COVID-19 BULLETIN

30 JUNE 2020

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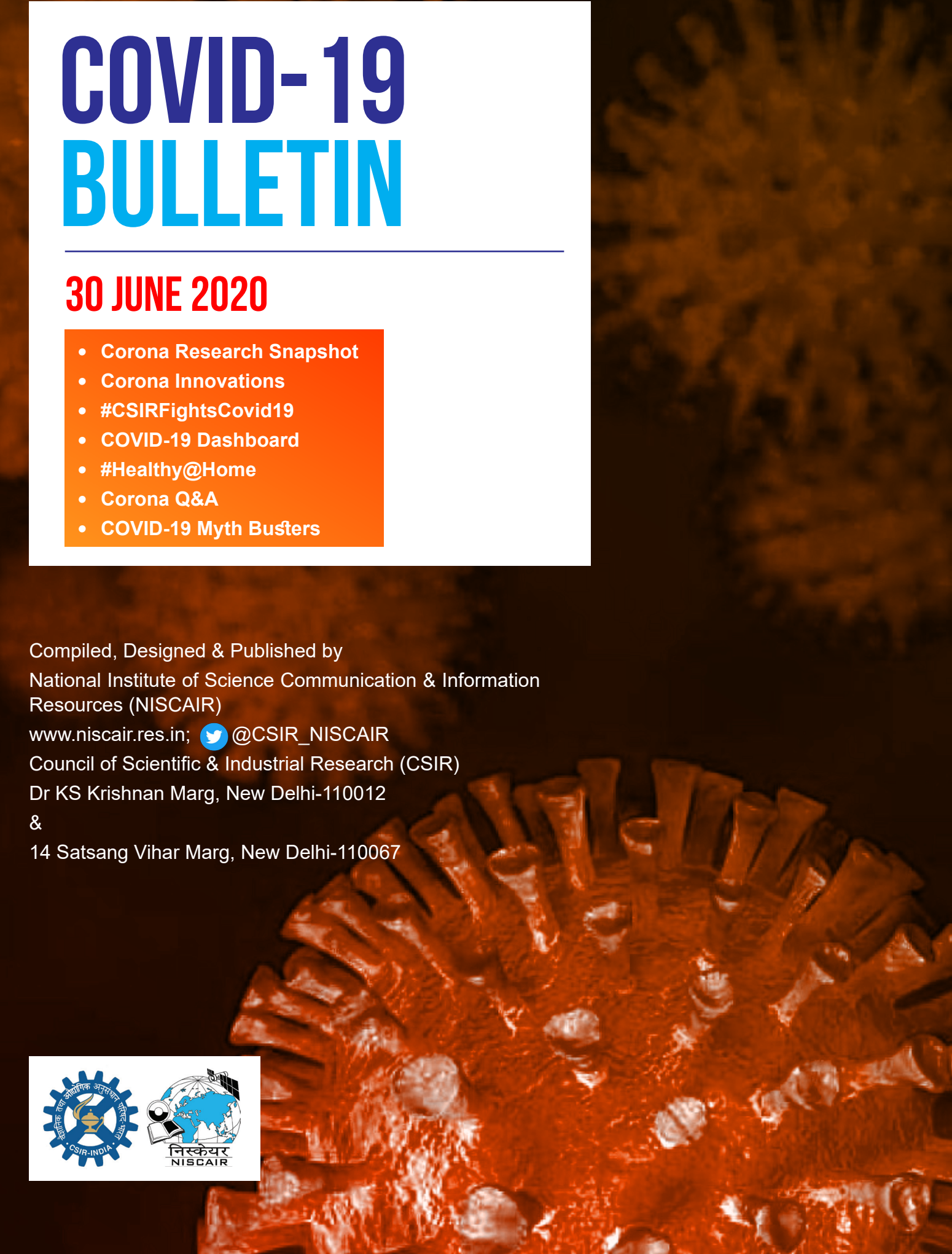
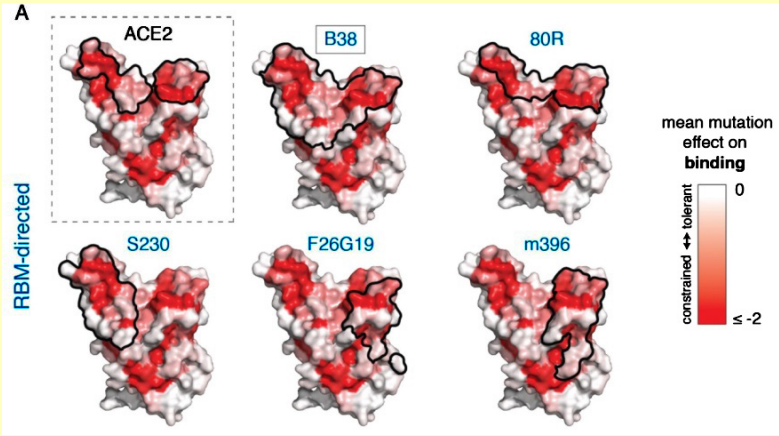


CORONA RESEARCH SNAPSHOT

Scientists engineer amino acid to impair the spike protein's binding ability on human cells

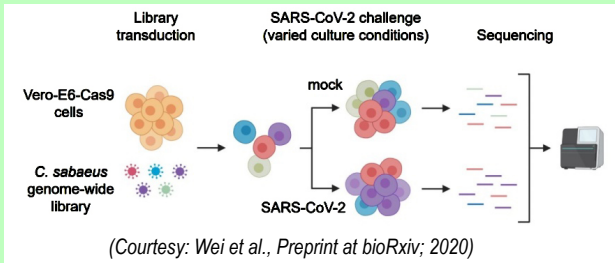


(Courtesy: Starr et al.,bioRxiv, 2020)

To infect a cell, the spike protein of SARS-CoV-2 binds to the ACE2 receptors present on the surface of human cell membrane. Scientists are trying to invent a mechanism that can reduce the binding capability of spike protein on human cell membrane. Scientists at Hutchinson Cancer Research Centre, USA have created and described more than 3,804 variations of the protein that SARS-CoV-2 utilises to latch on to its targets. Spike protein molecules are big molecules with amino acids. The scientists altered a single amino acid at a time present in a key segment of spike protein to generate 3804 variants of proteins. These variants of proteins are tested for their binding abilities on the human cell membrane. The tests confirm that many of these protein variants bind well with the cell membrane, finally causing SARS-CoV-2 infection. The tests also revealed that there are artificially alterable amino acids that can impair the binding ability of spike protein. This understanding is potentially useful in engineering the drug molecules which can neutralise the ability of SARS-CoV-2 to infect human cells. The study is under peer review presently.

(Source: Preprint at bioRxiv; http://doi.org/dz8r)

CRISPR identifies host genes helping SARS-CoV-2 viral infection



(Courtesy: Wei et al., Preprint at bioRxiv; 2020)

The understanding about host genes can reveal why some people are more susceptible to SARS-CoV-2 infection than others and also in designing new therapies. Researchers at MIT and Harvard, USA used CRISPR-Cas9 to alter the host genes in cultured monkey cells. The researchers pinpointed the genes that influence viral infection and cause host cell death. The experiments confirmed that there are a few host genes that assist SARS-CoV-2 infection in the cultured monkey cells. Among them, there are other proteins which are involved in cell growth and death. The study is under peer review.

(Source: Preprint at bioRxiv; http://doi.org/dzz3)

Youth below 20 years of age are at minimum risk of SARS-CoV-2 infection

In a detailed study, published in the journal *Lancet Inf. Dis,* researchers have concluded that people under the age of 20 years are the most protected among others. Scientists of the University of Florida, USA and Guangzhou Centre for Disease Control and Prevention, China analysed viral transmission among infected people and individuals who are in close contact with them. They found that individuals under the age of 20 had 5.2% risk of being infected, in comparison to 14.8% risk for 20-59 age and 18.4% risk for 60 and above age when kept

(Courtesy: New Indian Express)

in close contact with infected people. The researchers also observed that people with COVID-19 were at least as infectious before their symptoms started and after it.

(Source: *Lancet Inf. Dis*.; http://doi.org/dznw)

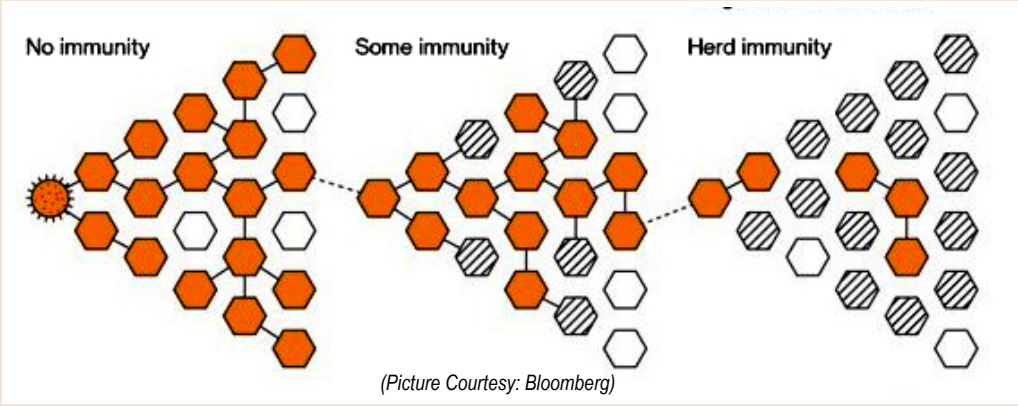
Animal models of Hamsters develop protective immunity to SARS-CoV-2 by convalescent serum

(Picture Courtesy: Creative Commons)

Syrian hamsters, commonly kept as pets, have helped scientists understand human infectious diseases for a very long time due to their many similarities with human body. Hamsters are good animal models for SARS-CoV-2 research. In a collaborative study by the scientists of University of Wisconsin-Madison, USA and University of Tokyo-Japan, it has been observed that the convalescent serum limits the viral invasion in the lungs of hamster animal models. The scientists observed that COVID-19 can infect both their upper and lower respiratory tracts. The SARS-CoV-2 virus could severely infect lungs of the animal models as confirmed by the CT-scans. The most severe effects are observed within eight days after infection. COVID-19 is no longer detected in the organs of animal models after 10 days of infection but the lung damage persisted for 14 days in most of the animal models. The convalescent plasma or sera extracted from recovered COVID-19 patients' blood was used to treat these hamsters. The studies are published in *Proceedings of the National Academy of Sciences*.

(Source: Proceedings of the National Academy of Sciences, DOI: 10.1073/pnas.2009799117)

According to a mathematical model, herd immunity threshold could be lower for COVID-19

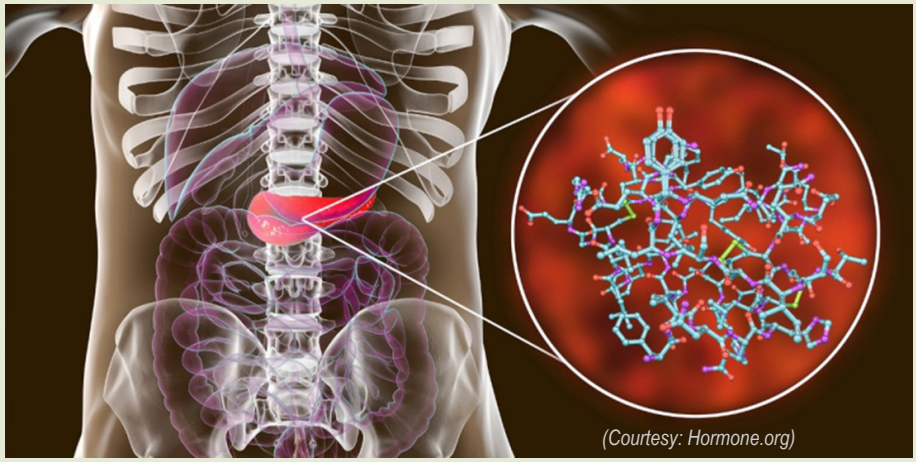


(Picture Courtesy: Bloomberg)

Herd immunity is achieved when enough numbers of individuals in the community become immune to an infectious virus such that the virus is unable to find new hosts. Mathematicians from the University of Nottingham, UK and University of Stockholm, Sweden formulated a mathematical model to estimate the conditions for herd immunity in case of SARS-CoV-2. The researchers categorised people into several groups reflecting age and social activity. They estimated that the herd immunity level can be achieved after infecting 43% of population in case of COVID-19 in comparison to 60% for other viruses. The research has been published recently in the journal *Science* after peer review.

(Source: Science, June 23, 2020; DOI: 10.1126/science.abc6810)

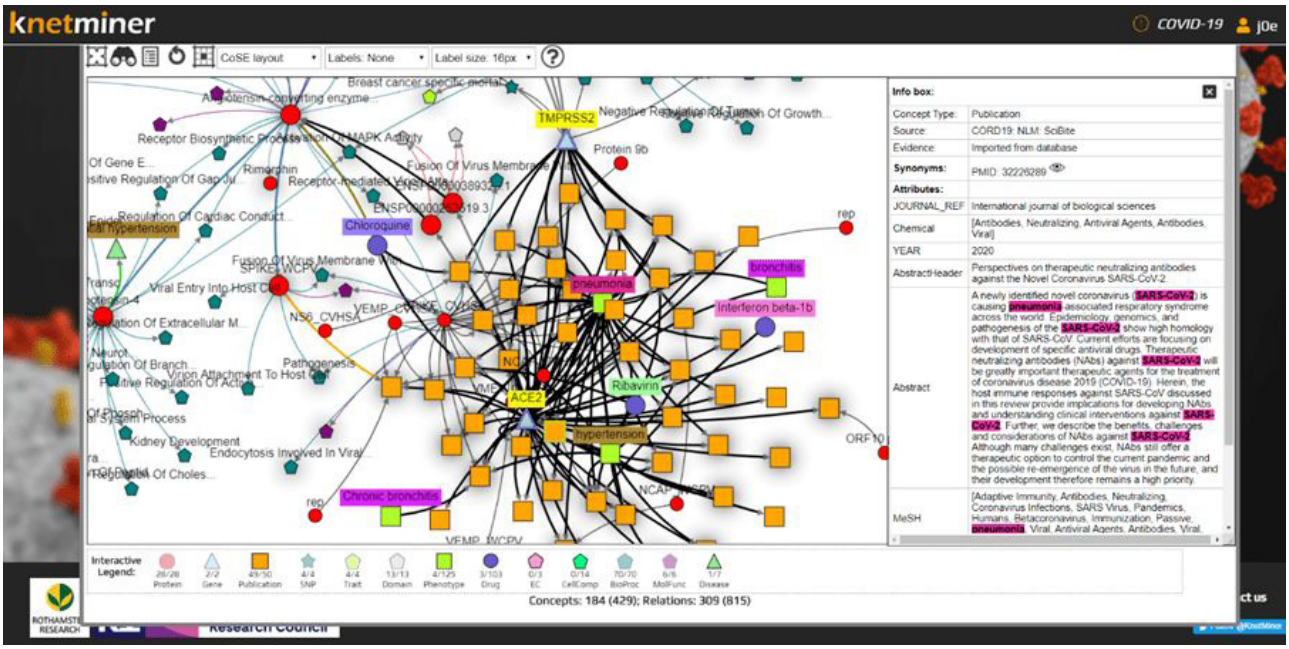
Tissue studies show that SARS-CoV-2 is damaging insulin producing cells in selected people


(Courtesy: Hormone.org)

In most people with type 1 diabetes, their immune cells start destroying beta-cells. These beta-cells are responsible for producing the hormone insulin which is necessary to fight diabetes. Diabetes has already proved to be dangerous in combination with SARS-CoV-2. Researchers have detected extremely high levels of blood sugar after COVID-19 infection in many patients worldwide. There is growing evidence that SARS-CoV-2 is damaging insulin producing cells in case of infection in selected cases. The study published very recently (19th June) in *Cell Stem Cell* journal indicates the role of SARS-CoV-2 in damaging insulin cells. However, scientists are suggesting the need for more detailed studies to confirm the hypothesis and understand the mechanism of the process.

(Source: Nature News; *DOI: 10.1038/d41586-020-01891-8* and Cell Stem Cell; DOI: 10.1016/j.stem.2020.06.015)

CORONA INNOVATIONS



Human COVID-19 Antibody Library launched

ProteoGenix has launched the first Human Immune COVID-19 library for fast discovery of potent antibodies against SARS-CoV-2. This library has been created by using blood samples from dozens of recovered COVID-19 patients which is adapted for screening with phage display and strives to meet the rising demands for effective antibodies for a broad range of applications.

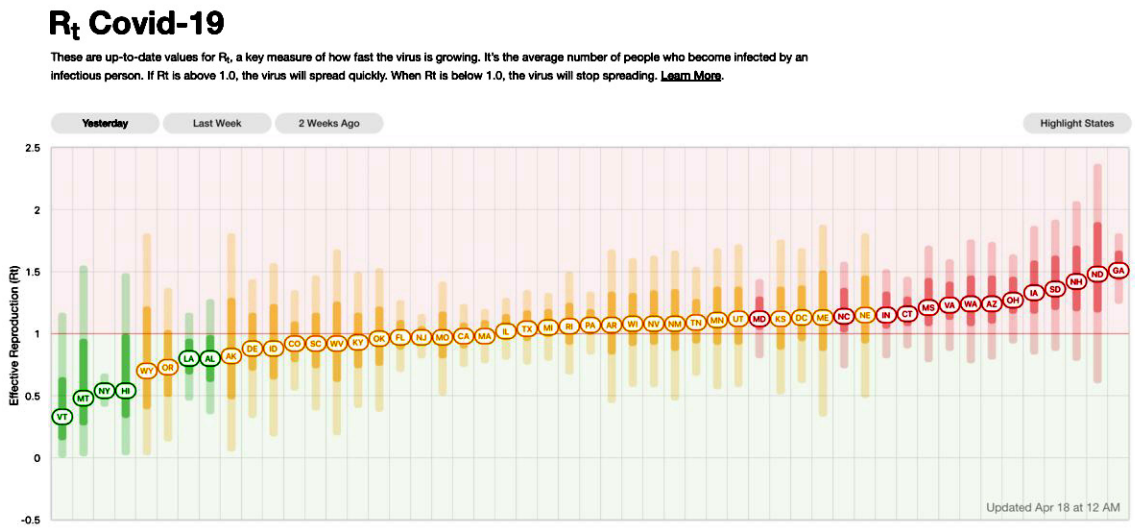
The library's diversity (1.2×10^{10} different clones) allied to the fast turnaround time and sensitivity of the screening technology, is intended to fast-track the discovery of antibodies with the strongest specificity, affinity and viral blocking activity. Compared to the hybridoma technology, phage display saves time by allowing us to directly screen highly diverse and human antibody libraries. In addition to developing therapeutic antibodies, this technique also helps to reduce the time-to-market by avoiding complex antibody humanization processes.

(Source: https://www.news-medical.net)

AI-powered low-cost Covid-19 testing kit

Indian Institute of Technology, Hyderabad, has developed an Artificial-intelligence powered COVID-19 Testing Kit. The kit can generate results for both symptomatic and asymptomatic patients in 20 minutes and is capable of performing at an affordable cost. To ensure the efficiency, the testing kit has already been field-tested at ESIC Medical College and Hospital in Hyderabad.

Source: timesofindia.indiatimes



Instagram founders launch coronavirus tracker

Entrepreneuers and founders of Instagram Kevin Systrom and Mike Krieger have launched the coronavirus tracker website named Rt.live. The website uses continuously updated data from the COVID Tracking Project to determine how quickly the novel coronavirus is spreading state by state in the U.S. The website focuses on the "Rt" value of coronavirus, where anything above 1.0 indicates that it is spreading in a given state and numbers below 1.0 indicate the spread is slowing down.

The metric being tracked in this Rt.live tracker represents the effective reproduction rate of the virus calculated for each locale. It gives estimate of how many secondary infections are likely to occur from a single infection in a specific area. Values over 1.0 mean more cases are expected in that area and values less than 1.0 mean we should expect fewer.

Epidemiologists have argued that for controlling COVID-19, we not only need to know *Rt*, but also local *Rt.* Knowledge of the local *Rt* allows us to manage the pandemic effectively.

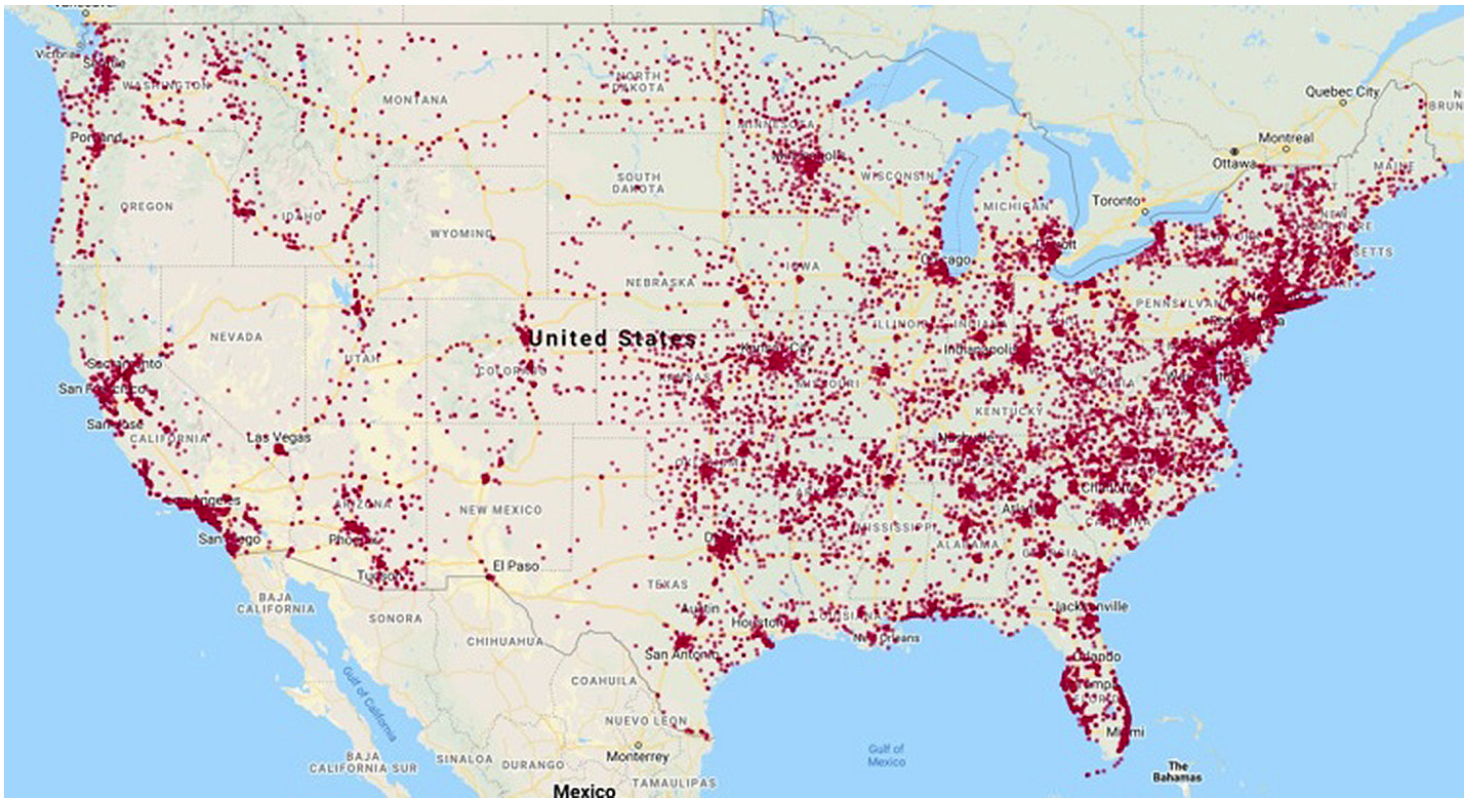
(Source: https://www.wbur.org)

Podcast addresses COVID-19 with the help of AI

COVID-19 is reshaping healthcare system through technology. The AHA Center for Health Innovation and Accenture have come up with the podcast technology to address the COVID-19 pandemic.

AHA has explored the impact of utilizing AI to improve healthcare service and to serve as a valuable resource for hospitals and health systems during this global pandemic. AHA has published a Market Insights report “AI and Care Delivery”. The report explores the four building blocks (people, policies, resources and technology) hospitals and health system leaders need to create an effective clinical AI program.

(Source: https://www.accenture.com)



Fighting the pandemic hunger crisis

Food insecurity has become one of the toughest challenges of the COVID-19 economic fallout. With unprecedented unemployment sweeping the nation, and hunger on the rise, 10x Management, a freelance developer hiring agency, has partnered with WhyHunger and software engineers Greg Sadetsky and Colin Wren to draw out a pandemic hunger solution. They have developed a comprehensive, crowd-sourced open-source interactive map of free meal sites in the United States.

10x Management and WhyHunger saw a vital opportunity to use their mapping and software background to create this resource to help individuals in their dire needs. They provide real-time information, increase access and combat food insecurity during this pandemic. This open-source interactive mapis updated daily.

(Source: https://whyhunger.org)

Ultraviolet disinfection conveyor

A baggage disinfecting conveyor to combat the virus has been developed by the Defence Research Development Organisation (DRDO)'s Kochi-based Naval Physical and Oceanographic Laboratory (NPOL), in association with city firm Apollo Microsystems Limited. The conveyor is an automated standalone system that uses UV bath for disinfecting luggage and other such items within seconds.

Source: the Hindu

'e-bloodservices' App

Dr Harsh Vardhan, Union Health Minister, launched the "eBloodServices" mobile app developed by the Indian Red Cross Society (ICRS). The App is developed by the E-Raktkosh team of Centre for Development of Advanced Computing (CDAC) to ascertain 'transparency' in the blood donation programme and minimise the worries of those who need blood during the difficult phase of Covid-19 pandemic.

Source: republicworld

NavRakshak PPE

National Research Development Corporation (NRDC) has licensed the manufacturing knowhow of a PPE suit named NavRakshak to five MSME clients to meet the ongoing countrywide demand of quality PPE kits. The five manufacturers are together planning to mass-produce more than 10 million PPEs per year.

Source: PIB

COVID-19 predictive model

IIT Kharagpur has developed a prediction system to help predict the future spread of COVID-19 and help decision making in health-care, industry, economy, and even academics. The data used for the predictions pertain to the entire country, and for the eight most affected states in the country including Maharashtra, Tamil Nadu, Delhi, Gujarat, Uttar Pradesh, Rajasthan, West Bengal, and Madhya Pradesh.

Source: kgpchronicle.iitkgp.ac.in

COVID-19 Predictions for India
An Initial Attempt

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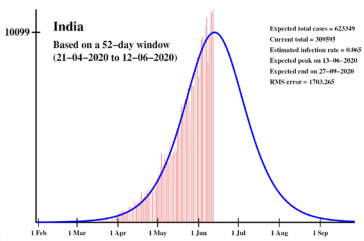
Date: 13-June-2020

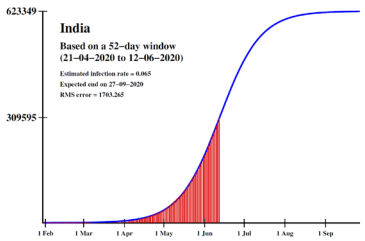
(Technical Report)

Abstract—In this report, some attempts for making predictions about the COVID-19 pandemic in India are documented. The logistic model is used to fit the available daily counts of infection cases. The best estimates are obtained using the concept of minimizing the root-mean-square (RMS) errors. Moving averages are used to smooth out daily noises. The tool is applied on national data and also on state-level data.

The model shows remarkably good fitting with the past data. However, the predictions for the future change quite rapidly with time. It appears that the spread of the infection in India has not yet reached a steady pattern. Consequently, predictive systems (like the one reported here) are unable to make reliable and definitive predictions about the future of the disease in India. Nevertheless, the trend revealed by the model may be a good indicator, and can be used for future planning.

Index Terms—SARS-COV-2, COVID-19, pandemic, prediction, logistic model, least-square curve fitting, nonlinear regression.





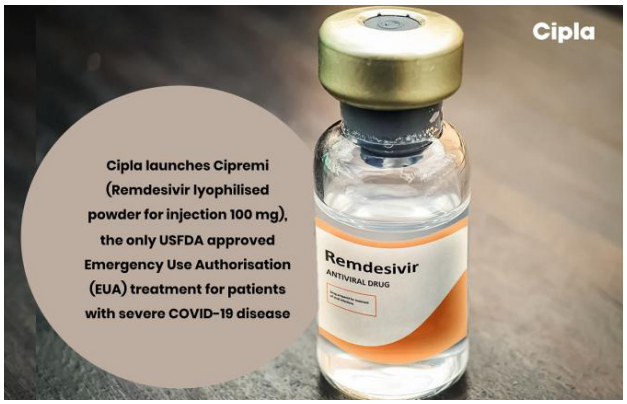
FabiFlu is the first oral Favipiravir

Image credit: Pixabay

Glenmark, a research-led, integrated global pharmaceutical company, has become the first pharmaceutical company in India to receive regulatory approval for oral antiviral Favipiravir, for the treatment of mild to moderate COVID-19. Glenmark Pharmaceuticals announced the launch of antiviral drug Favipiravir (brand name FabiFlu®) for the treatment of mild to moderate COVID-19 patients. Glenmark has received manufacturing and marketing approval from India's drug regulator, making FabiFlu® the first oral Favipiravir-approved medication in India for the treatment of COVID-19.

Source: Press Release, Glenmark

Cipla's 'Cipremi' gets approval



Cipla Limited announced the launch of Remdesivir under its brand name CIPREMI. The U.S. FDA issued an Emergency Use Authorization (EUA) to Gilead Sciences Inc. for emergency use of Remdesivir for the treatment of hospitalised COVID-19 patients. It is the only U.S. FDA approved Emergency Use Authorisation (EUA) treatment for adult and paediatric patients hospitalised with suspected or laboratory-confirmed COVID-19 infection. Cipla has been granted regulatory approval by the Drug Controller General of India (DCGI) for restricted emergency use in the country as part of the accelerated approval process considering the urgent and unmet medical need.

Source: Media Release, Cipla

'COVIFOR'

Hetero Pharmaceuticals, Hyderabad, announced the approval and launch of the first generic 'COVIFOR' (Remdesivir) in India for the treatment of COVID-19. Hetero announced that it has received the manufacturing and marketing approval for the investigational antiviral medicine 'Remdesivir' from the Drug Controller General of India (DCGI) for the treatment of COVID-19. Hetero's generic version of Remdesivir will be marketed under the brand name 'COVIFOR' in India. **Source: Press Release, Hetero**

#CSIRFightsCovid19

Ever since the Coronavirus pandemic broke out, CSIR has mounted a strategic, well-coordinated and integrated approach towards mitigating the Coronavirus outbreak ranging from containing the spread of the virus by providing sanitisation and disinfection solutions to equipping the frontline workers and health warriors with protective gear, and from exploring repurposing of existing drugs to discovering new drugs and vaccines. Here are some major developments this week.

CSIR-NCL & BEL Manufacture Oxygen Enrichment Unit

Oxygen enrichment units have special significance in view of the COVID-19 pandemic. Patient recovery can be faster with supplemental oxygen in early stages. It can reduce the number of patients who will need ventilators. Post-ventilator treatment patients can be served with this unit, thus reducing demand of oxygen cylinders. Its portability makes it convenient for using such units in home care, villages and remote places.

OEU developed by CSIR-NCL, GEnrich and manufactured by BEL

A team of scientists led by Dr Ulhas Kharul, Head of the Polymer Science and Engineering Division of CSIR-National Chemical Laboratory (CSIR-NCL) have demonstrated the use of hollow fiber membranes to enrich oxygen. The Oxygen Enrichment Unit (OEU) developed by Dr Kharul's team is efficient in providing 35-40% oxygen concentration from air with an adjustable flow rate of 0.5-15 lit/min. Atmospheric air at 5-6 bar pressure is passed through the membrane cartridge wherein the oxygen preferentially permeates through the membrane, due to intrinsic higher sorption capacity of oxygen into the membrane matrix.

The technology was licensed to NCL start-up, GEnrich Membranes. About 50 units were assembled and demonstrated in various forums, hospitals and primary health centres.

With the onset of COVID-19 pandemic, CSIR-NCL applied for certification of a prototype OEU to TUV, Bangalore, which was found to be qualified. "Overcoming several hurdles right from material supply to availability of manpower, CSIR-NCL and

GEnrich Membranes quickly assembled three units during the lock down period," stated Dr Kharul. Naidu Hospital at Pune is testing these units for treating mildly hypoxic Covid-19 patients for more than a month.

CSIR-NCL has tied up with Bharat Electronics Ltd. (BEL), Pune for the manufacture of OEU along with GEnrich. Mr. K. Rajendra, GM BEL said, "Looking at the emerging medical crisis, BEL took this project on war footing and manufactured 10 units in record time and that too with skeletal workforce. BEL has plans to manufacture another 100 units and supply to hospitals to meet the critical requirement."

CSIR's Sepsis Drug Shows Promising Results in Trials

CSIR and Cadila's joint trials on Sepsivac, a drug used to treat a life-threatening infection sepsis, have shown promising results. The Phase 2 trials were conducted across Postgraduate Institute of Medical Education and Research, Chandigarh, All India Institute of Medical Sciences (AIIMS) Delhi, and AIIMS, Bhopal.

Once the necessary data from the Phase 2 trials are available, the two parties will once again approach the regulator to see if this drug can be given emergency-use authorisation in the wake of the pandemic. Approval to start two Phase 3 trials are in place — one on 600 patients, another on 500 patients. For the third phase, two more sites will be added — AIIMS Raipur and a Banaras Hindu University institute.

Sepsivac is an immunomodulator drug that boosts the innate immunity and also works to reduce the release of inflammatory Cytokine IL-6 that attacks internal organs.

CSIR, Cipla Drug Projected to be Cheaper

A multi-centre Phase-II drug trial by CSIR indicates its drug could cost lesser by at least 20-30 per cent of the current price. This could lead to a major reduction in the cost of the drug required for the treatment of mild and moderate symptoms of coronavirus.

The CSIR had done end-to-end synthesis of Favipiravir in April. It is now conducting multi-centre Phase-II trials of the drug with Mumbai-based pharma company Cipla which is due to make public the trial results soon.

Cipla is hoping to launch the coronavirus drug by the end of June under the brand name "CIPREMI" and price it between Rs 3,000 and Rs 4,000 per dose in a tie-up with BDR Pharma to manufacture the drug.

CSIR's COVID-19 Drugs Under Clinical Trial

CSIR is working on 25 approved drugs to repurpose them for treating COVID-19. Favipiravir and Umifenovir (Arbidol) have already been approved by Drug Controller General of India (DCGI) for clinical trials to treat COVID-19. The regulatory body has approved Favipiravir for the second phase of clinical trials, and multicentre trials are underway across different locations, including Mumbai and Pune.

Along with Favipiravir and Umifenovir other CSIR drugs now in clinical trials are ACQH and Mycobacterium W (anti-leprosy drug). With the focus on repurposed drugs and with 10 in the basket so far, CSIR is hopeful of results in the next two to three months.

Multicentre clinical trials of phytopharmaceutical ACQH have also begun. It is a plant extract found in the tribal belts of Gujarat, Jharkhand and Madhya Pradesh. Another drug Mycobacterium W (Mw) has been under clinical trials.

The Umifenovir drug also has a good safety profile and acts by preventing entry of viruses into human cells. It also works to prime the immune system and is used for the treatment of influenza. Clinical trials to evaluate its efficacy are also underway.

CSIR-CSIO Develops Protective Eyewear for Healthcare Professionals

CSIR-CSIO, Chandigarh has come up with a technology for precision manufacturing of safety goggles for the healthcare professionals involved in treating high-viral load COVID-19 patients. The technology has been transferred to the Sark Industries, Chandigarh for commercialisation and mass production.

The conjunctiva membrane, located inside the eyelid to lubricate the eyeballs, is the only exposed mucous membrane of the body. When the eyes are opened, the conjunctiva membrane is also exposed, making it an important but often overlooked entrance for viruses. The protective eyewear is ergonomically designed to provide full cover and efficient sealing of the eye area and would protect the healthcare professionals from hazardous aerosols as well as other suspended particles.

A team of CSIR-CSIO scientists, led by Dr Vinod Karar, Chief Scientist and Head, Optical Devices and Systems, has come up with the affordable and innovative precision manufacturing technique. The goggles are designed with a flexible frame to provide a tighter sealing with the skin of the face covering the eyes and surrounding areas, and can also accommodate prescription glasses. The structure of the goggles consists of a sturdy polycarbonate lens and adjustable elastic strap for ease of wearing and can be used in varied environmental conditions without any fogging or fatigue.

Digital & Molecular Surveillance

Surveillance at the level of the virus, humans, and geographical origins and distributions is a critical step in combating COVID-19. While *molecular surveillance* involves large-scale sequencing of viral genomes, *digital surveillance* utilizes big data at the population level. CSIR is using digital and molecular methods to conduct surveillance using a three-pronged approach; (i) gathering information about the virus (ii) pooled testing for greater outreach (iii) patient-centric approach.

- **CSIR undertook community surveillance in Kolar and Jamshedpur. The surveillance report would help in tracing and isolation. Now,** CSIR-IGIB has access to COVID-19 samples of health workers from Max Hospital, Delhi for studying patient data and correlating with outcomes. COVID-19 virus from patients with a varied outcome (dead, recovered) will be cultured with the help of CSIR-IMTech and correlated with their genome sequence to find the plausible cause of the particular outcome. The National Institute of Nutrition, Hyderabad has collected over 3000 samples which will be available to CSIR-CCMB for similar studies.

Status of Coronavirus Sample Testing

A. *CSIR labs engaged in Sample Testing of Coronavirus:*

1) CSIR-Centre for Cellular & Molecular Biology (CSIR-CCMB), Hyderabad
2) CSIR-Institute of Microbial Technology (CSIR-IMTech), Chandigarh
3) CSIR-Indian Institute of Integrative Medicine (CSIR-IIIM), Jammu with NCDC, Delhi
4) CSIR-National Environment Engineering Research Institute (CSIR-NEERI), Nagpur
5) CSIR-Indian Institute of Toxicological Research (CSIR-IITR), Lucknow
6) CSIR-Institute of Himalayan Bioresource Technology (CSIR-IHBT), Palampur
7) CSIR-Central Drug Research Institute (CSIR-CDRI), Lucknow
8) CSIR-Central Leather Research Institute (CSIR-CLRI), Chennai
9) CSIR-Indian Institute of Petroleum (CSIR-IIP), Dehradun
10) CSIR-North East Institute of Science & Technology (CSIR-NEIST), Jorhat

B. *CSIR labs supporting State Governments in Testing:*

- CSIR-Nation Institute of Oceanography (CSIR-NIO), Goa
- CSIR-National Institute of Interdisciplinary Science & Technology (CSIR-NIIST), Thiruvananthapuram

C. *CSIR labs ready for Sample Testing:*

- CSIR-Indian Institute of Chemical Biology (CSIR-IICB), Kolkata
- CSIR-National Botanical Research Institute (CSIR-NBRI), Lucknow
- CSIR-Central Institute of Medicinal and Aromatic Plants (CSIR-CIMAP), Lucknow

- An agreement is being worked out with RML Hospital, Delhi for carrying out surveillance on their health workers using antibody-based tests.
- So far CSIR has sequenced >700 viral genomes with CSIR-IGIB having sequenced about 500 sequences and CSIR-CCMB nearly 300 sequences. Of these, 258 viral genomes have been deposited in the GISAID (Global Initiative on Sharing All Influenza Data) database and more are expected in the coming week. This would help in understanding the Indian viral strains and specific mutations if any.

SARS-CoV-2 Diagnostic Testing

The key to flattening the curve of growth in Coronavirus cases is the detection of the infected at the earliest and isolating them. A combination of digital and molecular surveillance with rapid diagnosis is the need and CSIR is striving towards that using multiple strategies. Currently, 11 CSIR labs across India are conducting COVID-19 tests. So far, 66,748 samples have been tested and during the last week 14,587 samples were tested.

CSIR Media Coverage

थ्री डी सेवा के लोकार्पण अवसर पर आयुक्त तुकाराम मुंढे, राकेश कुमार, राम जोशी व अन्य.

थ्री डी इमेज से मिलेगी कोविड की जानकारी

मनपा आयुक्त के हाथों सेवा का लोकार्पण

नागरिकों को कोविड-19 के प्रति सतर्क और सुरक्षित रखने के ध्येय से नागपुर मनपा ने राष्ट्रीय पर्यावरण अभियांत्रिकी अनुसंधान संस्थान (नीरी) और इंडियन इंस्टीट्यूट ऑफ पेट्रोलियम देहरादून के सहयोग से थ्री डी डिजिटल सेवा शुरू की है. इसमें कोविड के मरीजों की जानकारी थ्री डी स्टाइल में मनपा की अधिकृत वेबसाइट पर उपलब्ध कराई गई है.

गूगल अर्थ एप्लीकेशन का आधार लेकर यह तैयार हुआ है. उसी प्रकार नागपुर स्मार्ट सिटी प्रोजेक्ट की तरफ से कोविड-19 की जानकारी देने के लिए डैशबोर्ड तैयार किया

के हाथों सेवा का लोकार्पण हुआ. इस दौरान नीरी के निदेशक डॉ. राकेश कुमार, मनपा के अपर आयुक्त राम जोशी, नीरी के मुंबई जोन के प्रमुख व वरिष्ठ मुख्य वैज्ञानिक डॉ. रितेश विजय, प्रकल्प सहायक कौस्तुभ जिचकार व स्मार्ट सिटी के महाप्रबंधक शील घुले उपस्थित थे. आई.आई.पी. के सुनील पाठक का सहयोग मिला.

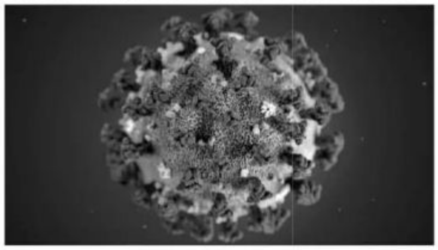
आयुक्त ने कहा कि नागरिकों को सहजता से कोविड मरीजों की जानकारी मिले, इसके लिए यह सेवा शुरू की गई है. नीरी के सहयोग से शाला, उद्यान, कार्यालय की जानकारी भी नागरिकों को इसी प्रकार उपलब्ध कराई जाएगी.

डॉ. राकेश कुमार ने कहा कि नागरिकों की मदद के लिए प्रशासन की पहल सराहनीय है. उसका

Scientists: Virus may infect respiratory centre of brain

Coronavirus could enter brain through nose and reach brain's olfactory bulb

PRESS TRUST OF INDIA
NEW DELHI, 19 JUNE



A team of researchers at the CSIR, Indian Institute of Chemical Biology (IICB), Kolkata, has explored the neuro-invasive potential of Covid-19 and suggested the virus may infect the respiratory centre of the brain, a statement said.

The researchers suggest attention should be focused on the respiratory centre of the central nervous system to learn about mortality due to coronavirus.

The paper published in *ACS Chemical Neuroscience* and supported by Science & Engineering Research Board (SERB), a statutory body of the Department of Science & Technology (DST), implies that coronavirus could enter the human brain through the nose and reach the olfactory bulb of the brain.

From there, the virus might infect PreBotzinger complex (PBC), the primary centre of the brain that controls the respiratory rhythm

pathi, Dr Upasana Ray, Dr Amit Srivastava and Dr Sonu Gandhi suggested that while the lung is one of the most infected organs, several other organs, including the brain, are also affected by Covid-19.

This is the first report that highlights SARS-CoV-2 may target the PBC of the brain stem that controls respiration and causes respiratory

the route of SARS-CoV-2 entry and its spread to the respiratory centre of the brain.

The PreBotzinger complex functions as the primary respiratory oscillator and it has been proposed as a centre of respiration. It has been earlier shown that disruption of PBC causes lethality due to respiratory failure, suggesting its central role in

brain stem, it said, adding this hypothesis needs to be validated for SARS-CoV-2.

Another recent study from a group of scientists at King's College London, UK, highlighting that loss of smell was one of main symptoms of Covid-19 patients, hinting at the involvement of the same route through which coronavirus may enter the

थ्री डी इमेजवर कोविडची अद्ययावत माहिती

नीरी व स्मार्ट सिटीचे सहकार्य

मनपा आयुक्तांच्या हस्ते लोकार्पण

बैठकीत तुकाराम मुंढे, डॉ. राकेश कुमार, राम जोशी.

कोविडची संपूर्ण माहिती एका क्लिकवर उपलब्ध व्हावी, त्याचा उपयोग करून नागरिकांनी कोरोनापासून सतर्क राहावे या उद्देशातून नागपूर महानगरपालिकेने प्रारंभापासूनच तंत्रज्ञानाचा वापर केला. आता एक पाऊल पुढे टाकत कौन्सिल ऑफ सायंटिफिक ॲण्ड इंडस्ट्रीयल रीसर्च अंतर्गत असलेल्या नागपूर येथील नॅशनल एन्व्हायर्नमेंटल इंजिनीअरिंग रीसर्च इंस्टिट्यूट अर्थात नीरी आणि इंडियन इन्स्टिट्यूट ऑफ पेट्रोलियम डेहरादूनच्या सहकार्याने नागपूर महानगरपालिकेने गूगल अर्थ अप्लिकेशनचा वापर करीत एक ३-डी डिजिटल सर्व्हिस तयार केली आहे. तसेच नागपूर स्मार्ट सिटीने एक कोविड - १९ ची माहिती देणारा डॅशबोर्ड तयार केला आहे. याची लिंक मनपाच्या वेबसाईटवर उपलब्ध असून या लिंकच्या आधारे

अद्ययावत माहिती ३-डी मध्ये उपलब्ध होणार आहे. ३-डी वर कोविडसंबंधी अद्ययावत माहिती देणारी नागपूर महानगरपालिका देशातली बहुधा पहिली ठरली आहे. नागपूर महापालिकेने नीरी, आईआईपी आणि स्मार्ट सिटी सोबत घेतलेली ही मोठी भरारी आहे.

या सर्व्हिसचे लोकार्पण बुधवारी मनपा आयुक्त तुकाराम मुंढे यांच्या हस्ते झाले. यावेळी नीरीचे संचालक डॉ. राकेश कुमार, मनपाचे अतिरिक्त आयुक्त राम जोशी, नीरीचे मुंबई झोनल प्रमुख आणि

विजय, प्रकल्प सहायक कौस्तुभ जिचकार व स्मार्ट सिटीचे महाव्यवस्थापक शील घुले उपस्थित होते. आयआयपीचे सुनील पाठक यांचेही यात सहकार्य लाभले. संगणकाची बटन दाबून तुकाराम मुंढे यांनी कोविडसंदर्भातील अद्ययावत माहितीसाठी तयार करण्यात आलेल्या ३-डी डिजिटल सर्व्हिस व डॅशबोर्डचे लोकार्पण केले. याप्रसंगी बोलताना आयुक्त तुकाराम मुंढे म्हणाले, तंत्रज्ञानाचा अधिकाधिक वापर करून कोविड संदर्भातील माहिती नागरिकांना सहज उपलब्ध

आहे. गूगल अर्थचा वापर करून आता एका क्लिकवर कोविडची माहिती ३-डी इमेजेसमध्ये उपलब्ध करून देण्यात आली आहे.

नीरीचे संचालक डॉ. राकेश कुमार म्हणाले, अशा माहितीमुळे नागरिकांच्या ज्ञानात भर पडते. नागरिकांनी प्रशासनाच्या या प्रयत्नाचा वापर करावा.

काय मिळेल माहिती ?

या प्रोग्रामच्या माध्यमातून नागपुरात कोविडचे आजचे रुग्ण किती, ॲक्टिव्ह केसेस किती, प्रतिबंधित क्षेत्र कोणते, प्रतिबंधित क्षेत्राचे इपिसेंटर कोणते, जवळचे कोविड हॉस्पिटल कोणते यासंदर्भातील सर्व माहितीचा 'रिलिस्टीक व्ह्यू' येथे दिसेल. ३-डी इमेज हा या सर्व्हिसमधील महत्त्वाचा भाग असून यूजर्सला सहज समजेल, अशा पद्धतीने हे तयार करण्यात आले आहे. नागपूरकरांनी याचा अधिकाधिक उपयोग करून कोरोनाचे संक्रमण रोखण्यात मदत करावी, हाच या मागील उद्देश आहे. ही माहिती नागपूर महानगरपालिका व स्मार्ट सिटीच्या फेसबुक आणि ट्विटरवर पण उपलब्ध राहील.

COVID-19: CSIR begins clinical trials for 10 drugs

- AI can be a game-changer in detecting, managing patients, say experts during an online panel discussion organised by NEERI

into the Global Scene'.

The five verticals devised by CSIR to develop science and technology-based solutions to combat COVID-19 are digital and molecular surveillance; rapid and economical diagnostics; new drugs/repurposing of drugs/vac-

Mande, CSIR ...dy working ...r giants like ...nd diagnos- ...ital assistive ...CS for digital ...r repurposed coronavirus ...tech for inac- ...evelopment;

BHEL for electrostatic spray and ventilator; BEL for thermometer and Oxygen enrichment unit, etc.

Dr Mande was the lead panelist in the discussion.

The other expert panelists included Yogendra Puranik, City Councillor, Japan; Dr Vaibhav Anand Deshpande, Chief Executive Officer, Ai4World Limited, UK; Dr Deepak Hegde, Vice-President, Pharma, China; Dr Asmita Gupte, University Hospital, Florida, USA; Dr Amita Athavale, KEM Hospital, Mumbai; Dr Vikram Pattarkine, Chief Executive Officer, Peace, USA; and Dr Amol Kulkarni, CSIR-NCL, Pune.

Other experts who participated in the on-line panel discussion stressed that Artificial Intelligence (AI) could prove to be a game-changer in detection and management of COVID-19 patients.

Shedding light on the steps taken in Japan to battle COVID-19, Puranik said that the number of COVID-19 cases in Japan remained significantly lower because the habit of wearing masks was widespread in Japan and people maintained utmost cleanliness in their routine life. He informed that the call centres were instituted in each city to take COVID-19 inquiries in different languages as a lot of foreigners lived in Japan. To support the economy, Japan never opted for complete lockdown, he added.

Dr Deshpande signified the importance of AI in rapid detection of COVID-19 patients. He urged scientists to develop an effective AI software that could find out with a chest X-ray if one

(Contd on page 2)

सीडीआरआई ने चीन-रूस में इस्तेमाल हो रही एंटीवायरल दवा तैयार की

कोरोना के मरीजों पर होगा क्लीनिकल ट्रायल, उमीफेनोविर की प्रॉसेस टेक्नोलॉजी अब तक रूस-चीन के ही पास थी

यह दवा शरीर की प्रतिरक्षा प्रणाली को करती है सक्रिय जिससे वायरस नहीं कर पाते कोशिकाओं में प्रवेश

अमर उजाला ब्यूरो

लखनऊ। सीएसआईआर की लैब सेंट्रल ड्रग रिसर्च इंस्टीट्यूट (सीडीआरआई) ने चीन और रूस में फ्लू के इलाज में इस्तेमाल हो रही दवा

उमीफेनोविर है क्या? : उमीफेनोविर एक एंटी वायरल दवा है। अभी तक रूस और चीन के पास ही इसे बनाने के लिए जरूरी प्रॉसेस टेक्नोलॉजी है। उनके पेटेंट का हम उपयोग नहीं कर सकते हैं और अन्य किसी देश में यह उपलब्ध नहीं है। हाल ही में कोविड-19 के रोगियों के लिए इसके संभावित उपयोग को चिह्नित किया गया है। ऐसे में सीडीआरआई ने तीन महीने में इस दवा के देसी वर्जन के लिए अपनी प्रॉसेस टेक्नोलॉजी विकसित कर ली।

120 में चुने गए 30 कंपाउंड में से पहला : सीडीआरआई ने कुल 120 कंपाउंड कोरोना की संभावित दवा के लिए चुने थे। उसमें से 30 को प्रभावी पाया गया। यह पहला कंपाउंड है जिसका क्लीनिकल ट्रायल शुरू हो रहा है। खास बात है कि इसके उत्पादन के लिए किसी भी एक्टिव फार्मास्युटिकल्स इंग्रीडिएंट को आयात करने की जरूरत नहीं होगी।

गोवा की फार्मा कंपनी बनाएगी देसी दवा

गोवा की निजी फार्मा कंपनी को टेक्नोलॉजी ट्रांसफर सीडीआरआई ने की है। फार्मा कंपनी भी अलग से डीजीसीआई से क्लीनिकल ट्रायल की अनुमति ले चुकी है। दवा के निर्माण और बिक्री का लाइसेंस उनके पास है जिससे क्लीनिकल ट्रायल सफल रहने पर न्यूनतम समय में उत्पादन करने में आसानी होगी।

...कता है। सीडीआरआई के प्रवक्ता डॉ. संजीव ...दव क... ...रकरी स... ...स्टीट्यूट

मेडिकल कॉलेज में 130 मरीजों पर होगा। खुद पर ट्रायल के लिए रजामंदी देने वाले

कोरोना से जंग सीडीआरआई ने विकसित की दवा निर्माण की प्रॉसेस टेक्नॉलजी

उमीफेनोविर के क्लिनिकल ट्रायल को मंजूरी

■ एनबीटी, लखनऊ

कोविड-19 के खिलाफ चल रही जंग के बीच उमीफेनोविर दवा को नई उम्मीद के तौर पर देखा जा रहा है। सीएसआईआर-सेंट्रल ड्रग रिसर्च ईंस्टिट्यूट (सीडीआरआई) ने इस दवा के निर्माण की प्रॉसेस टेक्नॉलजी विकसित कर ली है। इसके साथ इस दवा के क्लिनिकल ट्रायल के लिए भी मंजूरी मिल गई है। संस्थान के निदेशक प्रो. तपस के कुंडु ने बताया कि इसका क्लिनिकल ट्रायल केजीएमयू, डॉ. राम मनोहर लोहिया संस्थान और एरा मेडिकल कॉलेज में किया जाएगा।

संस्थान के निदेशक प्रो. तपस के कुंडू के मुताबिक, उमीफेनोविर दवा वायरस को कोशिकाओं में जाने से रोकने के साथ रोग प्रतिरोधक क्षमता बढ़ाने में भी कारगर साबित हो सकती है। फिलहाल सिर्फ रूस और चीन में इंफ्लूएंजा के लिए इसका इस्तेमाल किया जाता है। बाकी किसी देश में यह दवा उपलब्ध नहीं है। कोविड-19 का संक्रमण शुरू होने पर कई जगह इसके इस्तेमाल पर रिसर्च शुरू हुई है। इस बीच संस्थान ने रेकॉर्ड समय में इस दवा को बनाने के लिए प्रॉसेस टेक्नॉलजी तैयार कर ली है।

कंपनी को दिया लाइसेंस

संस्थान के निदेशक ने बताया कि दवा का असर जांचने के लिए तीसरे चरण रेंडम, डबल ब्लाइंड प्लेसबो नियंत्रित क्लिनिकल ट्रायल की मंजूरी मिल गई है। क्लिनिकल ट्रायल सफल रहा तो तो इस दवा को किफायती दर पर देश में ही बनाया जा सकेगा। संस्थान ने यह दवा बनाने के लिए गोवा की मेडिजेस्ट फार्मास्यूटिकल को प्रॉसेस टेक्नॉलजी का लाइसेंस दिया है।

देश में किफायती दर पर बन सकेगी दवा

जल्द शुरू होगा ट्रायल

सीएसआईआर के महानिदेशक डॉ. शेखर मांडे ने कहा कि उमीफेनोविर दवा का क्लिनिकल ट्रायल बहुत महत्वपूर्ण है। मंजूरी मिलने के बाद जल्द से जल्द दूसरे चरणों पर विचार किया जा रहा है, ताकि आम लोगों को जल्द ही दवा उपलब्ध हो।

इस टीम ने विकसित की तकनीक

उमीफेनोविर के निर्माण की प्रॉसेस टेक्नॉलजी डॉ. अजय कुमार श्रीवास्तव, चंद्रभूषण त्रिपाठी, नयन घोष, नीलांजना मजूमदार, डॉ. रविशंकर रामचंद्रन की टीम ने विकसित की है। इन ...ा है कि इस दवा की रोग ...हुत अधिक है। यह कोविड- ...खिलाफ बेहद किफायती और ...हो सकती है।

CDRI to start clinical trials of drug for Covid-19 treatment

PNS ■ LUCKNOW

In the battle against Covid-19, CDRI has received permission from the Drug Controller General of India to conduct clinical trials of a drug which it has come up with recently. CDRI director Tapas Kundu said it would be one of the cheapest drugs for the treatment of Covid-19 .

"Central Drug Research Institute has received permission for carrying out controlled trials of efficacy, safety and tolerability of antiviral drug 'Umifenovir'. The phase-III clinical trials will be carried out at KGMU, RMLIMS and Era's Lucknow Medical College & Hospital," media spokesperson Sanjeev Yadav said.

"This drug has a good safety profile and it acts by preventing entry of virus into human cells and also by priming the immune system. CDRI came up with this drug by carrying out a repurposing of drugs where they screened a number of drugs. We have also developed a process technology for manufacturing it. 'Umifenovir' is mainly used for treatment of influenza and is available in China and Russia, and has recently come into prominence due to its potential use for Covid-19 patients. To evaluate its efficacy in Indian patients, CDRI has taken up the clinical trials. Further, it has developed the process technology for 'Umifenovir' in record time and licensed the economical process technology for manufacturing and marketing the drug to M/s Medizest Pharmaceuticals Private Ltd (Goa) that has already received test license from DCGI," he explained. Kundu said all the raw materials for the drug are indigenously available and if the clinical trial is successful, 'Umifenovir' can be a safe, efficacious, affordable drug against Covid-19 and can be part of the National Programme against the disease. Prof. He added that this drug has the potential for prophylactic use.

CSIR Shekhar Mande Shekhar Mande said the clinical trial is an integral part of the CSIR strategy of repurposing drugs for Covid-19 and complimented the team of CDRI scientists. The clinical trial application was processed on high priority as per the DCGI's initiative against Covid-19. The next steps of the trial are being fast-tracked to enable the availability of the drug to patients as soon as possible.

An autorickshaw driver shows a bottle of sanitiser which he uses in view of the coronavirus pandemic Pioneer

कोविड-19 के मरीजों की जांच व प्रबंधन में अहम साबित होगा

आर्टिफिशियल इंटेलिजेंस

▪ नीरी की ओर से आयोजित पैनल डिस्कशन में शामिल हुए देश-विदेश के विशेषज्ञ

भास्कर संवाददाता | नागपुर

कोविड-19 के मरीजों की जांच के लिए आर्टिफिशियल इंटेलिजेंस का उपयोग मरीजों की जल्द से जल्द पहचान में अहम भूमिका निभा सकता है। यह विचार यूके के एआईफोर लिमिटेड के सीईओ डॉ. वैभव देशपांडे ने नीरी में 'नीरी में फाइट अगेंस्ट कोविड-19 ए पीक इन टू ग्लोबल सीन' विषय पर आयोजित पैनल डिस्कशन में व्यक्त किए।

बीमारियों का पता लगाने प्रभावी सॉफ्टवेयर तैयार करें

डॉ. देशपांडे ने कोविड-19 के मरीजों की जांच में आ रहे तकनीकी बदलाव के महत्त्व पर प्रकाश डालते हुए कहा कि उन्होंने वैज्ञानिकों से ऐसा प्रभावी सॉफ्टवेयर तैयार करने को कहा है जिससे छाती के एक्सरे से कोविड-19 के पॉजिटिव मरीजों का पता लगाया जा सके। यह सारी, न्यूमोनिया समेत अन्य बीमारियों का पता लगाने में भी सक्षम होगा। उन्होंने कहा कि आर्टिफिशियल इंटेलीजेंस अस्पताल प्रबंधन में भी अहम भूमिका निभा सकता है। पैनल डिस्कशन सीएसआईआर के डायरेक्टर जनरल और डीएसआईआर के सचिव डॉ शेखर मांडे, जापान के सिटी काउंसिलर योगेंद्र पुराणिक, एआईफोर लिमिटेड यूके के सीईओ डॉ. वैभव देशपांडे, वीपीफार्मा चीन के डॉ. दीपक हेगडे, फ्लोरिडा स्थित यूनिवर्सिटी हॉस्पिटल की डॉ. अस्मिता गुप्ते, केईए हॉस्पिटल मुंबई की डॉ. अमिता आठवले, यूएसए स्थित पीस सीईओ डॉ. विक्रम पत्तरकिने, सीएसआईआर पुणे के डॉ. अमोल कुलकर्णी और नीरी के डायरेक्टर डॉ. राकेश कुमार शामिल हुए।

रोकथाम के लिए पांच स्तरों पर काम

डॉ. मांडे ने बताया कि कोविड 19 के प्रसार को रोकने के लिए अपेक्षित उपाय खोजने हेतु सीएसआईआर पांच स्तर पर काम कर रहा है। इनमें डिजिटल और मॉलिक्युलर निगरानी, तीव्र और कम खर्चीला निदान (डाइग्नॉस्टिक्स), नई दवाएं व वैक्सीन, अस्पतालों के लिए सुरक्षा यंत्र, पीपीई किट, सपोर्ट सिस्टम की आपूर्ति शामिल हैं। इसके लिए निजी क्षेत्र में काम करने वाली बड़ी कंपनियां भी सहयोग कर रही हैं।

साफ-सफाई व मास्क की आदत से जापान में कम मामले

योगेंद्र पुराणिक ने बताया कि जापान में लोगों के मास्क पहनने और साफ-सफाई की आदत के कारण कोविड-19 के मामले अपेक्षाकृत कम सामने आए हैं। यहां तक कि जापान में कभी भी पूर्ण लॉकडाउन अपनाने की जरूरत नहीं पड़ी।

New technology to generate sodium hypochlorite

STAFF REPORTER
KARAIKUDI

CSIR-Central Electro Chemical Research Institute, Karaikudi, has developed a zero-emission and cost-effective electrochemical technology by which sodium hypochlorite can be generated by directly oxidising sodium chloride (salt water) solution.

Sodium hypochlorite is an effective disinfectant against bacteria, viruses, fungi and mycobacterium.

Any micro, small and medium enterprise can use this technology to generate large quantities of disinfectants by investing between ₹3 lakh and ₹5 lakh. The demonstration and transfer of technology can be made available for any industrial client, a press release said.

CSIR Media Coverage

व्यापार प्रतिनिधि

CSIR-NEERI में चर्चासत्र

नागपुर. सीएसआईआर-नीरी की ओर से 'कोरोना के बढ़ते मामलों के बीच इसके खिलाफ लड़ाई' विषय पर आयोजिन आनलाइन चर्चासत्र में विभिन्न देशों के विशेषज्ञों ने शिरकत की. डा. वैभव देशपांडे ने कहा कि बीमारी की बड़े पैमाने पर जांच में आर्टिफिशियल इंटेलिजेंस बड़ी भूमिका निभा सकता है. हमें ऐसे एआई साफ्टवेयर को विकसित करने का प्रयास करना चाहिए जो छाती के एक्स-रे से यह पता लगा सके कि मरीज कोरोना पॉजिटिव है या नहीं. यह न्यूमोनिया और अन्य बीमारियों का भी पता लगाए. इतना ही नहीं यह अस्पताल प्रबंधन जैसे वेंटिलेटर, बेड्स और अन्य उपकरणों की सप्लाई में भी अहम रोल निभा सकता है. डा. विक्रम पट्टरकाइन ने कहा कि लॉकडाउन के दौरान हमें पर्यावरण में अविश्वसनीय बदलाव देखने को मिले हैं. इसे बनाए रखने का प्रयास करना होगा. उन्होंने भारत में गांवों को आत्मनिर्भर बनाने की सलाह दी. अमोल कुलकर्णी ने कहा कि शोधकर्ताओं को अपनी रिसर्च में मेडिकल प्रोफेशनल्स को भी शामिल करना चाहिए. जापान के योगेंद्र पुराणिक ने बताया कि वहां लोगों में मास्क पहनने की आदत के कारण कोरोना के मामले अपेक्षाकृत कम रहे. इसके अलावा वहां लोगों को साफ-सफाई के साथ रहने की आदत है. हर शहर में कोरोना वायरस संबंधित जानकारी के लिए कॉल सेंटर बनाए गए. इसके अलावा अर्थव्यवस्था को सपोर्ट करने के लिए वहां पूरी तरह लॉकडाउन लागू नहीं किया गया. चीन से शामिल प्रतिभागी ने बताया कि वहां कोरोना के उपचार में पारंपरिक दवाओं का भी इस्तेमाल किया गया जिसके अच्छे परिणाम दिखाई दिए. इस अवसर पर सीएसआईआर के महानिदेशक डा. शेखर मांडे, दीपक हेगड़े, अशिमता गुप्ता, अमिता आठवले सहित अन्य प्रतिनिधि उपस्थित थे.

NEERI, DLSA to teach sanitisation techniques to migrant labourers

Staff Reporter

IN ACCORDANCE with the Supreme Court directives to States to formulate employment schemes for workers to rehabilitate them, CSIR-National Environmental Engineering Research Institute (NEERI) has joined hands with District Legal Services Authority (DLSA), Nagpur and NGOs to impart training in sanitisation techniques to homeless and migrant labourers staying in Nagpur.

A meeting was held at CSIR-NEERI on Thursday in this regard. Judge Abhijeet Deshmukh, Secretary of DLSA; Dr Rakesh Kumar, Director, CSIR-NEERI; Dr J S Pandey, Chief Scientist and Head, Climate Change and Skilling Division, CSIR-NEERI; Dr Sadhana Rayalu, Chief Scientist and Head, Environmental Materials Division, CSIR-NEERI; Arshad Tanvir Khan, International Skill Development Society; Sameer Patel, Sarim Constructions; Amithabh Pawde, Aapulki Samajik Sanstha; Dr Sameer Deshpande; and Dr Pradeep Salve, Senior Principal Scientist, CSIR-NEERI attended the meeting.

Dr Sameer Deshpande, Dr Sadhana Rayalu, Dr J S Pandey, Judge Abhijeet Deshmukh and others during a meeting of NEERI and DLSA held on Thursday.

During the discussion, the participants emphasised that before the re-opening of schools, colleges, hotels, etc, all these institutions should be properly sanitised. For, many schools, especially Government and Zilla Parishad schools have been used to quarantine COVID-19 suspects and shelter migrant workers. DLSA and NGOs pointed out that various Government and private organisations would henceforth seek routine and standard environmental sanitisation procedures, and CSIR-NEERI could play a major role in bringing out a policy document. CSIR-NEERI could also be instrumental in imparting sanitisation training to homeless and migrant labourers for providing them employment opportunities.

CSIR-NEERI agreed to work with DLSA and NGOs for the betterment of homeless and migrant labourers, not only with respect to imparting training in sanitisation techniques but also for various environmental aspects having employment potential.

Dr Rakesh Kumar said that epidemiology relied on a working knowledge of probability and statistics. He reiterated that an effective policy should be formulated for cleaning and disinfection of various places, wherever really required. He emphasised on the need to bring out training material in three languages -- English, Marathi, and Hindi. Pawde expressed concern over ever-increasing quantity of disinfectants into environment. Dr Rayalu briefed about science and technology efforts undertaken by CSIR-NEERI to combat COVID-19.

Earlier, Dr Suvha Lama, Scientist, CSIR-NEERI, spoke on how to clean and disinfect the workplaces. Dr Shilpa Kumari, Scientist, CSIR-NEERI, informed that CSIR-NEERI already imparted training to various NGOs on how to prepare reusable masks according to WHO guidelines. She also demonstrated various systems and devices by which disinfection could be done. Dr Pratap Reddy Maddigapu, Project Scientist, CSIR-NEERI, said that a disinfection device designed by using UV-C technology could be used to disinfect used masks, used hand-gloves, papers, documents, files, etc. After giving them proper training, the homeless and migrant labourers could be engaged in such disinfection methods for their livelihood, he added.

Dr J S Pandey co-ordinated the meeting.

ଆଇଏମ୍ଏମ୍‌ଟି ପ୍ରସ୍ତୁତ କଲା ଇନ୍‌ଟ୍ୟୁବେସନ୍ ହୁଡ୍

ଡାକ୍ତର ଓ ସ୍ୱାସ୍ଥ୍ୟକର୍ମୀଙ୍କୁ ସଂକ୍ରମଣରୁ ରକ୍ଷା କରିବ

ଭୁବନେଶ୍ୱର: ୬।୬(ଭୁ.ପ୍ର): କରୋନା ରୋଗୀଙ୍କ ଚିକିତ୍ସାରେ ନିୟୋଜିତ ଡାକ୍ତର ଓ ସ୍ୱାସ୍ଥ୍ୟକର୍ମୀଙ୍କୁ ସଂକ୍ରମଣରୁ ରକ୍ଷା କରିବା ଏବେ ବି ଏକ ଆହ୍ୱାନ ହୋଇ ରହିଛି। ବିଶେଷକରି ଆଇସିୟୁରେ ସଂକ୍ରମଣ ଭୟ ଅଧିକ ରହିଛି। ତେବେ ଭୁବନେଶ୍ୱରସ୍ଥିତ ଇନ୍‌ଷ୍ଟିଚ୍ୟୁଟ୍ ଅଫ୍ ମିନେରାଲ୍ସ ଆଣ୍ଡ ମ୍ୟାଟେରିଆଲ୍ସ ଟେକ୍ନୋଲୋଜି ... ଭାରତୀୟ ଆୟୁର୍ବିଜ୍ଞାନ ପ୍ରତିଷ୍ଠାନ (ଏମ୍ସ) ଡାକ୍ତରଙ୍କ ପରାମର୍ଶକ୍ରମେ ଆଇଏମ୍ଏମ୍‌ଟି ଏହି ହୁଡ୍ ପ୍ରସ୍ତୁତ କରିଛି। ତିନି ପ୍ରକାର ହୁଡ୍ ବ୍ୟବହାର ପାଇଁ ଏମ୍ସକୁ ଦିଆଯାଇଛି। ଆଗକୁ ଅଧିକ ସଂକ୍ରମିତ ଚିହ୍ନଟ ହେଲେ ଏପରି ହୁଡ୍‌ର ଆବଶ୍ୟକତା ପଡ଼ିବ ବୋଲି କୁହାଯାଇଛି।

ଆଇଏମ୍ଏମ୍‌ଟି ନିର୍ଦ୍ଦେଶକ ... ଭିତରେ ଭର୍ତ୍ତି କରାଯାଇଥାଏ। ଏହି ସମୟରେ ଡାକ୍ତର ଓ ସ୍ୱାସ୍ଥ୍ୟକର୍ମୀଙ୍କ ସଂକ୍ରମିତ ହେବାର ଯଥେଷ୍ଟ ଆଶଙ୍କା ରହିଥାଏ।

ବିଶ୍ୱର ପ୍ରମୁଖ ଦେଶର ଡାକ୍ତରଖାନାରେ ଏରୋସୋଲ୍ ବକ୍ସ ବ୍ୟବହାର କରାଯାଉଛି। ଏପରିସ୍ଥଳେ ଆଇଏମ୍ଏମ୍‌ଟି, ଭୁବନେଶ୍ୱର ଇନ୍‌ଟ୍ୟୁବେସନ୍ ହୁଡ୍ ପ୍ରସ୍ତୁତ କରିଛି।

IMMT tool to keep docs safe

Minati.Singha
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Bhubaneswar: The Institute of Minerals and Materials Technology (IMMT) in association with Gitanjali Awards, a city-based manufacturer of awards and trophies, has developed a tool that would keep medical professionals safe while examining patients amidst the corona pandemic.

"While treating patients suffering from cough and sneezing there are chances of droplets coming out of their mouths, which may infect doctors. The box covers the upper part of the patient's body completely and does not allow the droplets to go out of it and spread the infection," said director of IMMT Prof Sudhasatwa Basu.

With the technology and know-how provided by the IMMT, Gitanjali Awards will be manufacturing these intubation or aerosol boxes. These transparent safety hoods can be placed on a patient while a doctor carries out the examination. The patient will be able to breathe freely inside it. The boxes can also be of great use to dentists and eye specialists while they carry out their procedures.

"These boxes are made up of acrylic and are light weight. It is like a ticket counter and helps in maintaining a safe distance between the doctor and patient during medical examination," said Kishna Mohan Tata, director of Gitanjali Awards.

An agreement was signed between CSIR IMMT (Institute of Minerals and Materials Technology) and Gitanjali Awards for the technology transfer.

The number of corona positive cases is on the rise and with the coronavirus likely to stay for some more time these safety tools are very important. "We are planning to manufacture these boxes for different hospitals and clinics," said Tata.

The aerosol box on display at IMMT, Bhubaneswar

ITI designs shoe sanitiser

Berhampur: After designing technology-driven protective gears to contain the spread of the novel coronavirus, the government-run Industrial Training Institute (ITI) here on Monday launched the UV (ultra-violate) sole sanitiser to disinfect shoes.

Chairman of Odisha Skill Development Authority Subroto Bagchi inaugurated it. The first machine was donated to the Covid-19 hospital set up at Sitapalli in Berhampur. TNN

OLD METHOD WAS PAINFUL

➤ The CCMB team said microRNAs have potential to become important diagnostic tools for identifying and monitoring clinical outcome in patients with acute lymphocytic or lymphoblastic leukaemia

➤ At present, diagnosis is carried out using peripheral blood or bone marrow specimens

➤ This process is cumbersome and painful, while the CCMB method is simple and makes it easy to detect this type of cancer

एक लाख 'फेसशिल्ड'ची व्हेंचर सेंटरकडून निर्मिती

लोकसत्ता प्रतिनिधी

पुणे : करोना विषाणू संसर्गापासून संरक्षण देण्यासाठी राष्ट्रीय रासायनिक प्रयोगशाळेच्या व्हेंचर सेंटर या इन्क्युबेशन सेंटरने गेल्या दोन महिन्यांत एक लाख फेसशिल्डची निर्मिती करून पुरवण्याची कामगिरी केली आहे. हे संरक्षक साधन पोलीस, डॉक्टर, प्रशासन अधिकारी यांना उपयुक्त ठरले आहे.

करोना विषाणूचा प्रादुर्भाव वाढू लागल्यावर संसर्गापासून बचाव करणाऱ्या साधनांचा तुटवडा निर्माण झाला होता. त्यामुळे डॉक्टर, आरोग्य कर्मचारी, पोलीस यांना प्रत्यक्ष काम करताना अडचणींना सामोरे जाण्यासह संसर्गाचा धोका होता. अशावेळी 'व्हेंचर सेंटर'ने अल्पावधीत संशोधन करून पुणे फेसशिल्ड ॲक्शन ग्रुपच्या माध्यमातून त्रिमिती मुद्रणाच्या (थ्रीडी प्रिंटिंग) सहाय्याने अनोख्या फेसशिल्डची निर्मिती केली. कमी किमतीत तयार होणाऱ्या या फेसशिल्डची उपयुक्तता लक्षात घेऊन पुणे पोलिसांकडून मागणी करण्यात आली. त्यानंतर या फेसशिल्डला मागणी वाढू लागली. त्यामुळे व्हेंचर सेंटरने सातत्याने काम करून एक लाख फेसशिल्डची निर्मिती करून पुरवण्याचा महत्त्वपूर्ण टप्पा गाठला. व्हेंचर सेंटरचे संचालक प्रेमनाथ वेणूगोपालन म्हणाले, की एक लाख फेसशिल्डची निर्मिती करून पुरवठा करू शकल्याचा मोठा आनंद आहे. फेसशिल्डला मोठी मागणी येऊ लागल्याने अनेक नवउद्यमी, उत्पादक फेसशिल्डची निर्मिती करू लागले आहेत. चांगल्या प्रमाणात हे संरक्षक साहित्य उपलब्ध होऊ लागले आहे.

देणगीच्या रूपात निधी उपलब्धता

फेसशिल्डच्या निर्मितीसाठी १४३ व्यक्ती, ४३ संस्था आणि काही कंपन्यांकडून सामाजिक उत्तरदायित्वाच्या रूपात निधी उपलब्ध झाला. त्यामुळे एवढ्या मोठ्या प्रमाणात निर्मिती करणे शक्य झाले आणि केवळ निर्मिती खर्चाच्या किमतीत फेसशिल्ड पुरवता आले, असे वेणूगोपालन यांनी सांगितले.

कोरोना स्वॅबसाठी पॉलिमर धाग्यांचे स्वदेशी साधन

प्रतिनिधी | पुणे

कोरोना संसर्गाच्या तपासणीसाठी राष्ट्रीय रासायनिक प्रयोगशाळेने संपूर्ण स्वदेशी बनावटीचे, पॉलिमर धाग्यांचा वापर करून स्वॅब संकलन साधन विकसित केले आहे. कोरोना चाचणीसाठी नाक आणि घशातील स्त्रावाचा (स्वॅब) नमुना घ्यावा लागतो. परंतु सध्या स्वॅब संकलनात अनेक त्रुटी आढळत आहेत. त्याचप्रमाणे त्या साधनांचा तुटवडा जाणवतोय तसेच योग्य किमतीमध्येही पुरवठा होत नसल्याचे दिसून आले आहे. त्यामुळे सीएसआयआर (भारतीय विज्ञान आणि औद्योगिक संशोधन परिषद) या शिखर संस्थेच्या वतीने पुणेस्थित राष्ट्रीय रासायनिक प्रयोगशाळेने (एनसीएल) संपूर्ण स्वदेशी बनावटीचे स्वॅब संकलन साधन विकसित करण्याचे आव्हान स्वीकारले आणि ते यशस्वी केले आहे.

स्त्राव संकलनासाठी स्वदेशी साधन (nasopharyngeal swabs-एनपी स्वॅब) विकसित करण्यात एनसीएलमधील संशोधक डॉ. चंद्रशेखर रोडे, डॉ. प्रकाश वडगावकर आणि डॉ. अनुया निसाळ यांचा प्रमुख सहभाग आहे. सीएसआयआर-एनसीएलच्या वैज्ञानिक पथकाने एनपी स्वॅबच्या विस्तृत तपशिलांवर यशस्वीरीत्या काम केले. या एनपी-स्वॅबचे वैशिष्ट्य असे की याच्या डिझाइन, उत्पादन, पॅकिंग आणि निर्जंतुकीकरणासाठी वैद्यकीय श्रेणीची सामग्री वापरणे सर्वात महत्त्वाचे आहे. वैद्यकीय स्वॅब उत्पादनासाठी पॉलिमर्सच्या वैशिष्ट्यांमुळे आणि रासायनिक विश्लेषण करण्याचे काम अगदी कमी कालावधीत करता येईल, असे संचालक डॉ.अश्विनीकुमार नांगिया यांनी सांगितले.

अशी रचना : एक मायक्रॉनइतका व्यास

स्वॅब विकसित करताना त्याची रासायनिक रचना व जैविक अनुकूलता महत्त्वाची होती. हे साधन रुग्ण किंवा संशयित रुग्णाच्या घशात, नाकात घालून नमुने संकलित करणारे आहे. ॲल्युमिनियम किंवा प्लास्टिकपासून बनवलेली दांडी आणि टोकावर पॉलिमर धाग्यांचा संचय केला आहे. यात धागे दांड्याच्या टोकावर दातांच्या ब्रशप्रमाणे समांतर परंतु गोल गुंडाळलेले आहेत. याचा व्यास १ मायक्रॉन इतका असल्याचे डॉ.नांगिया म्हणाल्या

दररोज एक लाख एनपी स्वॅबची निर्मिती

सीएसआयआर-एनसीएलने नमुने संकलनासाठी स्वदेशी एनपी स्वॅबची ही प्रक्रिया मुंबईतील रसायन कंपनीला हस्तांतरित केली. एनपी स्वॅब, त्यांचे व्यास, टोकाची संरचना आणि निर्जंतुकीकरण पद्धतीची योग्य रासायनिक आणि पॉलिमर रचनेची पुष्टी केल्यानंतर एनसीएलने कंपनीला वैद्यकीय उपकरणांच्या मंजुरीसाठी पुढील नियामक मार्ग सुचवला आहे. दररोज एक लाख एनपी स्वॅब तयार करण्यास ते सक्षम आहेत.

सीएसआईआर-आईएमएमटी ने एरोसोल बॉक्स को डिजाइन किया

कोरोना मरीजों का इलाज करते समय डॉक्टरों और स्वास्थ्य कर्मचारियों की सुरक्षा के लिए, सीएसआईआर-आईएमएमटी ने एम्स भुवनेश्वर के डॉक्टरों के परामर्श से एक हूड इंटुबेशन को, जिसे एरोसोल बॉक्स के रूप में भी जाना जाता है, डिजाइन किया है ... भुवनेश्वर को उनके उपयोग के लिए दिए गए हैं. दुनियाभर में भी स्वास्थ्यकर्मी कोविद-19 रोगियों के उपचार के दौरान इस तरह के एरोसोल बक्से का उपयोग कर रहे हैं. यदि कोरोना मरीजों की संख्या बढ़ती रही तो इसी तरह के बक्से की बहुत आवश्यकता होगी. इसका बड़े पैमाने पर उत्पादन और आपूर्ति करने के लिए सीएसआईआर-आईएमएमटी ने एम/एस गीतांजलि

CSIR-IICT working on drug compounds to fight coronavirus

WHO identifies 25 drugs to be repurposed and tested

SPECIAL CORRESPONDENT
HYDERABAD

Since drug discovery takes many years, scientists are repurposing drugs that have been used to contain various flus or diseases across the world.

The World Health Organisation (WHO) identified 25 such drugs to be repurposed and tested to battle COVID-19.

Among them, the Council for Scientific & Industrial Research (CSIR) had identified five compounds and began working on them, said top scientists of the Indian Institute of Chemical Technology (IICT) on Friday.

COVID-19

The CSIR-IICT work on compounds Favipiravir, Remdesevir, and Umifenovir included developing a process technology to make them available at affordable costs in the market, once they are cleared by the regulatory authority, they said, during the webinar organised by the institute for students and others on current scenario on drug discovery and safety protocols to contain COVID.

IICT director S. Chandrasekhar said scientists stood strong during lockdown to find solutions to combat the virus.

CSIR-IICT scientists have been working continuously to ensure a speedy solution in the form of drugs and protection gear to reach the society at affordable prices. Masks and face shields developed at the institute are for common men, he said.

Time taken for any drug to come to the market is about eight to 12 years, and can cost approximately ₹10,000 crore. This process involves many steps right from identifying a molecule to trials and permissions. Utmost importance, while developing a drug, is given to safety and toxicity of the drug, he explained. While there is no drug for COVID-19, science and technology developed over the years has helped in identifying the virus and possible solutions to contain it. He advised students to maintain social distancing and follow self-hygiene to defeat the spread.

Senior principal scientists Ch Raji Reddy and Prathama S. Mainker spoke on repurposing of drugs. Another senior principal scientist Anthony Addlagatta detailed the working of RT-PCR testing kits for COVID-19 while his colleague S. Sridhar demonstrated the use of masks and face shields developed at a low cost.

Scientist Ramanuj Narayan moderated the webinar and explained the importance of maintaining good hygiene and following preventive measures.

CSIR Chief Hails Clinical Trial Nod To Test Plant-based Drug For Treatment

CSIR –IIIM

"CSIR Director-General Dr. S[...] said, "CSIR is pleased to infor[...] clinical trial has begun yeste[...] Pharmaceutical in collaboration [...] with ICGEB New Delhi and CSI[...] with support by CSIR and DBT to attempt to combat COVID-19 [...] that it is successful."

संस्थापक संपादक : विश्वदेव शर्मा gujaratvaibhav.com सन् : 1992
गुजरात वैभव
अहमदाबाद मंगलवार 23 जून, 2020 वर्ष 28, अंक 219, पृष्ठ-12 Registration No-54924/92.

कोरोना से सभी को और सावधान व सतर्क रहने की आवश्यकता : प्रो.कन्नन

ऐसे समय जबकि कोविड-19 के प्रकोप से भारत ही नहीं परंतु पूरा विश्व एक अप्रत्याशित स्थिति का सामना कर रहा है, वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद की गुजरात के भावनगर में स्थित केन्द्रीय नमक व समुद्री रसायन अनुसंधान संस्थान (सीएसएमसीआरआई) कई आयामों पर इस लड़ाई में लगा हुआ है। संस्थान के निदेशक प्रो. कन्नन श्रीनिवासन ने कहा कि जब सरकार लॉकडाउन में ढील देकर जन-जीवन सामान्य करने की कोशिश कर रही है तब तक जिम्मेदार नागरिक के रूप में हम सभी को और सावधान तथा सतर्क रहने की आवश्यकता है। उन्होंने बताया कि घर से बाहर निकलने पर दो गज की दूरी और मास्क का प्रयोग अब और भी जरूरी है क्योंकि बाजार खुलने के कारण भीड़ बढ़ेगी। समयांतराल पर साबुन से हाथ धोना अथवा अल्कोहल युक्त सेनिटाइजर से हाथों को विसंक्रमित कर अपने कार्यस्थल को विशेष रूप से संक्रमण मुक्त कर और सरकार के निर्देशों का पालन कर कोविड-19 से आसानी से बचा जा सकता है। उन्होंने कहा कि कोविड-19 हम पर तब तक हमला नहीं कर सकता जब तक कि हम खुद ही उसे आमंत्रण न दें। कोविड-19 महामारी से बचाव के बारे में सीएसआईआर एवं सीएसएमसीआरआई, भावनगर द्वारा किए जा रहे कार्यों की चर्चा करते हुए उन्होंने बताया कि सीएसआईआर कोविड-19 शमन में सक्रिय भूमिका निभा रहा है और सामूहिक नेतृत्व स्तर पर हम पांच व्यापक क्षेत्रों पर युद्ध स्तर पर कार्य कर रहे हैं जिसमें कोविड-19 के निगरानी के डिजिटल तरीके, प्रभावी और सस्ते उपचार, दवाइयों, अस्पताल/व्यक्तिगत सुरक्षा उपकरण, ज्ञात ड्रग्स और टीके का पुनरुत्थान और नए टीके की खोज प्रमुख हैं। सीएसएमसीआरआई के वैज्ञानिकों ने एक विशेष तरह की मेम्ब्रेन से बना हुआ मास्क विकसित किया है जो कि कुशलता से अतिसूक्ष्म रोगाणुओं के प्रवेश को रोकता है। यह मास्क कोविड-19 के खिलाफ लड़ रहे फ्रंट स्वास्थ्य कर्मियों तथा सुरक्षा कर्मियों के लिए काफी उपयोगी है। उन्होंने कहा कि हमारे जिम्मेदार नागरिकों एवं उत्साही वैज्ञानिकों के सहयोग से शीघ्र ही हम इस महामारी से विजयी हो के निकलेंगे लेकिन तब तक हमें इस विषाणु से बचावों के तरीकों को सीखना होगा।

CSIR Media Coverage

NCL develops indigenous nasopharyngeal swabs for Covid-19 sample collection

HT Correspondent

PUNE: The National Chemical Laboratory (NCL) here has successfully developed an indigenous nasopharyngeal (NP) swab for collecting samples from the throat cavity of patients affected with Sars-Cov-2 virus which causes the Covid-19 (coronavirus) infection.

The NCL, a lab under the Council for Scientific and Industrial Research (CSIR), will manufacture one lakh nasopharyngeal swabs a day, a press release issued by the organisation said.

A team of three scientists, namely, Chandrashekhar V Rode, Dr Prakash P Wadgaonkar and Dr Anuya A Nisal worked on the specifications of nasopharyngeal swab polymers and adhesives.

Ashwini Kumar Nangia, director, CSIR-NCL, said, "This is an excellent example of optimising the polymer specifications and validating the chemical analysis of an urgently needed medical swab product in a very short time."

It said that the nasopharyngeal swabs are in huge demand across the globe and therefore, their supplies are not dependable and could result in delays, escalated prices and variable quality. The organisation, therefore, decided to make indigenous nasopharyngeal swabs in mid-April. The nasopharyngeal swab is a medical device with stringent specifications of quality, polymer grade, dimensions and sterilization.

CSIR-NCL WILL MANUFACTURE 1 LAKH NASOPHARYNGEAL SWABS A DAY

"It consists of a cylindrical plastic stick with a brush-like tip of synthetic bristles/flocks. Flocking is a very important processing step in the manufacture of medical swabs, which is to align the fine bristles in a parallel orientation on the stick head, much like a toothbrush, except that this has round uniform geometry and the nasopharyngeal swab bristles are of micron diameter," the release said.

CSIR-NCL and BEL manufacture Oxygen Enrichment Unit useful in Covid-19 treatment

ET TOP NEWS

The technology has been licensed to NCL-start up GEnrich Membranes and the OEUs will be manufactured by Bharat Electronics Ltd. (BEL).

By Jayashree Bhosale, ET Bureau | Jun 24, 2020, 10.59 PM IST

Agencies

With the onset of Covid-19 pandemic, CSIR-NCL applied for certification of a prototype OEU to TUV, Bangalore, which was found to be qualified.

PUNE: Oxygen Enrichment Unit (OEU), developed by scientists from Polymer Science and Engineering Division of CSIR-National

The Statesman

(Image: PIB)

Subscribe to Notifications

The COVID-19 testing facility has become operational at CSIR-National Environmental Engineering Research Institute (CSIR-NEERI) from April 2020. So far more than 3,000 samples have been tested for COVID-19.

With a testing capacity of 50 samples per day, CSIR-NEERI has the requisite infrastructure to test COVID-19 samples and take all appropriate bio-safety and bio-

NEWS18

LIVE TV

Scientists to Carry Out a Larger Trial of Favipiravir and Other Combination Drugs: CSIR Director General

Cipla is currently in Phase-3 of Favipiravir trials which are being carried out in eight centres in the country. Five of these eight centres have approved the Phase-3 trials.

UPDATED ON: JUNE 24, 2020, 6:56 PM IST

Nikhil Ghanekar , News18.com

Favipiravir h... influenza viru... a potential t... (Photo: Reute...

IMMT designs tools to fight Covid

Sandip Mishra | TNN

Bhubaneswar: The CSIR-Institute of Minerals and Materials Technology (IMMT), Bhubaneswar, has come up with a series of innovative tools such as a one-of-its-kind 3D printed face mask ... has developed an insulated coffin with a provision of an ice pack, which can be used to preserve a body for about 10 to 12 hours. The CSIR-IMMT has handed over one such coffin to the AIIMS Bhubaneswar on request. The institute has developed a UV disinfectant to disinfect personal belongings such as masks, key rings, currency, handkerchief, tissue, papers and bills.

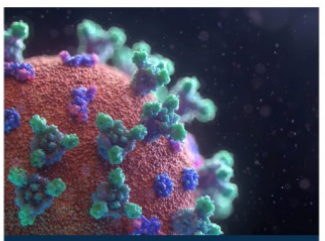
The prototype of IMMT's 3D printed face mask

The institute administrators said the technology of all the tools has been provided to different micro, small and medium enterprises, which are engaged in production and supply. As many as 13 such startups have approached the institute for production of the tools so far, the administrators said.

"Our scientists have been engaged in developing the tools ever since the pandemic broke out in the country. We have provided technology to a number of startups and also produced and distributed a few products among frontline workers. Our scientists are working on more innovations," CSIR-IMMT director Suddhasatwa Basu said.

19 JUNE 2020 NEWS

CDRI gets approval for Phase III trial of Umifenovir to treat Covid-19



In this Phase III trial, CDRI will test the efficacy, safety and tolerability of Umifenovir in treating Covid-19. Credit: Fusion Medical Animation on Unsplash.

Sign up here for GlobalData's free weekly Covid-19 report on the latest

करोनाग्रस्तांसाठी ऑक्सिजन संवर्धक

'एनसीएल'च्या संशोधकांची कामगिरी

म. टा. प्रतिनिधी, पुणे

विशिष्ट खोलीतील ऑक्सिजनचे प्रमाण ३५ ते ४० टक्क्यांनी वाढविणारे तंत्रज्ञान पुण्यातील राष्ट्रीय रासायनिक प्रयोगशाळेने (एनसीएल) विकसित केले आहे. त्याचा वापर करोनाबाधित रुग्णांसह ऑपरेशन थिएटरमधील रुग्ण व अन्य रुग्णांवर उपचार करण्यासाठी होऊ शकणार आहे.

पोकळ तंतूंच्या पटलावर आधारित (पॉलिमर मेंब्रेन) तंत्रज्ञानाचा वापर करून 'ऑक्सिजन संवर्धक' नावाची यंत्रणा विकसित करण्यात आली आहे. 'एनसीएल'मधील डॉ. उल्हास खरूल यांच्या नेतृत्वाखालील संशोधकांच्या पथकाने ही यंत्रणा विकसित केली आहे. या यंत्रणेत पॉलिमरपासून तयार केलेल्या पटलांच्या फितीमधून (कार्टिरेज) पाच ते सहा बार दाबासह वातावरणातील हवा सोडल्यावर त्यातून ऑक्सिजन व इतर घटक वेगळे केले जातात. त्यामुळे हवेतील ऑक्सिजनचे प्रमाण ३५ ते ४० टक्के वाढते. वेगळ्या येथील टीपूची राइनलँड इंडिया प्रा. लि. या कंपनीकडून या यंत्रणेचे प्रमाणीकरण करून घेण्यात आले आहे. या तंत्रज्ञानाचा परवाना जेनरिच मेंबरेन्स या स्टार्ट अप कंपनीला देण्यात आला आहे. लॉकडाउनच्या काळात साहित्य पुरवठा आणि अन्य अडथळ्यांना तोंड देऊन हे संशोधन करण्यात आले. भारत इलेक्ट्रॉनिक्सच्या मदतीने या यंत्रणेचे उत्पादन सुरू करण्यात आले आहे.

हॉस्पिटलमध्ये ऑक्सिजन केंद्रित असणे आवश्यक असते. अतिदक्षता विभाग व ऑपरेशन थिएटरमध्ये हे प्रमाण ९० टक्केही असू शकते. करोनाबाधित रुग्णांना पुरेसा ऑक्सिजन मिळाल्यास त्यांची प्रकृती वेगाने सुधारते. त्यामुळे व्हेंटिलेटरची गरज पडणाऱ्या रुग्णांची संख्या कमी होऊ शकते. व्हेंटिलेटरच्या वापरानंतर रुग्णांवर या यंत्राचा वापर करून उपचार केल्यास ऑक्सिजन सिलेंडरच्या मागणीत घट होऊ शकते.

करोना रुग्णांवर उपचारांसाठी 'एनसीएल'कडून ऑक्सिजन संवर्धक यंत्रणा विकसित करण्यात आली आहे.

'आणखी १०० युनिट्सची योजना'

सध्या या यंत्रणेचा वापर रुग्णालये, प्राथमिक आरोग्य केंद्रांमध्ये सुरू असून यात ५० यंत्रणांचा वापर केला जात आहे. पुणे महापालिकेच्या नायडू रुग्णालयात श्वसनासंदर्भात तक्रारी असलेल्या रुग्णांसाठी त्याचा वापर होत आहे. हाताळणीसाठीही ही यंत्रणा अतिशय सुकर, सुलभ आहे. 'बीईएल'ने कमीतकमी वेळात व कमी मनुष्यबळ उपलब्ध असताना १० युनिट्सची निर्मिती केली. आणखी १०० युनिट्स विकसित करण्याची योजना असल्याचे 'बीईएल'चे सरव्यवस्थापक के. राजेंद्र यांनी सांगितले.

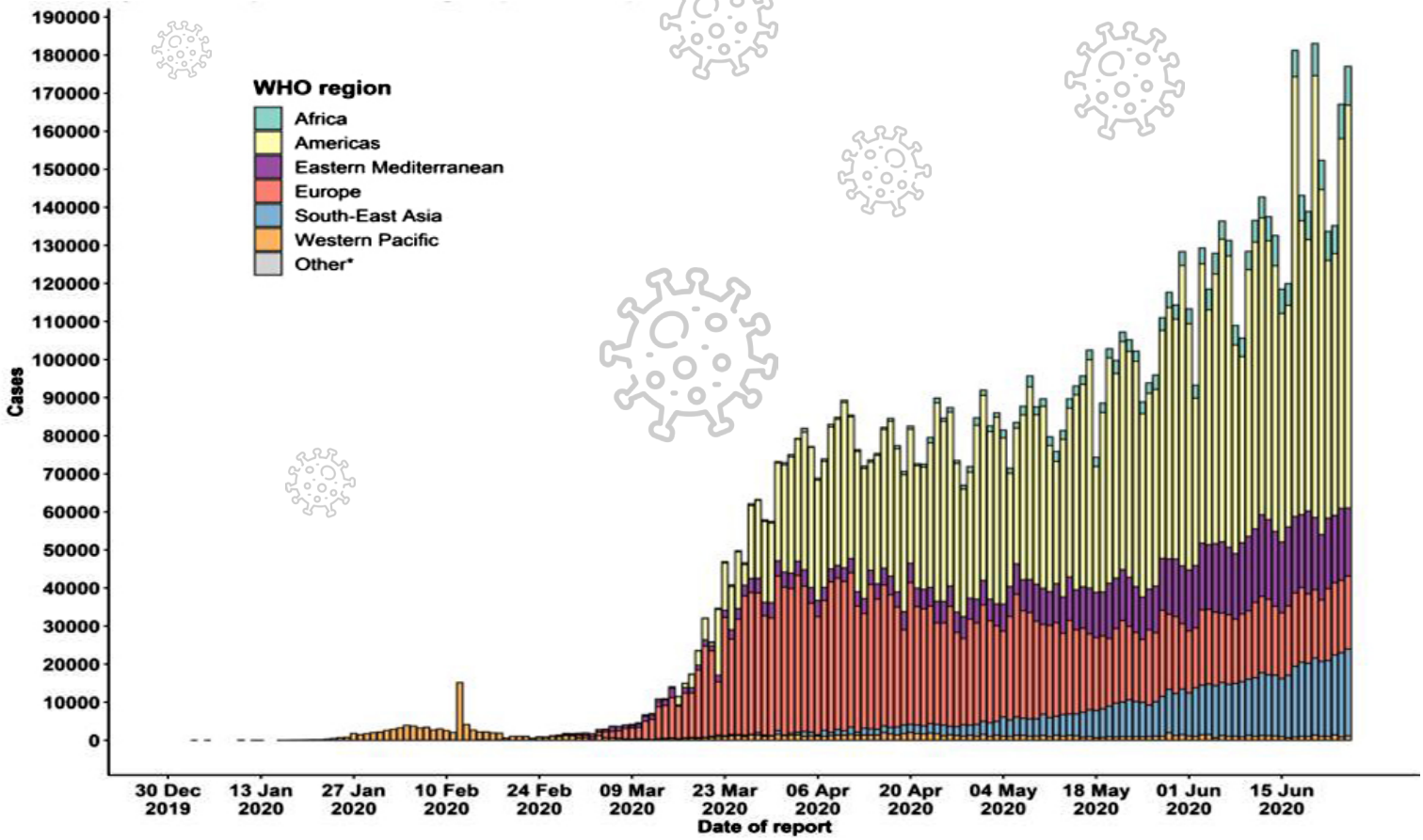
> मेंब्रेनच्या आधारे हवेतील ऑक्सिजनचे प्रमाण वाढवता येते. त्यामुळे या विषयीचे संशोधन काही काळापासून सुरू होते. श्वसनासंदर्भातील विकार असलेल्या रुग्णांसाठी ही यंत्रणा विकसित करण्यात आली होती. करोना संसर्गात फुप्फुसावर परिणाम होत असल्याने करोना रुग्णांसाठी वापर करणे शक्य आहे.
> – डॉ. उल्हास खरूल, संशोधक, एनसीएल

COVID-19 Dashboard

COVID-19 Cases and Deaths in World

(Data as of 26 June 2020)

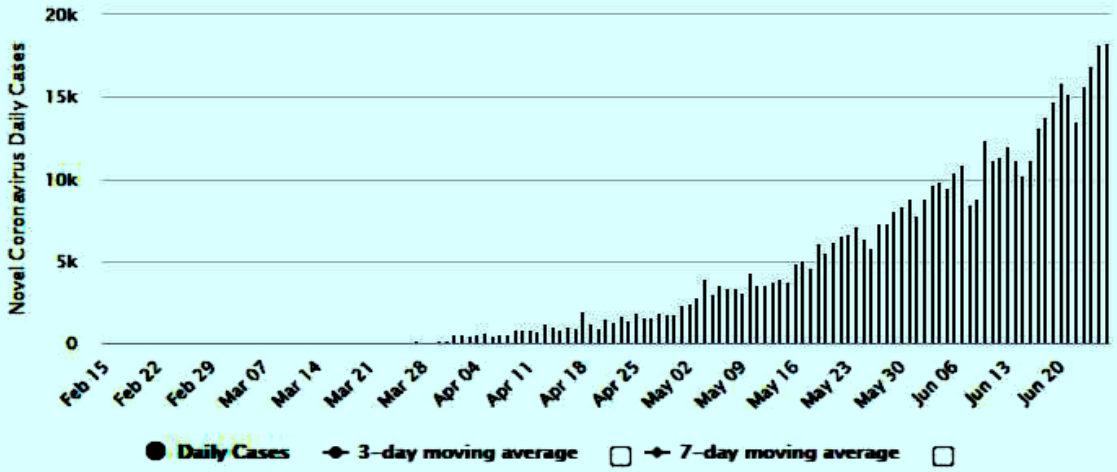
	Worldwide
Total Confirmed Cases	9473214
New Cases	177012
Total Death	484249
Total New Death	5116

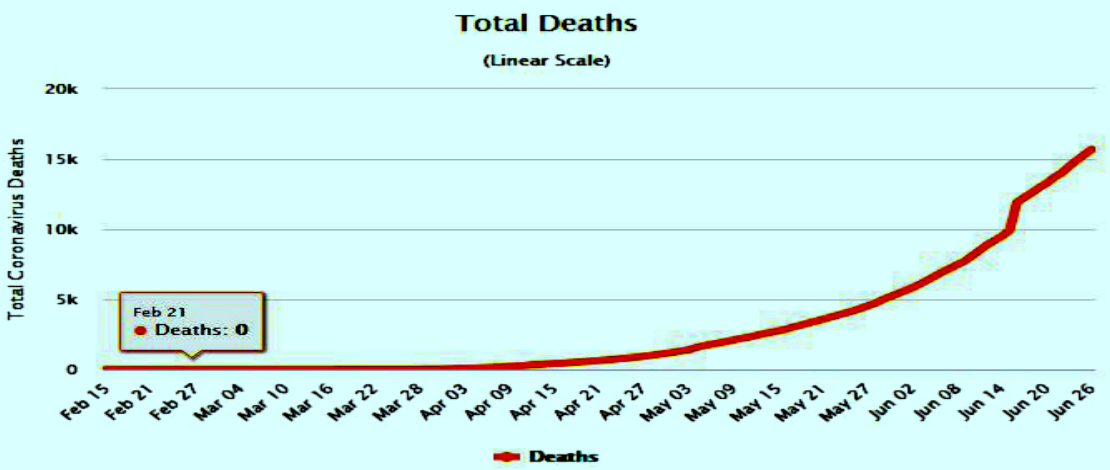


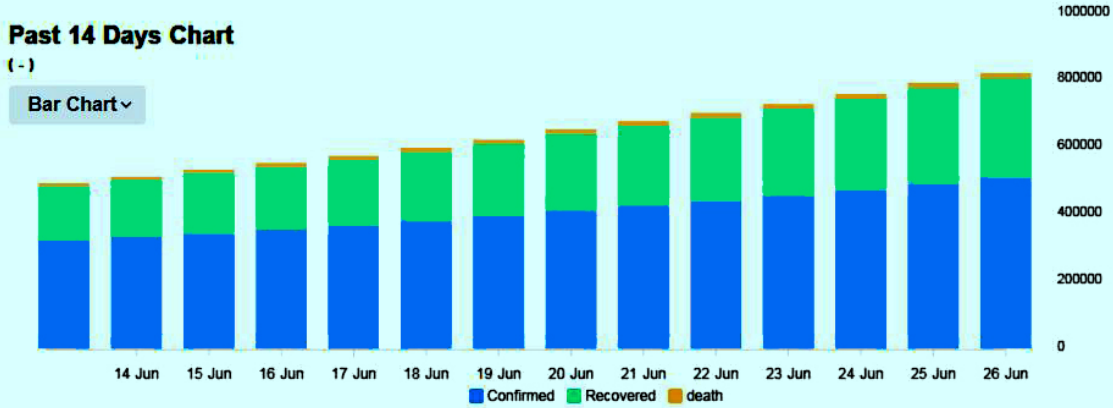
Graph
India

197387	295880	15685	1
Active Cases	Cured / Discharged	Deaths	Migrated

Source: www.mygov.in







Source: www.worldometers.info

CORONA Q&A

If even a single surface is compromised, can a virus infect the majority of a workplace in a matter of hours?

Offices have been, and are, prime sites for the spread of viruses and bacteria. You're likely familiar with cycle: every season, a bug will go around. One person will arrive at the office – sneezing, coughing – and will pass on whatever virus they have to their colleagues. And the cycle will continue. Researchers have shown that bugs, germs, viruses and bacteria spread easily in an office.

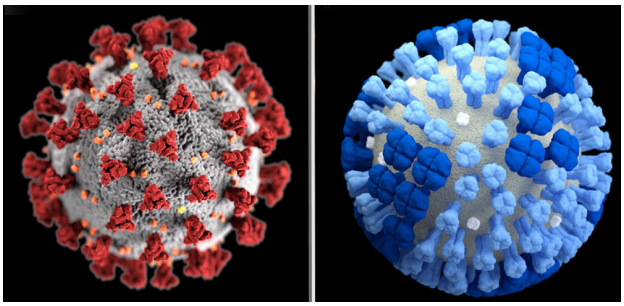
In other words, many of the high-touch areas in your office could be vectors for the spread of virus. And the more colleagues that touch them, the higher the risk of contamination, such as refrigerators, drawer handles, faucet handles, push-out exit doors and coffee pots tend to have the highest concentrations of germs. Poor hygiene from office workers can exacerbate this. That's why it's so important that, no matter whether you're working in a shared office or at home, you need to prioritise sanitisation.

www.bbc.com

Why N95 mask is a useful Personal Protective Equipment (PPE) to protect health workers from COVID-19?

N95 is a surgical mask also known as a medical respirator. Healthcare authorities recommend this respirator only for use by healthcare workers involved in surgery. A respirator is a personal protective device that covers the nose and mouth to reduce the wearer's risk of inhaling hazardous airborne germs, infectious pathogens or gases. N95 respirator is capable enough to filter out at least 95% of extremely small (of size 0.3 micron) infectious agents or particles including bacteria and virus.

How are COVID-19 and influenza viruses different?



The speed of transmission is an important point of difference between the two viruses. Influenza has a shorter median incubation period (the time from infection to appearance of symptoms) and a shorter serial interval (the time between successive cases) than COVID-19 virus. The serial interval for COVID-19 virus is estimated to be 5-6 days,

while for influenza virus, the serial interval is 3 days. This means that influenza can spread faster than COVID-19.

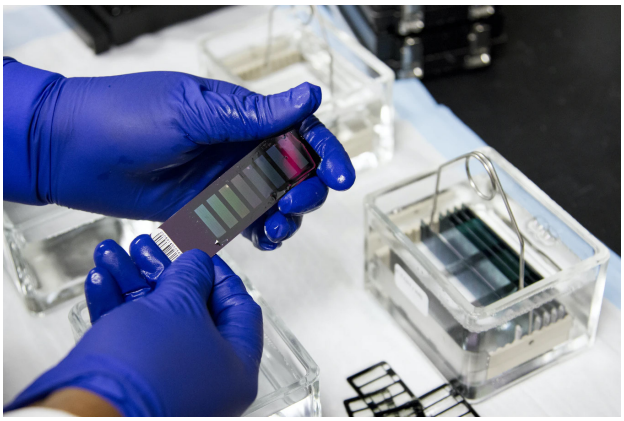
The reproductive number – the number of secondary infections generated from one infected individual – is understood to be between 2 and 2.5 for COVID-19 virus, higher than for influenza. However, estimates for both COVID-19 and influenza viruses are very context and time-specific, making direct comparisons more difficult.

Children are important drivers of influenza virus transmission in the community. For COVID-19 virus, initial data indicates that children are less affected than adults and that clinical attack rates in the 0-19 age group are low.

Those most at risk for severe influenza infection are children, pregnant women, elderly, those with underlying chronic medical conditions and those who are immunosuppressed. For COVID-19, our current understanding is that older age and underlying conditions increase the risk for severe infection.

Mortality for COVID-19 is higher than for influenza, especially seasonal influenza.

Does the presence of antibodies mean that a person is immune?



No, currently no study has evaluated whether the presence of antibodies to SARS-CoV-2 confers immunity to subsequent infection by this virus in humans. The development of antibodies to a pathogen through natural infection is a multi-step process that typically takes place over 1-2 weeks, but the process to develop a full immunologic response may be longer. Most COVID-19 studies on the presence of antibodies to date show that people who have recovered from infection have antibodies to the virus. However, some of these people have very low levels of antibodies able to neutralize virus in their blood.

www.who.int

Is tuberculosis treatment different in people who have both TB and COVID-19?

In most cases tuberculosis (TB) treatment is not different in people with or without COVID-19 infection. Experience on joint management of both COVID-19 infection and TB remains limited. However, suspension of TB treatment in COVID-19 patients should be exceptional. TB preventive treatment, treatment for drug-susceptible or drug-resistant TB disease should continue uninterrupted to safeguard the patient's health, reduce transmission and prevent the development of drug-resistance.

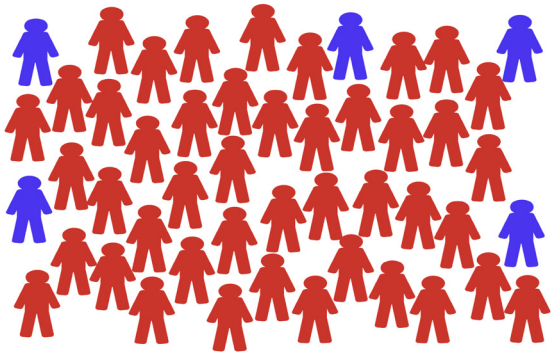
While treatment trials are ongoing, no medication is currently recommended for COVID-19 and therefore no cautions on drug-drug interactions are indicated at present. TB patients on treatment should

nonetheless be asked if they are taking any medicines, including traditional cures that may interact with their medication. Effective treatments to prevent TB and to treat active TB have been scaled up and are in use worldwide. The risk of death in TB patients approaches 50% if left untreated and may be higher in the elderly or in the presence of co-morbidity. It is critical that TB services are not disrupted during the COVID-19 response.

www.who.int

What is herd immunity?

Herd immunity is the indirect protection from an infectious disease that happens when a population is immune either through vaccination or immunity developed through

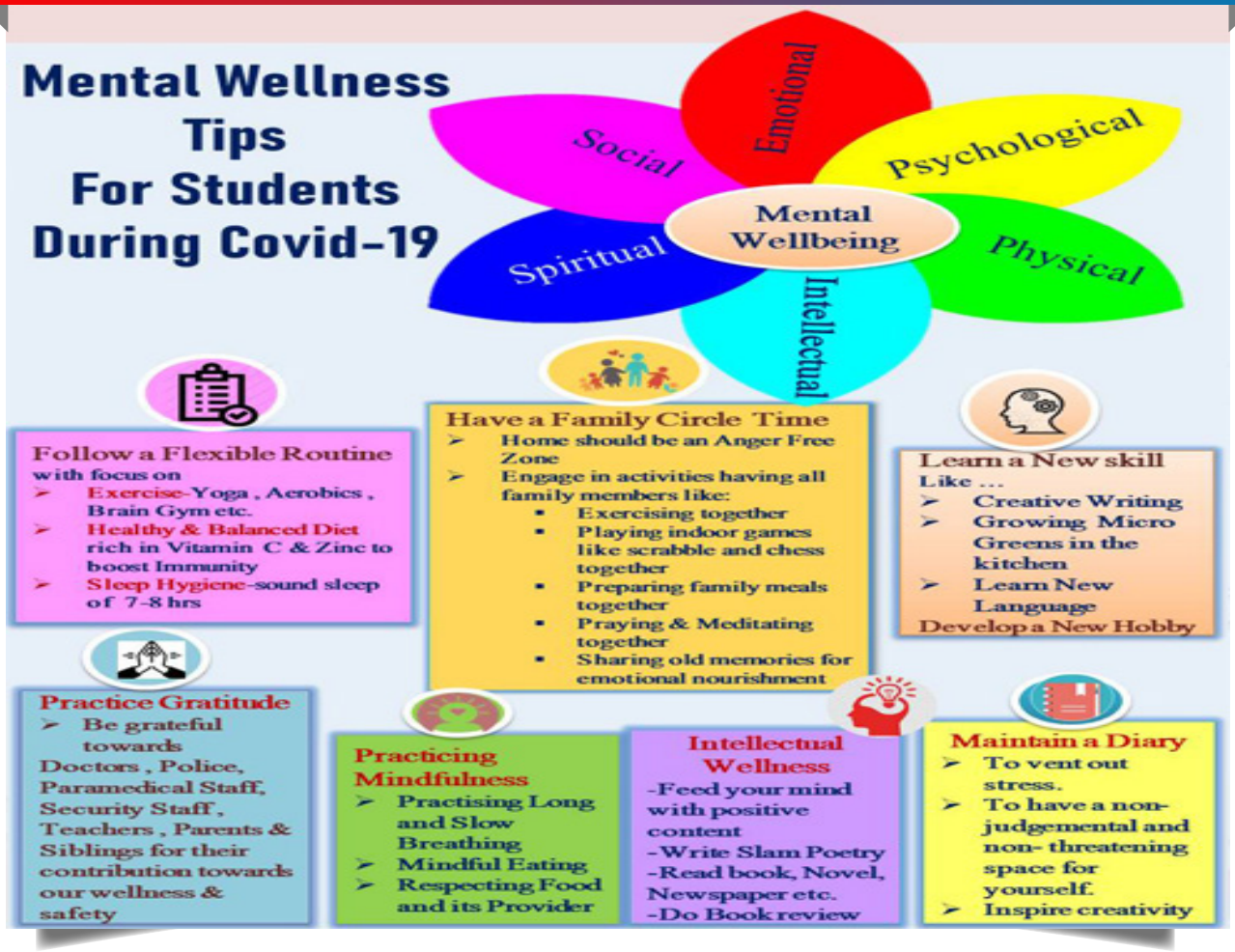


previous infection. This means that even people who haven't been infected, or in whom an infection hasn't triggered an immune response, are protected because people around them who are immune can act as buffers between them and an infected person. The threshold for establishing herd immunity for COVID-19 is not yet clear.

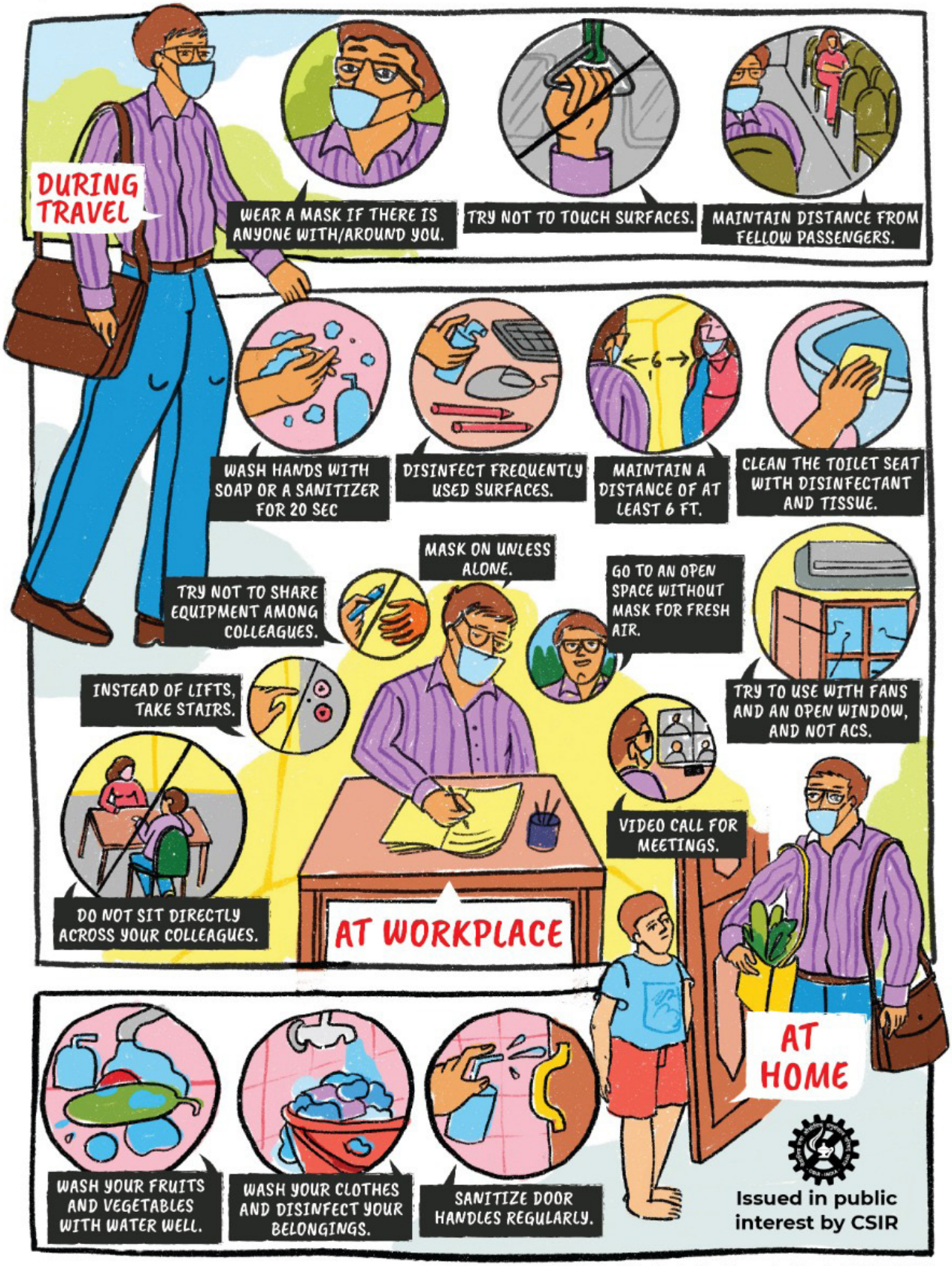
www.who.int

Family Life During COVID-19 — MHRD

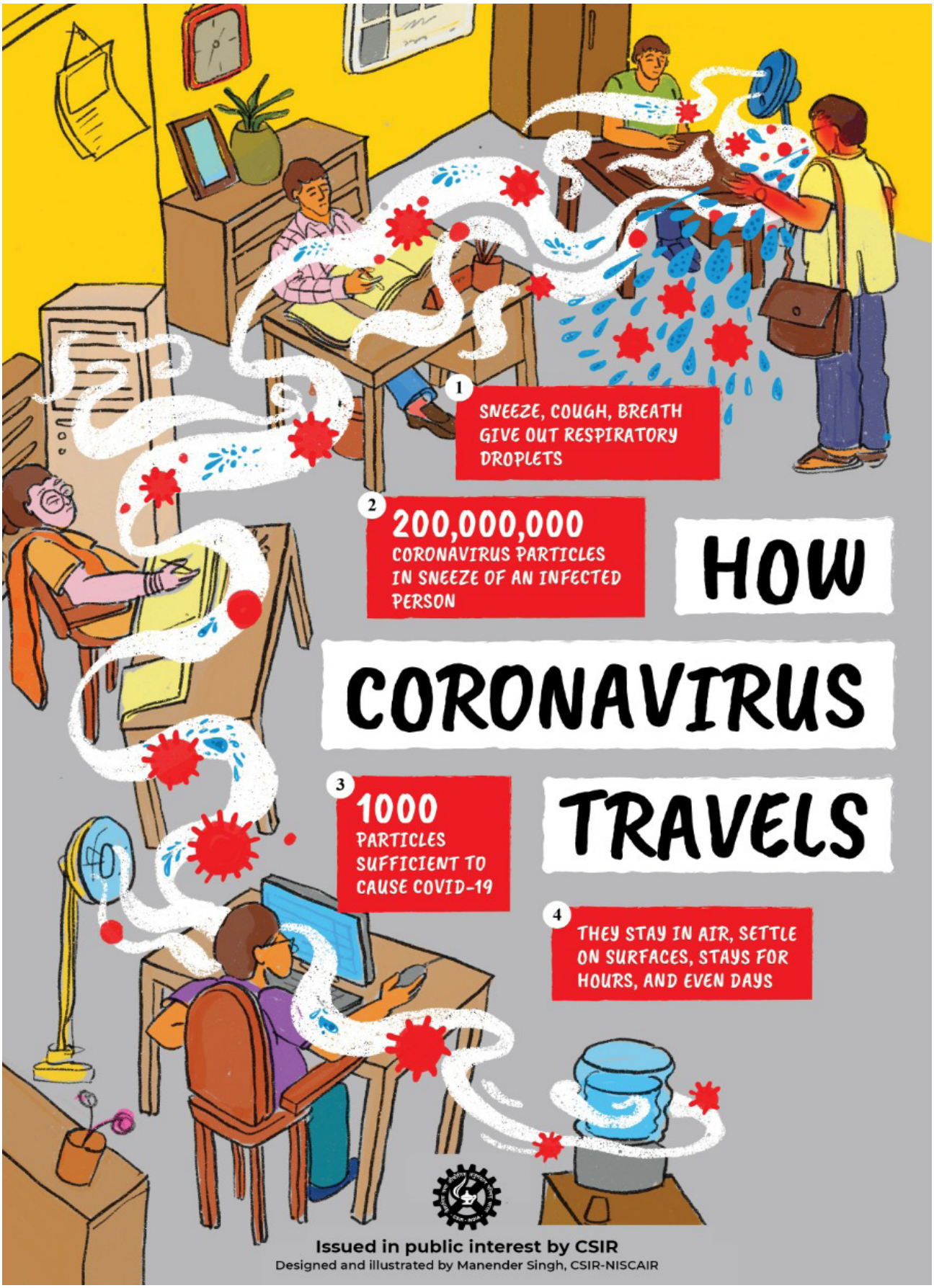
MENTAL WELLNESS TIPS FOR STUDENTS DURING COVID-19 — MHRD



GOING TO WORK NOW - KNOW THE DO'S AND DON'TS



Designed and illustrated by Manender Singh, CSIR-NISCAIR


1
SNEEZE, COUGH, BREATH GIVE OUT RESPIRATORY DROPLETS
2
200,000,000
CORONAVIRUS PARTICLES IN SNEEZE OF AN INFECTED PERSON
HOW
CORONAVIRUS
TRAVELS
3
1000
PARTICLES SUFFICIENT TO CAUSE COVID-19
4
THEY STAY IN AIR, SETTLE ON SURFACES, STAYS FOR HOURS, AND EVEN DAYS
Issued in public interest by CSIR
Designed and illustrated by Manender Singh, CSIR-NISCAIR

#Healthy@Home

Regular cleaning is an important part of keeping your kitchen healthy. Regular cleaning is even more crucial during the COVID-19 pandemic. SARS-CoV-2, the virus that causes COVID-19, can live on some surfaces in your home for days. Luckily, it's easy to get rid of the virus material from these surfaces with some basic disinfectants and cleaning procedures.

- Wash your hands with soap and water for 20 seconds before you touch anything, especially if you've been outside or at work.
- Sanitize your hands with a 60 percent (or higher) alcohol sanitizer if soap and water aren't immediately available.
- Regularly wipe down all kitchen surfaces, including counters, tabletops, and any other surface you frequently touch, like stove or microwave buttons.
- Wash all dishes and silverware before and after you use them.
- A sponge can carry mold and thousands of germs and food borne pathogens if it's not cleaned or stored properly. Placing the sponge in the dishwasher with a high temperature and the drying cycle on wetting it and putting it in the microwave for 1–2 minutes, squeezing it out well after every use and keeping it in a place that allows it to air dry.
- Cloth dish towels can also harbor unhealthy microorganisms, even if they're only used for drying clean dishes. Wash them often with your machine temperature dial set to hot.
- Never cut fruits or vegetables on the same cutting board you use to slice raw meat. Clean it with hot water and soap first.
- Household pests like cockroaches can carry a number of pathogens and can also trigger asthma and allergies in some people. You can sanitize your countertops with bleach after wiping them down with soap and water. One teaspoon of chlorine bleach per quart of water will do the trick. This extra step will help kill any lingering pathogens.
- Using bleach with chlorine will also help remove any virus material related to COVID-19. Ammonia will also work. Just don't use bleach and ammonia together, as they can combine to produce harmful chemicals.
- Keep a lid on possible insect infestations by washing dishes and utensils immediately after eating, storing food in tightly sealed containers, and keeping trash in a container with a lid on it.

www.healthline.com

FACT CHECK

COVID-19 MYTH BUSTERS

MYTH ✗

Pets at home can spread the new coronavirus

FACT ✓

At present, there is no evidence that companion animals/pets such as dogs or cats can be infected with the new coronavirus. However, it is always a good idea to wash your hands with soap and water after contact with pets. This protects you against various common bacteria such as *E. coli* and Salmonella that can pass between pets and humans.

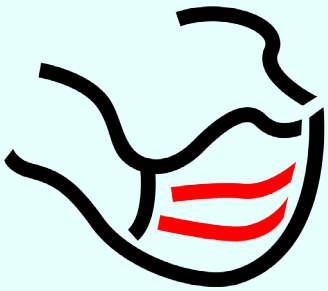
www.healthcare-in-europe.com

You cannot recover from COVID-19

Most treated persons have recovered and have eliminated COVID-19 from their bodies. However, it is very important that you seek medical attention as soon as you realize you have COVID-19 symptoms. Call your local health facility by phone and seek medical care. Thanks to supportive care, most patients have recovered from the deadly virus.

www.acko.com

Face masks always protect against coronavirus



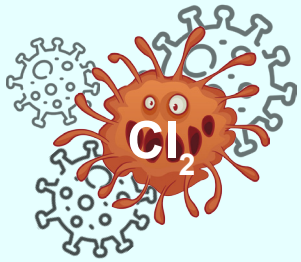
Healthcare workers use professional face masks, which fit tightly around the face, to protect themselves from infection. Disposable and cloth masks can protect against droplets, but neither can protect against aerosolized particles. When wearing a mask, it is essential to continue with other precautions, such as not touching the face and practicing physical distancing. Surgical masks and N95 respirators provide greater protection, but these are reserved for healthcare workers only.

www.medicalnewstoday.com

MYTH ✗

FACT ✓

Chlorine will kill the virus



If you have contracted the virus, spraying of chlorine all over the body will not kill the novel coronavirus. While it is effective to clean surfaces as it acts as a disinfectant, you need to use it as per recommendations.

www.acko.com

Marijuana/cocaine kills the coronavirus

There are lots of messages going around that marijuana, also called weed, kills coronavirus. “There is good evidence that marijuana contains antibacterial cannabinoids that can kill bacteria,” reads one such message. This is not true. In any case the coronavirus is a viral illness not a bacterial one. Similarly, smoking a highly addictive substance like cocaine can cause respiratory illnesses, not cure it.

www.gulfnews.com

Shaving off facial hair will reduce chances of contracting coronavirus

It has been widely claimed that the Centers for Disease Control and Prevention (CDC) in the US recommends people shave off facial hair to protect against the coronavirus. The message was circulated alongside an infographic recommending men shave their beards to safeguard themselves against the coronavirus. As it turns out, CDC did not release the graphic in relation to coronavirus. The graphic is four years old and depicts various types of facial hair how they work on filtering face piece respirators.

www.gulfnews.com

Content in this bulletin has been compiled from various sources, and wherever available, due credit has been given to the original source.