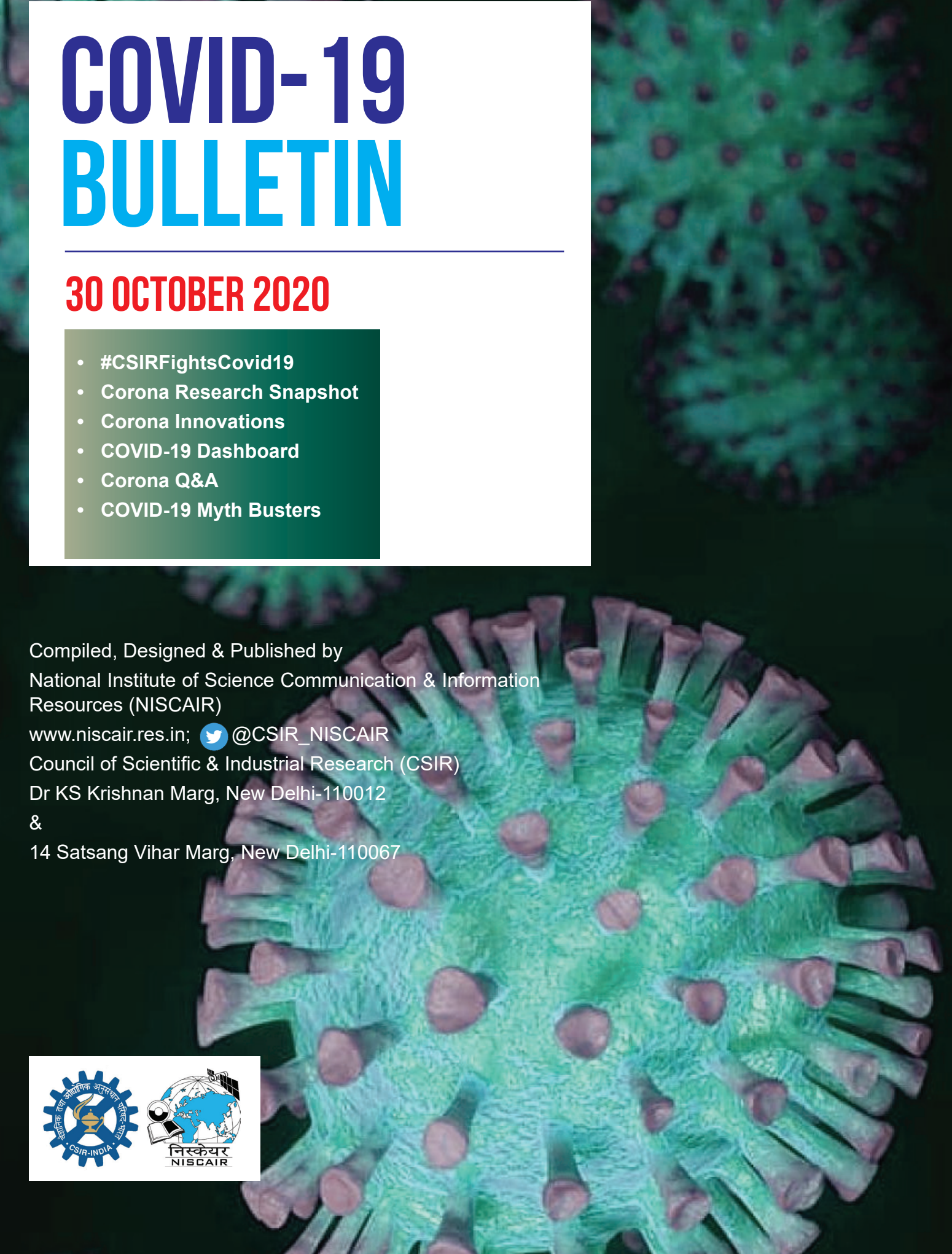
COVID-19 BULLETIN

30 OCTOBER 2020

- #CSIRFightsCovid19
- Corona Research Snapshot
- Corona Innovations
- COVID-19 Dashboard
- Corona Q&A
- COVID-19 Myth Busters



Compiled, Designed & Published by
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#CSIRFightsCovid19

--Sharing is Caring--

Feluda Test to be Available by the End of this Month

A COVID-19 test developed by the Council of Scientific and Industrial Research and to be commercialized by Tata Sons, the Feluda test for COVID-19 will be available from this month in laboratories. The Director-General, CSIR, Dr. Shekhar C. Mande, said that all the necessary formalities are completed and the test should be made available commercially anytime shortly this month.

8 EXPRESS NETWORK

WWW.INDIANEXPRESS.COM
THE INDIAN EXPRESS, TUESDAY, OCTOBER 20, 2020

CSIR to set up testing centres, makeshift hospitals in Ladakh, J&K, Himachal

ANJALI MARAR
PUNE, OCTOBER 19

The Council of Scientific and Industrial Research (CSIR) will extend support to Himachal Pradesh and the Union Territories of Jammu and Kashmir (J&K) and Ladakh for ramping up their infrastructure in the ongoing fight against Covid-19.

CSIR Director General Shekhar Mande said the agency will set up two testing facilities in Ladakh and work for three makeshift hospitals in Himachal Pradesh will begin this week. He added that discussions were ongoing with senior authorities of both UTs as well as the Himachal government in this regard.

CSIR director general Shekhar Mande said, "On an immediate basis, CSIR will be setting up two testing centres in Ladakh — one each at Leh and Kargil."

Till October 18, Ladakh reported 5,598 confirmed cases and 66 Covid-related deaths. As on Monday, the total confirmed cases in J&K were 89,942 with 1,379 related deaths.

Speaking to *The Indian Express*, Mande said, "On an immediate basis, CSIR will be setting up two testing centres in Ladakh — one each at Leh and Kargil. For smooth operation, we will provide manpower training required for carrying out tests."

The CSIR teams plan to make the facilities operational in both UTs ahead of the first anniversary of the J&K and Ladakh bifurcation, falling on October 31.

In April and May, there was an exponential rise in caseload and during the subsequent months, cities like Pune, Mumbai, Delhi and Bengaluru reported a severe shortage of ventilators, hospital beds and other medical facilities required to treat critical patients. To address this shortage, two CSIR institutes — Central Building Research Institute-Roorkee and Structural Engineering Research Centre-Chennai — developed an instantly deployable on-site hospital setup in August. The advantage of such a facility is that it can be readied within 5-7 days, with capacities ranging from 10, 20, 50 or 100 beds at any site.

CSIR and the National Disaster Response Force (NDRF) had first demonstrated a prototype of this hospital setup in Ghaziabad.

Mande said work for 50-bedded hospital setups at three locations in Himachal Pradesh, including Nahan and Kangra, will commence this week. Discussions are on for similar deployment in J&K, he added.

Since the outbreak in March this year, many states have grappled with challenges in testing — they lacked trained personnel and had little knowledge of carrying out RT-PCR tests. That is when CSIR laboratories in these states chipped-in, said Mande.

"At many of our labs, RT-PCR tests are performed almost every day. Initially, medical staff in Telangana, Jammu and many places needed to be trained. CSIR labs also extended testing facilities for Covid-19 during the last few months," he added. Till the third week of September, over three lakh Covid-19 tests were performed in 13 select CSIR laboratories across India.

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Cancellation of E-auction

Better bananas to cheaper Covid test, how desi scientists are using CRISPR

Research labs across India are working with the gene-editing tool that won two scientists the Nobel to find ways of fortifying crops and treating rare diseases

Sonam.Joshi@timesgroup.com

This week scientists Emmanuelle Charpentier and Jennifer Doudna were awarded the 2020 Nobel Prize in Chemistry for their work on CRISPR-Cas9 genetic scissors, a tool that can be used to change the DNA of animals, plants and microbes with extremely high precision. Doudna herself has likened it to using a word-processing programme to fix a typo in a document.

Even before the Nobel brought CRISPR to the headlines, Indian scientists were exploring the enormous power of this genetic tool. A research team at the Council of Scientific and Industrial Research's IGIB (Institute of Genomics and Integrative Biology) along with the Tata Group announced that it had used CRISPR to indigenously develop a Covid-19 test that is accurate, cheap and fast. Dr Debojyoti Chakraborty, Dr Souvik Maiti and the team were actually hard at work on another disease. "We were working on developing diagnostics for sickle cell anaemia (a fatal genetically-inherited disease) when the pandemic began," says Dr

FELUDA 2.0: A team from Institute of Genomics and Integrative Biology led by Debojyoti Chakraborty (centre) and Dr Souvik Maiti (third from left) developed the new Covid paper test using CRISPR

says. "As a result, developing a gene-based therapy for beta-thalassemia is more cumbersome." Ramalingam describes the process as targeted genome engineering in which he uses these molecular scissors to make a double stranded break in the genome of blood forming cells, and reconstitute foetal haemoglobin (HbF)."Rewriting fetal haemoglobin is a one-stop solution for the treatment of both sickle cell anaemia and beta-thalassemia," he adds.

It isn't a coincidence that these projects focus on blood disorders. In a TED talk in 2017, Doudna said that the first applications of the CRISPR technology are going to happen in the blood, where it's relatively easier to deliver this tool into cells, compared to solid tissues. "The reason blood disorders have an advantage is the delivery -- you can take out patient cells and transfuse them back after gene editing easily," says Ramalingam. There is ongoing research on in vivo genome editing for other genetic disorders as well.

Dr Sonam Mehrotra, scientist at the Tata Memorial Centre, Advanced Centre Treatment Research & Education in Cancer applies gene editing to mammalian cell cultures and the fruit fly model systems to study genes that are altered in various types of cancer and understand how a particular mutation signature will respond to a particular therapy such as radiation. She points out that CRISPR has many applications. "It can significantly advance gene therapy for inherited diseases and immunotherapy for cancer," she says. "You can edit the properties of plants to manipulate yield or parasite resistance, use it in animal breeding, or to control parasites like mosquitoes."

At Mohali-based National Agri-food Biotechnology Institute (NABI), research-

CRISPR TECH AND ITS MANY POSSIBILITIES

- Treatment for blood disorders like sickle-cell anaemia and thalassemia
- Driving malaria-carrying mosquitoes to extinction
- Mushrooms that don't brown
- Resurrecting the woolly mammoth
- Cats with no allergies
- Less-pungent mustard oil

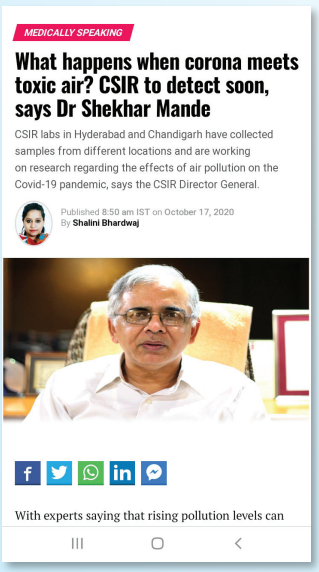
Chakraborty. The research sleuths harnessed that knowledge to come up with the Covid test which they named Feluda after Satyajit Ray's fictional detective.

Another scientist at IGIB, Dr Sivaprakash Ramalingam, has been researching the possibility of using CRISPR for beta-thalassemia. "Sickle-cell anaemia and beta-thalassemia are caused by the mutation in the same gene but in the latter you have an array of mutations," he

ers are using the gene-editing technology to improve the nutritional quality and yield of crops such as bananas, rice, wheat and soybean. For instance, Dr Siddharth Tiwari is working on enhancing the beta-carotene content (which is converted to vitamin A in the human body) in the fruit pulp of bananas. "Vitamin A deficiency is a major problem in India, especially among children," says Tiwari. "So we figured we could work on biofortification of bananas, which are cheap and widely available."

Besides the advantage of being precise, Tiwari says it also has less regulations as compared to transgenics (which involves introducing genetic material from another living organism). "So the probability of reaching the commercial stage is very high," he adds. "In the coming years, CRISPR can be used to target staple crops for improving several traits including biotic and abiotic stresses such as heat and drought, disease resistance and adaptation for different conditions in the context of climate change."

Similarly, in Delhi, Dr Naveen C Bisht, scientist, National Institute of Plant Genome Research, is deploying CRISPR to improve the nutritional quality of the Indian oilseed mustard or rai. Bisht says his aim is to reduce the level of glucosinolates, compounds which give the oil its pungent smell and are not liked by many people. "Using genome editing technology, we can precisely edit a specific target gene without disturbing the whole genome of the plant, as happens in conventional breeding and transgenic technologies," says Bisht. "The method is simple and can facilitate rapid and precise crop development."



Union Health Minister Dr Harsh Vardhan in New Delhi on Tuesday. Photo/ANI

Dr Harsh Vardhan launches CuRED, CSIR partnered clinical trials website

ANI | Updated: Oct 21, 2020 06:51 IST

New Delhi [India], October 21 (ANI): Union Health and Science and Technology MinisterDr Harsh Vardhan launched CuRED, a website that gives comprehensive info about the numerous COVID-19 clinical trials that the Council of Scientific & Industrial Research (CSIR) is engaged in partnership with industry, other government departments and ministries.

Indian trials on multiple Covid-19 drugs make progress, have Aatmanirbhar Bharat tilt

The modern method of scientific trials has also been used for testing one prospective herbal medicine for Covid-19 by the authorities.

- At least two existing medicines that were repurposed for the treatment of coronavirus disease (Covid-19) have entered into phase III clinical trials that are being conducted by the Council for Scientific and Industrial Research (CSIR). This includes the antiviral medicine Umifenovir and a medicine that is used to treat blood infection caused by resistant gram-negative bacteria MW Sepsivac.

How to dispose of PPE kits? A new study says on-site incineration may be best

October 12, 2020 0

Written by Shivnarayan Rajpurohit | New Delhi |

Updated: October 13, 2020 12:39:51 am

The study says that the decentralised method will reduce multiple contact points who handle the infected PPE kits. (Photo for representation by Bhupendra Rana)

As India grapples with the coronavirus outbreak, disposal of PPE kits has posed a new challenge to civic bodies across India. To solve this problem, a group of CSIR-NEERI scientists has suggested on-site incineration of PPE kits to reduce infection risk.

A study, titled Sustainable Solution for PPE disposal through LCA Approach, looked at three end-of-life disposal methods — centralised incineration, decentralisd incineration and landfills. LCA stands for life cycle assessment.

Union Health Minister Dr Harsh Vardhan

Rollout of the faster, cheaper Feluda Covid-19 test expected in few weeks, says Vardhan

2 min read . Updated: 11 Oct 2020, 03:20 PM IST

Edited By J. Jagannath

- 'Based on tests in over 2,000 patients during trials, the test showed 96% sensitivity and 98% specificity,' says Union Health Minister
- Similar to a pregnancy strip test, Feluda changes colour if the virus is detected and doesn't need expensive machines for detection

MEDICAL BUYER MEDTECH IVD LIFE SCIENCES BLOOD BANKS EDITOR'S DESK REPORTS BUYER'S GUI

4,682 October, 26 2020 - NITI Looking at reform

Feluda test to be commercially available by month-end: CSIR

October 21, 2020

The Feluda test, a coronavirus detection test developed by the Council of Scientific and Industrial Research (CSIR) and to be commercialised by Tata Sons, will be commercially available in laboratories this month.

"It should be available anytime soon this month. All the formalities are completed," Shekhar Mande, Director General, CSIR, told The Hindu.

The test, which still requires a nasal swab to be collected and sent to a lab, promises to be quicker than the gold-standard test because it doesn't need the expensive RT-PCR (Reverse transcription-quantitative polymerase chain reaction) machine that can set back a lab by at least ₹25 lakh.

A smaller, cheaper more portable machine called a thermocycler, which costs around ₹25,000, is employed and once the viral RNA is extracted, it takes anywhere from 45 minutes to an hour to confirm presence of the virus.

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Harsh Vardhan launches digital platform to share CSIR's real-time findings on Covid-19 treatment

The new digital platform will also provide details about clinical trials of diagnostics and devices in which the scientific body is involved

ETGovernment October 20, 2020, 17:42 IST

THE HINDU

Coronavirus | Feluda test to be commercially available by month-end: CSIR Director General

Representational image. File | Photo Credit: AP

Jacob Koshy

NEW DELHI 20 OCTOBER 2020 21:03 IST

THE HINDU

Coronavirus | Harsh Vardhan launches website for info on clinical trial of CSIR ushered repurposed drugs

CORONA RESEARCH SNAPSHOT

A promising drug found ineffective in saving lives

During severe COVID-19 infection, the human immune system instigates an excessive inflammatory response. Scientists link this severe illness to overly vigorous immune response against COVID-19 infection. This linkage is supported by the high levels of a protein called IL-6 which is responsible for stimulating the human immune system which causes requirement for ventilation and even death in severely infected COVID-19 patients. Scientists have been attempting to dampen the inflammation related to IL-6 protein in COVID-19 patients.

A drug *tocilizumab* is considered to be promising in interfering with IL-6 activity. It was thought that this drug may prove to be a game changer in reducing the death rates in severely ill COVID-19 patients. Scientists of Massachusetts General Hospital in Boston, USA have conducted randomized trials for this drug among 243 COVID-19 patients with moderate infection intensity. However, no significant reduction in death rates or need for ventilation was observed in comparison to control. The detailed study is published in the *New England Journal of Medicine* after peer review.

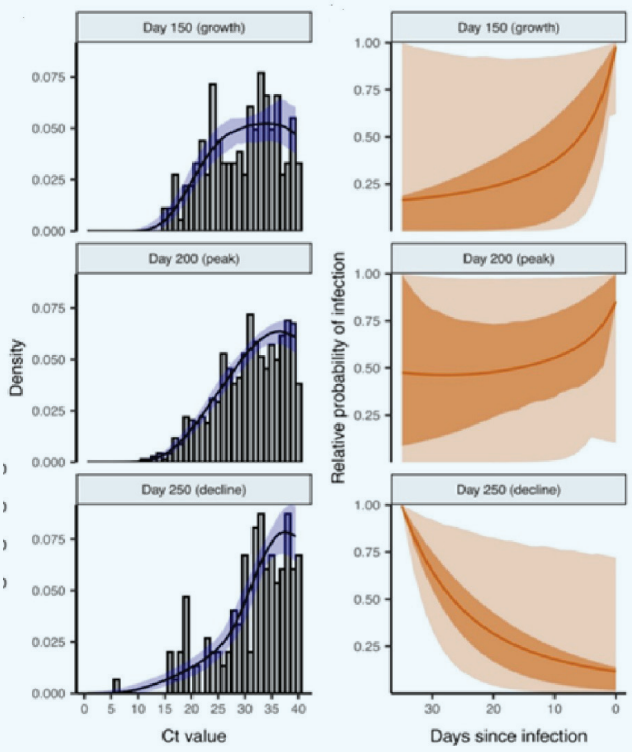
Source: J. H. Stone *et al. N. Engl. J. Med.*; DOI: 10.1056/NEJMoa2028836; 2020

(Image Credit: unsplash.com)

Viral loads may be used to assess the epidemic peak in a city

The viral load in an infected person's body can be an important indicator for assessing the peak in that town or city. Researchers of Harvard T.H. Chan School of Public Heath in Boston, USA have formulated a model to show that the viral loads in infected people and rate of viral spread in the population have a correlation and these viral loads can be used to measure the spread rates. In the early stages of the epidemic, the average infected person has higher viral load but in the later stages of the epidemic the average infected person has had the virus for longer and thus has a low viral load. Thus, the viral load profiling of a population in a city or town can be used to assess whether it has crossed the peak or not. The findings are still under peer review and have been published on medXriv as preprint.

Source: J. A. Hay *et al*. Preprint at medRxiv; DOI:10.1101/2020.10.08.20204222; 2020

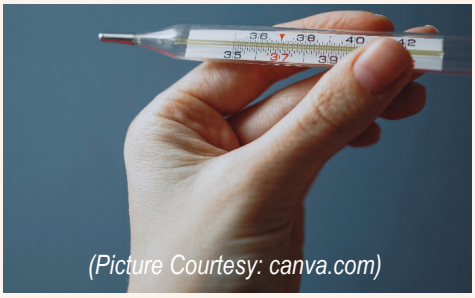


Model-predicted Ct distributions during epidemic growth, peak 229 and decline phases.
(Figure Courtesy: J. A. Hay et al. Preprint at medRxiv)

COVID-19 transmission rates are not affected by seasonal temperature changes

According to scientists who studied the early stages of the epidemic, the rate of COVID-19 transmission is unaffected by the arrival of spring or summer. It has been observed that Influenza viruses survive for longer outside the body in cold, dry air in comparison to warmer and more humid environments. To observe the effect of seasonal temperature on COVID-19 infection spread, scientists of Harvard Medical School in Boston, USA have created a model which incorporated the data of the early days of COVID-19 spread (mid-January to mid-February) in China. The data consists of the case counts, weather conditions and information about domestic travel, etc. including the effect of lockdowns imposed by the governments. The team of researchers has observed that the weather (cold and dry) alone is not able to explain the variability in the virus's spread in China. The study has been published in *Scientific Reports* (Nature) after peer review.

Source: C. Poirier *et al*. *Sci. Rep*.; 10.1038/s41598-020-74089-7; 2020


(Picture Courtesy: canva.com)

Several classes of neutralizing antibodies observed

Antibodies are the fighters that prevent the invading viruses from moving out of the cells by binding themselves on different parts of the spike proteins of SARS-CoV-2. The neutralizing antibodies recognize the SARS-CoV-2 particles and bind on their spike proteins. A group of researchers at California Institute of Technology, Pasadena-USA has determined 3D shapes of eight neutralizing antibodies attached to SARS-CoV-2. Their structures exhibit that these antibodies can be divided into several classes according to which part of the spike protein's region they recognize. It has also been observed that the mutations that allow viruses to avoid one class of antibodies are likely to obstruct others. The findings were published recently in the journal *Nature*.

Source: O. Barnes *et al*. *Nature;* DOI: 10.1038/s41586-020-2852-1; 2020

X-ray structure of C102 Fab – RBD331-518 complex

(Figure Courtesy: O. Barnes et al. Nature, 2020)

Seasonal common cold antibodies offer mild defence against SARS-CoV-2

Image Courtesy: wildpixel / iStock

According to researchers at the Rockefeller University, New York-USA, antibodies against seasonal coronaviruses are not able to protect against severe COVID-19 infection. The researchers analyzed 37 blood-serum samples before year 2020 from people of England. All of the participants had tested positive for at least one of the seasonal coronavirus, causing seasonal common cold. It was observed that these antibodies that can block at least one old coronavirus are unable to block the SARS-CoV-2. The researchers also conclude that antibodies to common cold coronaviruses don't play a major role in determining why few people got infected severely while others were mildly affected. The findings are still under peer review and are published at medXriv as preprint.

Source: D. Poston *et al*. Preprint at medRxiv: https://doi.org/fc4g; 2020

CORONA INNOVATIONS

Innovative technology to study after effects on internal organs

Understanding the aftermath of SARS-CoV-2 infection on internal organs of human body is becoming crucial. Many functions of this virus are still dubious and unresolved. Many of the emerging evidences show that besides its well-known effects on the lungs, it may also silently affect the brain, liver, gastrointestinal tract and other internal parts of our body. The significant medical standard for studying and diagnosing tissue-related modifications associated with SARS-CoV-2 is excisional biopsy followed by tissue processing and analysis. This procedure is slow, invasive, expensive and subject to sampling error and interpretive variability. Such limitations often make this approach impractical and place pressure on the sustainability of healthcare systems around the world.

To study and understand the minute after effects of this fatal virus on our internal organs, the ATTRACT project named "HARMOPLUS" has developed a prototype system for higher-harmonic generation (HHG) microscopy that achieves improved resolution and sensitivity based on the award-winning Re-Scan concept mastered by Confocal.nl. *This technology could be implemented in endo-microscopes to* **non-invasively image the effects of SARS-CoV-2 on organs *in vivo***, *based on endogenous contrast and so facilitate screening for pathological modifications and follow-up.*

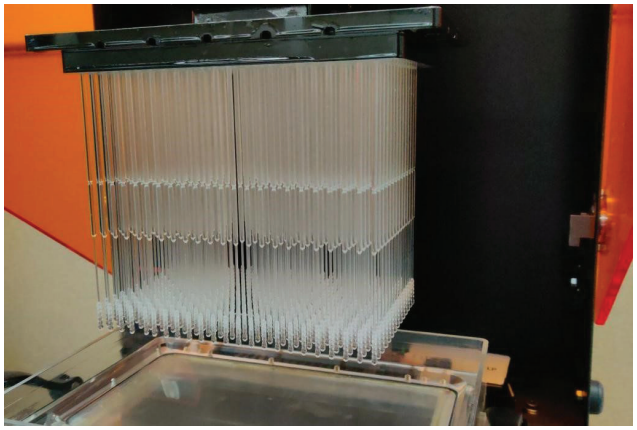
Source: https://www.sciencemag.org

Alcohol-free surface disinfectant

IIT Guwahati in collaboration with Berger Paints has developed an alcohol-free surface disinfectant which they claim can stay active on various surfaces for an extended period of hours thereby protecting from bacteria and COVID-like viruses by forming a protective nano-silver coating on the surface. The product will be sold under the brand name BreatheEasy Safe 24,

Source: PTI

Engineers design COVID-19 testing device



Michigan EnvisionTEC, a biomedical company has been working with local hospitals in the Metro Detroit area to provide a functional ventilation splitter. During COVID-19 pandemic, many countries were facing shortage of the testing kit for nasopharyngeal collection swabs. EnvisionTEC started working closely with the Harvard Microbiology Lab within a larger group dedicated to connecting academia with the manufacturing industry to combat the shortage of swab collection kit.

EnvisionTEC engineers have designed a collection tip for a flexible nasal swab. They 3D printed the final design for testing which is able to print 400 of the swabs in Class 1 approved material E-Guide in two hours.The testing process is a ten-stage mechanical testing, a two part absorption test, a biological/chemical testing procedure to ensure the swab absorbs viral RNA particles and does not interfere with PCA/ reagents, and a sample collection testing procedure. To pass, a sample needed to use a material that is approved as chemically safe, would bend 180 degrees without breaking and the design needed to be able to safely collect enough virus particles from the nasal passage to effectively test.

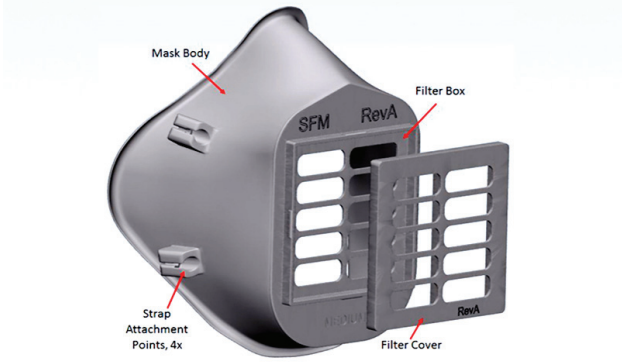
Source: https://envisiontec.com

Veterans Health Administration develops stopgap 3D printed mask

In collaboration with engineers and clinicians at the Veterans Health Administration, a Stopgap Face Mask (SFM) has been developed for medical purposes. These masks can be utilized when standard PPE is unavailable or for less critical non-medical environments. Such face masks become more beneficial in cases of shortage of PPE for protective face masks.

In fact, every medical application does not require N95 mask. With this viewpoint, 3D Systems worked with engineers and clinicians to develop this emergency Stopgap Face Mask (SFM). The SFM is available in multiple sizes and is printed from a biocompatible nylon material using selective laser sintering technology. The SFM is comprised of the 3D printed mask and filter cover, two elastic strips, and a rectangular patch of filter material. This mask can be reprocessed using disinfectants and/ or autoclaved.

Source: https://www.industryweek.com



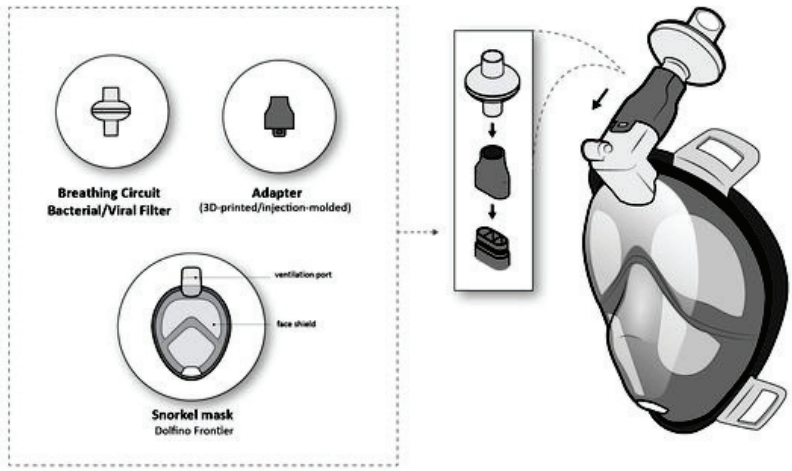
Reusable snorkel mask

Stanford University has developed a reusable full-face snorkel mask PPE named 'Pneumask'. This is a kit of parts consisting of an off-the-shelf snorkeling mask, a custom (3D-printed) adapter and a filter or filter cartridge. The fundamental benefit of a snorkeling mask is providing a full-face shield and air seal while allowing for controlled intake and exhaust flows through the mask.

In this "full-face" snorkeling mask, a 3D-printed part on the ventilation port of the snorkel shield is added. This 3D-printed part will be a custom attachment which acts as a swap-in replacement for the snorkel tube. As with a snorkel tube, all inhaled air will pass through the attachment. A filter can also be added to the attachment for air filtration.

Integrating a N95 mask filter for 0.3 μm particles into the custom attachment would allow the snorkel mask to function as a simple face shield, thus providing the same level of protection to a medical health worker as a combination of an N95 mask and a face shield.

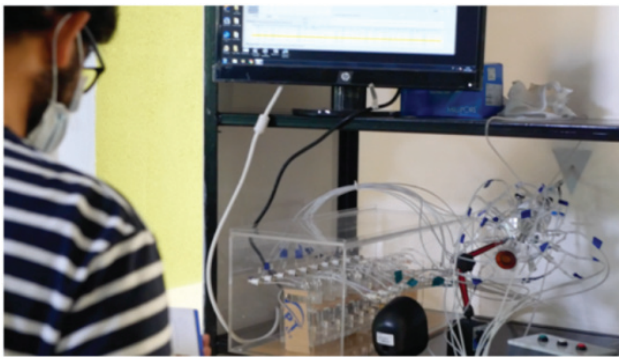
Source: https://bioengineering.stanford.edu



Olfactory-action Meter to detect asymptomatic COVID patients

In a paper (doi.org/10.1016/j.eclinm.2020.100575) published in The Lancet's *EClinicalMedicine*, in collaboration with the BJ Medical College and Sassoon General Hospitals in Pune, researchers from IISER (Indian Institute of Science Education and Research) Pune, report that by accurately measuring the ability to smell, one could detect an asymptomatic COVID-19 infection caused by SARS-CoV-2 virus. The researchers designed an olfactory-action meter to assess the olfactory fitness of asymptomatic COVID-19 patients diagnosed with SARS-CoV-2 infection.

Source: News & Events, IISER, Pune



Black pepper may hold the key for Corona fighting drug

The Department of Physics at the Indian Institute of Technology (Indian School of Mines), Dhanbad, has found that Piperine found in black pepper, can bind and inhibit the SARS-Cov-2 virus that causes the disease. Explaining the work to *India Science Wire*, the leader of the team, Prof. Umakanta Tripathy, said that Coronavirus, like any other virus, uses the proteins on its surface to enter into the cells of the human body. The team looked for natural compounds that could bind to these proteins and stop the virus from entering human cells. They used computer-based cutting edge techniques such as molecular docking and molecular dynamics simulation to hunt for potential inhibitors.

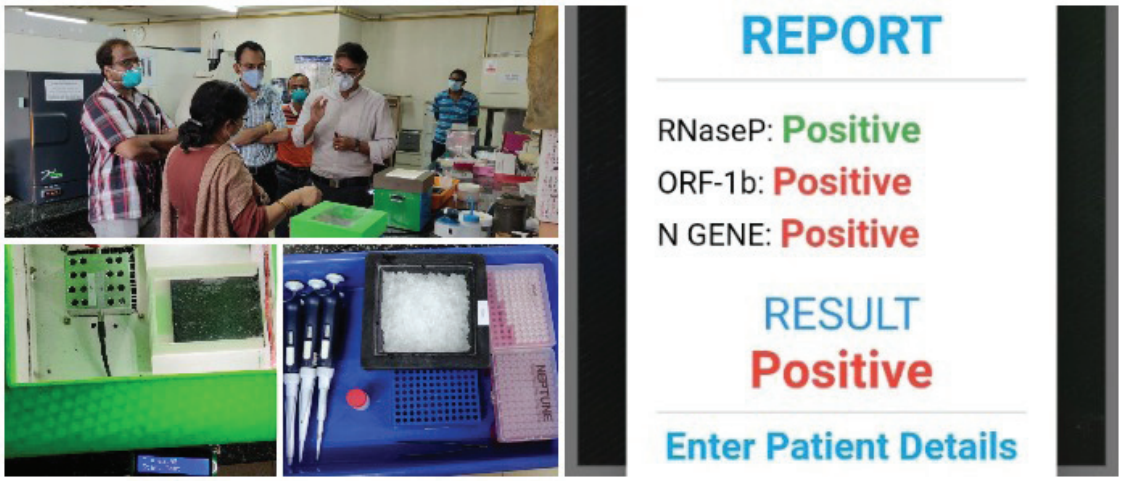
A report on the work got published in the Journal of *Biomolecular Structure and Dynamics* titled "In silico investigation of spice molecules as a potent inhibitor of SARS-CoV-2".

Source: *India Science Wire*

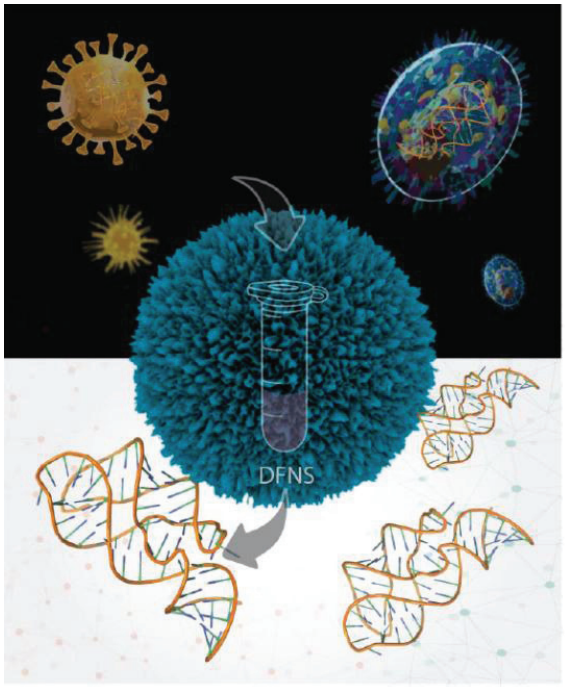
COVIRAP – Novel technology of COVID-19 test gets ICMR certification

A team of researchers at IIT Kharagpur developed a novel testing method that implements a highly reliable and accurate molecular diagnostic procedure. The portable device unit called COVIRAP is ultra-low-cost and gives results through a custom-made mobile application for dissemination without requiring manual interpretation. The diagnostic machine has been successfully validated for its efficacy in COVID-19 detection by the Indian Council of Medical Research (ICMR).

Source: kgpchronicle.iitkgp.ac.in



Nano-silica for RNA extraction from viruses



The cover art depicts how RNA from the cells could be extracted by dendritic fibrous nanosilica (DFNS) with excellent efficiency due to the unique fibrous morphology, high accessible surface area, and nano-size particles of DFNS. Credit: Ayan Maity, TIFR, Mumbai, Copyright: ACS Langmuir and authors.

For coronavirus testing RNA extraction is the first step but there is a shortage of RNA extraction kits because of which testing is getting affected. There is an increased demand for testing and limited supply of RNA extraction kits. Besides efficient RNA extraction is often limited by silica chemistry and surface area capable of binding and eluting RNA. Therefore, there is an urgent need for novel RNA extraction kits. In view of this, researchers at Tata Institute of Fundamental Research (TIFR), Mumbai, studied Dendritic Fibrous Nanosilica (DFNS) for RNA extraction from cells. It was shown that RNA from the cells could be extracted by DFNS with higher or equivalent efficiency than commercially available silica. The study (https://doi.org/10.1021/acs.langmuir.0c02520) was published in *Langmuir.*

Source: tifr.res.in

Powered Air Purifying Respirator (PAPR)

The Technology Business Incubator of Sree Chitra Tirunal Institute for Medical Sciences & Technology, Thiruvananthapuram has developed and designed Powered Air-Purifying Respirator (PAPR) comprising a hood that holds a filtered ambient air space for the wearer to breathe. The powered respirator provides filtered air for inhalation using an approved air filter and expels the expired air by continuous exhaust ventilation using another filter.

Source: sctimst.ac.in/resources/PAPR_22.10.2020.pdf

COVID-19 Dashboard

COVID-19 Cases and Deaths

(Data as of 26 October 2020)

Worldwide

Total Confirmed Cases	42,745,212
Total Death	1,150,961

Source: www.who.int

INDIA

(Data as of 26 October 2020)

TOTAL SAMPLES TESTED UP TO OCTOBER 26, 2020
10,34,62,778

SAMPLES TESTED ON OCTOBER 26, 2020
9,39,309

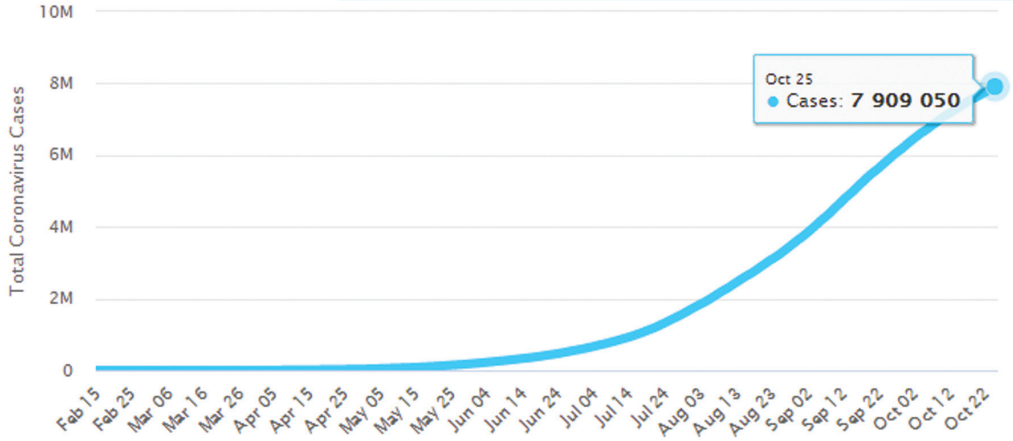
Total Cases	79,09,959	↑ 45,148
Active (8.26%)	6,53,717	↓ 14,437
Discharged (90.23%)	71,37,228	↑ 59,105
Deaths (1.50%)	1,19,014	↑ 480

Source: www.mygov.in

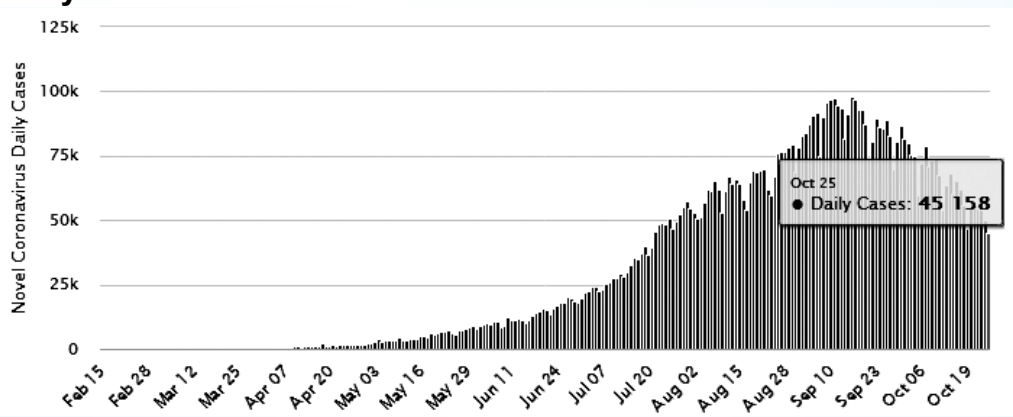
Graph
INDIA

(Data as of 26 October 2020)

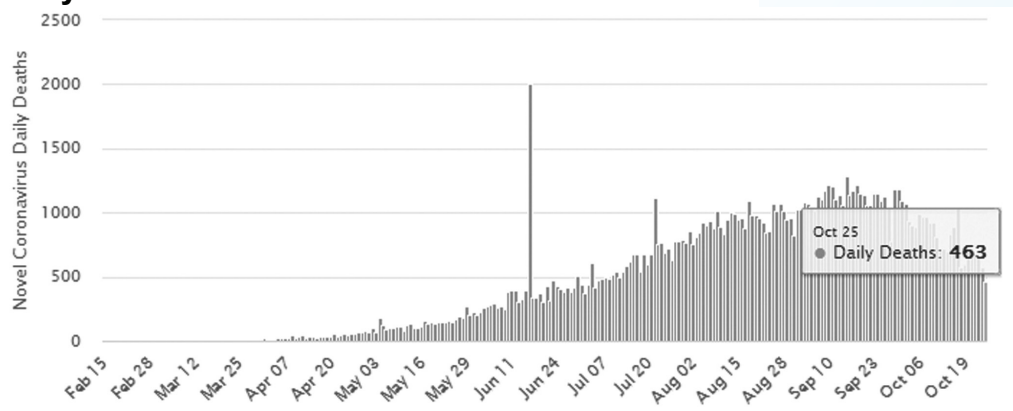
Total Cases in India



Daily New Cases in India



Daily New Deaths in India



Source: www.worldometers.info

CORONA Q&A

What does it mean to be a Coronavirus "Long-Hauler" & what are the complications and precautions they need to take?

There is a growing number of people worldwide who have survived COVID-19 but continue to battle the symptoms of the illness, long after they have clinically tested negative for the disease. These people suffer from disabling after-effects of the disease after they have been declared COVID-free, with some even experiencing newer symptoms after testing negative. They are called long-haulers. One of the most frustrating aspects of being a long-hauler is that you don't quite know when the symptoms of the disease will finally subside as the current pandemic is only months old.

Another aspect is that these symptoms may be dismissed by doctors as psychological issues, further worrying the long-hauler who doesn't quite understand what is wrong with him/her. While there is increasing online support for people with long-lasting COVID-19 symptoms, the medical community is still struggling to find answers for these bizarre after-effects of COVID-19.

Some of the most common symptoms of a long-haul COVID-19 are same as coronavirus and include extreme fatigue, muscle or body ache, shortness of breath or difficulty in breathing, massively reduced stamina, exhaustion, inability to exercise or lead an active lifestyle, memory problems, and dizziness. Long-haulers may also experience a racing heart and even a persistent loss of smell. They complain of not being able to go back to their previously active lifestyles or return to the workplace.

According to a study conducted by Bristol-based Southmead Hospital, almost 75 per cent of the patients admitted to the hospital continued to battle the symptoms of COVID-19, even after being declared COVID-free. On an average, patients said that the coronavirus symptoms lasted for three months and maximum patients admitted to suffering a difference in the quality of life. Another preliminary study supports the higher-than-average risk of heart inflammation and heart failure in COVID-19 survivors.

As scientists and the medical community echo similar sentiments that they need more time to evaluate and understand the virus, for long-haulers it all boils to taking proper care of yourself. This includes getting plenty of rest, drinking a lot of fluids and including fresh fruits and vegetables in your diet. It is important to treat the symptoms as and

when they come and not panic. You have already survived COVID-19, so this too shall pass. It is time to be gentle with yourself and take each day as it comes.

www.timesofindia.indiatimes.com

How particles of the novel Coronavirus move through a room?

Representative photo: Alexandre Pellaes/Unsplash

It doesn't take long for airborne coronavirus particles to make their way through a room. At first, only people sitting near an infected speaker are at high risk, but as the meeting or class goes on, the tiny aerosols can spread. That doesn't mean everyone faces the same level of risk.

An experiment was conducted to track how aerosols move, including those in the size range that can carry viruses. To understand how the coronavirus can spread, researchers injected aerosol particles similar in size to those from humans into a room and then monitored them with sensors. They used a 30-foot by 26-foot university classroom designed to accommodate 30 students that had a ventilation system. When they released particles in the front of the classroom, they reached all the way to the back of the room within 10 to 15 minutes. However, because of active ventilation in the room, the concentrations at the back, about 20 feet from the source, were about one-tenth of the concentrations close to the source. That suggests that with appropriate ventilation, the highest risk for getting COVID-19 could be limited to a small number of people near the infected speaker. As the time spent indoors with an infected speaker increases, however, risk extends to the entire room, even if ventilation is good.

In the past, the transmission of respiratory diseases has focused on the role of larger particles that are generated when we sneeze and cough. These droplets fall quickly to the ground, and social distancing and mask wearing can largely prevent infection from them. The bigger concern now is the role of tiny particles known as aerosols that are generated when we talk, sing or even just breathe. These particles, often smaller than 5 micrometers, can escape from cloth face masks and linger in air for up to about 12 hours. While these smaller particles, on average, carry less virus than larger particles that people emit when they cough or sneeze, the high infectivity of SARS-CoV-2 combined with the high viral load before symptoms appear makes these particles important for airborne disease transmission.

To minimize COVID-19 transmission indoors, the CDC's top recommendation is to eliminate the source of infection. Remote learning has effectively done this on many campuses. For face-to-face teaching, engineering measures such as ventilation, partition shields and filtration units can directly remove particles from the air. Of all the engineering controls, ventilation is probably the most effective tool to minimise infection spread.

It's important to remember that not all parts of a room are at equal risk. The corners of the room will likely have a lower air exchange, so particles can linger there longer. Being close to an air exit vent could

mean that airborne particles from the rest of the room could wash over you. About 95% of particles in the room will be removed by a properly functioning ventilation system in 30 minutes, but an infected person in the room means those particles are also continuously emitted. The pace of particle removal can be accelerated by increasing the air exchange rate or adding other engineering controls such as filtration units. Opening windows will also often increase the effective air exchange rate. As schools, restaurants, malls and other communal spaces start accommodating more people indoors, understanding the risks and following the CDC's recommendations can help minimise infection spread.

www.science.thewire.in

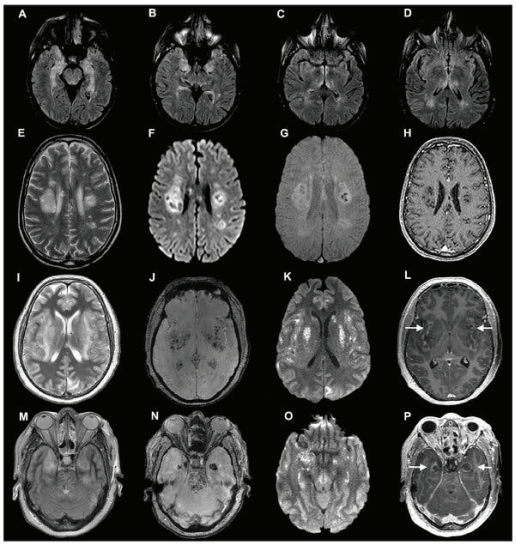
If I have antibodies, does that mean I am immune forever?

Not necessarily, the antibody test does not test for immunity to Covid-19. There is no test yet that can tell if you are immune. It is simply too early to know if the presence of antibodies confers immunity, as this is a new virus, meaning we've never seen it before. But experts generally agree that, based on experiences with other viruses, including SARS, the presence of antibodies most likely does confer some level of protection, though we don't know to what extent or for how long. An antibody test is not the same thing as a diagnostic test for Covid-19, and it will not diagnose whether you currently have it. Remember that antibodies take time to develop, so a lack of antibodies may just mean your body hasn't had enough time to develop them post infection.

According to experts, there is no clinical evidence that the presence of antibodies actually prevents the individual from getting the disease again. Knowing your antibody level will help you determine whether you've been exposed to the coronavirus. This does not mean you're immune, and you should still practice all of the safety precautions. But it does mean you may be eligible to donate convalescent plasma, which can potentially help patients still suffering from Covid-19 by allowing them to "borrow" your antibodies to accelerate their recovery time.

www.nytimes.com

How does the Coronavirus attack the brain?



Credit: Ross W. Paterson, Rachel L. Brown, et al./Brain, Oxford University Press

Brain scans of coronavirus patients from a study published in July. Some develop serious neurological complications, including nerve damage

Scientists have reported that it is not just lungs, the pathogen may enter brain cells too causing symptoms like delirium and

confusion. The coronavirus targets the lungs foremost, but also the kidneys, liver and blood vessels. Still, about half of the patients report neurological symptoms, including headaches, confusion and delirium, suggesting the virus may also attack the brain. A study at Yale University offers the first clear evidence that, in some people, the coronavirus invades brain cells, hijacking them to make copies of itself. The virus also seems to suck up all of the oxygen nearby, starving neighboring cells to death. It's unclear how the virus gets to the brain or how often it sets off this trail of destruction. Infection of the brain is likely to be rare, but some people may be susceptible because of their genetic backgrounds, a high viral load or other reasons. According to the researchers, if the brain does become infected, it could have a lethal consequence.

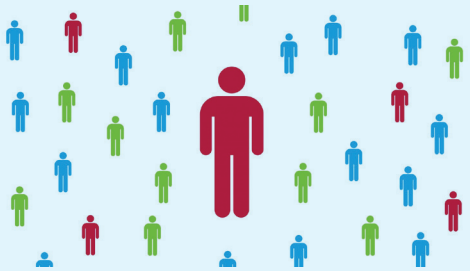
Researchers will need to analyze many autopsy samples to estimate how common brain infection is and whether it is present in people with milder disease or in so-called long-haulers, many of whom have a host of neurological symptoms. Recently in US 40 to 60 percent of hospitalized Covid-19 patients experienced neurological and psychiatric symptoms, said Dr. Robert Stevens, a neurologist at Johns Hopkins University. But the symptoms may not all stem from the virus's invasion of brain cells. They may be the result of pervasive inflammation throughout the body. For example, inflammation in the lungs can release molecules that make the blood sticky and clog up blood vessels, leading to strokes. There's no need for the brain cells themselves to be infected for that to occur.

www.nytimes.com

COVID-19 MYTH BUSTERS

MYTH ✗

Herd immunity is achievable through natural infection and is right around the corner



FACT ✓

We would be putting a lot of people at risk if we aim for herd immunity through natural infection. Without a vaccine, the only way to achieve herd immunity is through natural infection, but it would require anywhere from 40% to 70% of the population getting infected with COVID-19. Vaccination is the best way to reach herd immunity.

www.ajmc.com

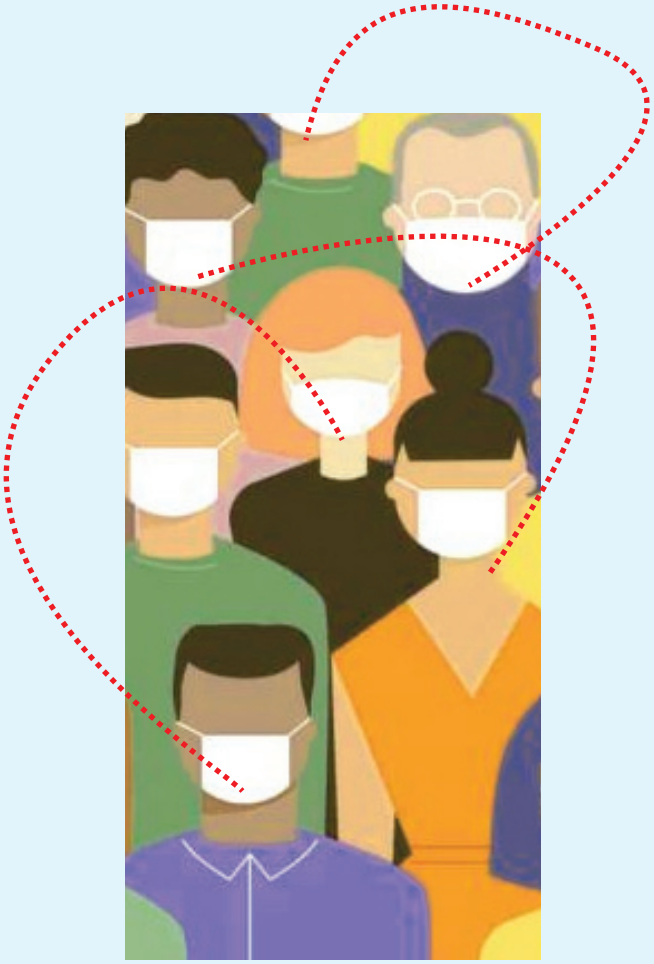
Changing your medication can prevent you from COVID-19

Changing your medication could be very dangerous and could make your condition worse. These drugs are very effective for heart failure, and to control high blood pressure to help prevent a heart attack or stroke, and so on. Any changes to your treatment that have not been recommended by a healthcare professional could put you at higher risk of a flare-up of your heart condition. There have been reports in the media suggesting that some commonly used drugs to treat high blood pressure (so-called ACE-Inhibitors and Angiotensin Receptor Blockers) may increase both the risk of infection and the severity of infection with the Coronavirus. However, this warning does not have a sound scientific basis or evidence to support it. Therefore, it is strongly recommended that you continue to take your blood pressure medication as prescribed.

www.escardio.org

MYTH ✗

There is no asymptomatic transmission

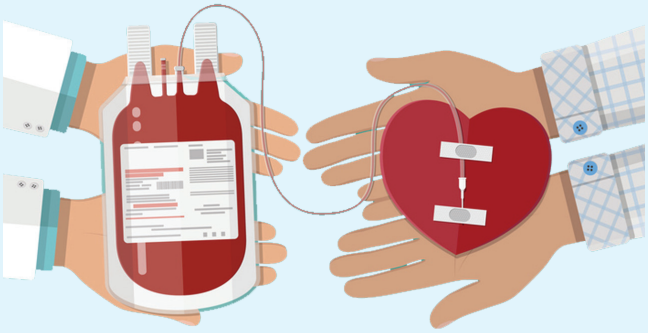


FACT ✓

There has been a problem distinguishing truly asymptomatic individuals with pre-symptomatic individuals. The reason is that someone who tests positive but doesn't have any symptoms is recorded as being asymptomatic, but they might develop symptoms later. Asymptomatic cases are often based on self-reported data, but there is a wide range of symptoms associated with COVID-19. For many people, they might not recognize that they, in fact, do have symptoms of COVID-19 because maybe they have diarrhea but no cough, and they don't realize that is still a symptom of the virus. However, it is known that there is a substantial amount of transmission from pre-symptomatic people. The fact that people are infectious before they develop symptoms has been a key challenge with controlling the spread of COVID-19. So, while asymptomatic transmission or asymptomatic cases and transmission probably exists, we don't really know the number for that, but we definitely know that pre-symptomatic transmission exists, and it's a major driver of this pandemic.

www.ajmc.com

I cannot donate plasma again

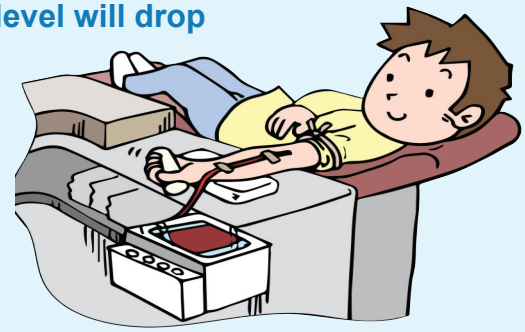


Unlike blood, plasma regenerates within four hours of donation. So, one can donate plasma again in 15 days. But plasma is usually taken within one or two months of getting infected, as that is when the antibody level is the highest. After three-four months, the antibody level will be the lowest. Generally, one donor's plasma can save two lives. At times some plasma receivers may need two units (200 ml each).

www.freepressjournal.in

MYTH ✗

If I donate my plasma, my immunity level will drop



You can only catch the virus from infected people

If a patient has a pre-condition (illness like diabetes, hypertension or cardiac), he or she doesn't qualify to be a receiver

FACT ✓

No, the medical team only collects the plasma. It has to be noted that collecting plasma is different from collecting blood. It is the liquid component of the blood. Only the antibody is taken from the body, the blood (WBC and RBC) is flushed back into your system. In short, the manufacturing unit in our body remains with us.

www.freepressjournal.in

Coronavirus spreads via airborne droplets from coughs and sneezes, but you don't necessarily need to be close to the infected person to catch it. Studies have shown that the virus can survive on various surfaces for up to 17 days. The World Health Organisation explained, "People could catch COVID-19 by touching contaminated surfaces or objects, and then touching their eyes, nose or mouth. If they are standing within one meter of a person with COVID-19 they can catch it by breathing in droplets coughed out or exhaled by them. In other words, COVID-19 spreads in a similar way to flu."

www.walesonline.co.uk

This is not true. However, based on the condition or the severity of the illness the medical experts will take a call if plasma treatment can be given to the patient.

www.freepressjournal.in

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