COVID-19 BULLETIN

15 OCTOBER 2020

- #CSIRFightsCovid19
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Compiled, Designed & Published by
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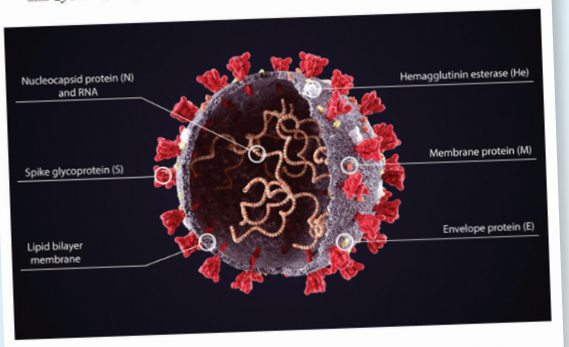
#CSIRFightsCovid19

CCMB scientists analyse 2,000 SARS-CoV-2 genomes from India

The team had revealed the presence of a distinct virus population among Indians

By PTI | September 21, 2020 11:47 IST



Scientists at the CSIR-Centre for Cellular and Molecular Biology (CCMB) in Hyderabad have analysed more than 2,000 SARS-CoV-2, the virus that causes COVID-19 genomes from India available in the public domain to understand the various strains in circulation.

Earlier in June, the team had revealed the presence of a distinct virus population among Indians.

This was named the clade I/A3i, and is recognised by the presence of 4 specific variations in their genetic makeup (genomes).

At that time, 41 per cent of all Indian SARS-CoV-2 genomes belonged to this clade.

However, the current analysis showed that the proportion of the A3i clade dropped to 18 per cent, it said.

The decrease in the proportion of A3i clade is accompanied by an increase of the A2a clade, also referred to as the G clade or the 20A/B/C clades in other nomenclatures.

Viruses of the A2a or the G clade carry the D614G mutation in their spike protein which is shown to be associated with an increased infectivity.

CSIR and Mylan Laboratories inks deal to identify potential COVID-19 therapies

The first of the clinical trials to be rolled out is a multiple arm Phase-3 study that will be conducted in adult patients with mild to moderate COVID-19 at risk of complications

Edex Live
Edex Live

Representative image

The Council of Scientific and Industrial Research (CSIR), India's premier research organisation, and Mylan Laboratories Ltd on Wednesday announced a partnership to address unmet patient needs amidst the evolving Covid-19 pandemic. Under the partnership, CSIR's constituent laboratory, the Indian Institute of Chemical Technology (CSIR-IICT), and Mylan will collaborate to identify potential therapies for Covid-19.

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CCMB scientists launch study to check whether coronavirus can travel in air, if so how far

The objective of the study, which began around ten days ago, was to know whether the virus actually travels in the air and if it does, how far it goes and primarily intended to help the healthcare personnel, CCMB Director Rakesh Mishra said.

PTI • September 28, 2020, 10:41 IST

HYDERABAD: The CSIR-Centre for Cellular and Molecular Biology (CCMB) here has launched a study in hospital environment to assess how long and far the coronavirus can stay in air from an infected person, in a bid to strengthen the safety of health workers.

The objective of the study, which began around ten days ago, was to know whether the virus actually travels in the air and if it does, how far it goes and primarily intended to help the healthcare personnel, CCMB Director Rakesh Mishra said.

THE WEEK MAGAZINE

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Ayush Ministry to take up clinical study on potential of Vasa Guduchi for management of COVID-19

PTI | September 25, 2020 14:44 IST

New Delhi, Sep 25 (PTI) The Ministry of AYUSH has approved a proposal for carrying out a clinical study to assess the role of Vasa and Guduchi in therapeutic management of symptoms in COVID-19 positive patients.

This will be a randomized, open label three armed study, and will be conducted at the All India Institute of Ayurveda (AIIA), New Delhi, in collaboration with the IGIB unit of CSIR, the ministry said.

In view of the need for accelerated solutions for COVID-19, the Ministry of AYUSH has taken up systematic studies on different possible solutions through multiple channels.

"As part of this effort, a proposal for a clinical study to assess the role of Vasa Ghana, Guduchi Ghana and Vasa-Guduchi Ghana in therapeutic management of symptoms in COVID-19 positive cases has recently been approved," the ministry said in a statement.

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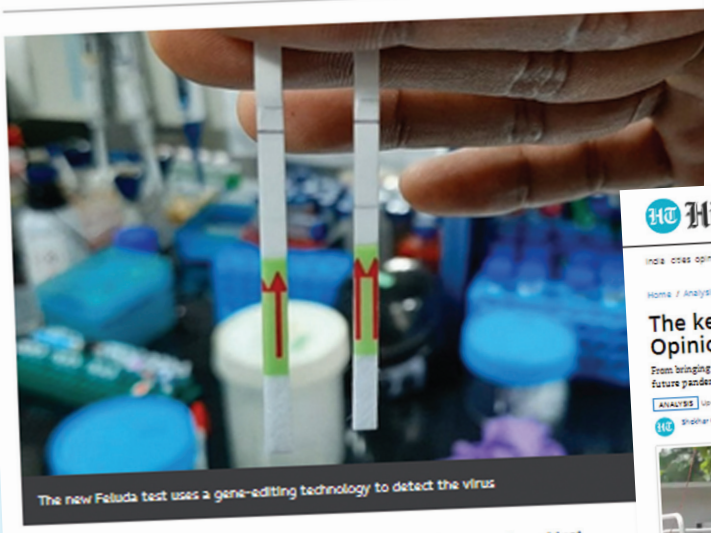
India's new paper Covid-19 test co... be a 'game changer'

6 days ago

India coronavirus lockdown



The new Feluda test uses a gene-editing technology to detect the virus

A team of scientists in India has developed an inexpensive paper-based test for coronavirus that could give fast results similar to a pregnancy test. The BBC's Soutik Biswas and Krutika Pathi unpack how it works.

The test, named after a famous Indian fictional detective, is based on a gene-editing technology called Crispr. Scientists estimate that the kit - called Feluda - would return results in under an hour and cost 500 rupees (about $6.75; £5.25).

Feluda will be made by a leading Indian conglomerate, Tata, and could be the world's first paper-based Covid-19 test available in the market.

"This is a simple, precise, reliable, scalable and frugal test," Professor K Vijay Raghavan, principal scientific adviser to the Indian government, told the BBC.

Hindustan Times

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Home / India News / 'Two Indian companies in clinical trial phase for Covid-19 vaccine': Health minister

'Two Indian companies in clinical trial phase for Covid-19 vaccine': Health minister

Health minister Dr Harsh Vardhan's remarks came during the launch of the Compendium on 'CSIR Technologies for Covid-19 Mitigation' on Thursday.

Union Minister of Health Dr Harsh Vardhan. (ANI)

India has put up a strong fight against Covid-19...

Hindustan Times

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Home / Analysis / The key role of CSIR in the battle against Covid | Opinion

The key role of CSIR in the battle against Covid | Opinion

From bringing in self-reliance ranging from indelible ink to the fight against Covid-19, CSIR has played a vital role and shall do so in any future pandemic or calamity that India faces.

All these highly-visible developments only set the stage for the next wave of innovations, which promise to catapult India into the league of the most developed nations(Keshav Singh/Hindustan Times)

The Council of Scientific and Industrial Research (CSIR), one of the first publicly-funded Science & Technology (S&T) research organisations in India, turns 79 today. CSIR has played a crucial role in shaping the developments of modern Indian society, and the Covid-19 pandemic is no exception. As India is seeing an accelerated increase in cases, there is an urgent need for innovations and products in drugs, diagnostics, surveillance and devices.

महानगर

नागपुर . बुधवार, 14 अक्टूबर 2020 16

नीरी लैब ने 3.05 घंटे में टेस्टिंग रिपोर्ट देकर बनाया देश में रिकॉर्ड

भास्कर संवाददाता | नागपुर

सीएसआईआर नीरी ने एक बार फिर सबसे कम समय में आरटीपीसीआर टेस्टिंग के परिणाम दिए हैं। इसकी तुलना में दूसरे लैब कम से कम 8 घंटे में रिजल्ट दे रहे हैं। इस पर पिछली बार भी दूसरे केंद्रों को टेस्टिंग तेज करने के निर्देश दिए थे। बावजूद टेस्टिंग में कोई गति नहीं आई है। देश में सबसे तेज जांच और रिपोर्ट का यह रिकॉर्ड है।

इससे पहले 4 घंटे में रिपोर्ट देने का था रिकॉर्ड

समय व्यय न करने के कारण जांच में तेजी

जिले में कोरोना टेस्टिंग के लिए कई केंद्र खोले गए हैं। इसमें से 5 शासकीय संस्थानों ने मॉलिक्यूलर लैब भी तैयार की गई हैं। यह लैब नीरी, मेडिकल, मेयो, एम्स, माफसू और अन्य निजी लैब हैं। नागपुर की नीरी ने कुछ समय पहले नागपुर विभाग में सबसे कम समय यानी 4 घंटे में आरटीपीसीआर टेस्टिंग की रिपोर्ट देने का रिकॉर्ड बनाया था। अब नीरी ने सबसे कम समय 3 घंटे 5 मिनट में टेस्ट रिपोर्ट दी है। इसमें सैंपल मिलने के बाद जांच से लेकर रिपोर्ट तक पूरा कार्य किया जा रहा है। नीरी में एक बार में करीब 300 टेस्ट किए जा रहे हैं। इसका एकमात्र कारण टीम में समन्वय और एक दो प्रक्रिया के बीच व्यय होने वाले समय को पूरी तरह खत्म कर देना है। इसके कारण जांच में तेजी आई है। इसमें डाटा एंट्री और पेपर प्रिंटिंग तक शामिल है।

सैंपल रिसीविंग से लेकर पूरी प्रिंट रिपोर्ट दे रहे हैं

हम सैंपल रिसीविंग से लेकर पूरी प्रिंट रिपोर्ट दे रहे हैं। यह सिर्फ पीसीआर नहीं है। हमारी टीम इसमें पूरी तरह लगी हुई है। 10 लोगों की टीम में यह पूरा कार्य किया जा रहा है। पहले हमने 4 घंटे में रिपोर्ट दी थी। इसके बाद सबसे कम 3 घंटे 5 मिनट में रिपोर्ट दी है। इसका फायदा मरीजों के इलाज के लिए और संक्रमण कम करने के लिए हो रहा है।

-डॉ. कृष्णा खैरनार, हेड, कोविड मॉलिक्यूलर टेस्टिंग लैब नीरी

रिपोर्ट जल्दी देने से फायदा

- यदि मरीज पॉजिटिव है, तो उसे इलाज जल्दी मिल सकता है। वह जल्दी आइसोलेट होगा।
- दूसरों को संक्रमित करने की आशंकाएं कम होंगी।
- कई मरीज दूसरी गंभीर बीमारियों से ग्रसित हैं। प्रोटोकॉल के अनुसार कोई सर्जरी या इलाज से पहले मरीज की कोविड रिपोर्ट होना जरूरी है। ऐसे में यदि मरीज की स्थिति गंभीर है और उसे अपनी कोरोना रिपोर्ट निगेटिव मिल जाती है, तो इलाज जल्दी शुरू हो सकता है।

दैनिक भास्कर Wed, 14 October 2020 https://epaper.bhaskarhindi.com/c/55656443

CORONA RESEARCH SNAPSHOT

Staggering infection patterns are observed in a massive contact-tracing study

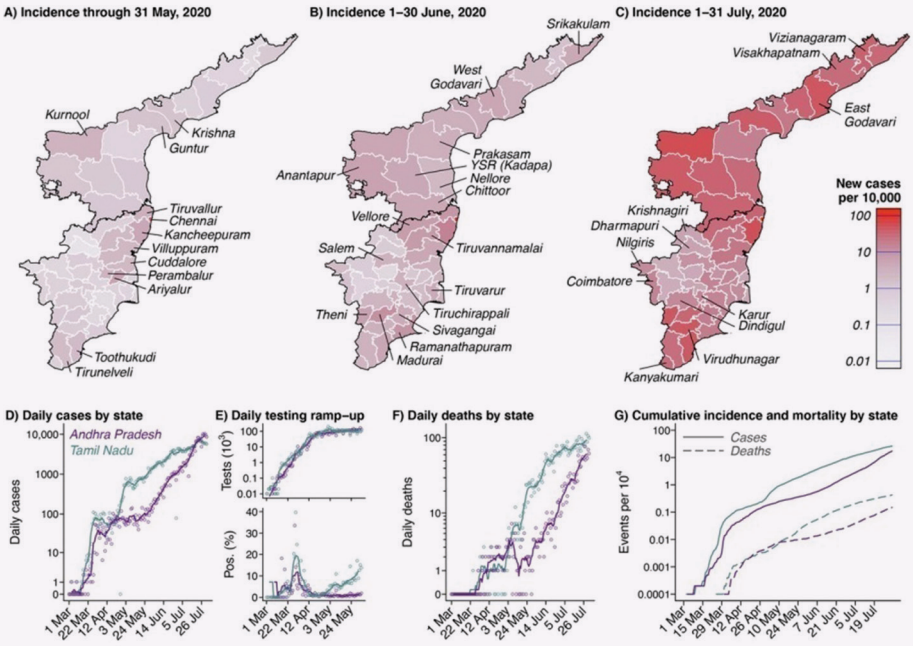
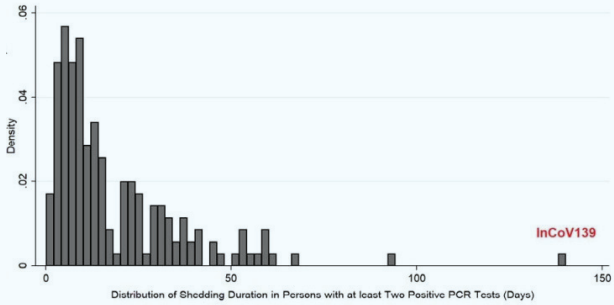


Figure Courtesy: R. Laxminarayan et al.; Science; 2020

A large contact tracing study reveals striking patterns of COVID-19 infection. The study was performed by a very large group of researchers of several international institutions including Center of Disease Dynamics-Delhi, Princeton University-USA, Johns Hopkins Bloomberg School of Public Health, USA, University of California, Berkeley and several government institutions of Andhra Pradesh and Tamil Nadu in India. In a collaborative effort, the data of almost 85,000 people with COVID-19 and their close contacts (almost 600,000 in number) from Andhra Pradesh and Tamil Nadu have been analyzed. It was found that the reported cases and deaths were concentrated in younger cohorts contrary to the observations in United States where the rate of infection increased with increasing age from 65. Mortality rates are also low in India for those who are aged 75 or above contrary to the case in US. Among 575,071 individuals who were exposed to almost 85,000 infected people, the infection probability was in the 4.7 to 10.7% range for low risk and high risk contact types. The already infected people were most likely to infect individuals of the same age group. It is more prominent among kids indicating that socializing among kids may contribute to viral spread. The detailed study has been published in the journal *Science* after peer review.

Source: R. Laxminarayan *et al. Science;* DOI: 10.1126/science.abd7672; 2020

Immune response characteristics could be related to genome



Graph for waning density of antibodies

(Figure Courtesy: medRxiv, 2020)

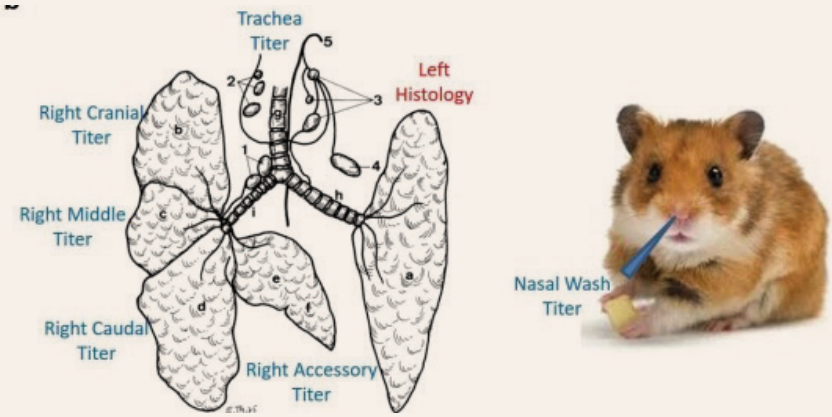
Through a genomic analysis based study, the researchers of the University of Washington, Seattle have shown that individuals have been reinfected, however, they did not show strong COVID-19 symptoms. The researchers studied the home-care residents who are in their sixties and tested positive with COVID-19 and had severe symptoms in March 2020. The individuals again tested positive in July 2020 with milder symptoms of coughing and shortness of breath. Waning antibody levels or a poorly developed immune response was also observed in these patients during the second infection, according to the study. According to the researchers, this study provides a useful standard for antibody levels unable to protect against reinfection. The study is under peer review and is published on medRxiv as preprint.

Source: medRxiv: DOI: 10.1101/2020.09.22.20192443; 2020

A variant of SARS-CoV-2 shows higher infectiousness

Researchers found a SARS-CoV-2 mutation in COVID-19 patients in February 2020 which is able to alter the amino-acid sequence of the virus's spike protein through which the virus gets entry into human cells. This amino-acid alteration is termed as D614G and it became common in Europe, North America including other continents of the world in spring 2020. Currently, all the viruses isolated worldwide exhibit this mutation. Two independent research groups at University of Texas Medical Branch, USA and University of North Carolina-USA have studied the virus mutants and their effects. Both teams found that this mutant is able to replicate itself in cells and human airway tissues more easily and efficiently in comparison to the viruses lacking the mutation. Both the studies have been published on bioXriv as pre-print and are yet to be peer reviewed.

Source: J. A. Plante *et al*. Preprint at bioRxiv DOI: 10.1101/2020.09.01.278689; 2020 and Y. J. Hou *et al*. Preprint at bioRxiv DOI: 10.1101/2020.09.28.317685; 2020



Schematic samples harvested on days 2, 4, and 7 post655 infection

Figure Courtesy: J. A. Plante et al. Preprint at bioRxiv; 2020

A front-runner vaccine candidate exhibits efficacy in older people

Scientists at Emory University-USA have studied the response of 40 people aged 56 and above to the vaccine developed by the Cambridge based biotechnology firm *Moderna*. This vaccine consists of a modified version of SARS-CoV-2 RNA protein. The participants in the vaccine trial could develop several types of antibodies that can disarm an invading microbe. The patients could develop similar levels of antibodies after getting administered the second dose of the vaccine in comparison to those of the control group participants who had recovered from COVID-19. The side effects of the vaccine were mild to moderate in general. The details of this trial study are published in *New England Journal of Medicine* after peer review.

Source: E. J. Anderson *et al.*; *N. Engl. J. Med.* https://doi.org/fbxj; 2020

Severe illness could be the reason for immune breakdown

According to a recent survey of nearly thousand people, the life threatening COVID-19 infection is being linked to dysfunction of immune-signaling chemicals called type-1 interferons. Type-1 interferons are crucial for triggering a defense against influenza and other viruses. The researchers at Rockefeller University in New York-USA analyzed the DNA extracted from the severely infected COVID-19 patients aiming to find specific mutations in their genes which trigger the production of type-1 interferon. In another study performed at the University of Paris, scientists attempted to search for the autoantibodies – kinds of antibodies that attach the body's own tissues and organs. The reason for attacking the body's own tissues and organs by autoantibodies is still not known. The researchers observed that more than 10% of the severely infected people with COVID-19 had autoantibodies that targeted the type-1 interferon activity.

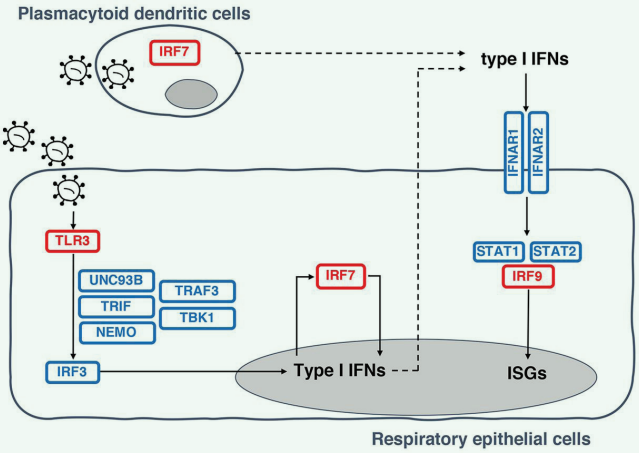


Illustration of TLR3- and IRF7-dependent type I Interferon production and amplification pathway

(Image courtesy: Science DOI: 10.1126/science.abd4570; 2020)

The researchers suggest that these type-1 interferons can also be used as therapy against the COVID-19 infection.

Sources: Q. Zhang *et al. Science* DOI: 10.1126/science.abd4570; 2020 and P. Bastard *et al. Science;* https://doi.org/d95q; 2020

Search for a standard for representing the level of infectiousness in COVID-19 patients

Scientists are searching for a number that can represent the level of severity in COVID-19 infected patients. This number is useful in labeling and flagging patients for their severity by doctors. These labeled patients can be easily identified for high risk and the treatment can be given accordingly. During the polymerase chain reaction (PCR) test, isolation and amplification of viral RNA is done which depends on multiple cycles of amplification to produce detectable amount of RNA in the test. The number of cycles can be representative of viral loads in the patients. In the PCR tests, if the signal is not detected even after 37-40 cycles of amplification, the test results in a negative.

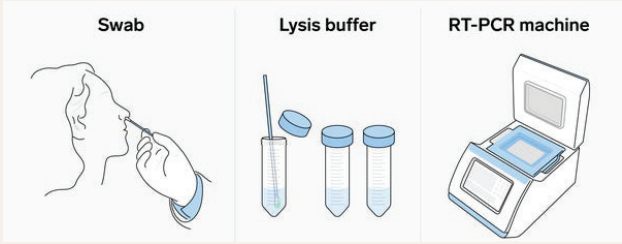


Image Courtesy: Business Insider

Scientists are trying to establish these cycle numbers as "Cycle Threshold (CT)" which will represent the severity of viral loads in patients. If a test is registered as positive after 12 rounds of amplification then its CT value will be 12. The CT value will enable the doctors to flag the patients for their high or low risks. Scientists are still in the process of finally establishing and universally accepting such a number.

Source: *Science*; doi:10.1126/science.abf0366; 2020

Solid Waste Management Policy

While the Coronavirus pandemic has reduced economic activities and possibly made air and water cleaner, change in the dynamics of plastic, food, and biomedical waste generation has led to the problem of solid waste management.

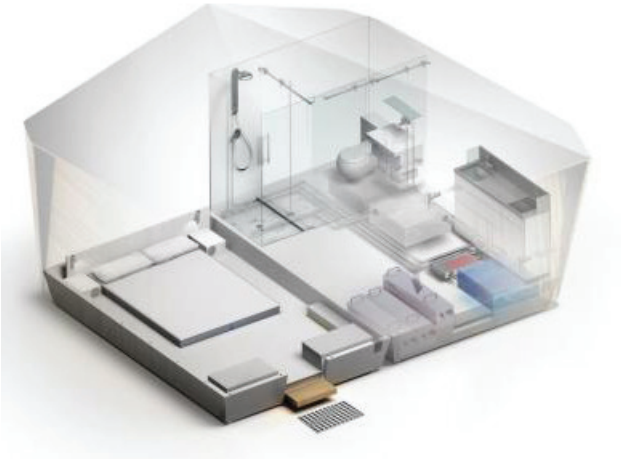
A recent study by IIT Kharagpur researchers, published in the international journal *Resources, Conservation & Recycling* has led to the formulation of a set of environmental recommendations for solid waste management under the pandemic situation. The researchers have explored the challenges faced by the solid waste management sector, typically cases in biomedical waste, plastic waste, and food waste management, during the pandemic and the underlying opportunities to fill existing loopholes in the system.

According to Prof. Brajesh Kr. Dubey at IIT Kharagpur's Dept of Civil Engineering, "It should be well understood that the mess created by the COVID-19 crisis should not be solved at the expense of solving the longer-term issue of the climate crisis. The post-COVID-19 world would need a systems-level approach on a global scale to address the issue of solid waste management and protect our environment through economic stimulus with a low carbon footprint," said Dubey.

Source: kgpchronicle.iitkgp.ac.in

CORONA INNOVATIONS

Modular hospital rooms to address pandemic



Shortage of hospital rooms and ICUs is a huge challenge during the coronavirus pandemic. To address this issue, Jupe Health has developed rapidly deployable, pop-up recovery hospital units. Jupe Health has developed a new type of cost-effective and shippable hospital room that can be quickly dispatched to the place of crisis. A standard flatbed truck can carry up to 24 of such compact shelter rooms and a cargo ship can bear 500000 per trip.

Jupe Health start-up offers three configurations. The smallest one is the Jupe Rest which is designed to offer shelter for hospital workers. In this configuration, each off-grid-capable unit can be outfitted with a queen or two twin beds, wi-fi, climate control and an optimal integrated filtration system. The second configuration is a wellness unit. It is designed for isolating non-critical patients of COVID-19. It has all facilities as Jupe Rest except bathroom fixtures and hospital features like a donning and doffing chamber and ventilator hookups. The third configuration of this modular hospital rooms is the most robust. It is called 'Jupe Plus'. It has an ICU.

All the modular hospital rooms developed by Jupe Health can be outfitted with solar photovoltaic panels and plugged into the grid on cloudy days.

Source: http://tapestry.click

Hands-free 3D printed door handle opener

A new project from Barcelona's BCN3D and engineers at CIM-UPC has developed hands-free door handle opener. The new 3D printable file of this door handle opener is designed by using cable ties rather than screws. The Arm Door Opener is printed as a single piece on desktop 3D printers and can be made within four hours.

Opening and closing doors is an unavoidable part of our daily life. By using our elbows instead of hands, anyone can reduce germs such as coronavirus. During the pandemic of coronavirus, this 3D printed door handle opener helps against the spread of coronavirus.

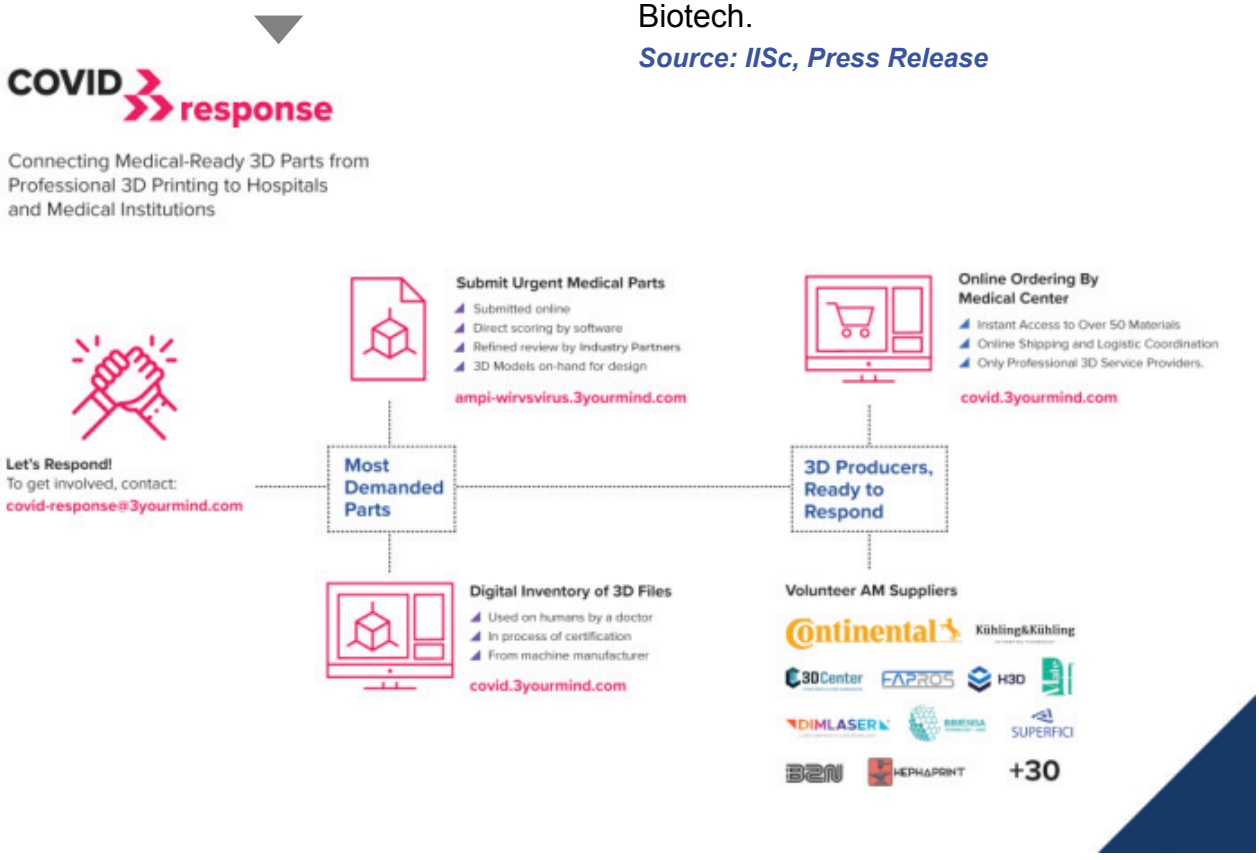
Source: https://www.materialise.com

COVID Response Platform

The 3D printing community is offering new design solutions and rapid production to contribute to control the spread of COVID-19. 3YOURMIND, a start-up in additive manufacturing has brought out 3D printed parts to hospital and medical centers to contain the coronavirus pandemic.

3YOURMIND has launched a COVID-19 response platform that has three key parts: a digital inventory of 3D parts has been culled and minimizes risk for doctors who choose to use them. The second part is a submission system for new parts which links to an evaluation system. The final part of the response is an ordering platform to match hospitals, clinics, suppliers of medical equipment with 3D printing services and additive manufacturing departments in OEMs who have offered to allocate their production for medical goods.

Source: https://www.3yourmind.com



Indigenous ICMR-approved COVID-19 Diagnostic Kit

Equine Biotech, a startup incubated at the Indian Institute of Science (IISc), has developed an indigenous RT-PCR diagnostic kit called "GlobalTM diagnostic kit" for accurate and affordable diagnosis of COVID-19. The test kit, based on Reverse Transcriptase Polymerase Chain Reaction (RT-PCR), the gold standard for COVID-19 diagnosis, has been approved for use in authorised COVID-19 diagnostic labs by the Indian Council of Medical Research (ICMR). The test takes about 1.5 hours to confirm the presence of SARS-CoV-2 in patient samples, according to Utpal Tatu, Professor in the Department of Biochemistry, IISc, and founder of Equine Biotech.

Source: IISc, Press Release

Telemedicine technology for home care during COVID

Researchers at the Department of Computer Science & Engineering at IIT Kharagpur have come up with a telemedicine system namely iMediX that integrates homecare with healthcare services from the hospital. The system is accessible by any standard internet browser and also from a mobile device.

Source: kgpchronicle.iitkgp.ac.in

Antiviral Protection Kit

Two IIT Delhi incubated startups E-TEX and Clensta have teamed up and launched a complete antiviral protection kit consisting of a novel Clensta protection lotion and hand sanitiser E-TEX Kawach Antiviral T-Shirt and Kawach Mask. The kit has been launched at an affordable price.

The antiviral fabric of E-TEX Kawach Antiviral Garment uses advanced technology that inhibits the hosting of microbes, reduces the likelihood and speed of contaminations and transmissions by destroying the micro-organisms on contact. The antimicrobial property of the garment remains effective even after 30 washes at mild condition. The finishing is done on cellulosic fibres, which is safe for human contact.

Source: home.iitd.ac.in/startup-etex.php

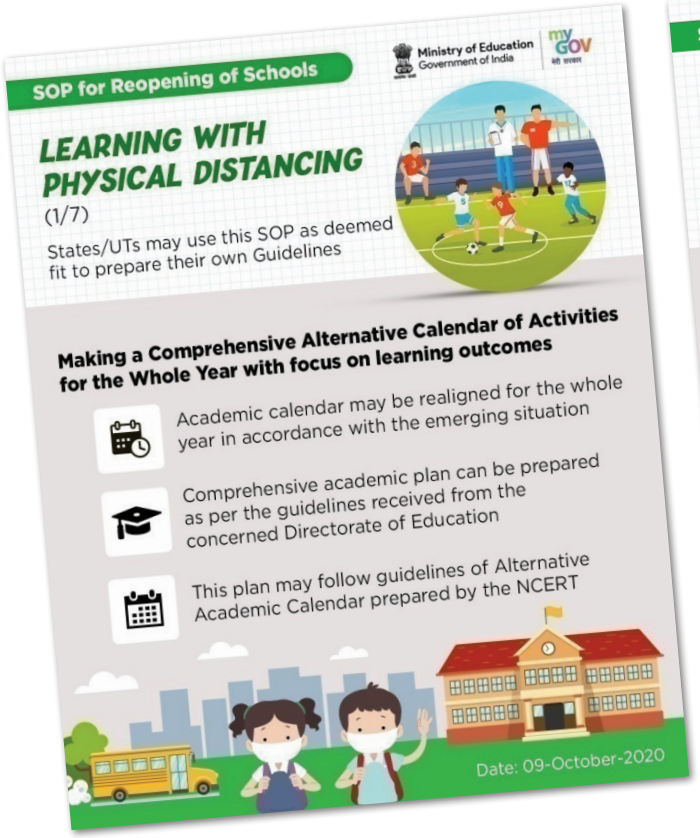
3D printed adapter that saves life

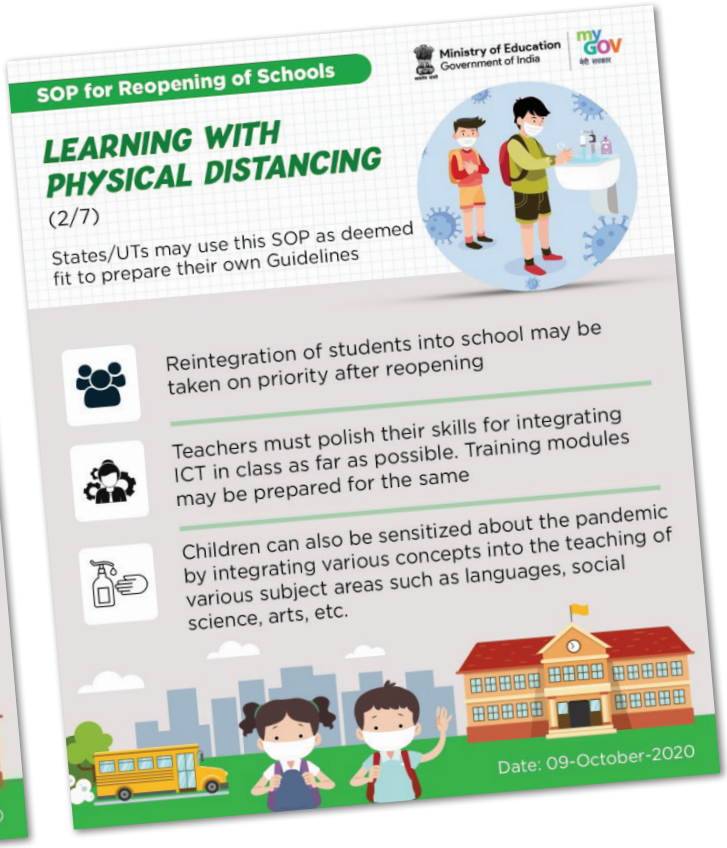
Northwell Health, the largest healthcare provider of New York, has developed an innovative ventilator by using 3D printing technology. This innovation is helping COVID-19 patients and managing the shortage of mechanical ventilators.

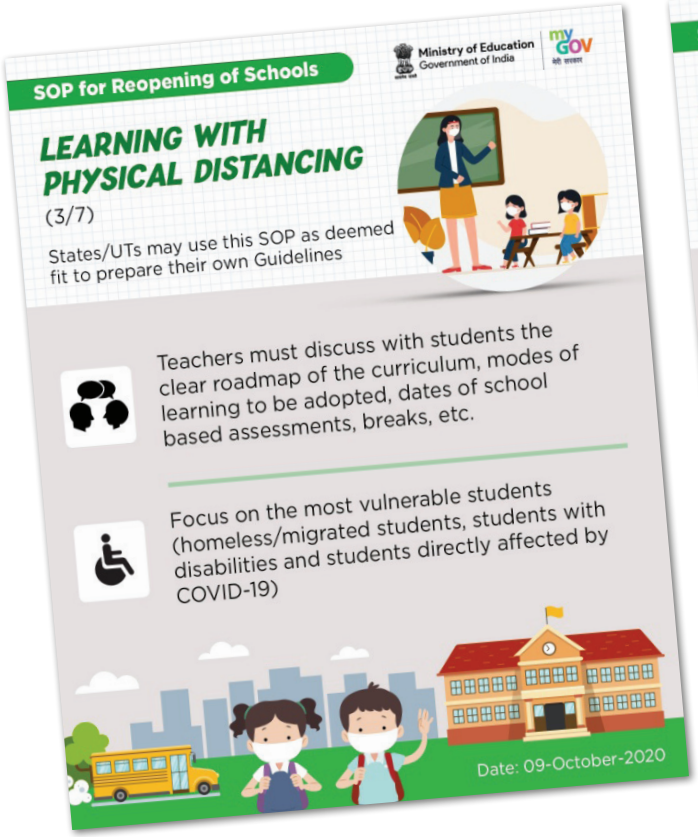
BiPAP is a type of positive airway pressure (PAP) that is commonly used to maintain a consistent breathing pattern at night or during symptom flare-ups in people with sleep apnea, congestive heart failure or chronic obstructive pulmonary disease (COPD), a chronic inflammatory lung disease. The BiPAP machine is more widely available than ventilators. A team led by Hugh Cassiere MD has developed an adaptor to convert the Philips Respironics V60 BiPAP machine into a pressure-controlled ventilator for both patients with and without COVID-19 induced lung disease.

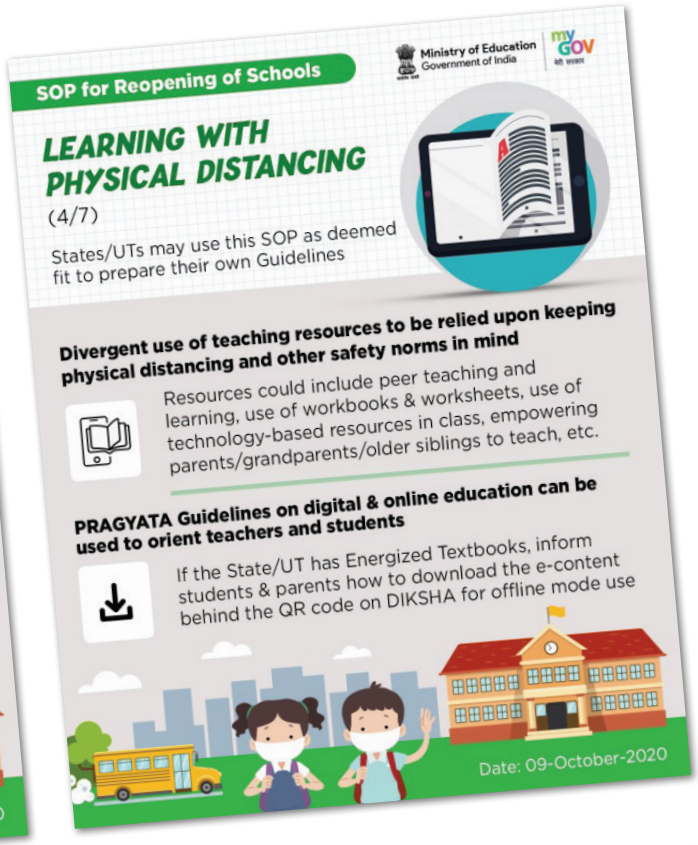
Northwell Health team and the 3D printed adaptor. *(Photo credit: Northwell Health)*

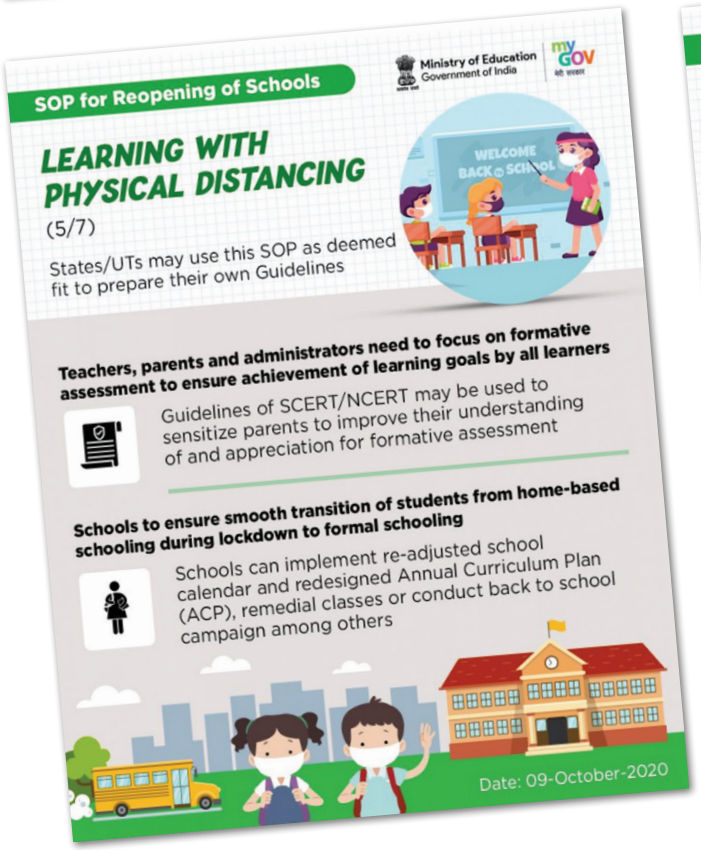
Source: https://feinstein.northwell.edu

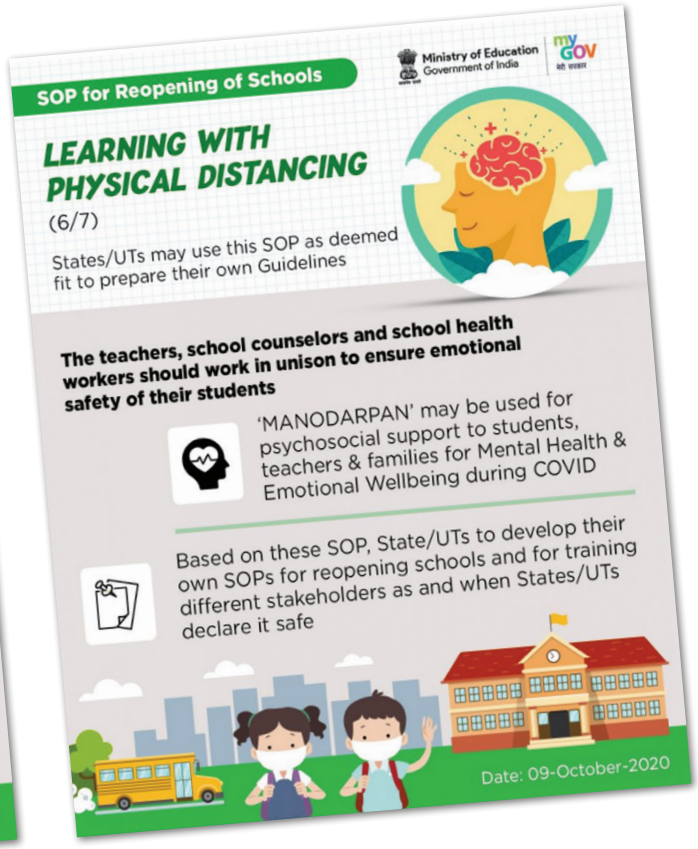





SOP for Reopening of Schools
Ministry of Education Government of India
LEARNING WITH PHYSICAL DISTANCING
(3/7)
States/UTs may use this SOP as deemed fit to prepare their own Guidelines
Teachers must discuss with students the clear roadmap of the curriculum, modes of learning to be adopted, dates of school based assessments, breaks, etc.
Focus on the most vulnerable students (homeless/migrated students, students with disabilities and students directly affected by COVID-19)
Date: 09-October-2020


SOP for Reopening of Schools
Ministry of Education Government of India
LEARNING WITH PHYSICAL DISTANCING
(4/7)
States/UTs may use this SOP as deemed fit to prepare their own Guidelines
Divergent use of teaching resources to be relied upon keeping physical distancing and other safety norms in mind
Resources could include peer teaching and learning, use of workbooks & worksheets, use of technology-based resources in class, empowering parents/grandparents/older siblings to teach, etc.
PRAGYATA Guidelines on digital & online education can be used to orient teachers and students
If the State/UT has Energized Textbooks, inform students & parents how to download the e-content behind the QR code on DIKSHA for offline mode use
Date: 09-October-2020


SOP for Reopening of Schools
Ministry of Education Government of India
LEARNING WITH PHYSICAL DISTANCING
(5/7)
States/UTs may use this SOP as deemed fit to prepare their own Guidelines
WELCOME BACK @ SCHOOL
Teachers, parents and administrators need to focus on formative assessment to ensure achievement of learning goals by all learners
Guidelines of SCERT/NCERT may be used to sensitize parents to improve their understanding of and appreciation for formative assessment
Schools to ensure smooth transition of students from home-based schooling during lockdown to formal schooling
Schools can implement re-adjusted school calendar and redesigned Annual Curriculum Plan (ACP), remedial classes or conduct back to school campaign among others
Date: 09-October-2020


SOP for Reopening of Schools
Ministry of Education Government of India
LEARNING WITH PHYSICAL DISTANCING
(6/7)
States/UTs may use this SOP as deemed fit to prepare their own Guidelines
The teachers, school counselors and school health workers should work in unison to ensure emotional safety of their students
'MANODARPAN' may be used for psychosocial support to students, teachers & families for Mental Health & Emotional Wellbeing during COVID
Based on these SOP, State/UTs to develop their own SOPs for reopening schools and for training different stakeholders as and when States/UTs declare it safe
Date: 09-October-2020

COVID-19 Dashboard

COVID-19 Cases and Deaths

(Data as of 11 October 2020)

	Worldwide
Total Confirmed Cases	36,996,501
Total Death	1,069,476

Source: www.who.int

INDIA

(Data as of 10 October 2020)

TOTAL SAMPLES TESTED UP TO OCTOBER 10, 2020

8,68,77,24

SAMPLES TESTED ON OCTOBER 10, 2020

210,78,544

Total Cases	Active (12.30%)
70,53,806	8,67,496
74,383 ↑	15,689 ↓

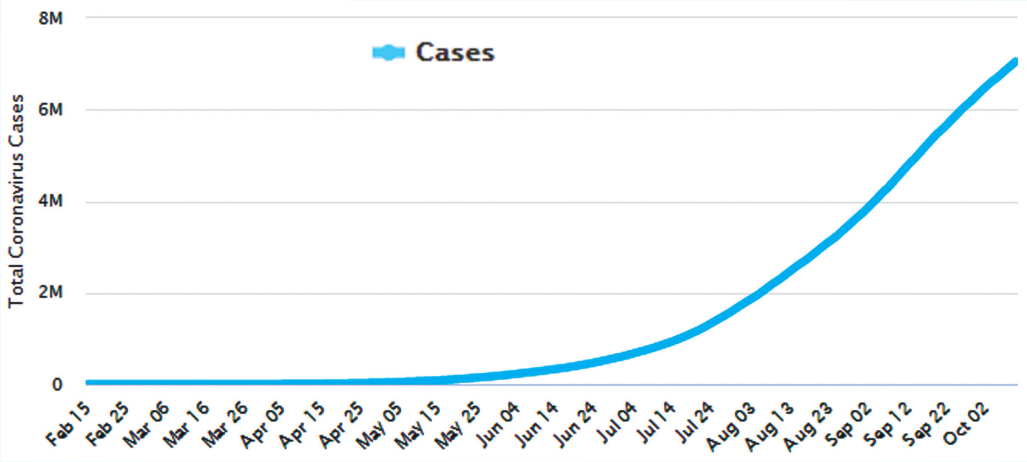
Discharged (86.17%)	Deaths (1.54%)
60,77,976	1,08,334
89,154 ↑	918 ↑

Source: www.mygov.in

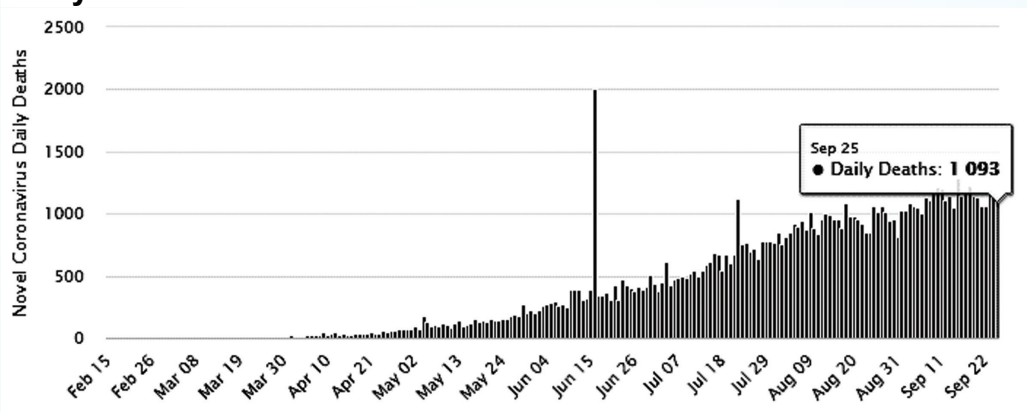
Graph
INDIA

(Data as of 10 October 2020)

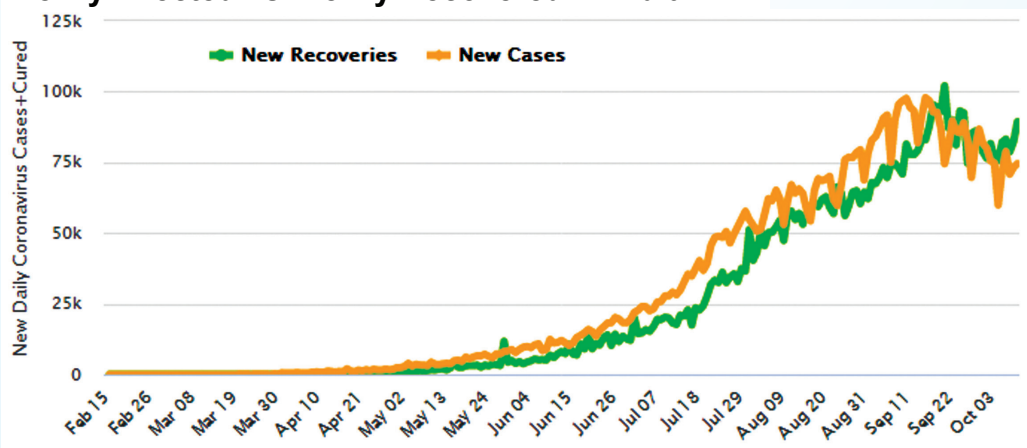
Total Cases in India



Daily New Cases in India



Newly Infected vs. Newly Recovered in India



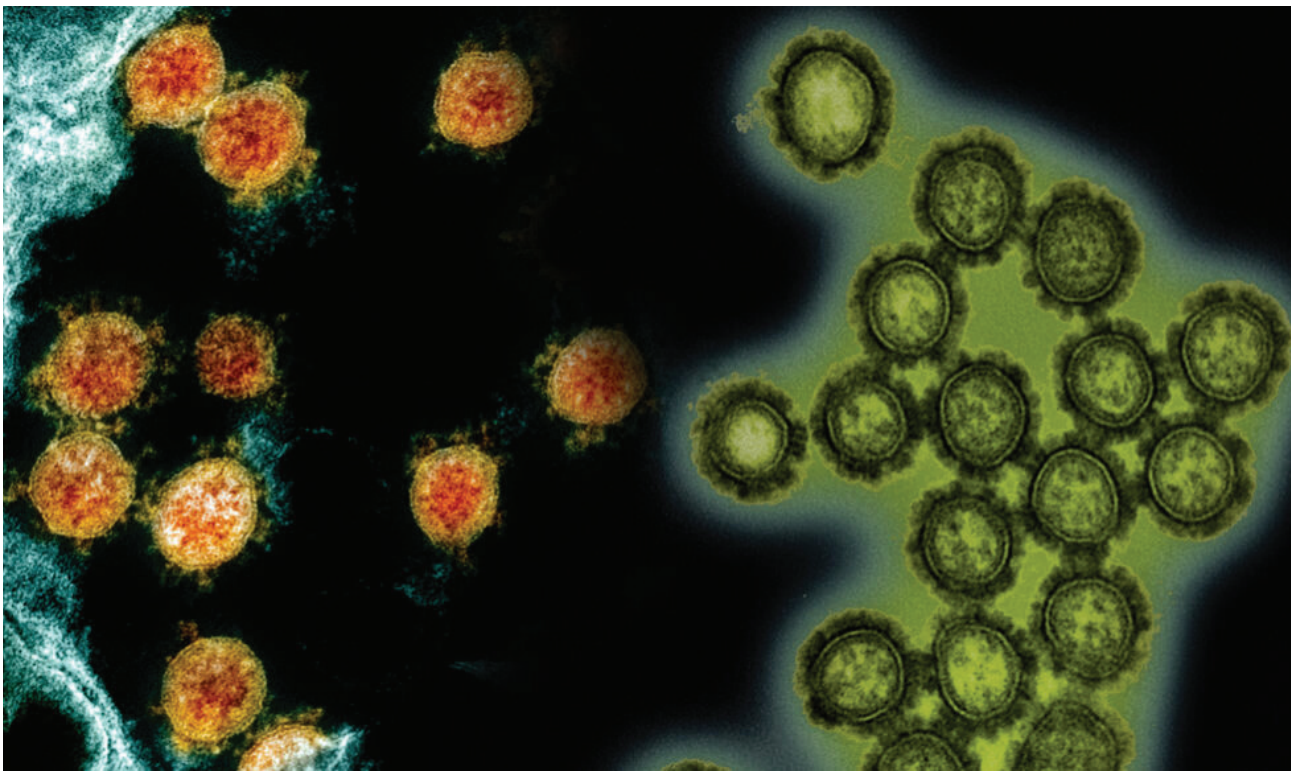
Source: www.worldometers.info

CORONA Q&A

What will happen when COVID-19 and the flu collide this fall?

The specter of a "twindemic", two epidemics at the same time, loom as cold and flu season starts in October in the Northern Hemisphere. No one can predict what will happen when flu meets COVID-19, but public health officials are urging people to prepare for the worst. Infectious diseases experts worry about a conjunction of influenza and coronavirus for multiple reasons, beyond overburdened health systems. Teasing out whether a person has flu or coronavirus, which have very similar symptoms, will require testing for both viruses, at a time when turnaround for COVID-19 tests is often slow. And some people may get infected with multiple viruses simultaneously, which could make symptoms more severe. But hints from the Southern Hemisphere give hope that the worst may not happen. Scientists usually forecast flu seasons' severity in the north by watching what happens south of the equator, where flu season falls in the middle of the year. This year, the preview held good news; a mild season for flu and some other respiratory viruses.

According to Jeanne Marrazzo, director of the infectious diseases division of the University of Alabama at Birmingham,



SARS-CoV-2, the virus that causes COVID-19 (shown in a colorized electron micrograph, left, in orange) may soon face off against influenza (H1N1 influenza virus particles in green, right) as seen in this composite image.

"We could see a perfect storm of accelerated COVID-19 activity as people gather more inside in particular, as they become increasingly fatigued with the mask wearing, social distancing and the hand hygiene, and as they are exposed to seasonal influenza".

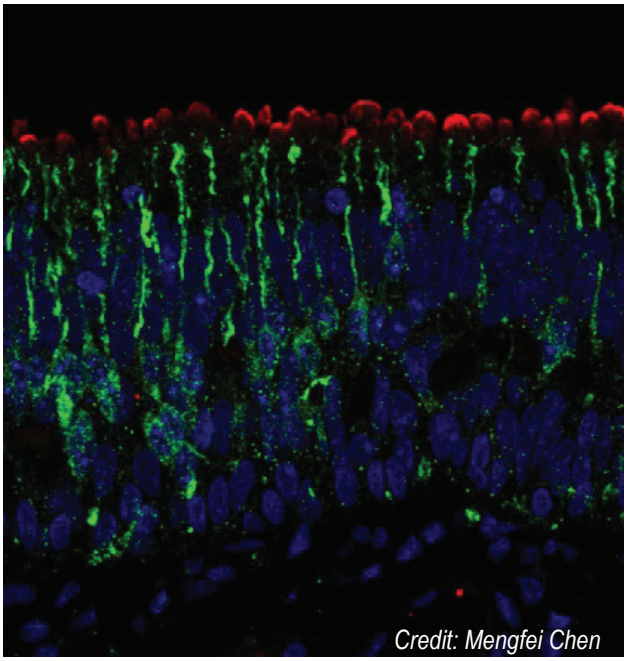
Richard Webby, a virologist at St. Jude Children's Research Hospital in Memphis, Tenn., is involved in efforts to predict which flu strains will dominate so that vaccines can be designed accordingly. One pattern Webby and other flu researchers have seen over and over again is that when a new pandemic influenza strain arises, it pushes out another strain.

According to the experts, it's not impossible to catch viral infections at the same time or in quick succession, but getting one viral infection generally makes it harder to get another one. That's because viral infections tend to rev up the immune system's generalized antiviral defense system, known as the innate immune system. Catching one virus sets off alarm bells in the form of virus-fighting immune chemicals known as interferons. For a short period after an infection, maybe weeks to months, the immune system stays on high alert with defenses at least partially raised to ward off any subsequent intruders. That battening of the hatches against other viral invaders is different from the specific kind of immunity that comes from making antibodies against a particular virus. But it still might be useful.

Injected flu vaccines are usually made with killed viruses and don't offer the same generalized virus protection as live vaccines. But public health officials are urging people to get flu vaccines, to reduce the chances of getting infected with both viruses and hopefully ward off a nasty flu season.

www.sciencenews.org

Can the treatment that targets the coronavirus in the nose help prevent COVID-19?



In the upper, back part of a person's nasal cavity, certain cells contain lots of ACE2 (red), a protein that can allow entry to the virus that causes COVID-19. Here, cells' nuclei are shown in blue and olfactory nerve cells, which don't seem to have ACE2, are green

COVID-19 can ravage the body, targeting the lungs, heart and blood vessels. To curb this wide-ranging attack, scientists are focusing on another part of the body, the nose. The virus that causes the illness, SARS-CoV-2, gains its foothold by infecting certain nasal cells, studies suggest. As a result, the nose has emerged as a key battleground in the war against COVID-19. Slowing or stopping that nasal invasion might ultimately be powerful enough to change the course of the pandemic, some scientists suspect.

So far, no such therapies exist. But people who study the nose and its contents bring fresh perspectives about the early stages of COVID-19 infections. Scientists are developing and testing ways to prevent

the virus from settling in to prime nasal real estate. These include a nose spray that smothers and inactivates a key viral protein, disinfectants that are commonly used before sinus surgeries, and even dilute baby shampoo misted up the nose.

In a recent study published in *European Respiratory Journal*, Andrew Lane, an otolaryngologist and rhinology specialist at Johns Hopkins School of Medicine and his colleagues measured levels of a protein on human cells called ACE2 that's thought to be one of the ways the virus can infect the cells. Among a collection of human tissues taken from the noses and throats of people, the upper back part of the nasal cavity, known as the olfactory epithelium, was packed with ACE2. (This spot is also where smell cells dwell; SARS-CoV-2 infections there have been linked to loss of smell). ACE2 signal suggests that those cells might be key entry ports that allow the virus to move into the rest of the body, and even perhaps back out again to infect other people.

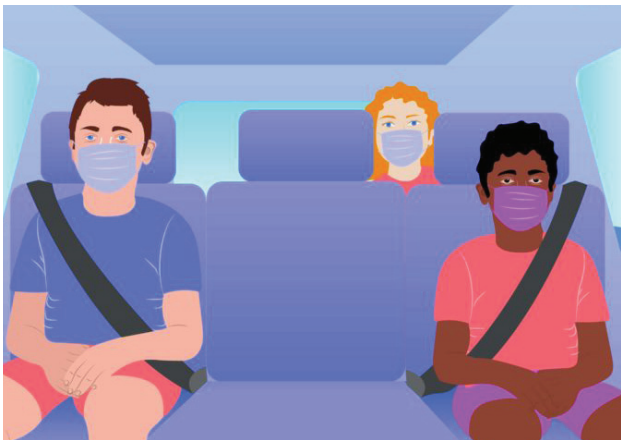
To interrupt the infection in the nose, some scientists are turning to specialized immune proteins found in camels, llamas and alpacas. Called nanobodies, these proteins help fight off invaders in the body, but are smaller and thought to be hardier than their human antibody kin. The researchers haven't yet tested the nanobodies in people. But their preliminary results suggest that, once neutralized with nanobodies, the virus cannot enter human cells. It cannot establish that beachfront in the nasal cavity. These nanobodies were stable when dried and aerosolized, the researchers found, suggesting that they could be made into a nose spray. Early hints that this rinse might work come from studies of the virus in lab dishes, including a paper published June 16 in the *Journal of Prosthodontics*. And a clinical trial is under way at the University of Kentucky in Lexington with health care workers using povidone-iodine nose sprays and gargles preventively before, during and after shifts.

Other researchers are turning to an even more low-tech solution: a mixture of soap and salt. Saline rinses can remove bacteria and allergens from the nasal cavity and ease symptoms of allergies, sinus infections and colds. A current clinical trial is designed to look for effects of baby shampoo mixed with a salt solution on the symptoms and possible spreading of SARS-CoV-2 in people who have COVID-19. The soapy solution might be able to wash viruses out of the nose, or pop their protective outer layer and inactivate them, says Justin Turner, a nasal and sinus surgeon and rhinologist who is among the researchers running the trial at Vanderbilt University in Nashville. Those interim results appear in the *International Forum of Allergy & Rhinology*. It's possible that nose rinses might stir up the virus and facilitate its spread but the idea of a nose rinse holds promise, and is worth testing.

www.sciencenews.org

Is it safe to carpool with other people's kids if you're at high risk for COVID-19?

If your child's school is reopening for in-person learning this year, you may wonder if carpooling is a safer bet than sending them to school on a bus during COVID-19. The virus that causes COVID-19 mainly spreads through respiratory droplets that travel from one person through coughing, sneezing, or talking and infect a person nearby. This is why the U.S. Centers for Disease Control and Prevention considers social distancing, remaining at least six feet from other people, one of the most effective strategies to avoid being exposed to the virus right now.



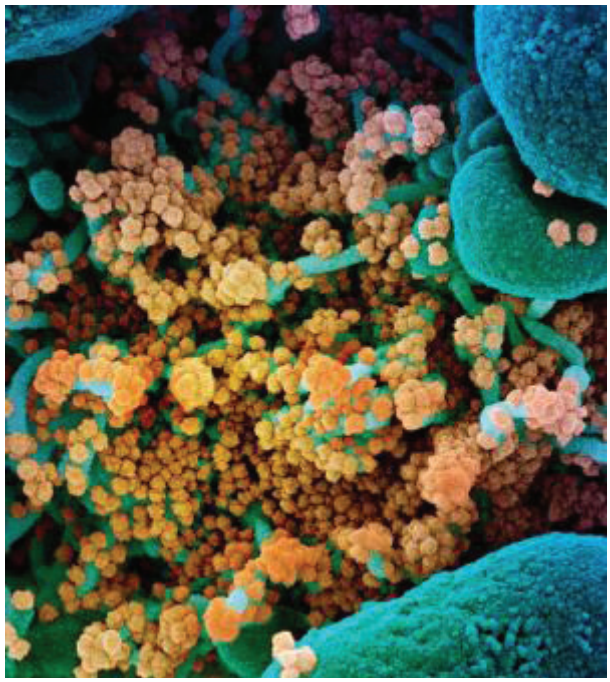
However, that's virtually impossible when you're in a car with individuals from outside of your household. The biggest concern with carpooling is that when kids and their friends are in the car, it's not possible for anybody to be more than six feet apart, so they can't social distance well. That close proximity, along with being in an enclosed space, puts you at higher risk during carpooling.

Although the CDC doesn't currently provide guidelines for carpooling with kids, it recommends that companies encourage individuals who commute to work to use transportation that minimizes close contact with others, such as biking, walking, or driving by car either alone or only with household members. Not only is there the risk of infected respiratory droplets spreading easily in a car, there are also several shared surfaces like door handles and seat belt buckles. Your level of risk may depend on the size of the vehicle being used and the level of local community spread.

Of course, experts acknowledge that it may not be possible for every family to avoid carpooling. If you can't drop your child off in your own vehicle, keep in mind that it may actually be possible to create more physical distance between seats on a bus — one that's not filled to capacity, than in a carpool.

www.creakyjoints.org

Is it true, COVID-19 antibodies decay quickly after mild illness?



University of California at Los Angeles researchers have found that levels of antibodies against SARS-CoV-2, the virus that causes COVID-19, dropped dramatically over the first 3 months of infection in 34 people recovered from mild illness. This research published in *New England Journal of Medicine* said that antibody levels against the novel coronavirus decreased by about half every 73 days and, if that rate were sustained, would be depleted within about a year.

In the first known estimation of the rate of SARS-CoV-2 antibody decay, the researchers studied the blood samples of 20 women and 14 men who had recovered from a mild case of COVID-19. The protective role of antibodies against the novel coronavirus is not known, but antibodies usually confer at least partial antiviral immunity for some time, the authors noted. The study found that the rate of antibody loss for SARS-CoV-2 was faster than that reported for

SARS-CoV-1, the virus that causes severe acute respiratory syndrome (SARS). The findings are similar to those of several previous reports showing rapidly decreasing antibody levels after infection, including one published in *Nature,* which showed that levels of antibodies against COVID-19 began to decrease within 2 or 3 months of infection.

The researchers said that their findings mean that people with mild illness, that is, most people with COVID-19, may not have long-lasting immunity to it, although they can't extrapolate beyond their 90-day observation period, after which the decay rate would be expected to slow.

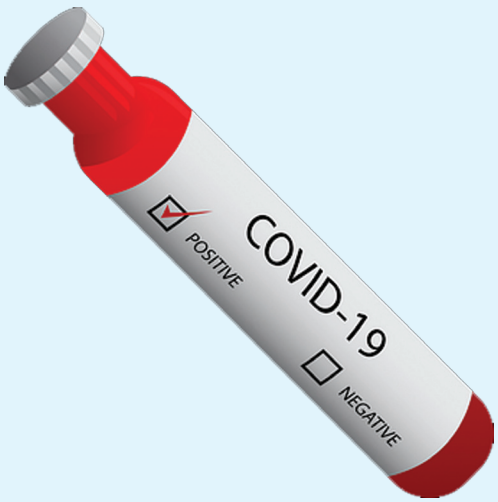
The results also dim hopes for "immunity passports," which some governments have suggested would allow recovered COVID-19 patients to return to work or travel on the presumption that they were immune against reinfection. The results call for caution regarding antibody-based 'immunity passports,' herd immunity, and perhaps vaccine durability, especially in light of short-lived immunity against common human coronaviruses. Further studies will be needed to define a quantitative protection threshold and rate of decline of antiviral antibodies beyond 90 days.

www.cidrap.umn.edu

COVID-19 MYTH BUSTERS

MYTH

If you test negative for COVID-19 it means you definitely don't have COVID-19

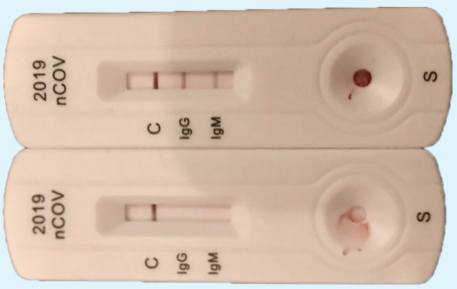


FACT

No, with tests for COVID-19 there is always the possibility of a false negative test, meaning a person tests negative even though the virus is inside their body. This can happen for a number of reasons. First, if a person is having a PCR test, also known as a molecular test, this usually involves a long thin swab being pushed into their nose and to the back of their throat. But if this swab is not pushed far back enough this can cause a false negative. Second, the person might be infected with the virus but there might only be very small amounts of the virus in their body, this can happen early on in the infection, and if this is the case, a test might not detect those small amounts of virus. Third, there can be problems with the test kits themselves that cause some people who are positive to test negative. For these reasons, we have to interpret the results of COVID-19 tests with additional information about the patient, how the patient is feeling, who they have been exposed to, and if they live in an area where there is a lot of virus being spread.

www.digitalmedic.stanford.edu

If an individual is tested more than once, and tests positive, they are counted as an additional case

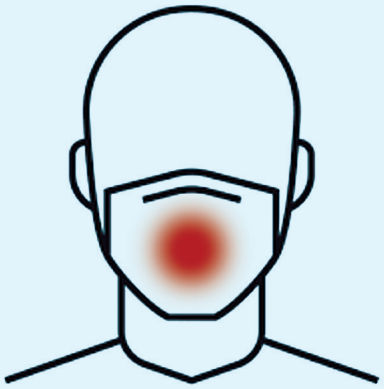


If an individual is tested for COVID-19, tests positive, and is tested again in a few days and tests positive again, they are still considered just one case. The additional positive tests are not counted as additional cases. However, if an individual tests positive, recovers, and after 90 days tests positive again, this individual would be considered a new case since they have been re-infected.

www.hoptownchronicle.org

MYTH ✗

Wearing a mask can make me sick or brain damaged by reducing my oxygen supply



FACT ✓

No, masks allow plenty of oxygen to enter your body. The carbon dioxide you breathe out dissipates quickly too. Health care providers wear masks all the time, for many hours at a time. Even before COVID-19, doctors and nurses working with at-risk patients or in operating rooms routinely wore masks even for 12-hour shifts. No one got sick. No one ran out of oxygen. Masks are better at stopping the spray of breath, a cough or a sneeze than using a tissue or the inside of your elbow. But they are only one part of the many ways we can work together to slow the spread of the coronavirus. Hand washing, social distancing and staying isolated when you're sick are important factors too.

www.adventisthealth.org

People with allergies are more susceptible to severe illness from COVID-19

No. Current guidance lists many groups at high risk for complications from COVID-19 but individuals with allergies are not included.

www.lung.org

Allergy medications helpful or harmful during this pandemic

Allergy medications are helpful to treat allergy symptoms and should continue to be taken as needed. Allergy medications do not suppress the immune system nor put people at higher risk of COVID-19 complications. Prescription nasal sprays contain steroids to decrease nasal and sinus inflammation, but the dose is not enough to affect the immune response to COVID-19. Patients should continue to use their nasal sprays and keep their allergy symptoms under good control. However, whatever you do, don't hoard or overuse any medications, only take them as prescribed.

www.lung.org

MYTH ✗

Air pollution can increase susceptibility to COVID-19 infection

FACT ✓

An emerging body of research is showing that people exposed to air pollution may be more vulnerable to severe symptoms of COVID-19. A study from Harvard found that even small, long-term exposures to particle pollution can increase an individual's risk of death from COVID-19 by 8%.

www.lung.org

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