COVID-19 BULLETIN

11 AUGUST 2020

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#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-CDRI to Establish Advanced Virus Research Centre

CSIR's Lucknow-based laboratory, the Central Drug Research Institute (CSIR-CDRI), is soon coming up with an advanced virus research laboratory on the lines of the National Institute of Virology in Pune. This has been informed by Dr Tapas Kundu, Director, CSIR-CDRI.

To be set up with a fund of Rs 100 crore and with support from the State as well as the Centre, the virus research laboratory will be dedicated to research on viruses and development of therapeutics against SARS-CoV-2, Encephalitis and Dengue.

CDRI advanced research centre kindles hope to tackle virus menace

Mohita Tewari | TNN | Updated: Aug 8, 2020, 11:26 IST

LUCKNOW: With the country struggling against a spike in the spread of novel coronavirus, a scientific institute in the city has paced up its efforts to set up a state-of-the-art virus research centre.

CSIR-Central Drugs Research Institute is coming up with an advanced virus research centre which will be second only to the National Institute of Virology of Pune.

Keeping an Eye on the Virus

Ever since the coronavirus outbreak, CSIR has been keeping a close watch on the dynamics, spread and distribution of the SARS-CoV-2 virus through digital and molecular surveillance. While *molecular surveillance* involves large-scale sequencing of viral genomes, *digital surveillance* utilizes big data at the population level, such as data of confirmed cases, suspected cases, probable cases, contact cases through contact tracing (that may include asymptomatic as well). The data so generated is closely analysed to interpret the spread of the disease and facilitate the government to take necessary action on a timely basis and mitigate community-level transmission of SARS-CoV-2.

Based on the model developed by CSIR, prediction in May for Delhi and Mumbai have been accurate. Using tracing and call data, current hotspots have been identified. Data was taken from Aarogya Setu and Setu Mitr to build maps and trends were built and analyzed, in combination with actual RT-PCR data. The percentage of positivity was found to be a strong trend predictor. Municipal Councils were provided with the prediction of the outbreak.

CSIR-CCMB and Aurobindo Pharma to Collaborate on Developing Vaccine

CSIR-CCMB and Aurobindo Pharma Ltd. have entered into collaboration for developing a COVID-19 vaccine against SARS-CoV-2. As a part of the collaboration CSIR labs (CSIR-CCMB, CSIR-IICB and CSIR-IMTECH) shall make available the SARS-COV-2 candidate proteins/ complexes for vaccine development after pre-clinical success to Aurobindo. CSIR Labs shall conduct the non-GMP preclinical studies and then transfer/license the technology at the Proof-of-Concept stage to Aurobindo Pharma. Aurbindo will carry out GMP compliant large-scale production and development of the vaccine. Aurobindo shall scale up the vaccine production and initiate Phase I trials.

Clinical Trials of Repurposing Drugs for COVID-19

Drug	Mode of Action	Industry Partner	Current Status
Umifenovir	Prevents entry of virus into human cells. Also boosts immune system.	MEDIZEST	• DCGI approval received for Phase-III trials • Phase III trial to be conducted at Dr Ram Manohar Lohia Institute of Medical Sciences (RMLIMS), Era's Lucknow Medical College & Hospital & King George's Medical University (KGMU)
(1) Favipiravir + Colchicine; (2) Umifenovir + Colchicine (3) Nafamostat + 5-ALA	Antivirals (viral-entry and replication inhibitors) Host-directed therapies (HDTs)	LAXAI	• Application submitted to DCGI for regulatory clinical phase III trials at Medanta Medicity • Total of 300 patients in 4 different groups • 75 patients in each arm • Treatment for 17 -21 days including screening and treatment.
(1) Favipiravir + Bromohexine (2) Niclosamide	Prevents viral entry Mucolytic drug Anti-viral and host directed response modifier	Cipla LAXAI	• Clinical trials are being designed for DCGI approval (trials to begin shortly) • Clinical trials are being designed for DCGI approval (trials to begin shortly)

Ongoing Clinical Trials for COVID-19

Sepsivac

- Pre-trial clinical studies have **demonstrated safety in COVID-19** patients
- Phase II trials on critically ill COVID-19 patients
- Trials at PGI Chandigarh; AIIMS Delhi, and AIIMS, Bhopal.
- Approval for Phase-III trials in place: one on 600 patients, another on 500 patients.
- Results expected soon

ACQH

- DCGI approval for clinical trials.
- **First-ever approval in India in phytopharmaceutical route**
- Clinical trials being done by **Sun Pharma** in collaboration with ICGEB & CSIR-IIIM Jammu.
- Clinical trials on at 12 centers; in 210 patients
- Results expected soon

Plasma Therapy

- The trial involves CSIR-IICB, Calcutta Medical College and Iinfectious Disease Hospital, Belegata, Kolkata
- Dedicated **'Epidemic Immune Monitoring Lab'** has been prepared for this program.
- Clinical trial has been approved by DCGI and has been initiated

CSIR-IICT and Cipla Foundation Partnership to Develop High-quality Masks

The CSIR-Indian Institute of Chemical Sciences (CSIR-IICT) is collaborating with the Cipla Foundation (CF) for a project on face masks in the wake of COVID-19. The project on affordable, multi-layered, hydrophobic face masks with anti-microbial properties, entitled "SAANS", is for production of one lakh high quality masks for distribution in identified mandals of Rural Telangana.

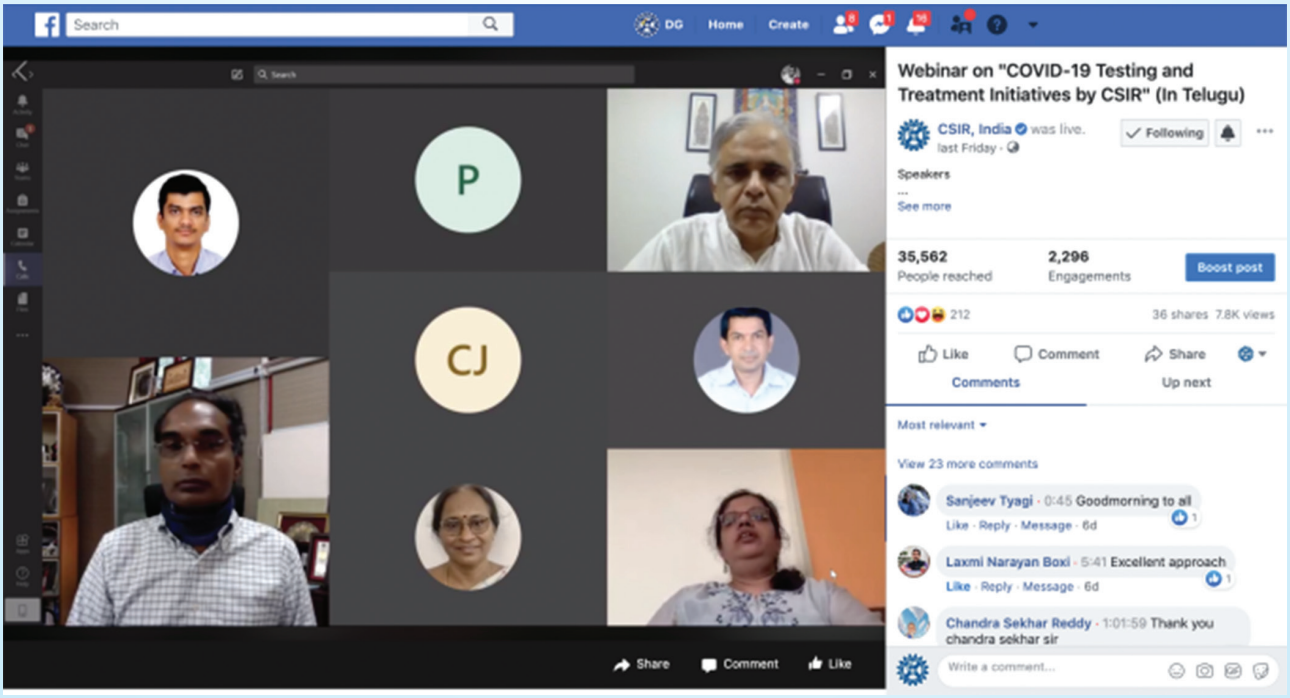
The project envisages multiple beneficiaries such as enhancing the income of the entrepreneur (start-ups or MSME's), generating employment to SHGs and improving the quality of hygienic life in rural areas for mitigation of the COVID-19.

CSIR Organises Webinar in Telugu as part of Communication Series in Indian Languages

As part of CSIR's outreach programme in Indian languages, CSIR organized a webinar in Telugu on "COVID-19 Testing and Treatment Initiatives by CSIR" on 1 August 2020. Dr Shekhar Mande, DG-CSIR gave the opening remarks. The speakers included Dr S. Chandrasekhar, Director, CSIR-IICT; Dr Shashikala Reddy, Dean, Osmania Medical College; Dr Raji Reddy, Senior Principal Scientist, CSIR-IICT and Dr D.T. Sowpati, Scientist, CSIR-CCMB.

The effort was not just aimed at disseminating information about CSIR's efforts in the fight against COVID-19 but also bringing clarity in the minds of the general public about the various issues and concerns related to treatment and testing for COVID-19.

The webinar was moderated by Dr Geethavani Rayasam, Head, Science Communication and Dissemination Directorate, CSIR



Sanitizer Based on CSIR-CDRI Technology Launched in Market

Germivid, a herbal hand sanitizer, the technology for which was developed by the CSIR-National Botanical Research Institute (CSIR-NBRI), Lucknow has been finally launched in the market. The technology for the sanitizer was transferred to M/s. Fervid Healthcare Pvt. Ltd. The product will be available in the market in 1 Litre, 500 ml, 200 ml & 100 ml bottles & priced as per the GOI rules.

CSIR MEDIA COVERAGE

भांग के औषधीय गुणों की खोज में मददगार हो सकती है नई शोध परियोजना

Tweet

इंडिया साइंस वायर ⊙ नई दिल्ली, गुरूवार, अगस्त 06, 2020

वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद की लखनऊ स्थित प्रयोगशाला केंद्रीय सगंध पौधा संस्थान (सीमैप) के वैज्ञानिकों द्वारा संचालित एक शोध परियोजना के तहत कैनाबिडिओल (सीबीडी), टेट्राहाइड्रोकैन्नाबिनॉल (टीएचसी) और कैनबिनोइड्स टरपीन से युक्त भांग की प्रजातियों की पहचान करने के प्रयास किए जा रहे हैं।

The Indian EXPRESS

CSIR study to explore possibility of airborne transmission of coronavirus

The study is an attempt to explore the possibility of airborne transmission of coronavirus, Dr Shekhar Mande, director general of the Council of Scientific and Industrial Research (CSIR), told The Indian Express.

Written By Anuradha Mascarenhas | Pune |
Published: August 7, 2020 1:37:14 am

CSIR experts lead effort to prove unique mutation of Sars-Cov-2

Researchers from the Council of Scientific & Industrial Research (CSIR) are trying to establish the prevalence of a unique mutation of the SARS-CoV-2 virus that causes Covid-19 that was discovered in samples of patients a couple of months ago.

READ IN APP

THE HINDU

HYDERABAD

Cipla to mass-produce IICT-designed masks

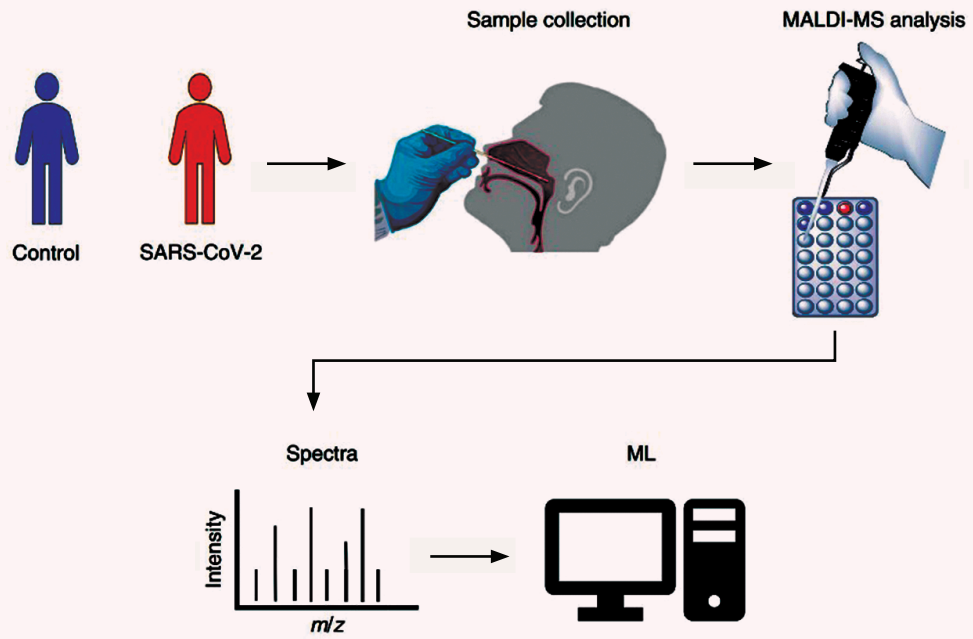
SAANS mask made with CSIR-IICT's design has three-four layers made of co-extruded hydrophobic polymers with antibacterial properties. | Photo Credit: By arrangement

CORONA RESEARCH SNAPSHOT

Detection of SARS-CoV-2 with the help of matrix-assisted laser desorption/ ionization mass spectrometry

RT-PCR is an exhaustive, sophisticated and time-taking diagnostic process to detect the presence of SARS-CoV-2 in nasal swab. Researchers are trying hard to come up with new, easy and fast technologies to diagnose the COVID-19 infection. Scientists of Universidad Autónoma de Chile, Chile have just published about the discovery of a new/easy method to detect SARS-CoV-2 in nasal swab with the help of matrix-assisted laser desorption/ionisation mass spectrometry (MALDI-MS) and machine learning analysis. This method does not require very specialized chemicals and accessories for the diagnostic process. The chemicals and accessories required to utilize this newly discovered technique are generally available in chemical laboratories. The scientists obtained mass spectra from 362 samples (211-SARS-CoV-2 positive and 151 negative pretested by RT-PCR) without sample preparation. The researchers used two features selection method and six machine learning approaches for highest accuracy in diagnostics. They found 93.9% accuracy in the results with 7% false positives and 6% false negatives. The study is published in *Nature Biotechnology* after peer review.

Source: *Nature Biotechnology;* DOI: 10.1038/ s41587-020-0644-7; 30 July 2020



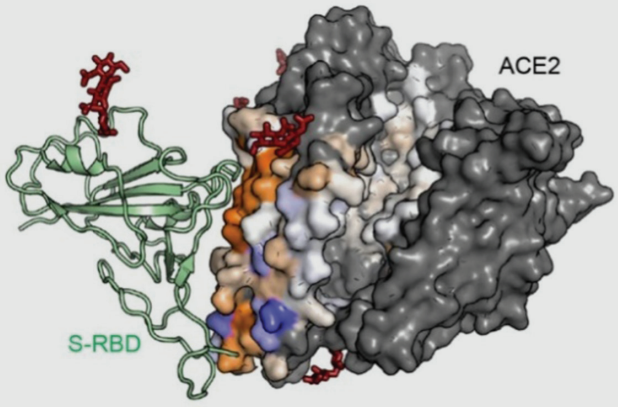
MALDI-MS method of COVID-19 infection detection

(Figure Courtesy: Nachtigallet al.; Nature Biotechnology; 2020)

Scientists aim to engineer human ACE2 receptors for therapeutic applications against COVID-19 infection

It is well understood that the spike protein of SARS-CoV-2 binds on ACE2 receptors on the cell membrane to initiate the entry for infecting the cell. Scientists have found the soluble ACE2 receptor as a therapeutic candidate which is capable of neutralizing the infection by acting as a decoy. Mutations in ACE2 receptors increase binding with spike protein, it is found across the interaction surface at different cell surface sites. The detailed understanding of this mutational landscape can provide a blueprint for engineering the high affinity decoy receptors. Scientists at the University of Illinois, USA and their collaborators at different institutes have been able to engineer a catalytically active decoy receptor which is closely similar to the native receptor. This engineered ACE2 receptor is potentially a therapeutic candidate in fighting COVID-19 infection.

Source: *Science*; DOI: 10.1126/science.abc0870; 2020



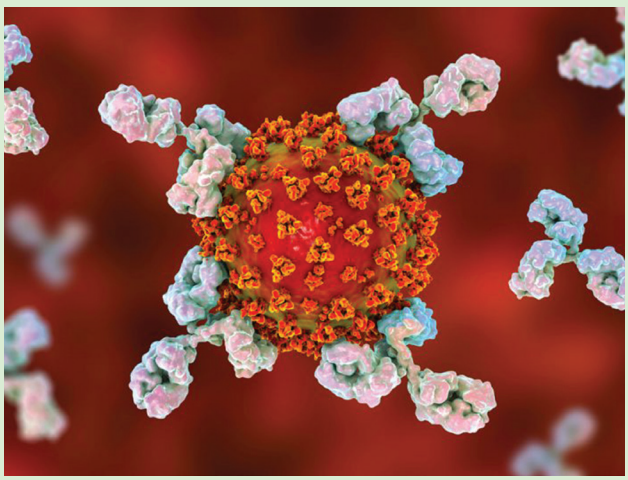
Engineered ACE2 receptor for therapeutic applications against COVID-19

(Image credit: K. K. Chan et al., Science; DOI: 10.1126/science. abc0870; 2020).

Designer antibodies can help in fight against COVID-19 in pre-vaccines time

While the whole world is racing for a safe and efficient vaccine, scientists are also leaving no stone unturned to develop targeted antibodies capable of providing instant immunity boost against the virus. Since it is estimated that SARS-CoV-2 is going to remain for a long time, and an efficient vaccine will take some time, alternative therapies are needed to give patients instant immunity boost which can prevent and treat the disease. Immunologist Dennis Burton at Scripps Research has isolated highly potent monoclonal antibodies against SARS-CoV-2 which will soon undergo human trials. In another effort, Regeneron is testing the efficacy of a cocktail that combines a spike antibody separated from a recovered human patient and another antibody from a mouse which was given spike protein to tweak its immune response. The prevention trial is running under the COVID-19 Prevention Trials Networks (CoVPN)-USA. An article written by Jon Cohen, published in *Science Magazine* discusses similar efforts related to designer antibodies for treatment and prevention of COVID-19 infection.

Source: *Science;* DOI: 10.1126/science.abe1740; 2020

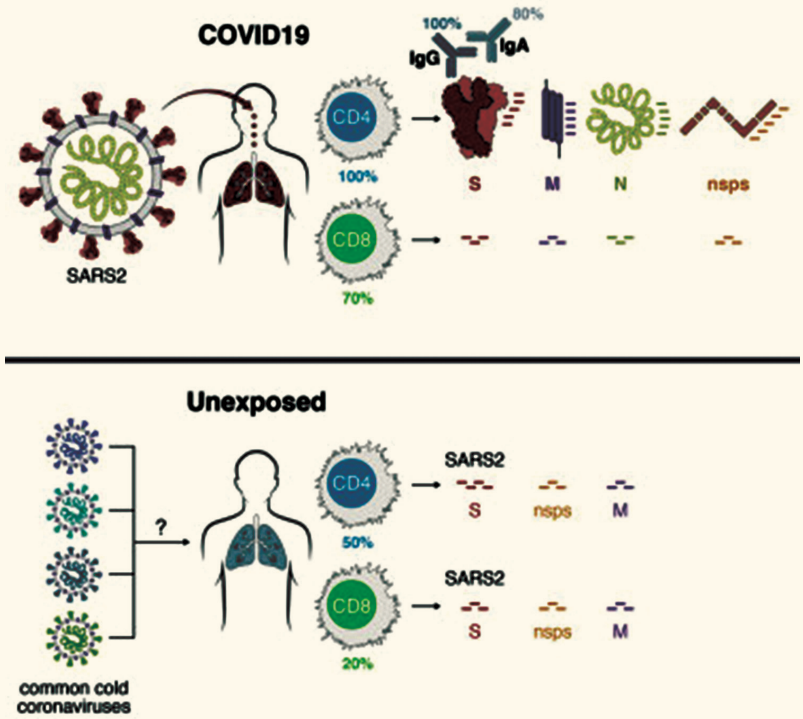


(Image Credit: Shutterstock)

T cell responses against SARS-CoV-2 in exposed and unexposed individuals

Researchers from the Centre for Infectious Disease and Vaccine Research, La Jolla Institute for immunology, USA have analysed the targets of T cell responses against SARS-CoV-2 in exposed and unexposed human beings. After the researches about petering out of antibodies in already recovered patients after 2-3 months created a suspicion about the efficacy of the vaccine for a very limited time, memory cells are raising a new hope among scientists. T cells are memory cells that kill the already infected cells in the fight against COVID-19. Since the adaptive immune system makes these cells active at the time of the viral attack, these cells are also called memory cells. Scientists are trying to understand the mechanisms behind the adaptive immunity against SARS-CoV-2 which is also very important to understand for developing an efficient vaccine, interpreting the COVID-19 pathogenesis and calibration of pandemic control measures. Scientists have found that SARS-CoV-2 specific CD8+ and CD4+ T cells are present in approximately 70% and 100% of COVID-19 patients respectively. The CD4+ T cell responds to spike protein, which is the main target of most of the vaccine candidates. The T cell response was robust and correlated with the magnitude of the anti-SARS-CoV-2 antibodies in most of the vaccine candidates. Further, researchers claim that they have found CD4+ T cells in approximately 40-60% unexposed individuals suggesting a cross-reactive T cell recognition between previously circulated common cold coronaviruses and SARS-CoV-2. The detailed results of this study are published in *Cell* after peer review.

(Source: *Cell*; DOI: 10.1016/j.cell.2020.05.015; 2020)



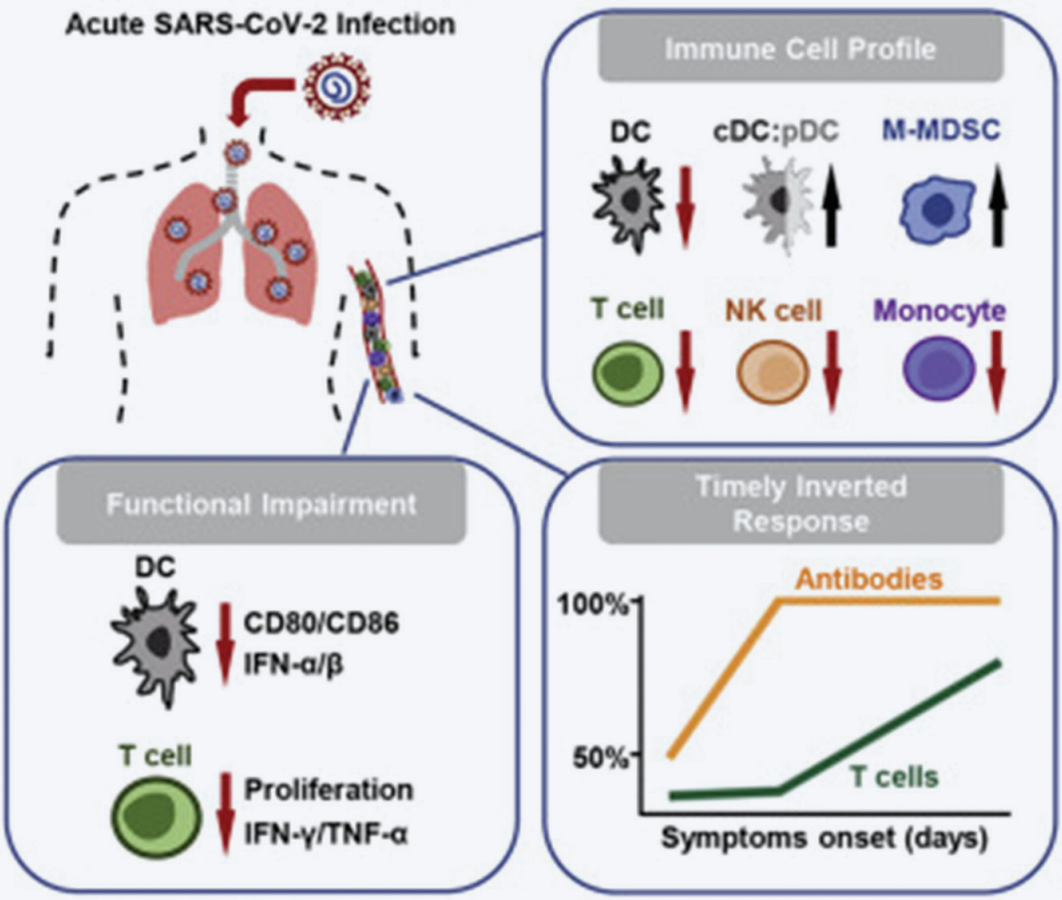
T cell response in SARS-CoV-2 exposed and unexposed individuals

(Image Credit: Grifoniet al., Cell; DOI: 10.1016/j.cell.2020.05.015; 2020)

Severe COVID-19 infection impairs dendritic and T cell response

Scientists at the Department of Microbiology, University of Hong Kong, Hong Kong have found that severe COVID-19 infection drastically reduces the dendritic cells, T cells and monocyte cell response. Scientists are aiming to understand the adaptive immune system response against COVID-19 infection, which is less known at this point of time. It is very important to understand the adaptive immune system response to make an efficient vaccine and understand the pathogenesis of the COVID-19 infection. The researchers at University of Hong Kong investigated 17 acute and 24 convalescent patients and found that acute COVID-19 infection caused the reduction of broad immune cells *e.g.* T cells, NK cells, monocytes, and dendritic cells in severely infected patients. The delayed receptor binding domain and NP-specific T cell responses are found during first three weeks of post-symptom time. The studies are being considered as important findings for the development of an efficient vaccine. The findings are published in journal of Cell press (Elsevier) after peer review.

Source:*Immunity*; DOI: 10.1016/j.immuni.2020.07.026; 2020



Effect of acute COVID-19 infection on adaptive immune cells' response

(Image Courtesy: Zhou et al., Immunity; DOI: 10.1016/j.immuni.2020.07.026; 2020)

Understanding the higher risk of COVID-19 infection in pregnant women

According to the data available related to USA from Centres for Disease Control and Prevention-USA (CDC-USA) till late June, among 91,412 women of reproductive age with COVID-19 infections, 8207 women were found to be 50% more likely to end up in ICUs than other non-pregnant women. It was estimated that pregnant women were 70% more likely to need ventilators. In an another study related to Sweden and published in the journal *ActaObstetricia et GynecologicaScandinavica*, the researchers concluded that pregnant women were nearly seven times more likely to end up in ICUs in comparison to non-pregnant COVID-19 infected women. Previous respiratory viral infections were also dangerous for pregnant women. Scientists from different countries are trying the understand the possible reasons and mechanisms behind the vulnerability of pregnant women towards COVID-19 infection.

Source: *Science*; DOI: 10.1126/science.abe1694; 2020

Representative Image
(Source: CANVA)

CORONA INNOVATIONS

Disinfection Booth for Corona-free Air Travel

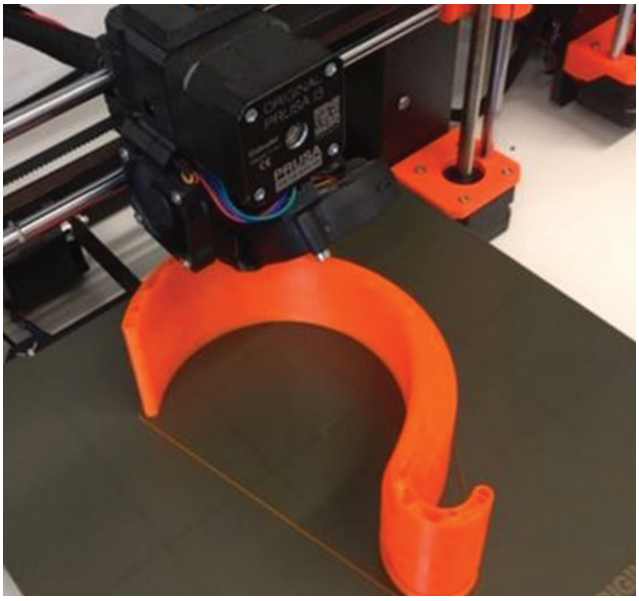
Cleaning robots, temperature checks and antimicrobial coatings could soon become new normal while air travel. CLeanTech is a full-body disinfection booth that uses sanitising spray, antimicrobial coatings and temperature checks. This innovative disinfection device could represent the future of airport screening. Hong Kong International Airport has provided these disinfection technologies to ensure corona-free air travel.

This disinfection process requires all those going through to undertake a temperature check before a 40-second disinfection and sanitisation in a small booth. This process of disinfection kills any viruses and bacteria found on clothing as well as the body.

According to the Hong Kong International Airport authority, the inside of the facility contains an antimicrobial coating that can remotely kill any viruses and/or bacteria found on clothing, as well as the body, by using photocatalyst advances along with 'nano needles'.

Source: https://edition.cnn.com

Hands-free door handle to check COVID infection



COVID-19 infection spreads through contact with various surfaces. Door knobs, stair side grills, lift buttons, etc. are major sources of corona infection. To avoid infection through these daily life surfaces, a hands-free door handle has been invented by Wyn Griffiths. He is a Senior Lecturer at the Department of Design Engineering and Mathematics of Middlesex University, London.

Griffiths has designed a prototype 'arm' which attaches to an existing door handle, with a crook to open the door. He has now distributed the 3D design of this innovative technology online for anyone to download it for free. People who have a 3D printer can help out their local hospital or anywhere the public visits by distributing these around the country.

Source: https://www.bbc.com

Health App to reduce risk of Coronavirus

China succeeded in controlling the spread of COVID-19 within a short time-span and also controlled the emergence of the second wave. Health App has played a crucial role in preventing the second wave of COVID-19 infections in China. Users of this app scan the QR codes to share information about their health status and travel history. These codes need to be scanned before boarding buses and trains or entering airports, offices and even their own housing complexes. Different colors on the apps indicate different levels of risk. Green code allows unrestricted movement, yellow codes for seven days of quarantine and red codes for those who require 14 days of quarantine. The apps can trace whether the users have been in contact with infected people.

Source: https://thewire.in

Phone booths for COVID-19 testing

A South Korean hospital has introduced coronavirus testing facilities that are similar to phone booths. This innovative testing facility allows medical staff to examine patients from behind a plastic screen. The name of this facility is 'Safe Assessment and Fast Evaluation Technical booths of Yangji hospital' or SAFETY in short.

Each infected person steps into the box and consults with the medical staff through an intercom. If it is necessary, s/he is sampled for an infection. The process takes about seven minutes, after which the booth gets sanitised and ventilated for the next patient. These phone booths have enabled the hospital to go from about eight samples a day to 80.

Source: https://www.straitstimes.com

High-quality made-in-India face masks

An IIT-Madras incubated clean technology start-up Air Ok Technologies has come up with a range of high-quality face masks under Air Ok Breathe Safe series. Air Ok has introduced N95 and N99 masks which comes with EGAPA Carbon infused with anti-counterfeit filter media. The EGAPA is a patented technology by Air Ok and the fabric used in the making of the mask is anti-allergic with comfortable facial fit because of its ergonomic design. The mask manufactured with anti-microbial technology provides five-layered protection with water repellent property. The easy to carry masks are foldable and reusable.

Source: https://zeenews.india.com

MITR labs for COVID-19 testing

An end-to-end COVID-19 testing solution called Mobile Infection Testing and Reporting (MITR) Labs has been developed by faculty members at the Indian Institute of Science (IISc), in collaboration with an IISc-incubated startup called ShanMukha Innovations.

MITR Labs is India's first and only Biosafety Level two-plus (BSL 2+) compliant mobile diagnostic lab approved by the Indian Council for Medical Research (ICMR). The mobile labs – which consist of a fleet of vans – allow healthcare workers to collect, process and test samples using RT-PCR onsite, and upload results directly to the ICMR portal. RT-PCR is considered the gold standard for the detection of the novel coronavirus.

The turnaround time to obtain results with these mobile labs is between four to 12 hours, a significant reduction from the two to ten days taken to get results in traditional medical diagnostic labs.

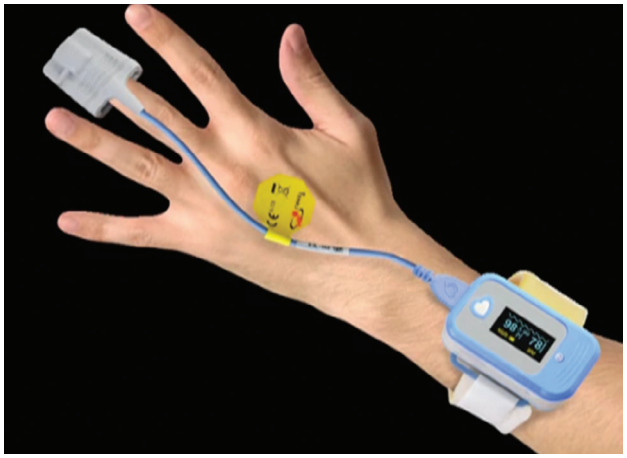
Source: IISc, Press Release

SteriLite — UV-C-based disinfection device

Ahmedabad-based security startup Sunbots Innovations has developed SteriLite, a UV-C disinfection tower with a foldable arm to deliver fast and effective germicidal dose of the continuous wavelength of UVC energy to kill bacteria and viruses including SARS-CoV-2. SteriLite is effective in killing viruses on surfaces from plastic, wood, electronics, metal, paper or clothes which is not possible with chemical-based disinfection. SteriLite can be positioned in multiple angles for faster and targeted disinfection. SteriLite is Mobile Application enabled for safe operation.

Source: https://sunbots.in/#sterilite

Patient monitoring solutions



IIT Madras has collaborated with a healthcare startup, HELYXON, to develop a device and deploy it for remote monitoring of COVID-19 patients. The device is self-contained, portable, wireless, reusable and can monitor four critical parameters including temperature, oxygen saturation, respiratory rate and heart rate.

The device can be clipped on to a patient's finger which in turn shares the information onto a mobile phone or central monitoring system. The temperature is measured at the armpit whereas the blood oxygen level and other parameters can be measured at the finger. The technology is applicable to hospitals where doctors can manage patients beyond COVID-19.

Source: https://www.ndtv.com/

Innovative products to fight COVID-19

A Bangalore Bioinnovation Centre, an initiative of the Karnataka Innovation and Technology Society (KITS), has launched eight products including contactless monitoring of patient's vitals, immunity boosters and water.

One of the products is Padma Vitals+ which is a centralised contactless monitoring system developed for ECG, respiration,

SpO_2 and body temperature. This can measure the vitals continuously and send the analyses via telemetry.

The other products include an immunity booster tea with anti-viral properties, prepared from medical mushrooms; a flat wheat bread or chapathi called 'beam roti' comprising a mixture of herbs recommended by the AYUSH ministry; a chewable tablet capable of fighting inflammation and infection; daily immunity booster drops; an alcohol and chlorine-free fruit and vegetable sanitizer and a water sanitizer or a miniaturized UV purifier that can be attached to the tap and kill 99% microbes; a module which when fitted on an air conditioning device, sanitizes the circulating air.

Source: https://www.livemint.com/

Geo-tagging of indigenous ventilators

Image credit: Wikimedia commons

To prevent the misuse of indigenously manufactured ventilators, authorities have decided to geo-tag them for which ventilators are being embedded with Global Positioning System chips. This will help to track the locations of the ventilators in hospitals in case the location is changed. The ministry has created a dashboard for tracking the real-time status of ventilators dispatched, delivered, and installed for monitoring and feedback.

Source: https://www.hindustantimes.com/

Rapid testing machine 'Virion' for COVID-19

Rapid testing is the need of the hour to ensure safety against the prevailing pandemic for which Israel based Kidod Science & Technologies Ltd has come up with a non-invasive detection device for COVID-19 testing. The device is just the size of a desktop computer and does not need an expert or any qualified personnel. Saving time, the device using the Ion-Mobility Spectrometry (IMS) technique can detect the virus by aaliva sample only. This testing is done in association with DRDO India. The Virion test can give result in 50 seconds with 95% accuracy rate.

Source: https://www.biospectrumindia.com/

Disposed PPE can be transformed into biofuel

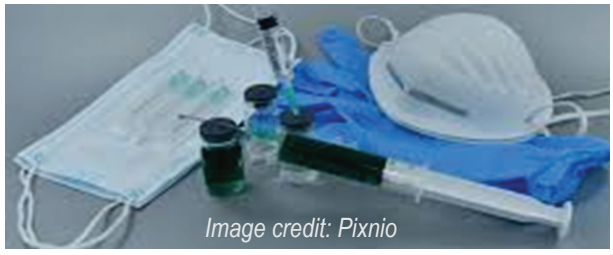


Image credit: Pixnio

During the pandemic, the plastic used in PPE is a major problem as it may contribute heavily in contaminating the environment. Indian researchers from The University of Petroleum and Energy Studies, Uttarakhand, have come up with a solution to convert dumped or disposed PPE into renewable liquid fuels — biofuels.

The study (DOI: 10.1080/17597269.2020.1797350) published in the journal *Biofuels* proposes an effective way of recycling the PPE by a process called pyrolysis. According to the study, "The pyrolysis of the PPE kit can be done in a closed thermal reactor between 300-400 °C for 60 min, which will convert the polypropylene into liquid fuels. This conversion will not just prevent the severe after-effects to humankind and the environment but also produce a source of energy. Thus, the challenges of PPE waste management and increasing energy demand could be addressed simultaneously by the production of liquid fuel from PPE kits. The liquid fuel produced from plastics is clean and has fuel properties similar to fossil fuels."

Spice-based formula to inactivate the SARS-CoV-2

IIT Bombay has developed a spice-based formulation which can inactivate COVID-19 virus within an hour. The nutraceutical and phytopharmaceutical formulation is called Picovrid. As a nutraceutical Picovrid contains ingredients approved and as per the limits of FSSAI (Food Safety Standards and Authority of India) and as a phytopharmaceutical it comprises approved Ayurvedic spices and natural emulsifiers, which are above food limits but at doses that are one-tenth of those found in conventional Ayurvedic formulations.

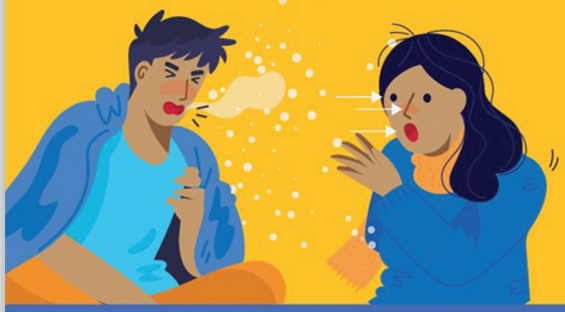
Picovrid is available in the form of an oral syrup, herbal water, flavoured beverages, oral liquid shot, capsules, gels, infusion bag of herbal tea, flavoured milk and yoghurt. The efficacy of the formulation was validated using the reverse transcription-polymerase chain reaction (RT-PCR). The pre-clinical results have been promising.

Source: https://www.hindustantimes.com/

COVID-19 Know The Facts

World Health Organization
Western Pacific Region

COVID-19 spreads primarily from person to person



- Droplets released when someone sick sneezes or coughs can land on the mouths or noses of people nearby
- Close contact with someone sick – like hugging or shaking hands

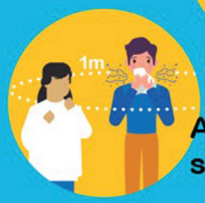
COVID-19 mainly spreads from person to person But it can also be left on objects and surfaces…

So if you touch something contaminated and then touch your face or another's face, you might all fall ill.

Reduce your risk of COVID-19

Clean your hands often

Avoid touching your eyes, nose and mouth



Avoid close contact with someone who is sick

Cough or sneeze in your bent elbow – not your hands!

Limit social gatherings and time spent in crowded places

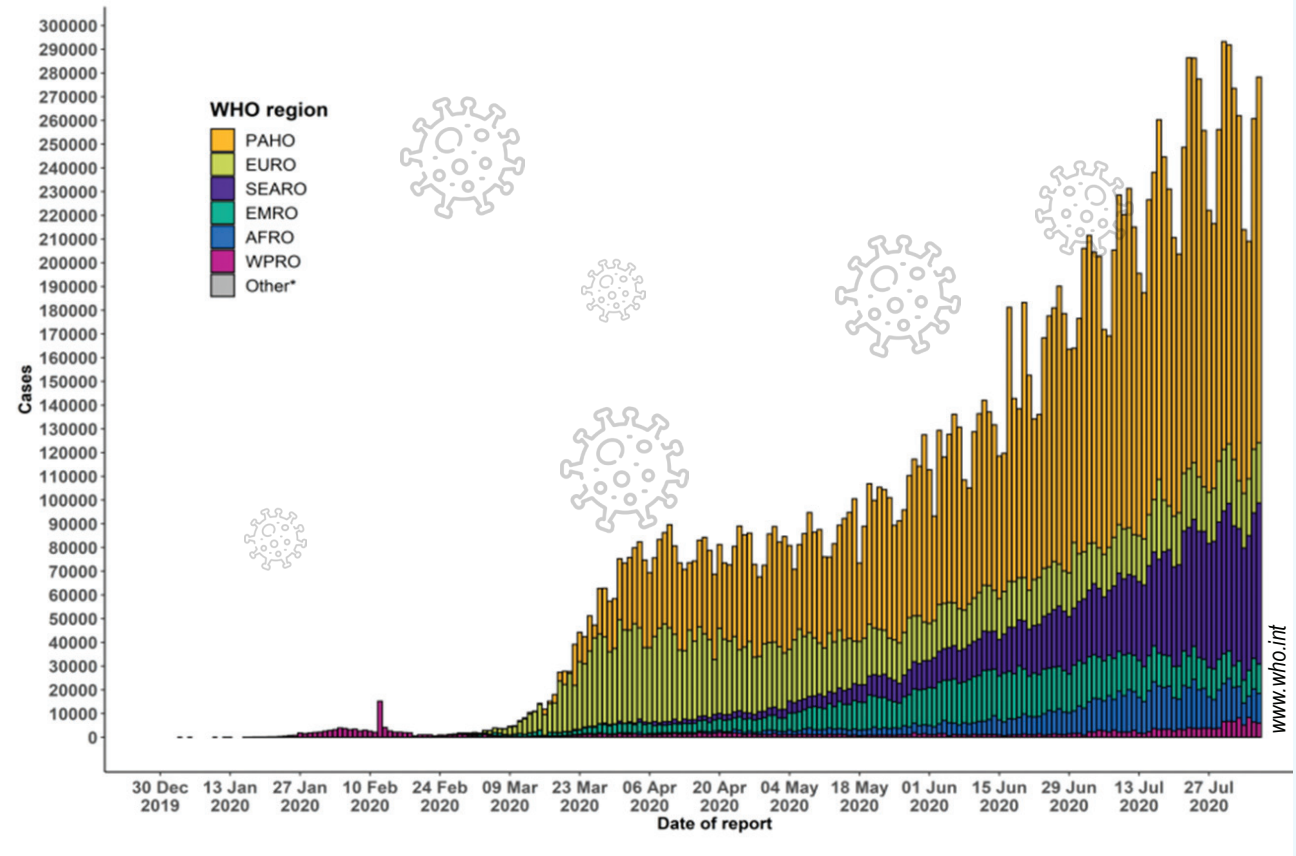
Clean and disinfect frequently touched objects and surfaces

COVID-19 Dashboard

Global COVID-19 Cases and Deaths

(Data as of 7 August 2020)

	Worldwide
Total Confirmed Cases	18902735
New Cases	278291
Total Death	709511
Total New Death	6815



INDIA

(Data as of 8 August 2020)

TOTAL SAMPLES TESTED UP TO AUGUST 7, 2020
2,33,87,171

SAMPLES TESTED ON AUGUST 7, 2020
5,98,778

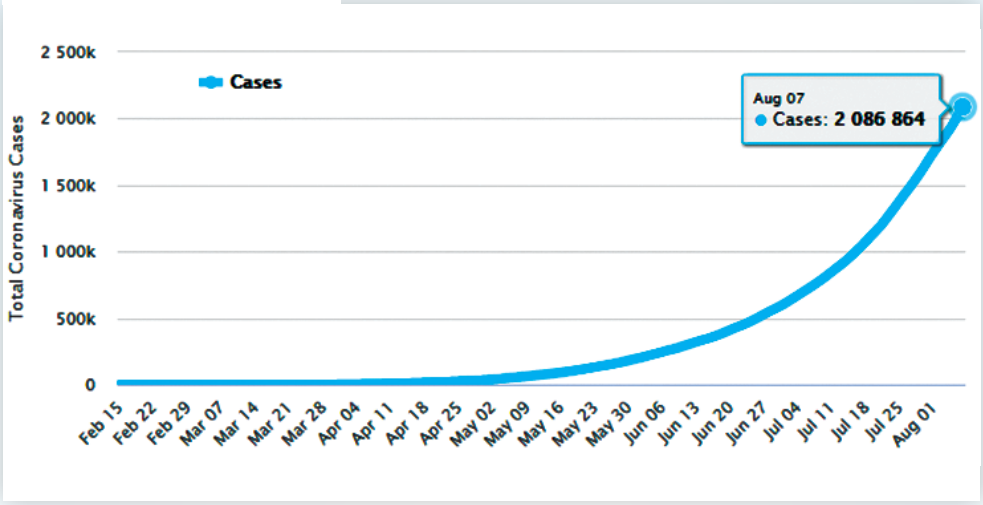
Total Cases	Active (29.64%)	Discharged (68.32%)	Deaths (2.04%)
20,88,611	6,19,088	14,27,005	42,518
61537 ↑	11704 ↑	48900 ↑	933 ↑

Source: www.mygov.in

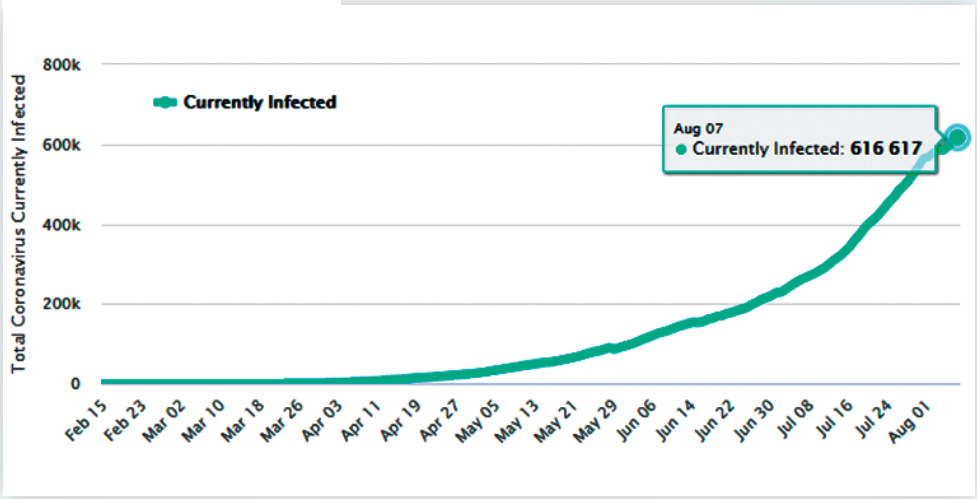
Graph
INDIA

(Data as of 7 August 2020)

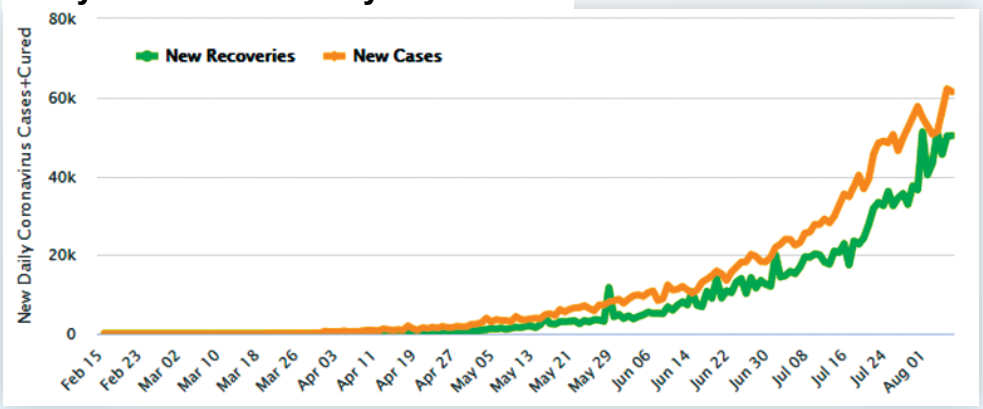
Total Cases in India



Active Cases in India



Newly Infected vs. Newly Recovered



www.worldometers.info

#Healthy@Home

Disinfecting Groceries

Viruses can only grow and multiply inside a living host. But they can remain alive for anything between a couple of hours to a few days on different kinds of non-living things. This means you can bring the virus to your home through the things you purchase.

Foods and groceries and anything that you order online come into your house packaged in cardboard boxes. Similarly, when you go grocery shopping, you store them in paper or plastic bags. In the market, many people touch the fruits, vegetables or other things that you finally end up buying. If anyone of them has the infection, the viruses could be present on the surface of the foods or there could be traces of the virus on the packaging as well. When you go out to purchase, you may accidentally touch something that was earlier handled by an infected person.

So, although you are washing your hands thoroughly after coming in from outside, do you also have to clean and disinfect everything that comes in from outside like groceries? Yes!

How to clean vegetables/raw food?

Viruses do not grow on food but raw vegetables can be a good vehicle for it. An infected person can contaminate the food and pass on the virus. Viruses have a higher resistance to chemical treatments than bacteria or fungi. So how should you prevent contamination?

- Wash raw vegetables in hot water or hot water with salt.
- You could also try washing the vegetables multiple times with potable water.
- Hydrogen peroxide/potassium permanganate is used by many households but it is far more effective on bacteria than on viruses.
- It is best to avoid eating raw food/salads now. Cooked food minimises the risk of infection. Make sure food is properly cooked. If you use raw vegetables in salads, clean these with extra care.
- You may want to wear gloves, when you are handling/buying vegetables and fruits. Make sure you wash these gloves once you are home.
- Do not place vegetables brought from outside, straight on the kitchen counter.
- If there are vegetables that cannot be washed as soon as you bring it in, try to keep it in a closed space and do not cook or consume within three to four hours.

How to take deliveries from an agent?

Most providers have assured us of delivery with 'zero touch' and are doing their bit to avoid COVID-19.

- Receive the packet in a separate tray, or use gloves.
- Maintain a distance of at least 6 ft when you meet another person who has come from outside (not just a delivery person).
- If possible, wash the packet under running water, or hot water.

- If it is a big box, you may also try to keep a dustbin outside your home, in the balcony or porch area and dispose of the packages and cartons immediately.
- As much as possible, ask the delivery person to leave the package at the doorstep.
- Wipe the doorknob clean, if it has been touched.
- When food or groceries are delivered to your home, tear off the cardboard or plastic packaging and let someone with clean hands draw the products out and bring them inside your home. Keep a waste bin outside and dispose of the package. Wash your hands thoroughly with soap and water.
- If you are going to the market or grocery store, take a jute or nylon grocery bag with you. Wash your bag once you come home.
- Rinse the counter or tabletop where you had set down your purchases.
- If your food is present in a tin or plastic container, wash it with soap and water.
- Clean your phone cover with cotton wool and alcohol-based solution when you come home.
- Try not to pay with cash as it changes hands numerous times. Use online transactions wherever possible.
- Wash your clothes with water and detergent as soon as you come in. And don't let anyone come in contact with you until you have cleaned yourself.

https://pharmeasy.in/

Is stroke risk higher for COVID-19 patients who smoke or vape?

Smoking and vaping could increase the severity of COVID-19 due to blood vessel damage and a higher risk of stroke. A recent report from a neurological hospital in the United Kingdom identifies cases of delirium, brain inflammation, nerve damage, and stroke in COVID-19 patients. Researchers from Texas Tech University Health Sciences Center previously found that smoking and vaping increase the risk of viral infection. They have published a review on how these activities might affect the risk of neurological dysfunction in COVID-19, particularly from damage to blood vessels in the brain, in the *International Journal of Molecular Sciences* (https://www.mdpi.com/1422-0067/21/11/3916). They found that both smoking and vaping could increase the risk of stroke in COVID-19 due to damage to the blood-brain barrier and a higher risk of blood clots.

But how does this relate to smoking? The researchers explain that when the body is deprived of oxygen, which occurs with smoking, the amount of clotting factors in the blood increase. In combination with COVID-19, which also increases blood-clotting proteins, the risk of stroke rises. COVID-19 seems to have this ability to increase the risk for blood coagulation, as does smoke. This may ultimately translate into a higher risk for stroke.

Vaping also appears to affect the blood-brain barrier, the defensive structure which protects the brain from toxins and pathogens in the blood (https://www.sciencedirect.com/science/article/abs/pii/S0889159120300519?via%3Dihub). The researchers also found specific evidence that long-term vaping may increase the risk of stroke.

www.medicalnewstoday.com

Could excessive cleaning and handwashing during the coronavirus pandemic lead to OCD or germ phobia?

OCD or contamination fears are caused by a combination of factors, captured by the diathesis-stress model. Individuals who

develop OCD have a genetic (biological or neurological) vulnerability to developing OCD, which is typically precipitated by environmental stressors. In individuals who have these biological vulnerabilities and obsessive-compulsive tendencies, behaviors such as excessive cleaning, handwashing, and avoidance can trigger these conditions. In OCD sufferers, when the threat diminishes, the threat-based response may persist or amplify.

However, individuals who are not predisposed to OCD are unlikely to develop these lifelong conditions, and instead, will become less concerned with cleaning rituals as time goes on and normal routines resume.

www.columbiapsychiatry.org

What happens inside the body when the SARS-CoV-2 virus infects it?

The more we learn about COVID-19, the more we have to question our assumptions about it. To explain the different processes that occur within the body when the SARS-CoV-2 virus infects it, we need to split the disease into four separate phases that roughly match the different levels of severity: mild, moderate, severe, and critical.

Phase 1: Cell invasion and viral replication in the nose – Both SARS-CoV-2 and SARS-CoV gain entry via a receptor called ACE2. More commonly known for their role in controlling blood pressure and electrolytes, these receptors are also present in the lungs, back of the throat, gut, heart muscle, and kidneys. Scientists have found ACE2 receptors in the mouth and tongue, and hence the hand-to-mouth route of transmission. Researchers also found a plentiful supply of a protease called TMPRSS2, which chemically splits off the top of the coronavirus spike to allow the SARS-CoV-2 RNA to enter into the nasal cells. Once inside the cell, the virus's genetic material directs the cell to manufacture millions of new copies of itself. As a result, SARS-CoV-2 can bind 10 times more tightly to insert its RNA into the cell, starting to explain why COVID-19 spreads so rapidly.

Phase 2: Replication in the lung and immune system alerted – In the lung, the ACE2 receptor sits on top of lung cells called pneumocytes. These have an important role in producing surfactant — a compound that coats the air sacs (alveoli), thus helping maintain enough surface tension to keep the sacs open for the exchange of oxygen and carbon dioxide. As soon as the body recognizes a foreign protein, it mounts the first response. The lymphocytes begin to produce the first defense IgM-type antibodies and then the longer term specific neutralizing antibodies (the IgG type).

Phase 3: Pneumonia – Pneumonia in COVID-19 occurs when parts of the lung consolidate and collapse. Reduced surfactant in the alveoli from the viral destruction of pneumocytes makes it difficult for the lungs to keep the alveoli open. As part of the immune response, white blood cells, such as neutrophils and macrophages, rush into the alveoli. Meanwhile, blood vessels around the air sacs become leaky

in response to inflammatory chemicals that the white blood cells release. This fluid puts pressure on the alveoli from outside and, in combination with the lack of surfactant, causes them to collapse. As a result, breathing becomes difficult, and the surface area in the lung where oxygen transfer usually takes place becomes reduced, leading to breathlessness.

Phase 4: Acute respiratory distress syndrome, the cytokine storm, and multiple organ failure – The most common time for the onset of critical disease is 10 days, and it can come on suddenly in a small proportion of people with mild or moderate disease. In severe acute respiratory distress syndrome (ARDS), the inflammation stage gives way to the fibrosis stage. Fibrin clots form in the alveoli and fibrin-platelet microthrombi (small blood clots) pepper the small blood vessels in the lung that are responsible for gas exchange with the alveoli. There is hope that drugs already licensed for anti-clotting action in strokes could be helpful at this stage.

Cytokines are chemical mediators that white blood cells such as macrophages release, and they can engulf infected cells. These cytokines — which have names such as IL1, IL6, and TNFα — have actions that include dilating the vessel walls and making them more permeable. In extreme circumstances, this can lead to a collapse of the cardiovascular system.

www.medicalnewstoday.com

Is there a risk to consumers from 'open' food?

There is currently little scientific information about the survival of the SARS-CoV-2 on the surface of open food. Work with similar viruses shows that some food surfaces don't allow the virus to survive at all, but some

do. Therefore, it is important to maintain good hygiene practices around open food (e.g. unpackaged bread, cakes, fruit, salad bars etc.) and this will reduce the risk of contamination of the food. People should strictly observe good personal hygiene practices at all times around open food.

Source: https://www.fsai.ie/faq/coronavirus.html

Are people with disabilities at higher risk?

Most people with disabilities are not inherently at higher risk for becoming infected with or having severe illness from COVID-19. Some people with physical limitations or other disabilities might be at a higher risk of infection because of their underlying medical condition. People with certain disabilities might experience higher rates of chronic health conditions that put them at higher risk of serious illness and poorer outcomes from COVID-19. Adults with disabilities are three times more likely to have heart disease, stroke, diabetes, or cancer than adults without disabilities. You should talk with your healthcare provider if you have a question about your health or how your health condition is being managed.

Source: cdc.gov

COVID-19 MYTH BUSTERS

MYTH ✗

You would be at risk if someone is infected in the housing complex/ neighborhood

FACT ✓

One cannot get infected if he/she maintains a two-meter distance from the infected patient, wears a mask, and avoids touching contaminated things. Practicing adequate hand hygiene and infection control measures can prevent from getting infected.

https://europepmc.org/article/pmc/pmc7301136

Ordering or buying products shipped from overseas will make a person sick

As per the WHO, the likelihood of becoming infected with COVID-19 from a commercial package is low since it has likely traveled over several days and had been exposed to different temperatures and conditions during transit.

https://europepmc.org/article/pmc/pmc7301136

Newspapers, milk packets, and vegetables can transmit the infection

No evidence of newspapers being potential carriers of COVID-19 has been proved. There is no risk of contracting the illness through newspapers or any packages, and no current data/research suggests that the virus can survive on paper for long hours. Following the hand hygiene measures, while touching the milk packet, may be sufficient to avoid the development of COVID-19 infection.

https://europepmc.org/article/pmc/pmc7301136

MYTH ✗

FACT ✓

Someone without symptoms cannot spread the infection

About 90% of the patients with confirmed COVID-19 infection are asymptomatic and hence are potential carriers of virus. Most of the patients are asymptomatic and can spread the disease, so adequate social distancing and hand hygiene measures to be taken.

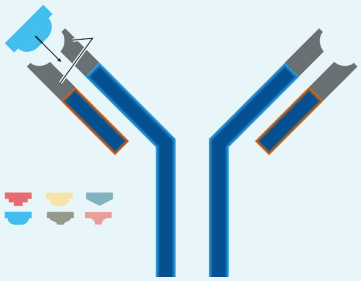
https://europepmc.org/article/pmc/pmc7301136

Anti-bacterial drugs are effective for therapy of COVID-19

COVID-19 is a viral infection; therefore anti-bacterial agents are not effective for treating COVID-19 but are useful for treating secondary bacterial infections.

https://europepmc.org/article/pmc/pmc7301136

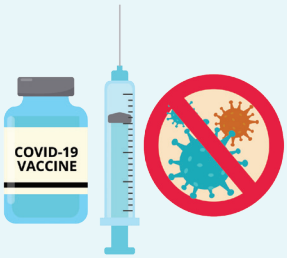
Antibodies equal immunity to protect an individual from reinfection



There is no evidence that antibodies will make people immune or offer any protection. Most experts agree that after the initial infection people will have some degree of immunity for some amount of time. But it's unclear how much protection it will grant or for how long. It could be minor protection for a few weeks or major protection for a few years.

www.forbes.com

'Vaccine is ready' means ready for market



No, when vaccine developers say they plan to have a vaccine "ready," that could mean just ready to be tested. Every vaccine must go through three phases of clinical trials to prove their safety and efficacy, and each phase takes about three months.

www.eatthis.com

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