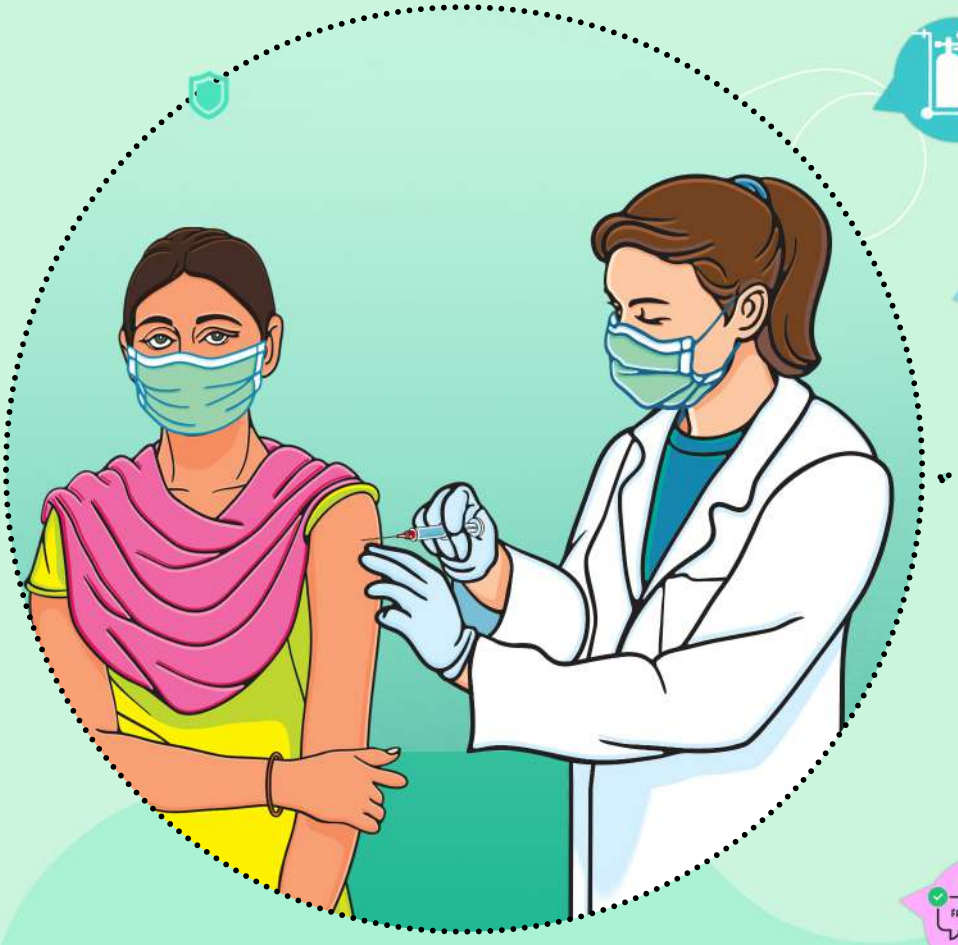
11TH JUNE 2021
FORTNIGHTLY EDITION

COVID-19

Science & Technology Efforts in India



- Funding Opportunities
- Medical Oxygen
- Start-up Spotlights
- Research Supports
- Communication & Resources
- Fact-checks & FAQs
- Community Outreach

विज्ञान प्रसार
VIGYAN PRASAR
An Autonomous Organization of
Department of Science & Technology
Government of India

VOL. IV | ISSUE 4

A compilation of all impactful efforts & scientific contributions towards mitigation of second wave of COVID Pandemic

DISCLAIMER

Contents in this e-Newsletter are for information purposes only and have been made available in public by the relevant department/organisation.

In case of any variance between what has been stated and that contained in the relevant document, the latter shall prevail.

Unless otherwise specifically stated, the information contained herein is made available to the public for information purposes only.

Although we have made the best effort to keep the information updated, the accuracy, completeness or adequacy of information will depend on what is made available by the third party or the same being up-to-date.

This will depend on the availability of the same. The e-Newsletter is continuously evolving and the aggregation of information is an unceasing process.

The process requires the co-operation of and synergy with all stakeholders.

PREFACE

With good news that the second wave of the pandemic, which has tested our patience and the extent to which we can tolerate the grief, is subsiding, the life has started crawling back to normalcy. But COVID discipline and appropriate behaviours need to be followed with utmost vigilance.

The present edition, COVID 2021: Nation's S&T Efforts Against COVID-19, has been compiled with an aim to inform readers and strengthen the usefulness of the information. This edition contains compilation and coverage of information related to capacity enhancement of medical oxygen, start-up spotlights, research contributions, community outreach, COVID resources, fact-checks, and so on. In this edition, the inner pages have been redesigned for the better user perspective. For all the sections, a section guideline has been provided and hyperlinked with the respective locations.

Hopefully, the coverage about how the country is overcoming challenges with the help of knowledge will instil in you a confidence and trust in the country's scientists and scientific administrators that would ultimately result in inculcating scientific temper. Together we can and we will beat the pandemic out. Going ahead, Vigyan Prasar is ideating on compiling information on presumed, anticipated outbreak of the third wave of the pandemic, and will keep you apprised on the developments.

We wish an engaging reading to our audiences across all strata of the society and look forward to suggestions and feedback at covidnewsletter@vigyanprasar.gov.in. Additionally, feedback questionnaires have been included and a link has been provided for submission. This, in turn, would help our readers in finding desired and more relevant compiled information.

11 June 2021

Vigyan Prasar

New Delhi

The older issues of e-newsletter are available in the Archival Section at https://vigyanprasar.gov.in/covid19-newsletters/

INDEX

The e-newsletter is being published on a regular basis by collating all the inputs received till the preceding day of the release.

1

INFORMATION OF IMMEDIATE USAGE

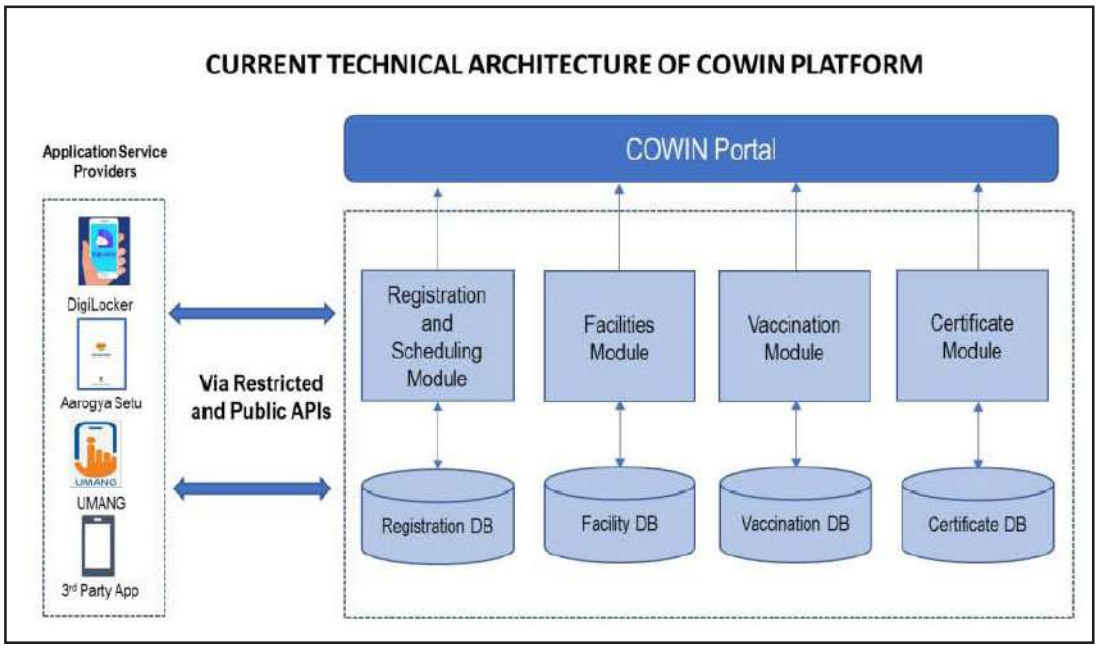
The up-to-date information related to guidelines, standard operating procedures (SOPs), regulations, etc., released by various apex bodies, government departments and ministries are compiled here in a ready-to-use manner. Reference links and contact information are made available wherever possible.

SECTION GUIDELINES

MoHFW releases guidelines for integration of Co-WIN application with third-party applications developed by ecosystem partners

Co-WIN platform for the management of registration, appointment scheduling, managing vaccination, and certification has been rolled out by the Ministry of Health and Family Welfare (MoHFW) and it is being used by all participating facilities in India's National COVID-19 Vaccination Programme. Since the launch, Co-WIN has published APIs for various functionalities. The intent is to enable various stakeholders such as States/UT Governments, Private Service Providers, Software Developers, and any other agencies who wish to provide vaccination-related services to develop and rollout software solutions around and compatible with Co-WIN. This document describes the guidelines on information exchange between Co-WIN and the various ASPs' software and the terms and conditions thereof. The Empowered Group on COVID Vaccinations shall continue to guide these efforts and these guidelines may be suitably amended from time to time as more features are introduced in Co-WIN and the APIs are updated/amended.

Contact Info: partners@cowin.gov.in

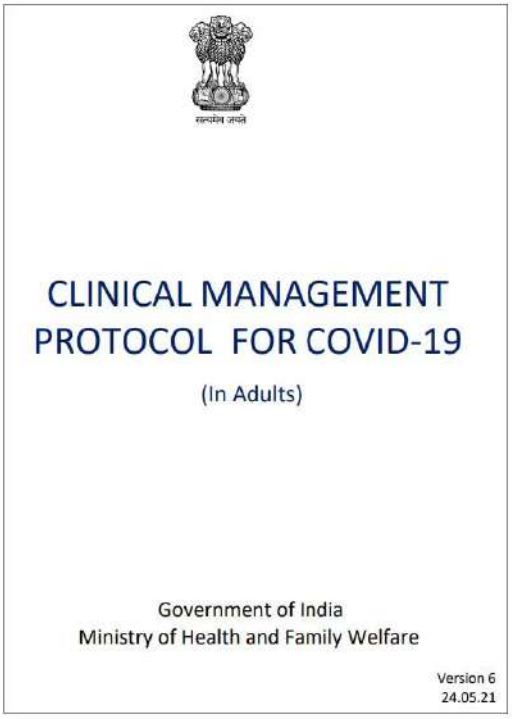


Website Link:

https://www.mohfw.gov.in/pdf/CoWINAPIGuidelinesFinal240521.pdf

MoHFW releases updated and detailed clinical management protocol for COVID-19 in adults

Ministry of Health and Family Welfare has released its 6th version of the updated Clinical Management Protocol for adult cases of COVID-19. It includes in detail Disease Epidemiology, Pathophysiology, Case Definitions, Clinical Features, Clinical Severity, Infection Prevention and Control Practices, Guidelines for Laboratory Diagnosis and for COVID Management as per the category of case. It also covered the Investigational Therapies, Prevention of complications, Patient discharge policy, and Management of post-COVID complications.


सत्यमेव जयते

CLINICAL MANAGEMENT PROTOCOL FOR COVID-19

(In Adults)

Government of India
Ministry of Health and Family Welfare

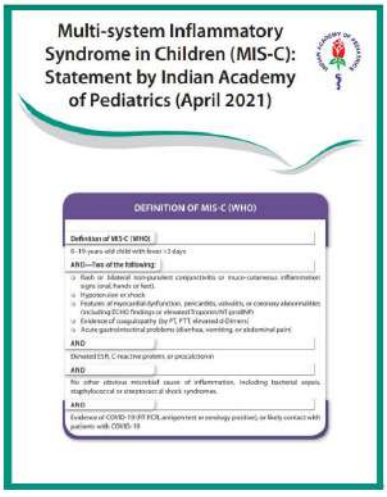
Version 6
24.05.21

Website Link:

https://www.mohfw.gov.in/pdf/UpdatedDetailedClinicalManagementProtocolforCOVID19adultsdated24052021.pdf

Indian Academy of Pediatrics brings forth a resource product for COVID-19 management in kids

Indian Academy of Pediatrics has issued guidelines for the treatment of COVID-19 for 1 month to 19-years-old children depending on the severity of a case — mild, moderate, or severe. It explained in details the treatment for mild, moderate, and severe cases which includes way of identification, recommendations, required oxygen support, use of medication or drugs, Dos and Don'ts, supportive measures, monitoring of health parameters, etc. Also it



mentions specifically about Multi-system Inflammatory Syndrome in Children (MIS-C), how to identify children with MIS-C and signs, symptoms, and treatment of MIS-C.

Contact Info: centraloffice@iapindia.org

Website link:

https://iapindia.org/pdf/yOQBzDmtbU4R05M_IAP%20Covid%2019%20managementGuidelines%20for%20Pediatrician%20V1.1%20Apr%2027_2021%20(2).pdf

MoHFW releases guidelines on near-to-home COVID Vaccination Centres for elderly and specially abled citizens

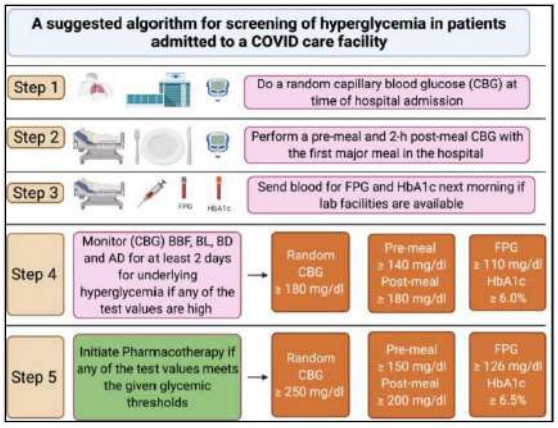
Ministry of Health and Family Welfare (MoHFW) has recently issued guidelines on near-to-home COVID Vaccination Centres for elderly and specially abled citizens. Senior citizens who are yet to take their first dose of the COVID-19 vaccine or those who have taken the first dose will now get the shots at a vaccination centre that is near to their home. The facility will also include differently abled people below the age of 60 years. It follows a community-based approach where sessions can be conducted in non-health facility-based settings and are nearer to home, e.g., in a community centre, RWA centre/office, panchayat ghar, school buildings, old age homes, etc.

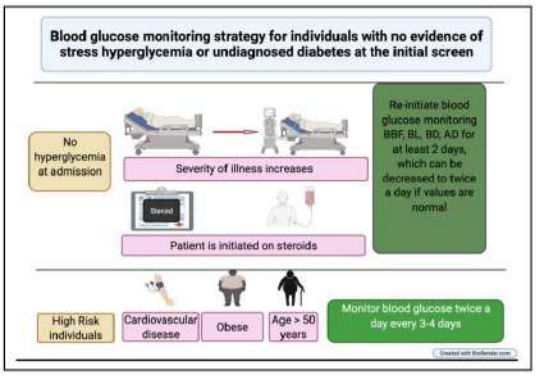
Website Link:

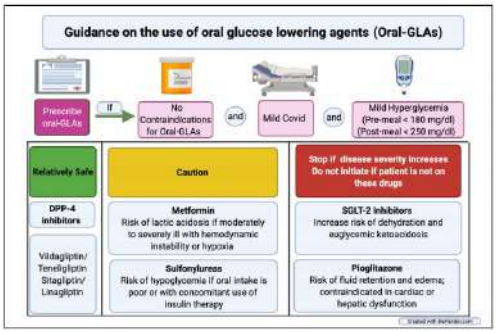
https://www.mohfw.gov.in/pdf/GuidanceNeartoHomeCovidVaccinationCentresforElderlyandDifferentlyAbledCitizens.pdf

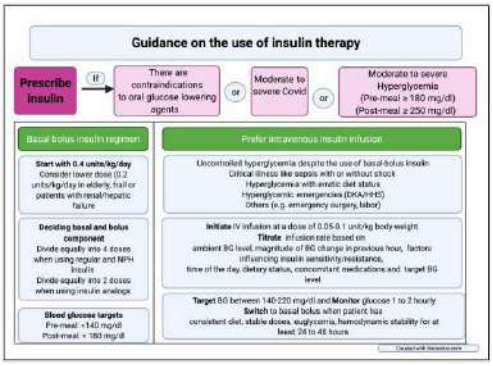
MoHFW released clinical guidance on diagnosis and management of diabetes at COVID-19 Patient Management facility

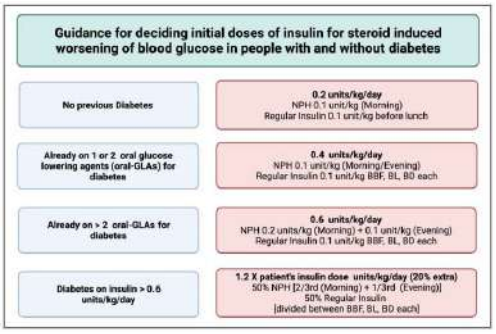
Ministry of Health and Family Welfare (MoHFW) released Clinical Guidance on Diagnosis and Management of Diabetes at COVID-19 Patient Management facility. This guidance states that screening every patient at admission for hyperglycemia with at least two capillary blood glucose values (1 pre-meal and 1 post-meal value) by a glucometer is needed. Every patient with diabetes should be started on a diabetic diet. It should also ensure that the patient strictly adhere to the timing and quantity advised in the diet chart. Along with it also mentions the information in the form of algorithm, strategy to control the glucose level in the patient body.

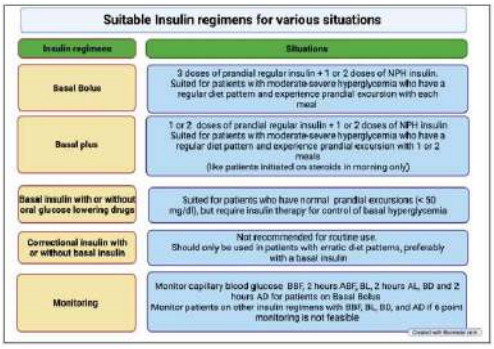












Website Link:

https://www.mohfw.gov.in/pdf/ClinicalGuidanceonDiagnosisandManagementofDiabetesatCOVID19PatientManagementfacility.pdf

MHA issues advisory on fire incidents in hospitals and nursing homes

The Ministry of Home Affairs (MHA) issued advisory to put in place a plan of action and ensure that no fire incident occurs in any of the health facilities, particularly COVID-19-dedicated centres both in the government and the private sector.

The States and UTs have been requested to conduct a detailed review with officials from the Health, Power, and Fire Departments and prepare a detailed plan of action to ensure that fire safety measures are in place in all hospitals and health facilities.

The States have been requested to issue directions to the officials concerned at various levels that health facilities should be visited by field level officials, internal wiring and availability of functional safety equipment as per fire safety guidelines examined, and necessary remedial action taken in case any deficiencies are found.

Saving every life is a priority, and it is critical to ensure that required support is provided to all health facilities managing COVID-19 by taking requisite actions in advance to avert any incident, which could hamper effective healthcare delivery to patients.

Website link:

https://covidwarriors.gov.in/ImportantDocs/Advisory_on_Hospital%204.5.21.pdf

ICMR releases revised advisory for COVID-19 home testing using Rapid Antigen Tests (RATs)

The Indian Council of Medical Research (ICMR) issued an advisory for COVID-19 home testing using Rapid Antigen Tests (RATs) in view of the second wave of COVID-19 pandemic. ICMR states that individuals who test positive may be considered as true positives and no repeat testing is required. All symptomatic individuals who test negative must get tested by RT-PCR as RATs are likely to miss few positive cases with low viral load. The advisory also states that home testing by RAT is advised only in symptomatic individuals and immediate contacts of laboratory-confirmed positive cases, and home testing should be conducted as per the procedure described by the manufacturer in the user manual. Pictorial and video link of the user manual is provided in the advisory against the name of the approved test kit.

Website Link:

https://www.icmr.gov.in/pdf/covid/kits/Advisory_Home_Test_kit_02062021.pdf

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2

COVID 2.0 FUNDING

The funding opportunities, like Calls For Proposals (CFPs), Expressions of Interests (EoIs), research grants, start-up grants, and so on, are compiled here for the usage of interested individuals, institutions, entrepreneurs, start-ups and industries, as a one-stop ready reckoner. Reference links – for more information, how to apply and contact information – are made available wherever possible for further connecting to the desired stakeholders with one another.

SECTION GUIDELINES

SERB and TDB jointly announce special call on critical components and innovations in oxygen concentrators

Joint projects under UK-INDIA COVID-19 Partnership Initiative for better understanding of COVID-19 severity in South Asian population of India and the UK

Invest India calls start-ups and entrepreneurs to strengthen India's fight against COVID-19, including supply of Medical Oxygen

ICMR invites expression of interest for validation of rapid antigen detection assays for COVID-19

Startup India Seed Fund Scheme aimed at financial assistance to start-ups for proof of concept, prototype development, product trials, market entry and commercialization

SERB and TDB jointly announce special call on critical components and innovations in oxygen concentrators

Considering emerging healthcare requirements to combat the COVID-19 pandemic, SERB announces special call to catalyse R&D on critical components and innovations concerning Make-in-India oxygen concentrators.

The call seeks investigation and innovation in the development of (individual/portable) oxygen concentrators in the domains of alternate materials and mechanisms for oxygen separation; design, development, and manufacturing of critical components such as valves and oil-less compressors; design improvements for greater performance; AI-optimized oxygen flow devices and oxygen-level IoT sensors; etc.

Scientist in regular service from educational and research institutes/laboratories, universities, and medical institutions, start-ups, and industries can submit a proposal. The scientists from industries should align with investigators from academic/research institutions as co-investigators. Funding for industry partner(s), with respect to R&D leading to commercialization, will be forwarded to TDB, DST, for their consideration.

Deadline: 15th June 2021

Proposals should be submitted in the prescribed format through SERB online portal:

https://www.serbonline.in/SERB/HomePage

Website link:

http://serb.gov.in/pdfs/what-new/Call%20announcement-O2%20Concentrators.pdf

Joint projects under UK-INDIA COVID-19 Partnership Initiative for better understanding of COVID-19 severity in South Asian population of India and the UK

UK Research and Innovation and Department of Biotechnology and Ministry of Science and Technology have joined forces to support four collaborative bilateral research partnerships worth £5 million, aimed at providing deeper understanding of COVID-19 severity in South Asian populations located in India and the UK. Projects will be funded in partnership between DBT and UKRI's Fund for International Collaboration.

Through the UK-India COVID-19 Partnership Initiative, DBT and UKRI will support world-leading UK-India research teams. The successful projects aim to understand the pandemic through the study of related ethnic groups in different environments in both countries. These projects have the potential to deliver public health impacts in mitigating the severity of COVID-19 in both the UK and India.

Deadline: 5th May 2022

Website link:

http://dbtindia.gov.in/latest-announcement/announcement-joint-projects-under-uk-india-covid-19-partnership-initiative

Press release on the UK-India C-19 call 4May2021.pdf (dbtindia.gov.in):

http://dbtindia.gov.in/sites/default/files/Press%20release%20on%20the%20UK-India%20C-19%20call%204May2021.pdf

Invest India calls start-ups and entrepreneurs to strengthen India's fight against COVID-19, including supply of Medical Oxygen

Aspiring entrepreneurs and young innovators today are at the forefront of COVID relief efforts. In the midst of the pandemic, the Indian start-up ecosystem has shown its resilience and unparalleled growth. Invest India has been contributing towards COVID relief efforts since the onset of the pandemic last year. The Business Immunity Platform as well as the Exclusive Investment Forum webinar series, which focused on notification of government's emergency and economic relief measures, provision of crisis support services, and contribution to national COVID-19 business response effort, were recognized by the United Nations as one of the best performing Investment Promotion Agencies with respect to response to the pandemic.

As part of on-going efforts in fight against COVID-19, Invest India is working on mapping innovations to the different challenges the pandemic has caused. Invest India has rolled out a form to collect information on the solutions that the start-up ecosystem has to offer. The form collects information such as a brief of the solution, the problem it solves, its financial implication along with contact details of the innovator/start-up, etc. The following are the categories listed on the form:

- Testing and diagnostics technologies
- Telemedicine
- Medical devices
- Oxygen supplies

- Mental health technologies
- Cold chain and last-mile delivery
- Bio-medical waste treatment
- Technology solutions for last rites
- Others

The information submitted shall be used for listing purposes on the Invest India platform and shall be circulated throughout its network across the government departments as well as private sector. In case there is an expression of interest from the ecosystem the relevant solution will be mapped on the best effort basis.

Deadline: Open till next announcement

Contact Info: contact@investindia.org.in

Website link:

https://www.investindia.gov.in/bip/resources/startup-innovations-during-covid-19

ICMR invites expression of interest for validation of rapid antigen detection assays for COVID-19

ICMR invites applications for validation of rapid antigen detection tests for COVID-19 from all manufacturers who have developed rapid antigen test (RAT) kits. Requirements for validations are based on various categories, like first-time validation, revalidation, and validation with alternate sample types.

The gold standard RT-PCR diagnostic test for COVID-19 has limitations in terms of widespread availability. In view of this, there is urgent requirement of reliable and convenient rapid point-of-care antigen detection assays with high sensitivity and specificity. Such assays could be used as potential diagnostic tests in all possible public and private healthcare settings and made available for mass testing.

Deadline: Open till next announcement

Contact Info: guptanivedita.hq@icmr.gov.in, drneetu.vijay@icmr.gov.in

Website Link:

https://www.icmr.gov.in/pdf/tender/Revised_EOI_for_Ag_kit_validation_22052021_v1.pdf

Startup India Seed Fund Scheme aimed at financial assistance to start-ups for proof of concept, prototype development, product trials, market entry and commercialization

Startup India Seed Fund Scheme (SISFS) aims to provide financial assistance to start-ups for proof of concept, prototype development, product trials, market entry, and commercialization. The initiative would enable these start-ups to graduate to a level where

they will be able to raise investments from angel investors or venture capitalists or seek loans from commercial banks or financial institutions.

The Need for Startup India Seed Fund Scheme: Easy availability of capital is essential for entrepreneurs at the early stages of growth of an enterprise. Funding from angel investors and venture capital firms becomes available to start-ups only after the proof of concept has been provided. Similarly, banks provide loans only to asset-backed applicants. It is essential to provide seed funding to start-ups with an innovative idea to conduct proof-of-concept trials.

Website link:

https://seedfund.startupindia.gov.in/

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3

CAPACITY ENHANCEMENT OF MEDICAL OXYGEN

The impact of the second wave of COVID pandemic has seen a shortage of medical oxygen across the nation. The section contains the compiled information related to efforts, initiatives, and contributions taken up by various agencies, industries, and so on.

SECTION GUIDELINES

IIT Delhi collaborates with Delhi Government to improve oxygen infrastructure and supply chain management in Delhi

CPCB asked to identify nitrogen gas plants for conversion to produce medical grade oxygen

Government caps Trade Margin on oxygen concentrators

Power Grid installs Oxygen Plant at District Hospital, Jaisalmer

Office of PSA calls for philanthropic funding for National Consortium of OXYGEN

Operation Samudra Setu II – Indian Navy's relentless effort to fight COVID-19

Indian Navy Provides 'Oxygen on Wheels' to Palasa COVID Care Centre

SERB and TDB jointly announce special call on critical components and innovations in oxygen concentrators

Invest India calls start-ups and entrepreneurs to strengthen India's fight against COVID-19, including supply of Medical Oxygen

IIT Delhi collaborates with Delhi Government to improve oxygen infrastructure and supply chain management in Delhi

IIT Delhi has provided strategic recommendations to the Government of National Capital Territory of Delhi (GNCTD) for the improvement of oxygen infrastructure and supply chain management in Delhi.

A joint team consisting of experts from IIT Delhi and officials from the Delhi Government (Health, IT Department, etc.) analysed the issues, which were coming in the way of management of oxygen infrastructure within Delhi and developed practical solutions to resolve them to strengthen the fight against COVID-19. The joint team has submitted its report to the Hon'ble Delhi High Court on 28 May 2021. The objectives of this collaboration are

1. To analyse strategic issues of the oxygen infrastructure in Delhi and prepare a blueprint for the same;
2. To improve the current IT Portal and Dashboard created for oxygen management by Delhi Government and integrate technological solutions to improve the same; and
3. To plan to augment and create medical oxygen storage, production, and distribution in Delhi.

Website Link:

https://home.iitd.ac.in/show.php?id=34&in_sections=News

CPCB asked to identify nitrogen gas plants for conversion to produce medical grade oxygen

Considering the COVID-19 pandemic situation and to further augment availability of oxygen for medical purposes in the country, the Central Government had asked Central Pollution Control Board (CPCB), which has comprehensive database of industrial units, to identify the industries having spare nitrogen plants and explore the feasibility of converting of existing nitrogen plants to produce oxygen. CPCB, in coordination with State Pollution Control Boards (SPCBs), identified such potential industries, wherein existing nitrogen plants may be spared for production of oxygen. CPCB has discussed with nearly 500 industries having nitrogen plants and has identified about 60 industries, wherein existing nitrogen plants may be spared for producing oxygen, without affecting their normal operation.

A nitrogen plant modified for the production of oxygen can be either shifted to a nearby hospital or, in case it is not feasible to shift the plant, can be used for on-site production of oxygen, which can be transported to hospital through cylinders.

To download all related technical information and resources, visit

http://125.19.52.219/nitrogen/user/important_links

Contact Info:

Mr Ajay Aggarwal: ajayaggarwal.cpcb@nic.in, +91-9868210860

Mr Saubhagya Dixit: dixit.cpcb@gov.in, +91-9716685665

Website Link:

http://125.19.52.219/nitrogen/user/

Government caps Trade Margin on oxygen concentrators

In view of the extraordinary circumstances arising due to the COVID pandemic that has resulted in recent volatility in Maximum Retail Prices (MRP) of oxygen concentrators, the Government has decided to step-in to regulate their price. As per information collected by the government, margin at the level of distributor currently ranges up to 198%.

By invoking extraordinary powers under Para 19 of the DPCO, 2013 in larger public interest National Pharmaceutical Pricing Authority (NPPA) has capped the Trade Margin up to 70% on Price to Distributor (PTD) level on oxygen concentrators. Earlier, in February 2019, NPPA had successfully capped the Trade Margin on Anti-cancer Drugs. Based on the notified Trade Margin, NPPA has instructed the manufacturers/importers to report revised MRP within three days. Revised MRPs will be informed in public domain by NPPA.

Every retailer, dealer, hospital, and institution shall display price list as furnished by the manufacturer, on a conspicuous part of the business premises in a manner so as to be easily accessible to any person wishing to consult the same. The manufacturers/importers not complying with the revised MRP after Trade Margin capping shall be liable to deposit the overcharged amount along with interest @15% and penalty up to 100% under the provisions of the Drugs (Prices Control) Order, 2013 read with Essential Commodities Act, 1955. State Drug Controllers (SDCs) shall monitor the compliance of the order to ensure that no manufacturer, distributer, or retailer shall sell oxygen concentrators to any consumer at a price exceeding the revised MRP, to prevent instances of black-marketing.

The Order shall be applicable up to 30 November 2021, subject to review.

With the spurt in cases under the second wave of the pandemic in the country, demand for medical oxygen has gone up considerably. The Government is striving to ensure uninterrupted supply of oxygen and oxygen concentrators in adequate quantity in the country during the pandemic. Oxygen concentrator is a Non-Scheduled Drug and presently under voluntary licensing framework of Central Drugs Standard Control Organization (CDSCO). Its price is being monitored under the provisions of DPCO 2013.

Website link:

https://pib.gov.in/PressReleasePage.aspx?PRID=1724330

Power Grid installs Oxygen Plant at District Hospital, Jaisalmer

Power Grid Corporation of India Limited (POWERGRID), a Maharatna CPSU under the Ministry of Power, Government of India installed an oxygen plant at District Hospital, Jaisalmer, which was inaugurated by Chief Minister of Rajasthan, Shri Ashok Gehlot. The plant has been built at an estimated cost of Rs. 1.11 crore under CSR initiative. The virtual ceremony was presided by Dr Raghu Sharma, Hon'ble Minister of Medical and Health, Medical Education, Ayurveda and DIPR, Government of Rajasthan in presence of state ministers, functionaries, and officials from POWERGRID.

The installed oxygen plant has a capacity of 850 l/minute, which will augment public health infrastructure of the state. The District Hospital had been functioning with about 30 oxygen beds, and with POWERGRID's effort of installation of Oxygen plant, now all 200 beds are equipped with oxygen support, which shall benefit around 10 lakh people living in and around the Jaisalmer district.

Website link:

https://pib.gov.in/PressReleasePage.aspx?PRID=1724432

Office of PSA calls for philanthropic funding for National Consortium of OXYGEN

Office of the Principal Scientific Adviser, Government of India calls for private sector companies, donor organizations and individuals to join India's fight against COVID-19 by providing philanthropic funding to support the National Consortium of OXYGEN (O_2 TO INDIA). The consortium is looking forward to providing immediate to short-term relief and working on building the manufacturing ecosystem and healthcare infrastructure for the long run.

These funds may be used for producing medical oxygen for various health facilities in India, including Army hospitals, Government hospitals and Charity hospitals through an initiative called 'Project O_2'. Medical oxygen is on high priority, so while companies are airlifting few supplies, we should be prepared for the pandemic that is expected to last for the next several years and 3rd and 4th waves are expected in the coming months. This needs immediate and short term ramp-up of our logistics as well as production capacities. This entails manufacturing raw material currently being imported from China and other places; some are delayed, and costs are unaffordable. There is a need to support the fast-paced evaluation of quality manufacturers, scale up their capacity, address logistics challenges, enable supplies to extended/make-shift hospitals, and strengthen R&D and innovation for future pandemics.

To execute this project, Office of the PSA is facilitating at the national level supply of critical raw materials such as zeolites, setting up small oxygen plants, manufacturing compressors and final products, quality oxygen cylinders, concentrators and ventilators. The manufacturing and supply consortium includes Bharat Electronics Limited (BEL), Electronic Corporation of India Limited (ECIL), Skanray Technologies, IIT Kanpur, C-CAMP Bengaluru, IIT Delhi, Venture Center Pune, IIT Bombay, IIT Hyderabad, IISER Bhopal and 40+ MSMEs.

A committee of key experts has been evaluating from a pool of Indian manufacturers, start-ups and MSMEs (in partnership with FICCI, MESA, etc.) producing medical oxygen and other critical equipment such as oxygen concentrators, ventilators and oxygen cylinders. A robust evaluation committee with both subject matter experts from IITs and manufacturing companies has been set up and it will be continuously evaluating the oxygen manufacturing companies on an on-going basis and adding to the consortium. Quality cannot be compromised, and hence this system has been put in place.

Simultaneously, a TCS logistics and inventory management portal has been provided pro bono to the office of the PSA for managing quality covid relief will be used.

Anyone could support the initiative by funding:

1) Research on variants and calibration of vaccines based on variants identified and

2) Start-ups, BEL, ECIL, MSMEs, Start-ups setting up and manufacturing oxygen equipment, extension hospitals by placing advance orders directly.

Office of the PSA aims to facilitate providing proposals approved by an expert committee and/or one can also fund the PSUs directly as they have 45 MSMEs under their supply chain.

Please write back for any clarification:

Project Lead: Mr Vibhor Bansal, Vibhor.bansal@investindia.org.in

Project Lead CSR/Philanthropy: Mr Bhanu Prabhakar, bhanu.prabhakar@investindia.org.in

Operation Samudra Setu II – Indian Navy's relentless effort to fight COVID-19

Operation Samudra Setu-II was launched by the Indian Navy for shipment of medical Oxygen-filled cryogenic containers and associated medical equipment from various countries in support of the nation's fight against COVID-19. The deployment of frontline warships including destroyers, frigates, tankers and amphibious ships of the Indian Navy for Operation Samudra Setu-II forms a significant part of the multiple lines of efforts, by the GoI and the Indian Navy to supplement the oxygen requirement in the country.

As part of the operation, INS Shardul embarked 270 Metric Tonnes (MT) of liquid medical oxygen from Kuwait and UAE including 11 International Standardisation Organisation (ISO) containers, two semi-trailers and 1200 oxygen cylinders. The ship arrived at New Mangalore Port on 25 May 2021 and disembarked 190 MT of liquid medical oxygen comprising seven ISO containers, two semi-trailers and 1200 Oxygen cylinders.

An amphibious ship capable of carrying troops, armoured tanks, vehicles and armament for amphibious operations, INS Shardul is a versatile platform. It is also capable of undertaking Humanitarian Assistance and Disaster Relief operations. The ship attached to the First Training Squadron of the Indian Navy based at Kochi has actively participated in multiple humanitarian relief operations by the Indian Navy in the recent past. These include transhipment of 600 MT of rice to Antsiranana, Madagascar as humanitarian aid in March 2020 and repatriation of 233 Indian citizens from Iran during the first wave of COVID-19 pandemic in June 2020, as part of Operation Samudra Setu-I, by the Indian Navy.

Deployment of INS Shardul for Operation Samudra Setu-II demonstrates the commitment and resolve of the Southern Naval Command and the Indian Navy to support the countrymen in the battle against COVID-19 in line with the spirit of 'Har Kaam Desh Ke Naam'.

Website link:

https://indiannavy.nic.in/content/operation-samudra-setu-ii-ins-jalashwa-arrives-visakhapatnam-critical-covid-relief

Indian Navy Provides 'Oxygen on Wheels' to Palasa COVID Care Centre

Receiving a request from the Srikakulam District Collector Shri J Niwas, the Indian Navy provided on 'Oxygen on Wheels' plant to Palasa COVID Care Centre on 25 May 2021. The 'Oxygen on Wheels' designed by Naval Dockyard was formally inaugurated at the Palasa,

Covid Care Centre by Shri Seediri Appalaraju, Hon'ble Minister of Animal Husbandry & Dairy Development & Fisheries, in the presence of Sub Collector Shri Suraj Ganore and the Naval Team.

The 'Oxygen on Wheels' has been connected up with the Oxygen pipeline in the Covid Health Care Centre at Palasa by a team of specialists from Naval Dockyard Visakhapatnam and it provides oxygen round the clock for up to 12 patients admitted in the hospital. The team has also trained hospital staff in the operation of the plant.

'Oxygen on Wheels' is a unique initiative launched by the Naval Dockyard wherein a PSA Oxygen Plant was integrated on a mobile platform to serve remote hospitals and was formally launched at Visakhapatnam by Vice Adm. AB Singh, Flag Officer Commanding-in-Chief, ENC on 20 May 2021.

Website link:

https://www.pib.gov.in/PressReleasePage.aspx?PRID=1721810

SERB and TDB jointly announce special call on critical components and innovations in oxygen concentrators

For details, refer to page no. **8**.

Invest India calls start-ups and entrepreneurs to strengthen India's fight against COVID-19, including supply of Medical Oxygen

For details, refer to page no. **9**.

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4

EFFORTS IMPACTING COVID MITIGATION

The efforts made by various agencies, apex bodies, domain institutions, and so on towards meeting the requirements posed due to the pandemic are compiled here for the consumption and benefits of the general public.

SECTION GUIDELINES

Web-based portal iNoveCOP developed by ICMR for synergy among frontline COVID institutions

COVIRAP: Nucleic acid-based Point-of-Care Diagnostic Device for COVID-19 and beyond – developed by IIT Kharagpur

Indian Immunologicals Limited to start production of drug substance for Covaxin under Mission COVID Suraksha

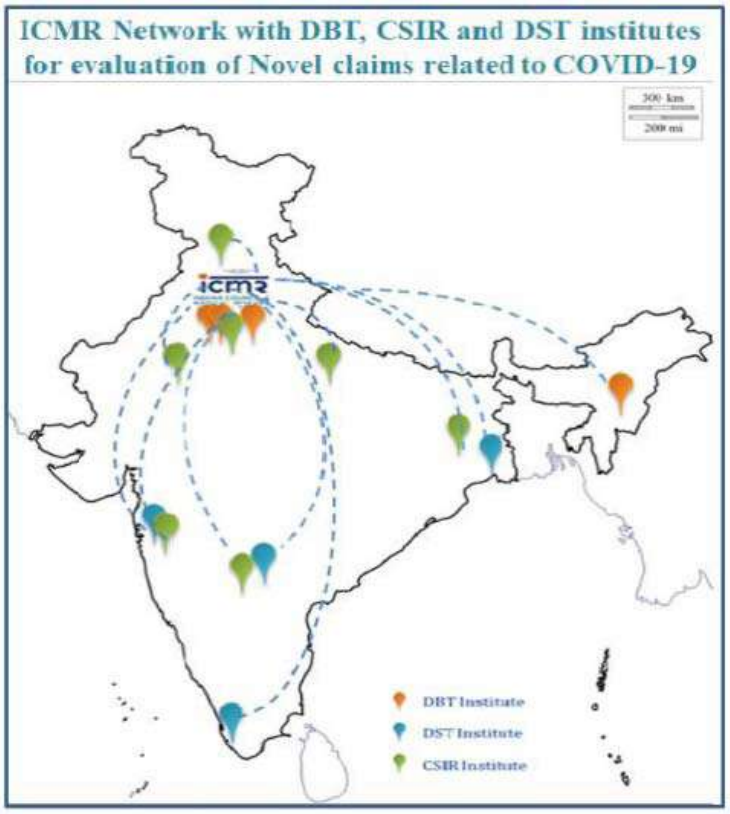
Innovative patient-friendly saline gargle RT-PCR testing method developed by NEERI

Shri Kiren Rijiju launches ACCR Portal to aggregate information about clinical outcomes achieved

Updated version of AYUSH Sanjivani App launched for inter-disciplinary studies involving Ayush interventions for COVID-19

Web-based portal iNoveCOP developed by ICMR for synergy among frontline COVID institutions

ICMR has been receiving several novel claims like drug molecules, AYUSH formulations, disinfectants, devices, and tools and technologies to facilitate evaluation and validation for COVID-19. Therefore, a web-based portal called iNoveCOP has been developed by ICMR, to guide applicants on various claims related to COVID-19. Applicants may submit their claim through this portal for guidance and/or evaluation of their innovation from independent agencies. Steps to fill the claim have also been provided as a Manual in the website.



Website Link:

https://inovecop.icmr.org.in/

COVIRAP: Nucleic acid-based Point-of-Care Diagnostic Device for COVID-19 and beyond – developed by IIT Kharagpur

IIT Kharagpur has successfully commercialized its flagship healthcare product – COVIRAP – the novel diagnostic technology for infectious diseases including COVID-19 and beyond. The product developed by lead researchers Professor Suman Chakraborty, Dr Arindam Mondal and their research group has been licensed for commercialization to the Rapid Diagnostic Group of Companies, India and Bramerton Holdings LLC, USA.

The research team has developed a more advanced version of COVIRAP using a step-wise isothermal nucleic acid testing technology for the rapid diagnostics of pathogenic infections including SARS-CoV-2 in individuals. The COVID-19 diagnostic test can be conducted directly from human swab samples in the portable device developed by the team, without requiring any separate facility for RNA extraction. The results can be made available within 45

minutes of obtaining the patient sample. The kit has also been also supplemented with a free smartphone app to facilitate unambiguous results interpretation and automated dissemination to the patients.

Recognizing the impact of the COVIRAP technology in meeting the long-standing demands of high-quality community-level testing, IIT Kharagpur has further initiated the procedure of deploying this product for on-campus use to detect possible novel coronavirus infection.

The envisaged trade-off between the high scientific standards of advanced molecular diagnostics with the elegance of common rapid tests appears to be the future of infectious disease detection and management. A platform technology capable to be inclusive of all such disease detections where nucleic acid-based tests may be deployed, COVIRAP is not just a one-time solution targeted specifically to COVID-19 but will remain imperative in global disease management in years to come.

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Website link:

https://kgpchronicle.iitkgp.ac.in/global-launch-of-covirap-nucleic-acid-based-point-of-care-diagnostic-device-by-iit-kharagpur-for-covid-19-and-beyond/

Indian Immunologicals Limited to start production of drug substance for Covaxin under Mission COVID Suraksha

In a bid to augment the vaccine production, the Government has decided to support some public sector companies with grants under the Mission COVID Suraksha. One such company is the Hyderabad-based Indian Immunological limited (IIL), a facility under the PSU, National Dairy Development Board.

A technical collaboration agreement has been reached between IIL and Bharat Biotech for IIL to supply of the drug substance required for manufacturing Covaxin Vaccine to Bharat Biotech. The Managing Director of Indian Immunological Limited, Dr K Anand Kumar said that IIL is planning to start the production of drug substance for Covaxin from June 15 and send out the first batch to Bharat Biotech Limited by July.

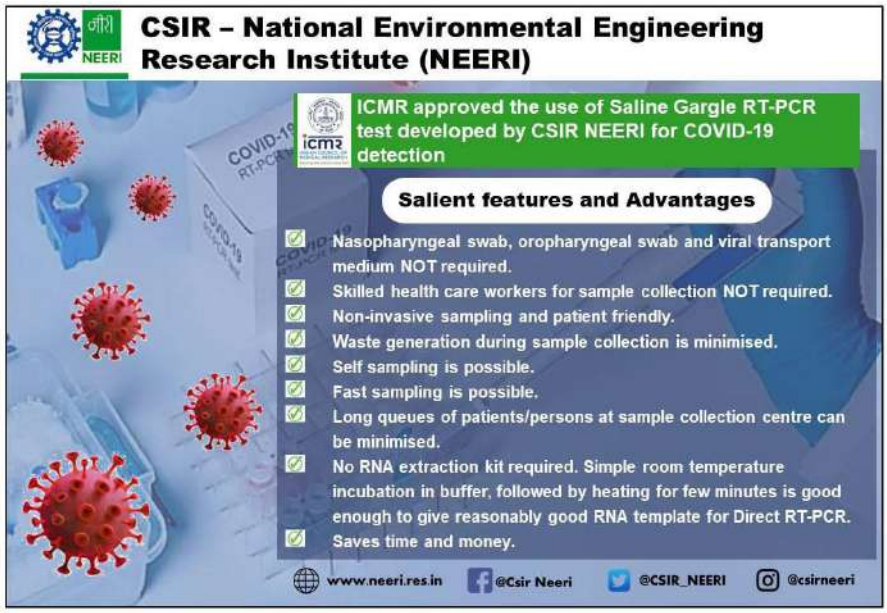
Website link:

https://www.pib.gov.in/PressReleasePage.aspx?PRID=1722478

Innovative patient-friendly saline gargle RT-PCR testing method developed by NEERI

Since the outbreak of the COVID-19 pandemic, India has been making multiple strides in augmenting its testing infrastructure and capacity. Scientists of Nagpur-based National Environmental Engineering Research Institute (NEERI), under Council of Scientific and Industrial Research (CSIR) have achieved another milestone in this journey with the development of a 'Saline Gargle RT-PCR Method' for testing COVID-19 samples.

A Method with Numerous Benefits: The Saline Gargle method offers a bunch of attractive benefits, all rolled into one. It is simple, fast, cost-effective, patient-friendly and comfortable. It also offers instant results and is well-suited for rural and tribal areas, given minimal infrastructure requirements. Speaking to PIB, Dr Krishna Khairnar, Senior Scientist, Environmental Virology Cell, NEERI says, "Swab collection method requires time. Moreover, since it is an invasive technique, it is a bit uncomfortable for patients. Some time is lost also in the transport of the sample to the collection centre. On the other hand, the Saline Gargle RT-PCR method is instant, comfortable and patient-friendly. Sampling is done instantly and results will be generated within 3 hours."



Patients themselves can collect the Sample: The method is non-invasive and so simple that the patients can collect the sample themselves, explains Dr Khairnar. "Collection methods like nasopharyngeal and oropharyngeal swab collection require technical expertise; they are also time-consuming. In contrast, the Saline Gargle RT-PCR method uses a simple collection tube filled with saline solution. The patient gargles the solution and rinses it inside the tube. This sample in the collection tube is taken to the laboratory where it is kept at room temperature, in a special buffer solution prepared by NEERI. An RNA template is produced when this solution is heated, which is further processed for Reverse Transcription Polymerase Chain Reaction (RT-PCR). This particular method of collecting and processing the sample enables us to save on the otherwise costly infrastructural requirement of RNA extraction. People can also test themselves, since this method allows self-sampling." The method is environment-friendly as well, since waste generation is minimized.

A Boon for Testing in Rural and Tribal Areas: The scientist expects that this innovative testing technique will be especially beneficial for rural and tribal areas where infrastructure requirements can be a constraint. The non-technique has received the approval of the Indian Council of Medical Research (ICMR). NEERI has further been asked to train other testing labs to help scale up its adoption across the country.

Nagpur Municipal Corporation has given permission to go ahead with the method, following which testing has begun at NEERI, as per approved testing protocol.

Need to Implement Pan India: Scientists, researchers, and lab-technicians of the Environmental Virology Cell at NEERI have taken painstaking efforts to develop this patient-friendly technique amid surging COVID-19 infections in the Vidarbha region. Dr Khairnar and his team hopes that the method is implemented at the national level, resulting in faster and more citizen-friendly testing thereby strengthening our battle against the pandemic.

Website link:

https://www.pib.gov.in/PressReleasePage.aspx?PRID=1722373

Shri Kiren Rijiju launches ACCR Portal to aggregate information about clinical outcomes achieved

Ayush Ministry marked yet another milestone by launching its Ayush Clinical Case Repository (ACCR) portal (https://accr.ayush.gov.in/) that will serve as a platform to support both Ayush practitioners and general public. In a virtual event Minister of State (IC) for Youth Affairs and Sports and Ayush, Shri Kiren Rijiju launched the portal as well as the new version of Sanjivani app. The portal aims to aggregate information about clinical outcomes achieved by Ayush practitioners on a large scale. It will facilitate not just dissemination of information but also further analysis and research. It is expected to document the strengths of Ayush systems for treatment of various disease conditions.

The portal will not only benefit the practitioner community and the public but will also help widen the solid scientific base of all streams of Ayush. One notable feature of the ACCR portal is the dedicated section for reporting and publishing details of COVID-19 cases treated through Ayush Systems.

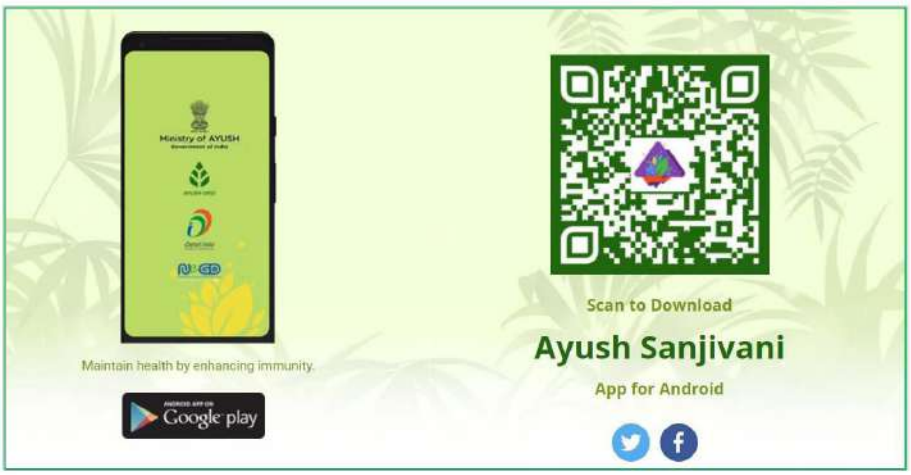
Website link:

https://ayushnext.ayush.gov.in/detail/news/ayush-minister-launches-accr-portal-and-3rd-version-of-ayush-sanjivani-app

Updated version of AYUSH Sanjivani App launched for inter-disciplinary studies involving Ayush interventions for COVID-19

The 'AYUSH Sanjivani' mobile app has been launched to generate data on acceptance and usage of AYUSH advocacies and measures among the population and its impact on the prevention of COVID-19.

The Ayush Sanjivani App (Third Version) is now published on Google Play Store and iOS. This version facilitates a significant study/documentation regarding the efficacy of selected Ayush interventions, including Ayush-64 and Kabasura Kudineer in the management of asymptomatic and mild to moderate COVID-19 patients. It is worthwhile to note that a national distribution campaign is on through which the Ayush Ministry is providing these two very effective Ayush formulations free to COVID-19 patients who are in home isolation.



Website link:

https://ayushnext.ayush.gov.in/detail/news/ayush-minister-launches-accr-portal-and-3rd-version-of-ayush-sanjivani-app

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5

RESEARCH SUPPORTS

The scientific approach has driven the ways the country is mitigating the pandemic. Here is an effort to sew up the significant contributions made by STI communities to humankind. The information is most suitable for the research fraternity, for whom the contact information is also provided to communicate further and up-skill the research.

SECTION GUIDELINES

Convergent evolution of SARS-CoV-2 spike mutations, L452R, E484Q and P681R, in the second wave of COVID-19 in Maharashtra

Prioritizing pregnant women for COVID-19 vaccination

Virtual screening of curcumin and its analogs against spike surface glycoprotein of SARS-CoV-2 and SARS-CoV

IISER Tirupati reviews "Global efforts on vaccines for COVID-19"

Isolation and characterization of the new SARS-CoV-2 variant in travellers from the United Kingdom to India

SARS-CoV-2 V501Y.V2 variant (B.1.351) detected in travellers from South Africa and Tanzania to India

Clinical presentation of cases with SARS-CoV-2 reinfection/reactivation"

A recombinant fragment of human surfactant protein-D binds spike protein and inhibits infectivity and replication of SARS-COV-2 in clinical samples

Postpartum psychosis in mothers with SARS-CoV-2 infection: A case series from India

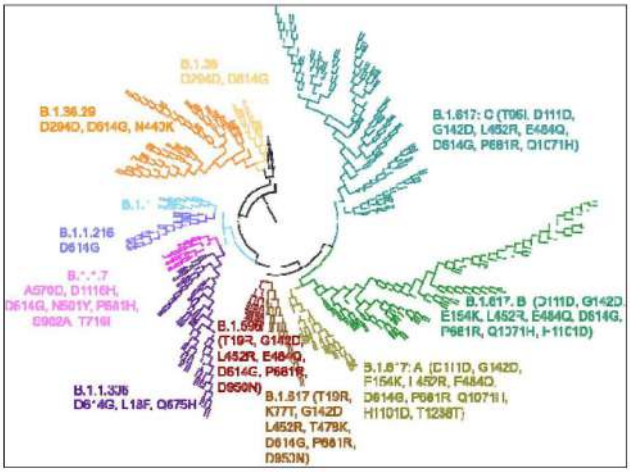
Co-infection of malaria and dengue in pregnant women with SARS-CoV-2

Universal screening identifies asymptomatic carriers of SARS-CoV-2 among pregnant women in India

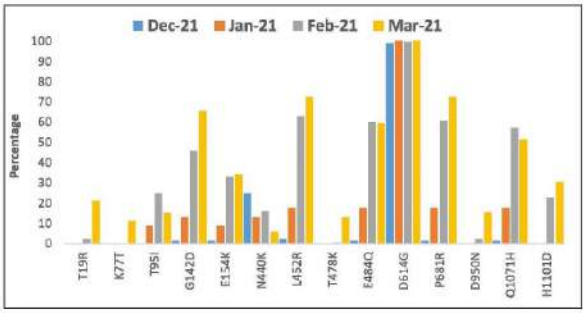
Delirium in a pregnant woman with SARS-CoV-2 infection in India

Convergent evolution of SARS-CoV-2 spike mutations, L452R, E484Q and P681R, in the second wave of COVID-19 in Maharashtra

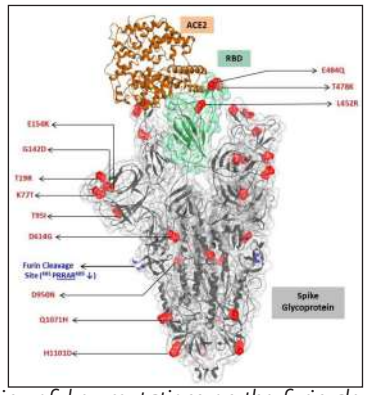
As the global severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic expands, genomic epidemiology and whole genome sequencing are being constantly used to investigate its transmissions and evolution. In the backdrop of the global emergence of "variants of concern" (VOCs) during December 2020 and an upsurge in Maharashtra since January 2021, whole genome sequencing and analysis of spike protein mutations using sequence and structural approaches was undertaken to identify possible new variants and gauge the fitness of current circulating strains. Phylogenetic analysis revealed that the predominant clade in circulation was a distinct newly identified lineage B.1.617 possessing common signature mutations D111D, G142D, L452R, E484Q, D614G and P681R, in the spike protein including within the receptor binding domain (RBD). Of these, the mutations at residue positions 452, 484 and 681 have been reported in other globally circulating lineages. The structural analysis of RBD mutations L452R and E484Q along with P681R in the furin cleavage site revealed that these may possibly result in increased ACE2 binding and rate of S1-S2 cleavage resulting in better transmissibility. The same two RBD mutations indicated decreased binding to select monoclonal antibodies (mAbs) and may affect their neutralization potential. Experimental



Maximum-likelihood tree of representative SARS-CoV-2 genomes depicting Pangolin lineages and the co-occurring mutations in the spike protein in the sub-clusters of lineage B.1.617



Trend of major mutations in the spike protein from December-2020 to March-2021



Mapping of key mutations on the furin-cleaved crystal structure of SARS-CoV-2 spike glycoprotein (grey surface view) in complex with ACE2 (brown solid ribbon), RBD region shown in green

validation against a wider panel of mAbs, sera from vaccines and those that recovered from natural infection needs to be studied. The emergence of such local variants through the accumulation of convergent mutations during the COVID-19 second wave needs to be further investigated for their public health impact in the rest of the country and its possibility of becoming a VOC.

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Website Link:

https://www.icmr.gov.in/pdf/covid/papers/B.1.617%20spread%20in%20Maharashtra%20State.pdf

Prioritizing pregnant women for COVID-19 vaccination

Even though evidence for the safety and efficacy of COVID-19 vaccination in pregnancy is emerging, most countries currently do not offer COVID-19 vaccination to pregnant women, while a few leave the decision to the woman. Pregnant women are known to be at high risk of complications from COVID-19.

Vardhman Mahavir Medical College, Safdarjung Hospital, and NITI Aayog did a web search on policies for COVID-19 vaccination of pregnant women in two sets of countries – those bearing a high burden of COVID-19 cases globally and a second set with a high burden of maternal and under-five mortality. Of the top 20 COVID-19-affected countries, six countries allow and two have in place guidelines for preferential vaccination of pregnant women. In contrast, none of the high maternal and under-five mortality burden countries have such preferential vaccination guidelines in place. India and Indonesia with one-fifth of world's population lie in both the groups, contributing 17% of COVID-19 cases, 11% of COVID-19 deaths, 17% of maternal, and 21% of under-five deaths globally, but do not allow COVID-19 vaccination of pregnant women. For COVID-19 not to further aggravate the already heavy existing burden of maternal and under-five mortality, there is a strong case for inclusion of pregnant women as a high priority group for COVID-19 vaccination. So, they recommend including COVID-19 vaccination in the routine protocol for antenatal care in all countries, particularly India and Indonesia, in view of their dual burden.

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Website link:

https://osf.io/5yxh7/

Virtual screening of curcumin and its analogs against spike surface glycoprotein of SARS-CoV-2 and SARS-CoV

COVID-19, a new pandemic caused by SARS-CoV-2, was first identified in 2019 in Wuhan, China. The novel coronavirus SARS-CoV-2 and the 2002 SARS-CoV have 74% identity and use similar mechanisms to gain entry into the cell. Both the viruses enter the host cell by binding of the viral spike glycoprotein to the host receptor, angiotensin converting enzyme 2 (ACE2). Targeting entry of the virus has a better advantage than inhibiting the later stages of the viral life cycle.

The crystal structure of the SARS-CoV (6CRV: full length S protein) and SARS-CoV-2 Spike proteins (6M0J: Receptor binding domain, RBD) was used to determine potential small molecule inhibitors. Curcumin, a naturally occurring phytochemical in Curcuma longa, is known to have broad pharmacological properties. In the present study, curcumin and its derivatives were docked, using Autodock 4.2, onto the 6CRV and 6M0J to study their capability to act as inhibitors of the spike protein and thereby viral entry. The curcumin and its derivatives displayed binding energies, ΔG, ranging from -10.98 to -5.12 kcal/mol (6CRV) and -10.01 to -5.33 kcal/mol (6M0J).

The least binding energy was seen in bis-demethoxycurcumin with ΔG = -10.98 kcal/mol (6CRV) and -10.01 kcal/mol (6M0J). A good binding energy, drug likeness, and efficient pharmacokinetic parameters suggest the potential of curcumin and few of its derivatives as SARS-CoV-2 spike protein inhibitors. However, further research is necessary to investigate the ability of these compounds as viral entry inhibitors.

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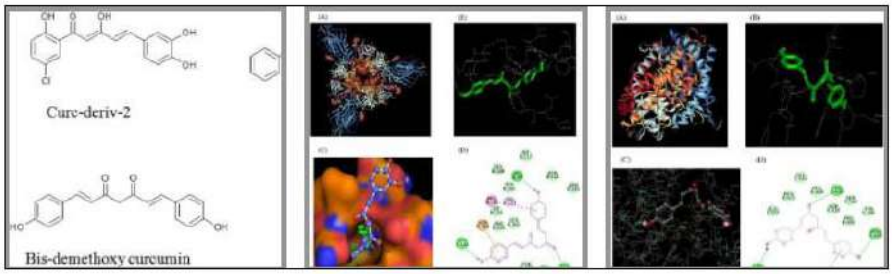

Website Link:

http://www.iisertirupati.ac.in/research/publication/2021.php

https://europepmc.org/backend/ptpmcrender.fcgi?accid=PMC7784829&blobtype=pdf

IISER Tirupati reviews "Global efforts on vaccines for COVID-19"

COVID-19 has turned into a pandemic. It spreads through droplet transmission of the new coronavirus SARS-CoV-2. It is an RNA virus displaying a spike protein as the major surface protein with significant sequence similarity to SARS-CoV which causes severe acute respiratory syndrome. The receptor binding domain of the spike protein interacts with the human angiotensin converting enzyme 2 and is considered as the antigenic determinant for stimulating an immune response. This review describes the key genetic features that are being considered for generating vaccine candidates by employing innovative technologies. It also highlights the global efforts being undertaken to deliver vaccines for COVID-19 through unprecedented international cooperation and future challenges post development.

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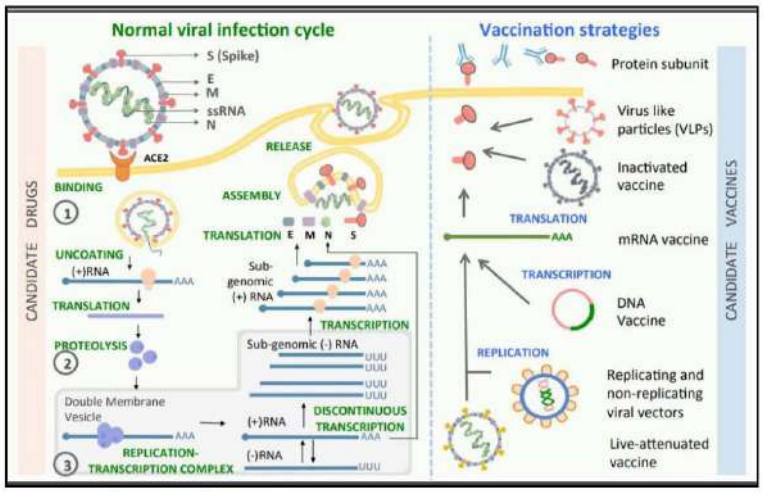

Website Link:

http://www.iisertirupati.ac.in/research/researchhigh/

http://www.iisertirupati.ac.in/events/Raju_Mukherjee_article.pdf

Isolation and characterization of the new SARS-CoV-2 variant in travellers from the United Kingdom to India

Since its emergence in China during December 2019, severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) has marked its presence all across the globe. During this pandemic phase, the new genetic mutations acquired by the virus have led to new variants, indicating that the virus is evolving. This is indicated by the emergence of two SARS-CoV-2 variants, B.1.1.7 lineage (20B/501Y.V1 variant of concern [VOC] 202012/01) and B.1.351 lineage (20C/501Y.V2) identified from UK and South Africa, respectively. The B.1.1.7 lineage has eight mutations in Spike receptor-binding domain which mediates the attachment of the virus to the angiotensin-converting enzyme 2 receptor on the surface of human cells; whereas the B.1.351 lineage has the N501Y but not the 69/70 deletion. B.1.1.7 lineage phenotype has also attracted attention, as it proves to be much more transmissible among humans than the other known SARS-CoV-2 lineages. The genetic mutations in these new variants are associated with rapid transmission of the infection. However, its effect on the severity of the disease and vaccine efficacy has not yet studied.

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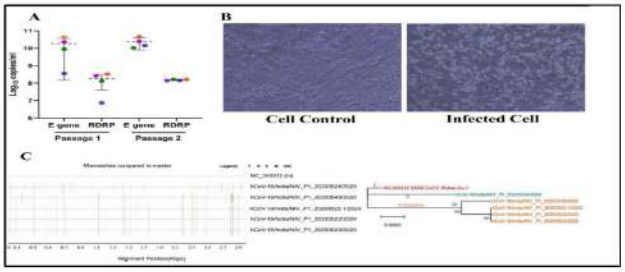

Website Link:

https://www.icmr.gov.in/pdf/covid/papers/B.1.1.7%20Isolation%20and%20Characterization.pdf

SARS-CoV-2 V501Y.V2 variant (B.1.351) detected in travellers from South Africa and Tanzania to India

The SARS-CoV-2 has been continuously mutating, leading to new variant strains since the emergence of the pandemic (2020-21). The first SARS-CoV-2 variant, 20I/501Y.V1 (B.1.1.7 Pangolin lineage) was reported from the United Kingdom (UK) which had 14 mutations and three amino acid deletions that influence the transmissibility of the virus in humans. Subsequently, emergence of new variants V501Y.V2 and 20J/501Y.V3 were also reported from South Africa and Brazil, respectively. Although, 50% increased transmissibility has been observed with V501Y.V2, the clinical severity associated with the variant is not known. The variant strains of SARS-CoV-2 have raised serious concerns related to their increased transmissibility and also their ability to evade the immune response elicited by available S gene-based vaccines. The World Health Organization (WHO) has also reported a resurgence of SARS-CoV-2 infection in few countries due to the emergence of the variant strains.

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Website Link:

https://www.icmr.gov.in/pdf/covid/papers/B.1.351%20first%20detection%20in%20India.pdf

Clinical presentation of cases with SARS-CoV-2 reinfection/ reactivation

The current COVID-19 pandemic is growing rapidly and healthcare workers (HCWs) are at a high risk of contagious SARS-CoV-2 infection. Frontline HCWs are at increased risk of COVID-19 as compared to the general population. With the passing time in the COVID-19 pandemic, the possibility of reinfection is an emerging threat. Although it is generally assumed that an episode of infection with SARS-CoV-2 would generate enough immune response providing protection for future infections, notwithstanding this, there are a few case reports demonstrating the possibility of re-infection. Like other coronaviruses, SARS-CoV-2 was expected to induce a monophasic disease with at least transient immunity. Nevertheless, rare cases of suspected COVID-19 "recurrence" or "reactivation" have been reported (REFS). Reinfection/reactivation of SARS-CoV-2 has been a matter of great interest from the immunological and vaccine perspective. However, little is known about the clinical presentation of such reinfection/reactivation.

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Website Link:

https://www.nirrh.res.in/publications/?by=title&search=sars

https://www.researchgate.net/publication/348096798_Clinical_Presentation_of_Cases_with_SARS-CoV-2_Reinfection_Reactivation

A recombinant fragment of human surfactant protein-D binds spike protein and inhibits infectivity and replication of SARS-COV-2 in clinical samples

COVID-19 is an acute infectious disease caused by the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). Human surfactant protein D (SP-D) is known to interact with spike protein of SARS-CoV, but its immune-surveillance against SARS-CoV-2 is not

known. The study aimed to examine the potential of a recombinant fragment of human SP-D (rfhSP-D) as an inhibitor of replication and infection of SARS-CoV-2. The interaction of rfhSP-D with spike protein of SARS-CoV-2 and hACE-2 receptor was predicted via docking analysis. The inhibition of interaction between spike protein and ACE-2 by rfhSP-D was confirmed using direct and indirect ELISA. The effect of rfhSP-D on replication and infectivity of SARS-CoV-2 from clinical samples was studied by measuring the expression of RdRp gene of the virus using qPCR. In-silico interaction studies indicated that three amino acid residues in the RBD of spike of SARS-CoV-2 were commonly involved in interacting with rfhSP-D and ACE-2. Studies using clinical samples of SARS-CoV-2 positive cases (asymptomatic, n=7; symptomatic, n=8; and negative controls n=15) demonstrated that treatment with 1.67 µM rfhSP-D inhibited viral replication by ~5.5 fold and was more efficient than Remdesivir (100 µM). Approximately, a 2-fold reduction in viral infectivity was also observed after treatment with 1.67 µM rfhSP-D. These results conclusively demonstrate that the calcium-independent rfhSP-D mediated inhibition of binding between the receptor binding domain of the S1 subunit of the SARS-CoV-2 spike protein and human ACE-2, its host cell receptor, and a significant reduction in SARS-CoV-2 infection and replication in-vitro.

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Website Link:

http://www.nirrh.res.in/publications/?by=title&search=sars
https://www.atsjournals.org/doi/pdf/10.1165/rcmb.2021-0005OC

Postpartum psychosis in mothers with SARS-CoV-2 infection: A case series from India

The current COVID-19 pandemic is causing severe damage to the mankind through direct impact on health and also collaterally affecting all aspects of life including the mental health. The impending mental health crisis has attracted the attention of global experts and organisations necessitating the documentation of impact of COVID-19 on mental health, especially among the vulnerable populations. Pregnancy and the postpartum period are known to have increased vulnerability to psychiatric disorders. Earlier studies reported the association of other coronaviruses with a range of psychiatric disorders. However, there is no information on new-onset psychosis in asymptomatic patients or postpartum women with COVID-19. In the research, three cases of postpartum psychosis (PP) associated with asymptomatic COVID-19 managed at Topiwala National Medical College (TNMC) & B. Y. L. Nair Charitable Hospital (NH). NH is a an academic tertiary care public hospital and a dedicated COVID-19 hospital in Mumbai, receiving referrals from all over the Mumbai Metropolitan Region (MMR). In the initial phase of three months of COVID-19 pandemic (from 4 April 2020 to 31 July 2020), NH treated three asymptomatic, RT-PCR-confirmed COVID-19 women with PP. The demographic, clinical characteristics, delivery details and management of COVID-19 mothers with PP are described in the research paper.

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Website Link:

http://www.nirrh.res.in/publications/?by=title&search=sars
https://sci-hub.do/10.1016/j.ajp.2020.102406

Co-infection of malaria and dengue in pregnant women with SARS-CoV-2

Many low- and middle-income countries (LMICs) experience high rates of malaria and other neglected tropical diseases (NTDs), such as dengue. The COVID-19 pandemic complicates these matters further as COVID-19 in pregnant women is associated with an increased risk of preterm birth, and in some LMICs it is associated with a higher risk of maternal death. Furthermore, the clinical presentations of malaria and dengue strongly overlap with that of COVID-19, therefore posing an additional challenge for differential diagnosis. The PregCovid registry (https://pregcovid.com), registered with Clinical Trials Registry India (no. CTRI/2020/05/025423), is currently accumulating data from various regions in Maharashtra. The present study reports the clinical presentations, management, and outcomes of three pregnant women with COVID-19 who also had co-infection of malaria, and one with dengue, admitted to BYL Nair Hospital in Mumbai.

Contact Info: nirajdr@hotmail.com

Website Link:

http://www.nirrh.res.in/publications/?by=title&search=sars
https://sci-hub.do/10.1002/ijgo.13415

Universal screening identifies asymptomatic carriers of SARS-CoV-2 among pregnant women in India

Asymptomatic women with COVID-19 are at risk of infecting their newborns and also pose a risk to healthcare providers and other patients. Considering this, Indian Council of Medical Research (ICMR) recommended universal testing for SARS-CoV-2 in pregnant women. Maharashtra is the worst-hit state in India and universal screening strategy for pregnant women was implemented in several public hospitals during this time. In this study report of the outcome of implementation of this strategy is being provided.

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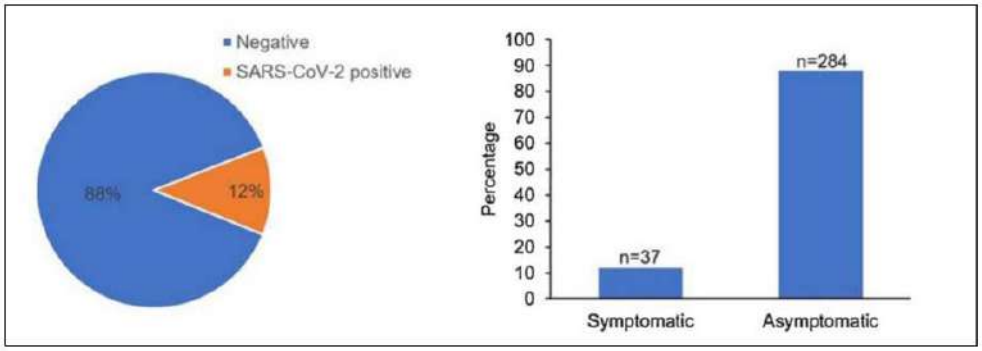

SARS-CoV-2 test results among pregnant women and their symptomatic status

Website Link:

http://www.nirrh.res.in/publications/?by=title&search=sars
https://sci-hub.do/10.1016/j.ejogrb.2020.09.030

Delirium in a pregnant woman with SARS-CoV-2 infection in India

In the current healthcare crisis due to COVID-19 pandemic, immediate dissemination of evidence is a priority for empowering the healthcare providers and policy makers. Currently, there is limited data on impact of COVID-19 on mental health of individuals residing in low-income and middle-income countries (LMICs), especially pregnant women. Pregnant women are at increased risk of contracting COVID-19 and thus require special attention, especially while dealing with mental health issues. It is extremely challenging to manage mental health problems of pregnant women with COVID-19 in India and other LMICs due to inadequate health system infrastructure and lack of trained manpower and mental health services. Several challenges are being faced in the COVID-19 hospitals in LMICs, especially for the management of pregnant and postpartum women with COVID-19. In a dedicated COVID-19 facility, 885 pregnant women with COVID-19 were managed wherein more than 600 women delivered. In these women, increased anxiety and psychological distress related to COVID-19 was observed (unpublished data). Three cases of postpartum psychosis associated with COVID-19 were successfully managed at the COVID-19 hospital.

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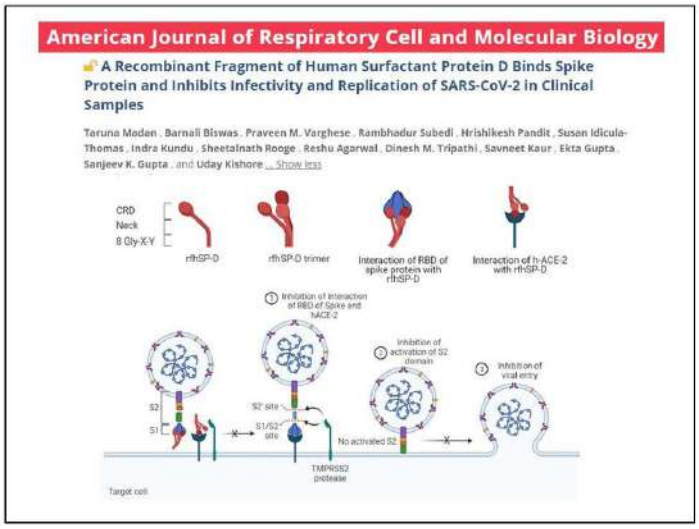
Website Link:

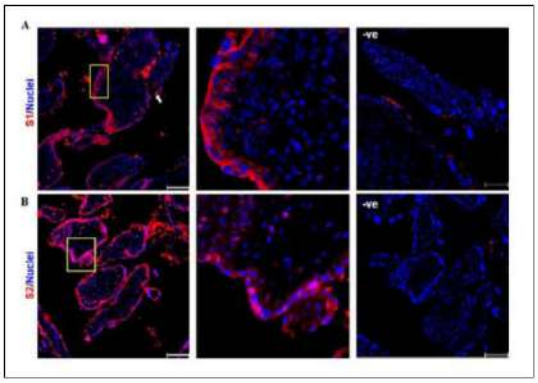
http://www.nirrh.res.in/publications/?by=title&search=sars

https://europepmc.org/backend/ptpmcrender.fcgi?accid=PMC7837259&blobtype=pdf

Persistence of SARS-CoV-2 in the first trimester placenta leading to vertical transmission and fetal demise from an asymptomatic mother

COVID-19 is caused by infection of the respiratory tract by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) which survives in the tissues during the clinical course of infection but there is limited evidence on placental infection and vertical transmission of SARS-CoV-2. The impact of COVID-19 in first trimester pregnancy remains poorly understood. Moreover, how long SARS-CoV-2 can survive in placenta is unknown. In this report, a case of a pregnant woman in the first trimester who tested positive for SARS-CoV-2 at 8 weeks of gestation has been discussed, although her clinical course was asymptomatic.





Localization of Spike Proteins of SARS-CoV-2 in villi of first trimester placenta of a women with asymptomatic COVID-19 at 8 weeks of gestation

At 13 weeks of gestation, her throat swab tested negative for SARS-CoV-2 but viral RNA was detected in the placenta, and the Spike (S) proteins (S1 and S2) were immunolocalized in cytotrophoblast and syncytiotrophoblast cells of the placental villi. Histologically, the villi were generally avascular with peri-villus fibrin deposition and in some areas the syncytiotrophoblast layer appeared lysed. The decidua also had fibrin deposition with extensive leukocyte infiltration suggestive of inflammation. The SARS-CoV-2 crossed the placental barrier, as the viral RNA was detected in the amniotic fluid and the S proteins were detected in the fetal membrane. Ultrasonography revealed extensively subcutaneous edema with pleural effusion suggestive of hydrops fetalis and the absence of cardiac activity indicated fetal demise. This is the first study to provide concrete evidence of persistent placental infection of SARS-CoV-2 and its congenital transmission is associated with hydrops fetalis and intrauterine fetal demise in early pregnancy.

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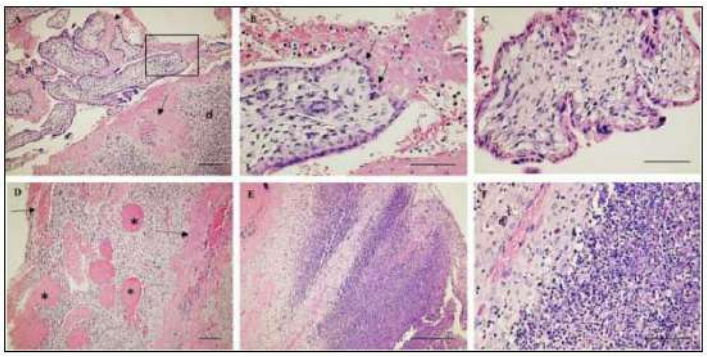


Histopathology of placenta and decidual tissue from a woman with asymptomatic SARS-CoV-2 infection in first trimester

Website Link:

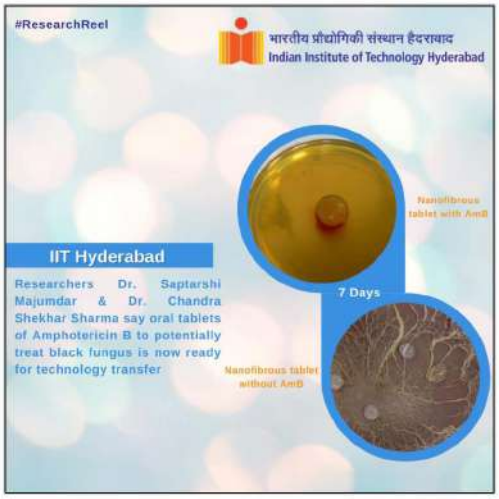
http://www.nirrh.res.in/publications/?by=title&search=sars

https://europepmc.org/backend/ptpmcrender.fcgi?accid=PMC7799080&blobtype=pdf

Oral solution for 'black fungus' is now ready for technology transfer, says IIT Hyderabad Researchers

In 2019 Prof. Saptarshi Majumdar and Dr Chandra Shekhar Sharma from the Department of Chemical Engineering made a proven study about oral nanofibrous AMB to be effective

for Kala Azar. This is a first-ever attempt to fabricate nanofibrous oral tablets of Amphotericin B for the potential cure of Leishmaniasis or Kala Azar. With two years of advancement of examination, the researchers are now confident that the technology can be transferred to suitable pharma partners for large-scale production. At present, the Kala-Azar treatment is being used as a treatment for Black and other Fungus in the country, Because of its availability and affordability this oral drug must be allowed for emergency and immediate trial.



Due to its amphiphilic nature, the AmB has poor aqueous solubility and forms aggregates in the system, which stresses renal filtration and thus causing nephrotoxicity. This is the reason the oral administration has been abstained, although being the most comfortable and effective route. In present research funded by DST-Nanomission, a team led by Prof. Saptarshi Majumdar and Dr Chandra Shekhar Sharma along with their PhD scholars Mrunalini Gaydhane and Anindita Laha intended to deliver Amphotericin B orally at an extremely slow rate, of course within the therapeutic window. The purpose was to increase drug absorption and reduce aggregation, to lower the drug toxicity. For this, the team has selected gelatin, an FDA-approved polymer as an excipient for drug molecules.

Further, as gastrointestinal tract contains different enzymes which hydrolyze the polymers, the team has checked and confirmed the enzymatic stability of the tablet in pepsin. The significance of the nanofibrous tablets is depicted in the enclosed illustration. The main concern with high drug loading was if it imposes nephrotoxicity. To ensure this, the team has carried out a cell viability assay (MTT assay) against human kidney fibroblast cells which illustrated no evidence of cell toxicity caused by AmB as well as a minute amount of Glutaraldehyde crosslinker. The concept is also briefed in a video that can be watched at: https://youtu.be/LIIo5UCoYGY

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Website link:

https://pcr.iith.ac.in/files/pressrelease/Oral%20solution%20for%20%E2%80%98black%20fungus%E2%80%99%20is%20now%20ready%20for%20technology%20transfer,%20says%20IIT%20Hyderabad%20Researchers.pdf

Psychological impacts of COVID-19 pandemic on the mode choice behaviour: A hybrid choice modelling approach

The COVID-19 pandemic is a pivotal moment in the history of mankind, which had a huge impact on the fast-paced world. The uncertainty associated with the plight of the pandemic, pushed the world towards a sense of insecurity and panic. Apart from the disease, the psychological problem connected to the lockdowns has caused an unprecedented change in the thought process of people towards travel.

A recent study conducted by two researchers at the IIT Ropar aimed to statistically illustrate the change the pandemic and lockdowns brought upon the travel mode choice behaviour. An

Integrated choice and latent variable (ICLV) framework was adapted to understand the impact of the novel behavioural constructs, such as awareness of the disease and people's perception of the strictness of lockdown towards the mode choice in the post-pandemic scenario. Different trip types were characterized according to the nature of the trip, and their mode choice were assessed separately for the impact of the latent constructs. The results suggest that the awareness of the disease and the perception of strictness of the lockdown implemented play a major role in affecting the change of the mode choice of people. Further, the perception of safety in public transport, characterized by the social distancing and sanitization measures, determine the willingness of people towards the choice of public transit systems. The study concludes with a focus on the policies, which could be implemented for a safe travel in the post lockdown stage.

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Website link:

https://www.sciencedirect.com/science/article/pii/S0967070X21001359
https://www.iitrpr.ac.in/library/pb_may_21.php

Novel Coronavirus 2019 (2019-nCoV) Infection: Preparedness and Management in Resource-limited Settings of PICU

The 2019-novel coronavirus predominantly affects the respiratory system with manifestations ranging from upper respiratory symptoms to full blown acute respiratory distress syndrome (ARDS).

The coronavirus disease mainly starts with a respiratory illness and about 5-16% requires intensive care management for ARDS and multi-organ dysfunction. Children account for about 1-2% of the total cases, and 6% of these fall under severe or critical category requiring Pediatric Intensive Care Unit (PICU) care. A study has been conducted by a team of researchers in this regard.

Use of high flow devices and non-invasive ventilation has been discouraged due to high chances of aerosol generation. Early intubation and mechanical ventilation are essential to prevent complications and worsening, especially in resource-limited settings, with very few centres having expertise to manage critical cases.

Hydrophobic viral filter in the ventilator circuit minimizes chances of transmission of the virus. Strategies to manage ARDS in COVID-19 include low tidal volume ventilation with liberal sedation-analgesia. At the same time, prevention of transmission of the virus to healthcare workers is extremely important in the intensive care setting dealing with severe cases and requiring procedures generating aerosol. PGIMER provide guidance on non-invasive respiratory support, intubation and management of ARDS in a child with COVID-19.

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Website link:

https://pubmed.ncbi.nlm.nih.gov/32238612/
https://pubmed.ncbi.nlm.nih.gov/32238613/

Research paper on heat-stable vaccine for COVID-19

Many of the COVID-19 vaccines need cold temperatures during their transportation. Exposure to higher temperatures may lose the potency of these vaccines. Researchers from the Indian

Institute of Science Bangalore and other collaborators from IISER Thiruvananthapuram, THSTI Faridabad, and the IISc-incubated start-up Mynvax have developed a heat-stable vaccine candidate for COVID-19. The so called 'warm vaccine' would not require cold chain transportation which is extremely important in the Indian context where the vaccine can be delivered to towns and villages without the requirement of cold temperatures for transportation. The research has been accepted for publication in the Journal of Biological Chemistry, a peer-reviewed scientific journal published by the American Society for Biochemistry and Molecular Biology.

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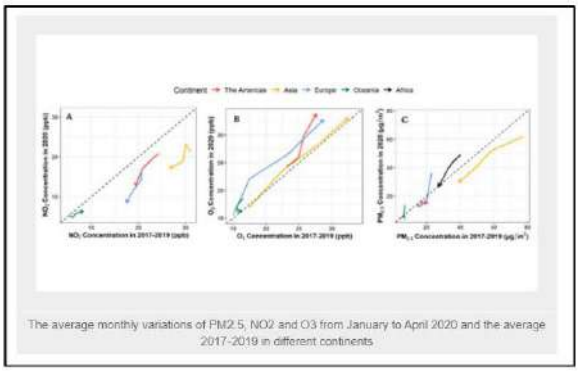
Website Link:

https://biology.iisertvm.ac.in/story/read/news-paper-on-covid-19-warm-vaccine-by-dr-stalin-rajs-team-along-with-iisc

Global air quality and COVID-19 pandemic: Do we breathe cleaner air?



The average monthly variations of PM2.5, NO2 and O3 from January to April 2020 and the average 2017-2019 in different continents

The global spread of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) has challenged most countries worldwide. It was quickly recognized that reduced activities (lockdowns) during the COVID-19 pandemic produced major changes in air quality. Research objective was to assess the impacts of COVID-19 lockdowns on ground-level PM 2.5, NO_2, and O_3 concentrations on a global scale. Data was obtained from 34 countries, 141 cities, and 458 air monitoring stations on 5 continents (few data from Africa). On a global average basis, a 34.0% reduction in NO_2 concentration and a 15.0% reduction in PM 2.5 were estimated during the strict lockdown period (until April 30, 2020). Globally, average O_3 concentration increased by 86.0% during this same period. Individual country- and continent-wise comparisons have been made between lockdown and business-as-usual periods. Universally, NO_2 was the pollutant most affected by the COVID-19 pandemic. These effects were likely because its emissions were from sources that were typically restricted (i.e., surface traffic and non-essential industries) by the lockdowns and its short lifetime in the atmosphere. These results indicate that lockdown measures and resulting reduced emissions reduced exposure to most harmful pollutants and could provide global-scale health benefits. However, the increased O_3 may have substantially reduced those benefits, and more detailed health assessments are required to accurately quantify the health gains. At the same time, these restrictions were obtained at substantial economic costs and with other health issues (depression, suicide, spousal abuse, drug overdoses, etc.). Thus, any similar reductions in air pollution would need to be obtained without these extensive economic and other consequences produced by the imposed activity reductions.

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Website Link:

https://aaqr.org/articles/aaqr-20-09-covid-0567

https://aaqr.org/articles/aaqr-20-09-covid-0567.pdf

Binding insight of clinically oriented drug Famotidine with the identified potential target of SARS-CoV-2

The coronavirus pandemic (COVID-19) has been associated with acute respiratory distress syndrome resulted from an enveloped, positive-sense, single-stranded RNA beta-coronavirus that has a genome of over 29 kb in length (Prajapat et al., 2020; Sarma et al., 2020). Six members of the Coronaviridae family were previously known to infect humans, including severe acute respiratory syndrome coronavirus (SARS-CoV) and Middle East respiratory syndrome coronavirus (MERS-CoV), in 2002 and 2012, respectively. SARS-CoV-2 is the latest addition to the family and has less severe symptoms and a lower mortality rate (6.4%), but more infectious (Zhu et al., 2020; Muralidharan et al., 2020; Gupta et al., 2020) than the SARS-CoV and MERS-CoV with the fatality rate of 10% and 36%, respectively (Chang et al., 2006). An increasing number of infections and the death toll despite concerted efforts to contain the pandemic using various strategies usher an adverse global impact on health and economics (Petropoulos & Makridakis, 2020), impelling to discover preventive therapeutics as quickly as possible (Cao et al., 2020). The scenario is further made worst by the fact that at present, no clinically effective drug has been approved for the treatment of this virus infection.

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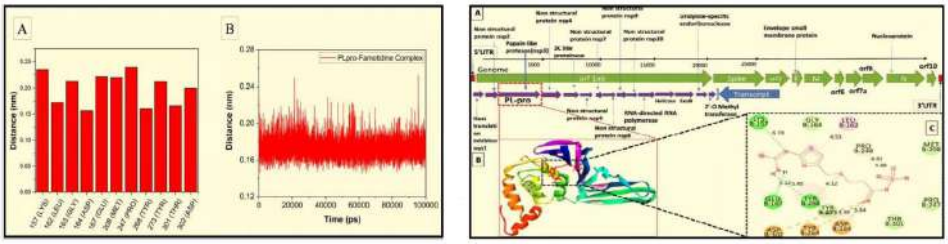

Website Link:

https://www.tandfonline.com/doi/pdf/10.1080/07391102.2020.1784795?needAccess=true

6

START-UP SPOTLIGHTS

Numerous start-up companies have timely contributed to the warfare against fighting the pandemic out in countless ways. Here is an effort to compile those contributions and sew up for the usage of the entrepreneur communities.

SECTION GUIDELINES

DST-supported disinfection system makes N95 Masks, PPE, medical gear reusable and reduces excessive COVID-19 bio-medical waste generation

iCreate-incubated start-up develops 3D-printed ventilator splitter for hospitals to fight COVID-19

Cloudphysician Healthcare develops tele-ICU platform to combat the shortage of ICU care during COVID-19

A start-up incubated at iCreate-Ahmedabad develops Venturi-valve respirator to help coronavirus patients

Carenation remote care delivery platform developed by Teslon Technologies

Start-up incubated at IIT Madras develops remotely monitored ICUs

Tamil Nadu-based Agribusiness Incubation Society develops OzGen18 (Ozone Disinfectant)

Viral Transport Medium Kit for COVID-19 developed by Genexis Biotech Pvt Ltd

Tamil Nadu-based start-up, Effinland IP, develops Botanical Disinfectant Fogger

Amaya – Differential two-way ventilator splitter developed by Ethereal Machines

Delhi-based start-up develops Portable Multifeed Oxygen Supply Ventilator (PMOSV-4)

Vexma Technologies develops ERVA to combat COVID-19

Mumbai-based start-up, Indra Water develops environment-friendly solution that reduces biomedical waste

DST-supported disinfection system makes N95 Masks, PPE, medical gear reusable and reduces excessive COVID-19 bio-medical waste generation

A N95 Mask/PPE disinfection system developed by Mumbai-based start-up, Indra Water, has been installed at multiple government hospitals across Maharashtra and Telangana.

The disinfection system called Vajra Kavach is significantly decreasing the cost of combating the pandemic by making PPE, medical, and nonmedical gear reusable and reducing the generation of excessive COVID-19-related bio-medical waste, thereby helping the environment. It is also making PPEs more available, affordable, and accessible.

The product uses a multistage disinfection process with advanced oxidation, corona discharge, and UV-C light spectrum to inactivate the viruses, bacteria, and other microbial strains present on the PPE with more than 99.999% efficiency.

Indra Water, the start-up which was initiated with the NIDHI-PRAYAS grant from DST (through SINE-IIT Bombay) for innovations in the water sector, used the Centre for Augmenting WAR with COVID-19 Health Crisis (CAWACH) grant of the Department of Science & Technology (DST), Government of India to modify their technology to make it suitable for combating the COVID-19 infection. With support from SINE, IIT Bombay prepared themselves to manufacture and supply 25 disinfection systems per month.

The system has been validated and tested by the Department of Biosciences & Bioengineering at IIT Bombay and has been found to achieve more than 5 LOG (99.999%) inactivation of

viruses and bacteria. It is also CSIR-NEERI approved and IP55 certified and is now being installed in hospitals treating COVID-19 patients across India.

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Website link:

https://www.pib.gov.in/PressReleasePage.aspx?PRID=1722192

iCreate-incubated start-up develops 3D-printed ventilator splitter for hospitals to fight COVID-19

The International Centre for Entrepreneurship and Technology (iCreate), Ahmedabad, an autonomous Centre of Excellence of the Government of Gujarat, has developed 3D-printed splitter, which is a unique ventilator expansion device that allows a single ventilator to support up to two or four patients during a time of acute equipment shortage. It is specifically designed to bypass ventilator deficiency. Produced using 3D printing the device is developed with material already used in the existing medical devices and produced at minimum cost. The splitter is available either in 1 × 2 or 1 × 4 models.

Contact Info: info@icreate.org.in

A representative image of 3D ventilator splitter

Website link:

https://www.investindia.gov.in/bip/resources/innovations-against-covid-19
https://www.icreate.org.in/

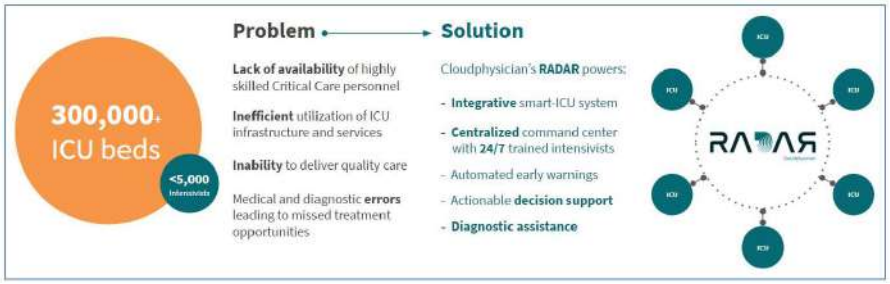
Cloudphysician Healthcare develops tele-ICU platform to combat the shortage of ICU care during COVID-19

The on-going COVID-19 pandemic has further strained India's pre-existing shortage of intensivists. Healthcare facilities are understaffed and underskilled to deal with the projected massive influx of critically ill patients. Bengaluru-based start-up, Cloudphysician, is using its tele-ICU platform, RADAR, which provides ICU expertise to hospitals that do not have 24/7 access to ICU specialist doctors.

RADAR digitizes and analyses patient data and provides clinical decision support to these super specialist doctors at the command center who then, together with the bedside team,

ensure evidence-based care for ICU patients. Their technology is cost effective, easy to deploy, with a low barrier of adoption for even technology-naive healthcare providers.

Contact info: info@cloudphysician.net



Website Link:

https://www.investindia.gov.in/bip/resources/innovations-against-covid-19
https://cloudphysician.net/

A start-up incubated at iCreate-Ahmedabad develops Venturi-valve respirator to help coronavirus patients

A representative image of Venturi-valve respirator

Venturi-valve is an airflow control device developed by iCreate-incubated start-up at Ahmedabad. It controls airflow by varying its annular orifice to modulate the flow of air. The cone is situated on an actuated shaft, which enables flow control through the full range (0%-100%) of the valve. The valve uses the Venturi effect to generate under pressure in a tube consisting of three parts - a convergent section (nozzle), followed by a constant section (throat), ending in a gradual expansion (diffuser). Due to the oxygen flow under pressure generated in the nozzle, the air is sucked into the valve. The valve is powered with a stream of pure oxygen with a flow rate of 10 l pm. Two streams mix in a diffuser - oxygen (100% O_2) and air (21% O_2) - resulting in high flow, high oxygen stream at the outlet. The proposed method of production and the valve is preferably SLA or FDM and the material is PLA or ABS which are ideal due to their non-reactiveness to the oxygen. It is a single consolidated 3D printed part requiring no assembly.

Contact Info: info@icreate.org.in

Website link:

https://www.investindia.gov.in/bip/resources/innovations-against-covid-19
https://www.icreate.org.in/

Carenation remote care delivery platform developed by Teslon Technologies

Carenation is an advanced remote healthcare delivery platform developed by Bengaluru-based start-up, Teslon Technologies Private Limited. The company offers two products, portable ICU Monitoring System and Patient App, for those quarantined and with mild symptoms.

Carenation teleICU carts can be remotely maneuvered or carried by duty doctors and nurses for a virtual visit into the ICU or isolation wards. The intensivist sitting remotely can instruct the doctors on the ground for interventions. This allows the intensivists to look into multiple ICUs and also reduce their risk of exposure. The system also has IoT capabilities to get all the data from patient bedside monitors and other equipment directly on to the doctor's screen.

Website link:

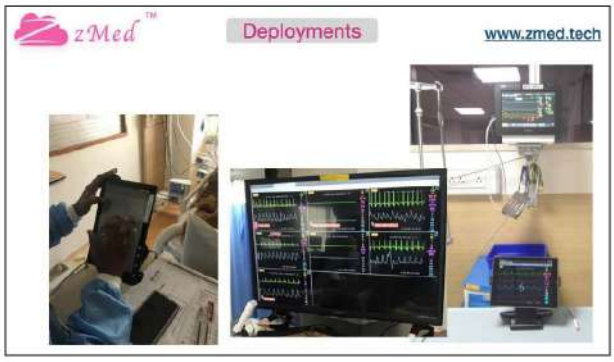
https://carenation.in/

https://www.investindia.gov.in/bip/resources/innovations-against-covid-19

Start-up incubated at IIT Madras develops remotely monitored ICUs

zBliss Technologies Pvt Ltd, a start-up incubated at IIT Madras, has developed a remote ICU monitoring solution using IoT, cloud, and AI technologies with large-scale deployment capabilities, auto-triaging and sorting of patients based on acuity and specific workflows for COVID-19 and automatic reports and alerts (SMS, WhatsApp, Email).

Contact Info: covid19@zbliss.com



Website link:

https://zmed.tech/

https://www.investindia.gov.in/bip/resources/innovations-against-covid-19

Tamil Nadu-based Agribusiness Incubation Society develops OzGen18 (Ozone Disinfectant)

OzGen18 (Ozone Disinfectant) is a third generation dielectric barrier discharge technology which can disinfect bacteria, viruses, fungi, and moulds on the produce and meat by discharging ozone on the surface. It will purify water and remove pesticides and germicides from vegetables and fruits (produce). OzGen18 can be used as an excellent air purifier. This device also eliminates odours, reduces levels of airborne allergens, and also removes the wax coating on the fruits. It is portable and ready to plug in as it comes from the box. Its effectiveness depends on the amount of ozone that is dispersed and allowed to contact the vegetables and fruits (for removing pesticides) and ambient air.

Contact Info: cipam-dipp@gov.in

Website link:

https://www.investindia.gov.in/bip/resources/innovations-against-covid-19

Viral Transport Medium Kit for COVID-19 developed by Genexis Biotech Pvt Ltd

GenVT Viral Transport Medium is a specially designed medium for transportation, storage, and analysis of viral sample developed by Genexis Biotech Pvt Ltd. GenVT is specially designed medium for transportation, storage, and analysis of viral sample. It is designed for maintaining viability and virulence of samples. GenVT medium contains HBBS (Hanks balanced salt solution) and antibiotics and antifungal agents to maintain pH and sterility of the medium. It also contains phenol red as pH indicator. The medium contains cryoprotectant which helps in preserving viruses, if specimens are frozen for prolonged storage.

Contact Info: info@genexisbiotech.com

Website link:

https://www.investindia.gov.in/bip/resources/innovations-against-covid-19
https://genexisbiotech.com/

Tamil Nadu-based start-up, Effinland IP, develops Botanical Disinfectant Fogger

To control virus spread and stop the spread of virus to humans as well as to non-humans and as a cleaning agent to industrial application to clean of virus moles etc., Effinland IP identified smart herbal antibacterial disinfectant fogger spray systems, Botanical Disinfectant Fogger, to stop virus spreading and eradicate the virus, which has 19 herbs.

Contact Info: effinlandip@gmail.com

Website link:

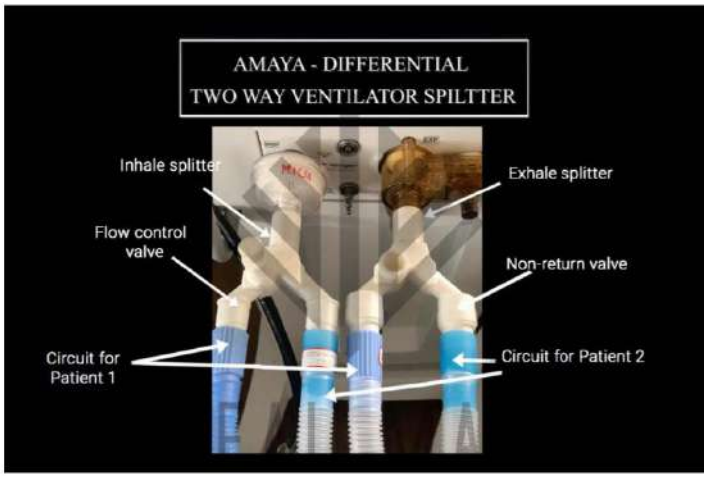
https://www.investindia.gov.in/bip/resources/innovations-against-covid-19
http://www.effinlandip.com/fogger.html

Amaya – Differential two-way ventilator splitter developed by Ethereal Machines

Start-up under the 'Start-up India' and 'Make in India' schemes by the Government of India, Ethereal Machines, develops two-way ventilator splitter called Amaya.

Amaya is a differential two-way ventilator splitter meant to be used as a last resort solution in the case of a COVID-19 surge. It can be used to multiply the capacity of the ventilators and helps in serving double the number of patients attached to a single ventilator.

Contact Info: info@etherealmachines.com; cipam-dipp@gov.in



Website link:

https://www.etherealmachines.com/covid

Delhi-based start-up develops Portable Multifeed Oxygen Supply Ventilator (PMOSV-4)

Department for Promotion of Industry and Internal Trade (DPIIT)-recognized Delhi-based start-up, Oshohealth R&D team has developed Portable Multifeed Oxygen Supply Ventilator for Emergency Respiratory Support to assist medical staff in the country in fighting COVID-19 pandemic. PMOSV-4 is already in service with Indian Air Force.

A typical oxygen providing facility at hospitals comprises of an oxygen cylinder, feeding only one patient through a Ventimask arrangement. At OshoHealth R&D, a suitable portable arrangement has been developed that could provide oxygen through existing Ventimasks with hospitals/medical support team to a number of needy patients using a single-cylinder during emergencies which is the need of the hour.

OshoHealth would enable one oxygen bottle to supply four patients concurrently thus enabling critical care management to a larger number of COVID patients with the existing limited resources.

Present oxygen supply facility at hospitals consists of an oxygen cylinder feeding only one patient at a time. In this period of COVID-19 pandemic, requirement is to utilise the limited available resources for maximum advantage

PMOSV consists of Oxygen Mother Cylinder, SS manifold, Inlet Pressure gauge, Opening/ Closing valve, Release Valve and Safety Valve and is mounted on four wheel portable trolley.

Contact Info: info@oshohealth.com; cipam-dipp@gov.in

Website link:

http://oshohealth.com/multifeed.php

Vexma Technologies develops ERVA to combat COVID-19

Vadodara-based start-up, Vexma Technologies developed ERVA (Emergency Respiratory Ventilation Apparatus), which is a non-invasive (NIV) portable ventilation device is suitable for emergency response as well as personal care. It is an automated Bag Valve Mask (BVM) system which provides mechanical ventilation in a highly controlled fashion. It is a plug-and-play device that needs minimal training and any healthcare personal can operate it.

ERVA can be easily set up with 3 major parameters which are tidal volume, inspiration to expiration (I:E) ratio, and respiratory rate. It offers up to 8 hours of battery life and has built-in audio-visual alarms keeping safety first. With compact form factor and user friendly interface, ERVA bridges the gap between a manual Ambu bag and an ICU ventilator when they aren't easily available.

The robust design delivers consistent airflow which makes it applicable to be used in tough emergency environments to treat COVID-19 or other respiratory-related emergencies. It can be used with or without oxygen in-line as per the patient requirement.

Contact Info: info@vexmatech.com

Website link:

https://vexmatech.com/erva-ventilator.html

Mumbai-based start-up, Indra Water develops environment-friendly solution that reduces biomedical waste generation

A product aptly named Vajra Kavach removes the scourge of viral particles from equipment used by the Corona warriors. The disinfection system developed by Mumbai-based start-up, Indra Water, removes any possible traces of the disease-causing SARS-Cov-2 virus from Personal Protective Equipment (PPE), N95 masks, coats, gloves and gowns. It thus enables reuse of PPEs and other materials used by healthcare workers and protects not only them, but our environment too, by helping reduce biomedical waste generation. It is also making the PPE more available, affordable, and accessible.

Viral load is reduced by one lakh times: "Our system is able to achieve a 1,00,000-fold reduction in the number of microorganisms; in scientific terms, tests showed that we got 5 log (99.999%) reduction of viruses and bacteria", informs a proud Abhijit VVR., one of the cofounders of Indra Water. 'Log reduction' is a term used to signify the relative number of living microbes that are eliminated after a process such as disinfection.

The validation and testing of the system was done by the Department of Biosciences & Bioengineering at IIT Bombay. "Vajra Kavach went through a very long trial and testing process. It was tested with Escherichia virus MS2 (a single-stranded RNA virus and a well-known

surrogate of human respiratory viruses such as influenza virus and coronavirus) and E.coli strain C3000. Full loads of the virus and bacteria samples were placed on a PPE. The PPE was then placed inside the Vajra Kavach. After the disinfection cycle time, the PPE was removed and the sample was rechecked to assess the growth rate and log reduction of the virus." Abhijit informs that the system employs a multistage disinfection process consisting of advanced oxidation, corona discharge, and UV-C light spectrum to inactivate the viruses, bacteria, and other microbial strains present on the PPE, achieving more than 99.999% efficiency.

Website link:

https://www.pib.gov.in/PressReleasePage.aspx?PRID=1723073

Multiple options for COVID-19 detection kits from start-ups on the cards through support of CAWACH Initiative of NSTEDB, DST

India will soon have the option of choosing from several COVID-19 rapid detection technologies that start-ups are working on currently.

A technology to conduct rapid molecular tests at small clinics, points of entry like airports, or small laboratories, a lab-on-palm platform for Rapid Antibody Test and a test kit with a reader enabling direct antigen testing in suspected COVID samples are some of them.

The technologies developed by some start-ups have been repurposed and extended for COVID-19 with support from the Centre for Augmenting WAR with COVID-19 Health Crisis (CAWACH), an initiative by National Science & Technology Entrepreneurship Development Board (NSTEDB), Department of Science and Technology (DST), implemented by Society for Innovation and Entrepreneurship (SINE), IIT Bombay.

Among 51 companies shortlisted for developing various COVID-19 solutions, 10 have been supported for manufacturing and wide-scale deployment of diagnostic kits and therapy solutions. Most of the technologies are under validation from ICMR and can be made functional once the validation and approval processes are completed and are granted.

Website link:

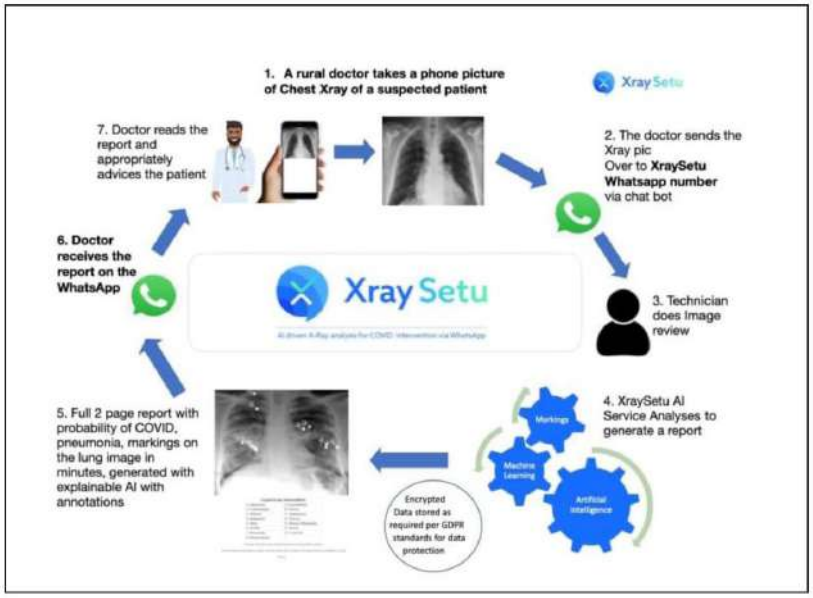
https://dst.gov.in/multiple-options-covid-19-detection-kits-start-ups-cards-through-support-cawach-initiative-nstedb

ARTPARK develops new AI-driven platform to facilitate early COVID interventions over WhatsApp

A new AI-driven platform will now help early intervention through rapid screening of COVID-19 with the help of chest X-ray interpretation over WhatsApp for doctors who have access to X-ray machines. The solution called XraySetu can work with low resolution images sent via mobiles. It is quick and easy to use and can facilitate detection in rural areas.

As COVID 19 continues to wreak havoc across the rural heartlands of India, it has become critical to drive rapid testing, contact tracing, and create dedicated containment zones. At a time when such tests take more than a week in some cities, the challenge is even more for rural areas. Easy alternative tests are necessary as RT-PCR tests also give a 'false negative' for some variants.

ARTPARK (AI & Robotics Technology Park), a not-for-profit foundation established by the Indian Institute of Science (IISc), Bangalore, with support from the Department of Science & Technology (DST), Government of India, in collaboration with Bengaluru-based Health-Tech start-up Niramai and the Indian Institute of Science (IISc), has developed XraySetu. It is specifically designed to identify COVID-positive patients even from low resolution chest X-ray images sent over WhatsApp.



Website link:

https://dst.gov.in/new-ai-driven-platform-will-facilitate-early-covid-interventions-over-whatsapp

Technology-based start-ups played crucial role in converting India from importer to second largest manufacturer of PPEs

A range of low cost innovative technologies developed and scaled up by start-ups from different corners of the country played a crucial role in India's emergence as the second largest Personal Protective Equipment (PPE) manufacturer in the world in response to the battle against COVID-19.

PPEs like masks and face shields, especially those used by medical professionals as protection from infection as they tackle the health emergency, are crucial shield in the battle against COVID-19. India had been importing PPEs at the start of the pandemic period, but a range of technologies like affordable mask making machines, low cost masks, reusable anti-viral and anti-bacterial masks, safety masks specifically designed for health workers by start-ups, etc. helped the country to turn the tables and start exporting them.

Many of these start-ups were supported by the Department of Science and Technology under the Centre for Augmenting WAR with COVID-19 Health Crisis (CAWACH) initiative by National Science & Technology Entrepreneurship Development Board (NSTEDB).

Website link:

https://dst.gov.in/technology-based-startups-played-crucial-role-converting-india-importer-second-largest-manufacturer

More efficient and cost-effective face mask coated with virucial agents

Thincr Technologies, a Pune-based start-up developed Virucidal N-95 masks which has an additional layer of woven cloth coated with virucidal formulation. The formulation has been developed at Merck Life Sciences, Nerul Mumbai. The project is approved by Technology Development Board (TDB), Department of Science and Technology, Government of India for grant-in-aid support. They are also involved in the coating and 3D printing of anti-viral agents on the masks as a preventive measure against COVID-19. Having commenced commercialization of these masks, they have distributed 6000 antiviral-coated masks to various Government Organizations across the country.

Contact Info: szambad@thincr-tech.com

Website link:

https://www.pib.gov.in/PressReleasePage.aspx?PRID=1722636
https://thincr-tech.com/

Ultraviolet Sanitizers developed by Evobi Automations

Bengaluru-based start-up, Evobi Automations, has developed Ultraviolet Sanitizers in two different models, one of which is portable and distributed in various hospitals in Mumbai and Pune and various Government schools across the country. The project is approved by Technology Development Board (TDB), Department of Science and Technology, Government

of India for grant-in-aid support. They have sold more than 500 UV Sanitizer boxes and are receiving orders from various organizations.

Website link:

https://www.pib.gov.in/PressReleasePage.aspx?PRID=1722636

Briota develops India's first CDSCO-approved digital handheld Spirometer Kit

Pune-based start-up, Briota Technologies Private Limited has developed SpiroPRO - Critical care Home Monitoring Kit for healthy lungs. SpiroPRO is a home monitoring kit built to monitor lung health conditions of high-risk patients for 62 actively verifying fever, other respiratory symptoms, and lung capacity which can lead to an increase in susceptibility towards the COVID-19 virus.

Briota is using AI and IoT technology for monitoring elderly and comorbid patients for their health condition. Its Home monitoring and Remote Support for Comorbid COVID-19 positive or COVID-19 high risk patients performs patient stratification for early medical intervention. This will eventually help reduce the case fatality rate of COVID-19. The Spirometer test can be performed with the help of a mobile software application which walks you through the process. Additional parameters such as for pneumonia, ventilation, respiratory rate, temperature, blood pressure, lung functioning etc. can be assessed.

Briota's COVID-19 Early Warning (VIEW) system helps monitor and manage high risk comorbid patients. The VIEW score is based on a sophisticated clinical algorithm which will mature and become more accurate as the system starts collecting more and more data of the COVID-19 patients. It is low cost and made in India.

Website link:

http://www.briota.co/

https://www.pib.gov.in/PressReleasePage.aspx?PRID=1722636

Bengaluru-based start-up developed advanced video analytics to identify persons with abnormal body temperature

TDB-supported start-up, Cocoslabs Innovative Solutions Pvt Ltd, Bengaluru developed and commercialized a high-accuracy and contactless thermal analytics product for detection of elevated body temperature along with automated checking for face masks and social distance compliance. In India, it is the first company to launch a thermal analytics solution for automatic temperature checking in free-flow crowds, thereby eliminating waiting time and exposure risks. The solution can screen over 10,000 people in a single day with a single unit when deployed in crowded places like railway stations, airports, bus stands, government offices, hospitals, etc. It can also detect people not wearing a mask or improper mask-wearing.

The funding support from TDB allowed the company resources to be freed for working on new solutions. The company, which also has contactless attendance with face recognition along with thermal analytics up their kitty, is currently working with other companies that are looking to set up post-COVID compliance protocols by using this solution to reopen their offices. They are working on AI sensor for hospitals that will monitor oxygen levels in oxygen tankers and alert authorities well in advance to enable better planning by obtaining oxygen availability data in real-time and ensure equitable supply at critical times.

Thermal Scanning Camera *Software Output Image*

M/s Cocoslabs Innovative Solutions Pvt. Ltd., Bangalore.

Website link:

https://www.pib.gov.in/PressReleasePage.aspx?PRID=1722636

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COVID COMMUNICATIONS AND RESOURCES

The section contains information about various aspects of the COVID-19 pandemic communicated by different reliable media houses, like Press Information Bureau (PIB). Also, the efforts made by multiple agencies and institutions in compiling the information and releasing the knowledge products in print or digital form are gathered here for one point, ready-to-use evidence.

SECTION GUIDELINES

ICMR comes up with timeline for COVID-19 depicting the build-up and growth of health infrastructure with the pandemic outbreak

NCCS explores nexus between biodiversity loss and COVID pandemic

IAP viewpoint on the third wave of COVID-19 in India impacting kids

MyGov calls to write blogs from citizens for the largest vaccination drive

Send a message to frontline healthcare workers working tirelessly to battle out COVID-19

MyGov comes forward to engage citizens in reducing vaccine hesitancy and promote COVID vaccination drive

Outreach initiatives through India Science, Technology and Innovation (ISTI) Web Portal

COVID 2021: Nation's S&T Efforts Against COVID-19 – An e-Newsletter on COVID-19

National Clinical Registry for COVID-19 (NCRC) being built up under the guidance of MoHFW

Government of India presents regular COVID-19 India factsheet and immunisation programme

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DRDO Newsletters enlisted initiatives by its laboratories and establishments extending helping hand in the fight against COVID-19

Government's effort to augment domestic production ensured supply-demand balance of COVID-19 treatment drugs

"There will be no deficiency in the care and infrastructure required for children catching COVID-19" Member, NITI Aayog

Under 'PMGKP Insurance Scheme for Health Workers Fighting COVID-19', new system of processing insurance claims introduced to streamline the process

Ministry of Women and Child Development asks States/UTs to ensure care and protection of children adversely impacted by COVID pandemic following the protocol as mandated under the JJ Act, 2015

Storytelling through Comic Characters on COVID-19 second wave

ICMR comes up with timeline for COVID-19 depicting the build-up and growth of health infrastructure with the pandemic outbreak

ICMR has prepared, designed, and disseminated for public use a timeline related to COVID-19. It is basically the alignment of time, a chronological statement, to define a certain chain of events or activities related to COVID-19 that happened at a particular phase in

2020. This document, in a visual context, is a representation of the data, defined through graphics, where it's all jotted down horizontally, sequenced in the same chronological order. This document has specifically highlighted the activities that have been initiated/led by ICMR in orange colour text. It also graphically showed monthly number and increasing trend of COVID-19 labs in 2020.

Website Link:

https://www.icmr.gov.in/COVIDTimeline/cindex.html

NCCS explores nexus between biodiversity loss and COVID pandemic

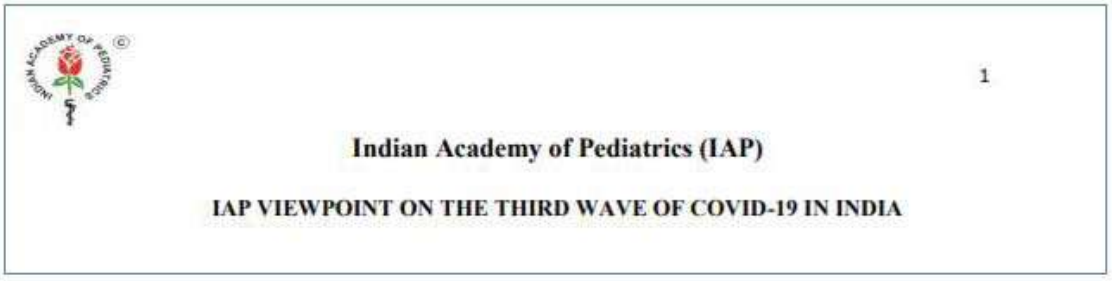
The United Nations proclaimed 22 May as The International Day for Biological Diversity (IDB) to increase awareness about the importance of biodiversity. Annual celebrations across the globe on this day draw the attention of the public towards various issues related to biodiversity and conservation. The Secretariat of the Convention on Biological Diversity (CBD) announces a theme each year, and the theme for 2021 was, "We're part of the solution". This is a continuation of last year's theme, "Our solutions are in nature", which served to remind us that the answers to many of our sustainable development challenges lie in biodiversity. This year's theme also underscores the need for everyone's participation to arrive at solutions collectively as a human race.

Ever since the world fell victim to the COVID-19 pandemic, the nexus between biodiversity loss and the emergence of new diseases has been a hot topic for discussion. However, conversely, the influence that the current pandemic could have on biodiversity did not receive much attention. Recently, Dr Yogesh Shouche, Emeritus Scientist at the National Centre for Cell Science (DBT-NCCS) in Pune gave a talk on "COVID pandemic and its impact on biodiversity" at a webinar held on 22 May 2021, on the occasion of the International Biodiversity Day. This webinar was organized by the Maharashtra State Biodiversity Board in association with the Chief Conservator of Forest (T), Pune and Chief Conservator of Forest (T), Nagpur. It featured talks on various topics by eight eminent biodiversity and conservation experts from Maharashtra. This panel included Dr Shouche, one of India's leading microbiologists, with expertise in microbial biodiversity and ecology and microbiome research. He is in charge of the world's largest individual collection of microorganisms, the National Centre for Microbial Resources (NCMR), a centre of excellence at the DBT-NCCS, and he also spearheads the SARS-CoV-2 viral genome sequencing initiative at DBT-NCCS.

Contact Info: yogesh@nccs.res.in, jyoti@nccs.res.in

IAP viewpoint on the third wave of COVID-19 in India impacting kids

Amidst growing fears of a third wave of COVID-19 epidemic impacting the children more, the Indian Academy of Pediatrics (IAP) released their view point in the form of Questions and Answers on the third wave of COVID-19 affecting children in India.



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Indian Academy of Pediatrics (IAP)

IAP VIEWPOINT ON THE THIRD WAVE OF COVID-19 IN INDIA

Website link:

https://iapindia.org/pdf/hA5Gnpt_IQv63Bk_IAP%20view%20point%20for%203rd%20wave%20Covid%2022%20May%202021.pdf

MyGov calls to write blogs from citizens for the largest vaccination drive

Words have the power to inspire millions. With this theme, MyGov is inviting citizens from all walks of life to share a blog write-up within 500 words for the world's largest vaccination drive and contribute to India's fight against COVID-19. Write a blog to encourage people to overcome vaccine hesitancy.

The last date of submission is 31st December 2021.

Website link:

https://www.mygov.in/task/inviting-blogs-mygov-citizens-largest-vaccination-drive/?target=inapp&type=task&nid=309211

Send a message to frontline healthcare workers working tirelessly to battle out COVID-19

Healthcare professionals are on the frontlines, working tirelessly to fight outCOVID-19. They are putting themselves in the path of this virus to care for all and we are grateful for the sacrifices they make every day and especially during this pandemic.

The least we can do is make their jobs easier by following COVID-appropriate behaviour and take out our time to express our gratitude. Let's make them feel valued. Let's tell them that they are appreciated every day, but also especially during this unprecedented time, we are all facing together. Let's hail the selfless work done by the medical professionals in India in dealing with the virus.

Though saying 'Thank you' might sound like a small word against the momentous task they have undertaken, yet let's make a small start. Join the Thank You Healthcare Workers Initiative and share your message to encourage them to move on to this difficult task of saving the lives during the COVID-19 pandemic.

Website link:

https://www.mygov.in/group-issue/lets-thank-our-healthcare-workers/?target=inapp&type=group_issue&nid=309871

MyGov comes forward to engage citizens in reducing vaccine hesitancy and promote COVID vaccination drive

Share vaccination photos of anyone in your family including yourself along with a tagline and

get rewarded. With the vaccination of the Hon'ble Prime Minister Shri Narendra Modi on 1 March 2021, millions of eligible citizens have been energized and have come forward to register for vaccination. If you/a family member have also got vaccinated, share a picture of the vaccination with MyGov platform along with a good tagline on the importance of getting vaccinated and inspire the world.

Ten best entries will be awarded with Rs. 5000 every month.

Last Date: 31st December 2021

Website link:

https://www.mygov.in/group-issue/share-vaccination-photos-anyone-your-family-including-yourself-along-tagline-get/?target=inapp&type=group_issue&nid=308401

Outreach initiatives through India Science, Technology and Innovation (ISTI) Web Portal

The India Science, Technology and Innovation Portal (ISTI) is a one-stop window for information about developments in India on science, technology, and innovation, with the vision of providing a single-window source of information on a web portal about all data related to the Indian STI Ecosystem by aggregating information on scientific inputs and outputs, bringing stakeholders together and disseminating science, technology & innovation content. The portal focuses on bringing all stakeholders and Indian STI activities on a single online platform; helping efficient utilisation of resources; highlighting functioning of scientific organisations, laboratories and institutions; aggregating information on science funding, fellowship and award opportunities spanning

from school to faculty level; pooling together conferences, seminars and events; and projecting science in India with its major achievements. The ISTI web portal has been developed by Vigyan Prasar, an autonomous organisation of the DST.

In the critical times of outbreak of COVID-19 pandemic, the web portal serves as a one-stop online information guide to bring together a collection of resources in response to COVID-19. These resources are generated by efforts made by numerous initiatives and schemes taken up by several Departments and Ministries of Government of India and numerous institutions spread across the country. The content presented here relies on the best available scientific understanding of the disease and its transmission.

The web portal provided all information related to COVID-19, from presentation of symptoms, to vaccine science and distribution strategy. It contains content on fact-checks and myth-busters in questions & answers format, contributions from research fraternity, start-up spotlights, industry collaborations, communications and resources, reaching out to society and so on. A dedicated focus has been given on exhibiting funding opportunities catering to the second wave of the COVID-19 pandemic.

Contact Info: kdgm@vigyanprasar.gov.in

Website link:

https://www.indiascienceandtechnology.gov.in/

COVID 2021: Nation's S&T Efforts Against COVID-19 – An e-Newsletter on COVID-19

In 2020, India dealt with the first wave of COVID-19 pandemic with collective measures, scientific approach, and awareness. Undoubtedly the second wave of the pandemic is testing our patience and the extent to which we can tolerate its fangs. The impact of the second wave has seen shortage of medical oxygen across the nation. But, the intelligent use of technology and well-planned resource allocation to tackle the new wave of the pandemic has been dealt with at a war-footing. The current edition, COVID 2021: Nation's S&T Efforts Against COVID-19, has been compiled to inform our readers and strengthen the usefulness of any published information.

To bridge the gap among scientific contributions, leadership and administrative efforts, and the perspective of the general public, Vigyan Prasar is continuously reaching out to its audiences in the shape of a regular e-newsletter, taking its mandate of science communication, popularisation and extension to the next level. Our effort is firmly based on the fact that "Science gathers knowledge faster than society gathers wisdom". The steady increase in the number of recoveries and the significant and continuous decrease in positivity rate provide us the much-needed assurance that this may be the outcome of improving the health infrastructure and making health the cornerstone

at the policy level. The e-Newsletter aims to be a handy guide to scientists, researchers, and scholars, especially those who are interested in knowing various aspects of COVID-19 and contributing to the coronavirus warfare.

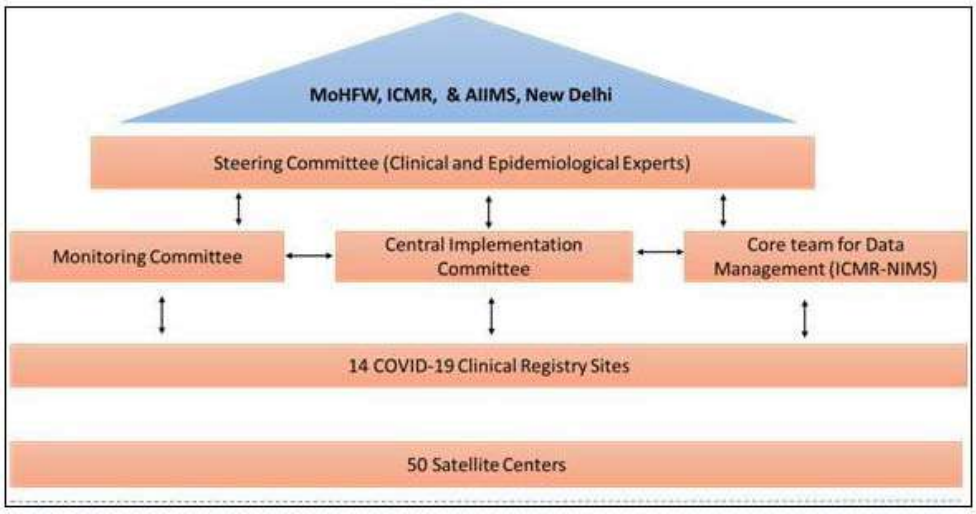
Contact Info: covidnewsletter@vigyanprasar.gov.in

Website link:

https://www.indiascienceandtechnology.gov.in/covid-19-the-pandemic/newsletter-archive

National Clinical Registry for COVID-19 (NCRC) being built up under the guidance of MoHFW

Ministry of Health & Family Welfare (MoHFW), Indian Council of Medical Research (ICMR), New Delhi and All India Institute of Medical Sciences (AIIMS), New Delhi have launched a National Clinical Registry for COVID-19 (NCRC). It is primarily developed to collect data regarding clinical and laboratory features, treatments, and outcomes of hospitalised COVID-19 patients in India. This registry is also being analysed and used to study the frequency, clinical and laboratory features, treatments, and outcomes of COVID-19-related multisystem inflammatory disorder in children and adolescents. The secondary objective of this registry is to utilise data to answer research questions on COVID-19, including natural course of the disease, spectrum of disease, prognostic factors, outcomes data, medications, health systems and context-specific questions such as COVID-19 in Tuberculosis, Malnutrition etc. Further, the registry would serve as a platform for additional clinical research studies in selected sites and collect follow-up data of discharged COVID-19 patients, if possible. The registry followed a hub-and-spoke model with primary data being collected in the electronic data capture form by satellite centres (dedicated COVID-19 hospitals) which are being trained, mentored, and supervised by medical institutes of national repute chosen region-wise. Data management including development of the electronic data capture form is being done by ICMR-National Institute of Medical Statistics (NIMS). It has been ruled out in phase manner for the duration of a year.



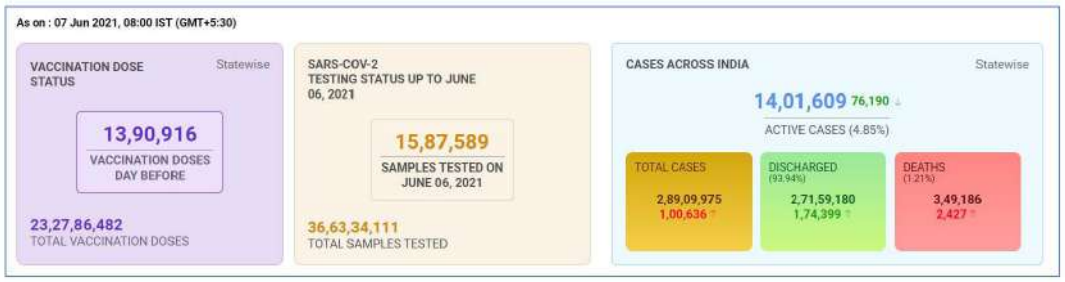
Website Link:

https://www.icmr.gov.in/tab1ar1.html

Government of India presents regular COVID-19 India factsheet and immunisation programme

India's coronavirus cases have crossed 2.8-crore mark, and as on 7 June 2021, 08:00 AM it stands at 2,89,09,975 cases out of which 2,71,59,180 have recovered. The recovery rate stands at 93.94% while the case fatality rate stands at 1.21%.

Government of India has so far provided, both through the free-of-cost category and through direct-state-procurement category, more than 23 crore vaccine doses (23,27,86,482) to States/UTs.

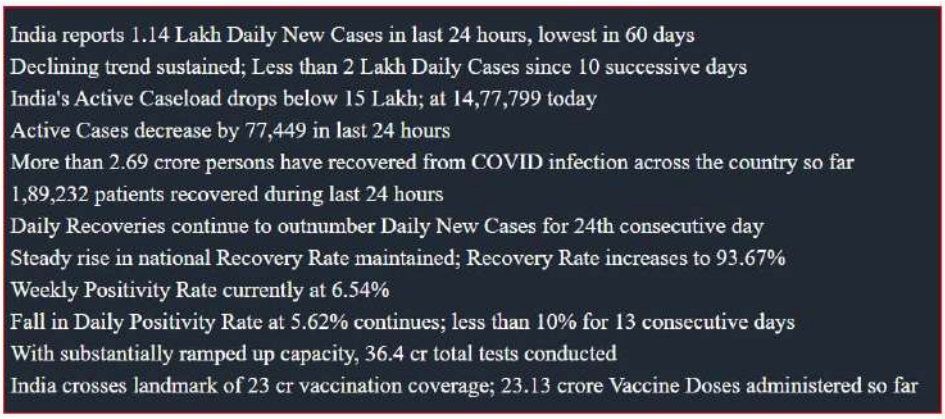


Website link:

https://www.mygov.in/covid-19

Press Information Bureau releases daily bulletin on COVID-19

Press Information Bureau (PIB), Government of India releases a daily bulletin on COVID-19, starting from early days of COVID-19 outbreak. The bulletin contains press releases concerning COVID-19, issued in last 24 hours, inputs from PIB field offices, and fact checks undertaken by PIB. These bulletins are published in 14 languages, namely Hindi, English, Urdu, Marathi, Telugu, Tamil, Punjabi, Bangla, Kannada, Oriya, Gujarati, Assamese, Malayalam and Manipuri. The following data-points were released on 6 June 2021.



Website link:

https://www.pib.gov.in/PressReleasePage.aspx?PRID=1724960

Outreach initiatives by India Science Channel

India Science is an Internet-based Over-The-Top (OTT) Science TV channel. It is an initiative of the Department of Science and Technology (DST), Government of India, implemented and managed by Vigyan Prasar (VP), an autonomous organisation of the DST. This 24x7 video platform is dedicated to science and technology knowledge dissemination, with a strong commitment to spreading scientific awareness, especially with Indian perspectives, ethos and cultural milieu. The initiative is supported by the National Council of Science and Technology Communication (NCSTC), DST.

Science and Technology are the main driving forces of the nation and fundamental to progress and growth. So, the advantages of science and technology must reach all sections of the society through popular media of communication. India's large Internet user base of 500 million is split between 305 million urban Indians and 195 million rural Indians, all of whom need to be reached with authentic science and technology content. And to do so, the Internet is fast becoming the most accessible and preferred media for content delivery.

Since the occurrence of COVID-19, India Science has been working tirelessly to connect with the people, in the form of regular bulletins, documentaries, interviews, bytes and live sessions of scientists, doctors, experts, science administrators and policymakers. The following is a brief account of the information products produced by India Science.

1. Weekly COVID-19 video bulletin: Produced in both Hindi and English on weekly basis from 7 July 2020, COVID-19 bulletin apprises the audience about the latest developments happening in the S&T scenario in India that are helping in managing and overcoming the challenges thrown up by the pandemic. Vigyan Prasar produced daily COVID-19 Bulletin from 11 April to 06 July 2020. Thereafter, a weekly bulletin is being produced which provides details about the most important S&T updates from the country related to COVID-19. From January 2021 onwards the COVID-19 Bulletin carried news about vaccination drive initiated by the Government of India.

2. COVID-19 Explained: Short films to explain the important research findings related to COVID-19 and COVID-19 vaccination in layman's language are produced on weekly basis. The topics chosen for COVID-19 Explained cater to the curiosity of common man towards COVID-19.

3. Facebook live sessions on interviews of various stakeholders on COVID-19 Vaccination programme.

4. Facebook and India Science live sessions on interviews with experts on COVID-19 Vaccination.

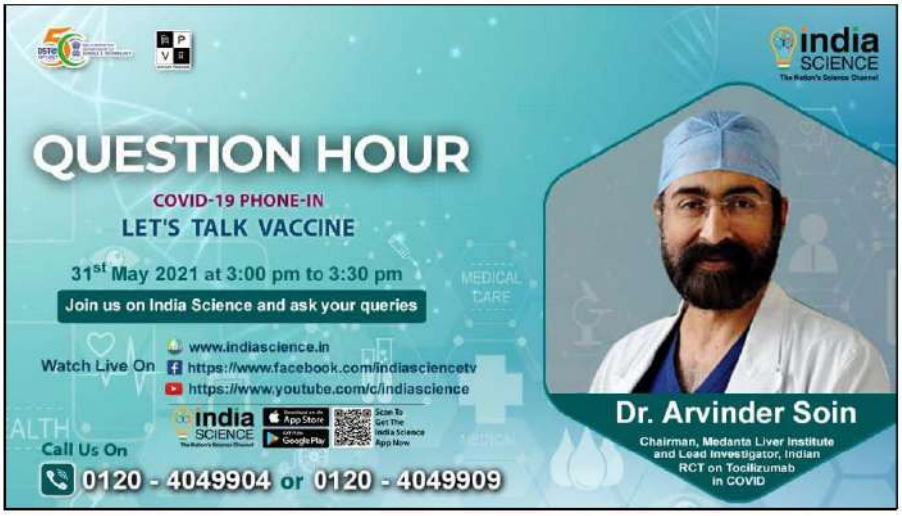
5. Live Phone in programme: A live phone in programme on COVID-19 vaccination is telecasted from India Science on every Monday and Tuesday. Experts from the field give answers to the questions related to COVID-19 vaccination received from the audience.

6. India Science started "Corona Ko Harana Hai" from April, 2021. In this programme India Science team take interview on COVID-19-related different issues with top medical professionals of the country.

7. India Science make infographics on COVID-19-related different issues regularly.

8. COVID-19 Vaccine: Fact File also telecast every Saturday from India Science.

Contact info: kapil@vigyanprasar.gov.in



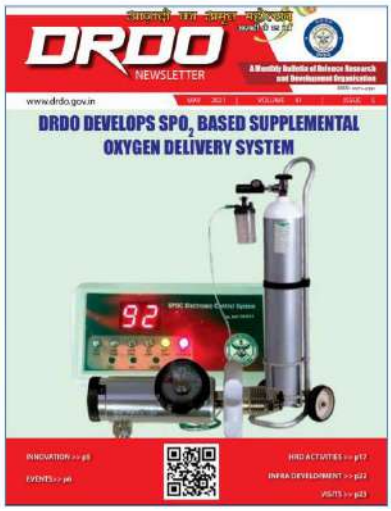
Website link:

https://www.indiascience.in/

DRDO Newsletters enlisted initiatives by its laboratories and establishments extending helping hand in the fight against COVID-19

DRDO has been at the forefront of the fight against COVID-19 since its detection in India. The premier R&D organisation has innovated and configured many products required immediately to regulate the pandemic from its existing arsenal of technologies and knowledge.

A number of the products developed by DRDO to reinforce operations and regulate the spread of the infection are covered in their five newsletters. While DRDO labs are engaged in providing technological solutions and have developed various mitigation products, many of its labs are involved in offering help to the local administration in combat against COVID-19.



Website link:

https://www.drdo.gov.in/newsletter

Government's effort to augment domestic production ensured supply-demand balance of COVID-19 treatment drugs

On June 1 Union Minister for Chemicals & Fertilizers Shri D.V Sadananda Gowda said that consistent efforts of Government to augment domestic production resulted in a stabilised supply-demand balance of COVID treatment drugs across the country.

The Minister informed that a total of 98.87 lakh vials of Remdesivir were allocated to States, UTs and Central Institutions from 21 April to 30 May 2021. Production of Remdesivir has been ramped up ten times leading to enough supply. With the accelerated production, it has been planned to supply up to 91 lakh vials by the end of June, he added. He further informed that Cipla has imported 11,000 vials of 400 mg and 50,000 vials of 80 mg of Tocilizumab from 25 April-30 May 2021. In addition, MoHFW received 1002 vials of 400 mg and 50,024 vials of 80 mg via donation in May. Further, 20,000 vials of 80 mg and 1000 vials of 200 mg are likely to arrive in June, he added.

Shri Gowda informed that about 2,70,060 vials of Amphotericin B have been allocated to States/UTs and Central Institutions from 11 May to 30 May 2021. This is in addition to the supplies of 81651 vials that had been made by manufacturers to States in the first week of May.

He stated that the production, supply, and stock position of other drugs used in treatment of COVID-19, such as Dexamethasone, Methylprednisolone, Enoxaparin, Favipiravir, Ivermectin, and Dexamethasone Tablets are also being reviewed weekly. The production has been augmented and stocks are available to meet demand.

Shri Gowda assured that the Government is continuously reviewing the availability of COVID-19 treatment drugs with existing and new manufacturers to enable the demand for the drug to be met.

Website link:

https://pib.gov.in/PressReleasePage.aspx?PRID=1723419

"There will be no deficiency in the care and infrastructure required for children catching COVID-19" Member, NITI Aayog

A National Expert Group has been formed to review COVID-19 infections in children and approach the pandemic in a renewed way to strengthen the nation's preparedness. The Group has examined signs which were not available 4-5 months ago. It has also considered available data, clinical profile, the country's experience, disease dynamics, nature of the virus, and the pandemic and has come up with Guidelines, which will be publicly released soon. This was informed by Dr V.K. Paul, Member (Health), NITI Aayog at the Union Health Ministry's media briefing on COVID-19, held at National Media Centre, PIB Delhi on 1 June. "While we have been systematically reviewing scientific developments in this area, the Group has been formed to take an updated view of the situation," he said.

Noting that paediatric COVID-19 is gaining attention, he informed that there will be no deficiency in the care and infrastructure required for children who may get infected. He said, "COVID-19 in children is often asymptomatic and rarely requires hospitalization. However, changes in epidemiological dynamics or viral behaviour can change the situation and increase prevalence of infection. No undue burden has been placed on paediatric care infrastructure so far. However, it is possible that 2-3% of children who get infected may need hospitalization."

Two Forms of Paediatric COVID-19

Dr Paul informs that COVID-19 in children may take two forms:

1. In one form, symptoms like infection, cough, fever and pneumonia may occur, followed in some cases by hospitalization.

2. In the second case, after 2-6 weeks of getting COVID, which may mostly be asymptomatic, a small proportion of children may show symptoms like fever, body rash, and inflammation of eyes or conjunctivitis, breathing troubles, diarrhoea, vomiting and so on. It may not remain restricted like pneumonia affecting lungs. It spreads to various parts of the body. This is called Multi-System Inflammatory Syndrome. This is a post-COVID symptom. At this time, the virus will not be found in the body and RT-PCR test will also come negative. But antibody test will show that the child had been infected by COVID-19.

Guidelines are being formulated to treat this unique disease found in some children, which presents itself as an emergency situation. Though treatment is not difficult, it has to be timely, adds Dr Paul.

Website link:

https://pib.gov.in/PressReleasePage.aspx?PRID=1723469

Under 'PMGKP Insurance Scheme for Health Workers Fighting COVID-19', new system of processing insurance claims introduced to streamline the process

The Government of India has been on the forefront of the fight against COVID-19 and has been supporting the efforts of States and UTs under the 'Whole of Government" approach. In this endeavour, the Union Government had already extended the 'Pradhan Mantri Garib Kalyan Package (PMGKP) Insurance Scheme for Health Workers Fighting COVID-19' for one year w.e.f. 24.04.2021.

Safety of the frontline healthcare providers remains the top priority of the Central Government and therefore the Government had revived this insurance policy for a period of one year so as to continue to provide the safety net to the dependents of health workers, who are deputed to take care of COVID-19 patients.

'PMGKP Insurance Scheme for Health Workers Fighting COVID-19' was launched w.e.f. 30.03.2020 initially for a period of 90 days to provide comprehensive personal accident cover of Rs. 50 lakh to all healthcare providers, including community health workers and private health workers, drafted by the government for the care of COVID-19 patients and for those who may have come in direct contact of COVID-19 patients and were at risk of being impacted by it. The scheme is being implemented through an insurance policy from New India Assurance Company (NIACL). The insurance policy has been extended twice so far.

States and other stakeholders had been raising the matter that the processing of the insurance claims was getting delayed. In order to cut down on these delays and to further streamline and simplify the processing of the insurance claims, it has been decided to start a new system for approval of claims as per which the due diligence will be done by State Governments at the level of District Collector. The District Collector in each case

will be certifying that the claim is in accordance with SoP of the Scheme. On the basis of this certificate of the Collector, the insurance company will approve and settle the claims within a period of 48 hours. Further, for the sake of uniformity and prompt disposal, the District Collector will also do due diligence and certify the claims even in case of Central Government hospitals/AIIMS/Railways etc.

The Ministry of Health and Family Welfare has informed all States Governments and UT Administrations about this new system which comes into effect immediately.

Website link:

https://pib.gov.in/PressReleasePage.aspx?PRID=1723396

Ministry of Women and Child Development asks States/UTs to ensure care and protection of children adversely impacted by COVID pandemic following the protocol as mandated under the JJ Act, 2015

The Ministry of Women and Child Development has asked the States/UTs to ensure care and protection of children adversely impacted by COVID-19, following the protocol as mandated under the JJ Act, 2015. In a letter written by the Secretary WCD, Shri Ram Mohan Mishra to the Chief Secretaries of States and Administrators of UTs, the States and UTs have been advised to continue the efforts relentlessly to bring all such children under the safety net provided by the government schemes and programmes.

The Ministry has said that to ensure the best interest of the children during the pandemic, need and resource mapping along with careful planning should be done to foster access to resources needed for their individual needs. All concerned Government departments and other stakeholders at all levels must be activated to guarantee convergent efforts in the best interest of the child in distress. It may be ensured that none of the vulnerable children slip through the safety net.

The States/UTs have been asked to adopt the following measures:

- Identification and profiling of children;
- Vigilance and protection;
- Emergency care and rehabilitation;
- Institutional support through Child Care Institutions (CCIs);
- Role of District Magistrate and District Administration Guardianship;
- Institutional support through CCIs;
- Police;
- Panchayat Raj Institutions/Urban local bodies;
- Education;
- Medical facilities.

Website link:

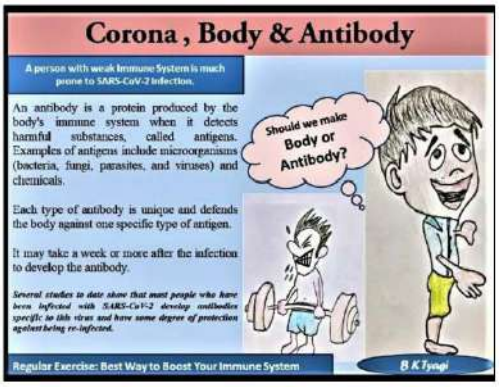
https://pib.gov.in/PressReleasePage.aspx?PRID=1724126

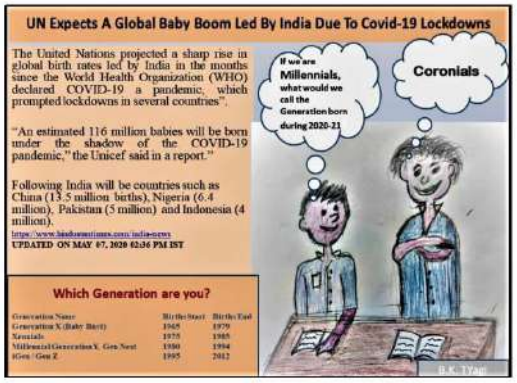
Storytelling through Comic Characters on COVID-19 second wave

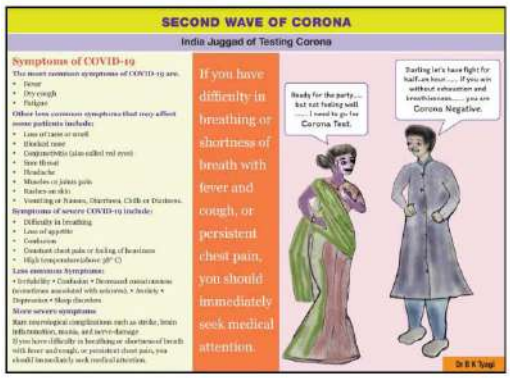
Science communication and visualization have played a crucial role in distilling information for the general public in a way that is engaging and approachable. Communicating these stories has been equally important in providing context to the statistics and data. This has helped invoke empathy in order to encourage preventative practices.

In the wake of the COVID-19 second wave outbreak, our lives have changed in ways we had never imagined before. It is only natural to feel scared, stressed, and saddened because of it. However, there are measures that we can take to be both physically safe and mentally healthy in these times. Dr B K Tyagi, Senior Scientist at Vigyan Prasar has been continuously and unceasingly preparing several interesting awareness material with the help of comic characters.

Contact Info: tyagi.bk@gmail.com







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8

COMMUNITY OUTREACH

The efforts made by various institutions, bodies, agencies, and industries to provide services to enhance quality or improved infrastructure in the healthcare sector have been collated here for the more extensive benefits of the grassroot level societies and healthcare communities.

SECTION GUIDELINES

PM CARES for Children: Empowerment of COVID-affected children launched

DST-supported SAIF facility at Panjab University partners with Molekule, USA to donate air purification units to hospitals in India

NTPC Bongaigaon starts COVID Care Centre

Power Grid sets Up COVID-19 vaccination camp in Bengaluru

Provision of 'near to home' vaccination centres to benefit large number of senior citizens and Divyangjan

IITK Campus Self-help Group for COVID

500-bed COVID Care hospital set up by DRDO inaugurated in Haldwani, Uttarakhand

IIT-Kanpur relief fund helping needy students amid pandemic

Operation Samudra Setu II – Indian Navy's relentless effort to fight COVID-19

Indian Navy Provides 'Oxygen on Wheels' to Palasa COVID Care Centre

PM CARES for Children: Empowerment of COVID-affected children launched

Prime Minister Narendra Modi chaired an important meeting to discuss and deliberate on steps which can be taken to support children who have lost their parents due to COVID-19. PM announced a number of benefits to children impacted by the current COVID pandemic. While announcing these measures the Prime Minister emphasized that children represent the future of the country, and the country will do everything possible to support and protect the children so that they develop as strong citizens and have a bright future. He said that in such trying times it is our duty, as a society, to care for our children and instil hope for a bright future. All children who have lost both parents or surviving parent or legal guardian/adoptive parents due to COVID-19 will be supported under 'PM-CARES for Children' scheme. He also added that the measures being announced have only been possible due to the generous contributions to the PM-CARES Fund which will support India's fight against COVID-19.

The 'PM-CARES for Children' scheme will include:

- Fixed Deposit in the name of the child
- School Education: For children under 10 years
- School Education: for children between 11-18 years
- Support for Higher Education
- Health Insurance

Website link:

https://www.pib.gov.in/PressReleasePage.aspx?PRID=1722719

DST-supported SAIF facility at Panjab University partners with Molekule, USA to donate air purification units to hospitals in India

COVID wards and ICUs at several hospitals in Chandigarh, Punjab, Uttarakhand, and Himachal Pradesh will soon be able to improve their ventilation facilities with the help of air purification units from a US-based company through an effort by Panjab University.

Department of Science and Technology-supported Sophisticated Analytical Instrumentation Facility, Panjab University Chandigarh (SAIF, PUC) has collaborated with Molekule, a USA-based air purifying manufacturer, to assemble and optimise Molekule's air purifiers in about 10 hospitals. So far this activity is still going on and the number is likely to change with progress of this work.

The partnership has led to donation of air purifiers Molekule & Air Pro RX units to hospitals across the country. Nearly 6 states have been covered till date, with efforts going on to cover most of the Covid-affected states of India to help aid in the battle against the virus and provide patients, doctors, and staff with much-needed clean air.

Installation of the air purifier will help prevent transmission of COVID-19 through exposure to aerosolized respiratory droplets by facilitating adequate indoor air purification and ventilation in the hospitals. It can help address concerns to the health of citizens and healthcare workers arising on account of the COVID-19 pandemic.

Molekule's core technology, Photoelectrochemical oxidation (PECO), is designed to destroy airborne pollutants like viruses, bacteria, mould, or chemicals in the air known as Volatile organic compounds (VOCs). Tests on PECO for these Molekule Air purifiers indicate up to 99.99% inactivation of coronavirus strains (porcine & bovine) and H1N1 flu virus, up to

95% destruction of VOCs and ozone (airborne chemicals), and up to 99.9% destruction of bacteria, mould, and viruses in the air.

In the first batch, Molekule Air Purifier Mini and Molekule Air Pro RX units were received, assembled, and tested at SAIF, PUC, by its technical staff members. Molekule Air Pro RX units had been originally designed for medical purposes in the United States and optimized for air purification in multipurpose facilities in hospitals to cater for huge areas such as emergency wards, ICUs, and so on and can now play a significant role in containing the rapid spread of COVID-19 in India.

Before distributing units to hospitals, the instrument's features were explained to Directors/ Chief medical officer, and medical superintendents of various hospitals. SAIF Chandigarh employees helped in setting up these air purifiers at emergency wards, ICUs, COVID wards, and even waiting rooms to prevent the transmission of coronavirus.

Website link:

https://www.pib.gov.in/PressReleasePage.aspx?PRID=1723123

NTPC Bongaigaon starts COVID Care Centre

NTPC, a Maharatna PSU under Ministry of Power continues its fight against COVID-19, and the dedicated team of power professionals are leaving no stone unturned to control the disease from spreading. Continuing its effort against COVID-19, NTPC Bongaigaon Medical Cell made the NTPC Bongaigaon COVID Care centre operational in association with Apollo Telehealth Services. It was inaugurated by Shri Subrata Mandal, CGM, NTPC on 25 May 2021 who inspected the facilities available.

The centre incorporates state-of-art technology to manage COVID-19 cases at remote locations. The Centre is equipped with 10 COVID beds, each equipped with a multipara monitor for continuous monitoring of temperature, SpO_2, heart rate, blood pressure and respiratory rate.

One e-ICU which is equipped with invasive ventilators, multichannel bedside monitor, webcam and LED television connected to Apollo, Chennai for real-time monitoring of critically ill patients are also being installed at the Centre. Besides 2 BiPAP machines for non-invasive ventilation, 7 oxygen concentrators and oxygen cylinders for oxygen support, Point-of-care diagnostics for assessment of d-dimer, troponin, CRP, ABG and ECG, 2 cart on wheels for easy accessibility of emergency medicines and equipment such as pulse oximeter, IR thermometers etc. make the centre well equipped to deal with any kind of exigency. Besides 2 kiosks for sample collection, 6 doctors and 10 nurses will be providing round the clock services to the patients.

Website link:

https://pib.gov.in/PressReleseDetailm.aspx?PRID=1721806

Power Grid sets Up COVID-19 vaccination camp in Bengaluru

Government of India Maharatna CPSU under Ministry of Power, Power Grid Corporation of India Limited (POWERGRID) has been organising a number of vaccination drives across the country for its employees and their families to safeguard them from the COVID-19 pandemic. Vaccination camps are being organised in all the establishments of Power Grid.

A vaccination camp was organised at Southern Region-II, Regional Headquarters, Bengaluru for the benefit of employees, dependent/non-dependent family members of RHQ, Yelahanka Sub-station, Bidadi Sub-station, Somanhalli Sub-station, Tumkur Sub-station, along with AMC, Security personnel, Drivers, Canteen and Transit Camp personnel.

About 110 employees, dependent family members and contract workers of POSOCO and SRPC were part of the camp organised in association with Manipal Hospitals, Bengaluru wherein about 250 doses of the vaccine were administered.

Website link:

https://pib.gov.in/PressReleseDetailm.aspx?PRID=1721867

Provision of 'near to home' vaccination centres to benefit large number of senior citizens and Divyangjan

Welcoming the directions issued by Ministry of Health and Family Welfare for providing 'near to home' vaccination centres to senior citizens and Divyangjan, the Union Minister of State for Social Justice and Empowerment, Shree Rattan Lal Kataria has said that the move shall benefit around 14 crore senior citizens and 2.2 crore Divyangjan across the nation. The Ministry of Social Justice & Empowerment had earlier flagged the problems being faced by Persons with Disabilities in testing, treatment and vaccination to MoHFW.

On 27 April 2021 an advisory was also issued for senior citizens regarding COVID-appropriate behaviour by the Ministry in consultation with the Geriatric Department of AIIMS, Delhi. Ministry of Social Justice & Empowerment has also launched a Helpline number for providing psychological support to people belonging to transgender community. Counselling through expert psychologists is available for transgenders (TGs) who are facing extreme stress owing to highly uncertain and evolving circumstances.

The Ministry has also announced one-time subsistence allowance of Rs. 1500 for transgender persons who are adversely affected by the lockdown restrictions imposed by respective state governments. The financial assistance, as an interim relief measure, was also extended last year when 7000 people from TG community were benefitted. Through its letter dated 20 May 2021

the Ministry also urged all state governments to spread awareness among transgender community in vernacular language regarding the COVID vaccination programme, to make existing vaccination centres TG friendly and to organize separate camps as well as mobile booths for vaccinating them.

The Minister added that we are witnessing the world's largest and fastest vaccination programme where the Government has so far administered 20.27 crore doses of vaccines within 130 days. He urged all public authorities and stakeholders to join hands in collectively fighting the second wave of COVID-19. He reposed full faith in the intent and resolute leadership of Prime Minister Shree Narendra Modi and claimed that soon, with the active cooperation from all sections of society, we shall be able to tide through the second wave.

Website link:

https://pib.gov.in/PressReleseDetailm.aspx?PRID=1722470

IITK Campus Self-help Group for COVID

IIT Kanpur made a website called Self-help Group for COVID to tackle the COVID-19 pandemic. The Health Centre is committed to promoting health and wellness of the campus community by providing high-quality prevention, education, and treatment services. The medical, counselling, and health promotion services are designed to help people stay healthy or get better so that one can minimize disruptions caused by injury and illness. The Health Centre aims to enhance the healthcare experience of the IITK campus community by providing healthcare with respect, consideration, and confidentiality.

Contact Info: Prof S Ganesh, dydir@iitk.ac.in, sganesh@iitk.ac.in

Website Link:

https://sites.google.com/view/iitk-self-help/home

500-bed COVID Care hospital set up by DRDO inaugurated in Haldwani, Uttarakhand

A 500-bed COVID Care Hospital set up by Defence Research and Development Organisation (DRDO) in Haldwani was virtually inaugurated by Chief Minister of Uttarakhand Shri Tirath Singh Rawat on 2 June 2021. This facility comprises 375 oxygen beds and 125 ICU beds with ventilators. With 100 per cent power backup, it is centrally air conditioned for all weather conditions. Pathology laboratory, Pharmacy, X-Ray and ECG etc. are inherent part of the facility. The Centre will become fully operational from 3 June 2021.

A control centre with Wi-Fi, CCTVs and helpline number has also been established for proper monitoring and hospital management through modern system software. Doctors and nursing staff to run the facility would be provided by co-located Government Medical College, Haldwani.

This hospital, which has been built in 21 days, is the result of the efforts of the workforce of 350 persons who worked relentlessly round the clock under adverse weather conditions. This time-bound challenging task involved coordination among various government agencies and arranging mammoth quantity of stores amidst lockdown in many places. Ample measures have been taken in design and functioning of the hospital to meet any unforeseen challenges in future. Mandatory fire safety norms have been ensured with fire detection alarm system, fire hydrants, and fire-fighting equipment.

In the present situation, this COVID Care Centre will be an invaluable asset for the people of Uttarakhand, providing timely essential medical care during the pandemic. It has been dedicated and named after late General Bipin Chandra Joshi who belonged to Uttarakhand and was the 17th Chief of Indian Army.

Member of Parliament Dr Ajay Bhatt, Minister in Uttarakhand Government Shri Bansidhar Bhagat, Leader of Opposition, Uttarakhand Dr Indira Hridayesh and senior officials of DRDO and state government were present on the occasion.

Raksha Mantri Shri Rajnath Singh has lauded DRDO for its continuous timely assistance during the pandemic. Secretary and Chairman DRDO Dr G Satheesh Reddy appreciated the relentless efforts of the team involved in the task and thanked the Uttarakhand Government for the support.

Website link:

https://pib.gov.in/PressReleasePage.aspx?PRID=1723653

IIT-Kanpur relief fund helping needy students amid pandemic

Amid the second wave of the pandemic, the Indian Institute of Technology, Kanpur (IIT-K) has started a COVID-19 relief fund to provide financial aid to students who are facing medical emergencies.

Website Link:

https://www.iitk.ac.in/new/images/large-images/media-coverage/covid-relief-fund.jpeg

Operation Samudra Setu II – Indian Navy's relentless effort to fight COVID-19

For details, refer to page no. **17**.

Indian Navy Provides 'Oxygen on Wheels' to Palasa COVID Care Centre

For details, refer to page no. **17**.

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9

CALLS FOR PHILANTHROPIC CONTRIBUTIONS

Your small contribution will make a big difference in fighting the pandemic. With this motto, various calls were made at institution levels for charitable and philanthropic contributions. A simulated effort has been made to collate all calls as a one-stop resource for the benefits of the common public.

SECTION GUIDELINES

PM-CARES Fund - Donate to Help India Fight COVID-19

CovAID Portal developed by Niti Aayog for real-time monitoring of relief

UNDP India initiates COVID-19 Relief Services in India

Delhi Government developed portal for donations to fight against COVID-19 pandemic

Office of PSA calls for philanthropic funding for National Consortium of OXYGEN

PM-CARES Fund - Donate to Help India Fight COVID-19

Your small contribution will make a big difference in fighting the pandemic!
Tackling the coronavirus epidemic requires joint efforts from every individual. Even as we maintain personal hygiene and practice social distancing, we can work together with the government to combat the spread of this disease. A small step we take can go a long way in the fight to ensure everyone's safety and security.

The primary objective of dealing with any kind of emergency or distress situation, like the one posed by the COVID-19 pandemic and to provide relief to the affected, a public charitable trust under the name of 'Prime Minister's Citizen Assistance and Relief in Emergency Situations Fund (PM CARES Fund)' has been set up. PM CARES Fund has been registered as a Public Charitable Trust. The trust deed of PM CARES Fund has been registered under the Registration Act, 1908 at New Delhi on 27 March, 2020.

Contact Info:

pmcares@gov.in (For Domestic Donation),

pmcares.fcra@gov.in (For Foreign Donation)

Website link:

https://www.pmcares.gov.in/en/

CovAID Portal developed by Niti Aayog for real-time monitoring of relief

NITI Aayog has set up a dedicated portal named CovAid to keep a track of all the COVID-19 aid received by the Indian government from several missions or individual organisations. A dedicated team has been constituted to expedite and facilitate the import of COVID-19 relief material into India by domestic and foreign institutions. The submission process has been streamlined through the CovAID portal. The team is there to provide end-to-end support right from initiating a request to getting the items to the intended beneficiary.

Contact Info: covidtaskforce.niti@gov.in

Website link:

https://niti.gov.in/covaid

UNDP India initiates COVID-19 Relief Services in India

India is experiencing an unprecedented second wave of the COVID-19 pandemic with a devastating impact on health, lives and livelihoods. UNDP is working with the Government of India, the international community, private sector, and civil society to strengthen health responses, expand social protection, and help rebuild lives and livelihoods.

Individuals, businesses, and organizations can play a vital role in our response and recovery efforts to mitigate the impact of the crisis across communities. UNDP India calls for general public and individuals to contribute in mitigating the pandemic.

Contact Info: partnerwithundp.in@undp.org

Website link:

https://www.in.undp.org/content/india/en/home/covid-19-pandemic-response/Join_us_in_combating_COVID19/Help_Now.html

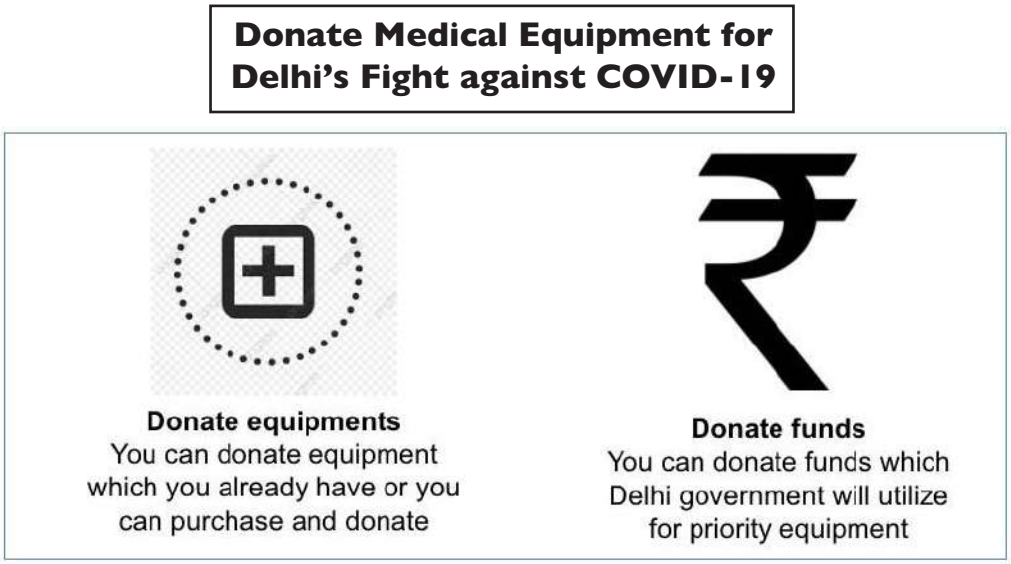
Delhi Government developed portal for donations to fight against COVID-19 pandemic

The Delhi government developed a portal through which people from around the world can donate funds or medical equipment to strengthen its fight against the raging COVID-19 pandemic.

The second COVID-19 wave is spreading faster than before, with infection rates more than double than at the previous peak. Health facilities and resources in Delhi are under severe

strain with rising number of patients. The priority right now is to make sure that we can give all the help to the hospitals in Delhi.

Indian citizens and diaspora has always been at the forefront of helping governments deal with calamities in the country. Delhi Government requests people to provide as much support as they can as donation (in-kind or financial).



Website link:

https://delhifightscorona.in/donate/

Office of PSA calls for philanthropic funding for National Consortium of OXYGEN

For details, refer to page no. **16**.

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10

COVID FACT-CHECKS

This section attempts to answer frequently asked questions (FAQs) on various aspects of the COVID-19 disease, its meeting out the second wave, and subsequently busting the myths spread in the society.

SECTION GUIDELINES

1. The Third Wave of COVID-19 in India and Protecting Children
2. COVID-19 and White Fungus Infection
3. Related to Use of Oxygen during current COVID-19 Pandemic
4. Related to drugs and medications fighting the disease
5. Related to Black Fungus and COVID-19 Disease
6. Related to Indoor Air and COVID-19 Disease

1. The Third Wave of COVID-19 in India and Protecting Children

Q. What is the possibility of a third wave of COVID-19 in the coming months?

A. Pandemics are likely to occur in multiple waves, and each wave could vary in the number of cases and its duration. Eventually, most of the population may get immune by asymptomatic or symptomatic infections (herd immunity). Over time, the disease may die out or may become endemic in the community with low transmission rates.

Key Message: There is a possibility of a third wave, but it is difficult to predict its timing and severity.

Q. Are children at greater risk if the third wave strikes?

A. In the first wave, primarily the elderly and individuals with co-morbidities were affected with severe disease. In the current (second) wave, a large number of younger population (30-45 years) have developed severe disease as also those without co-morbidities. After the second wave is over, if we do not continue following COVID-appropriate behaviour, the third wave, if occurs, is likely to infect the remaining non-immune individuals and that may include children also. The latest serosurvey (Dec 2020, Jan 2021) showed that the percentage of infected children in the age group of 10-17 years was around 25%, the same as adults. This indicates that while children are being infected like adults, they are not getting the severe disease.

Key Message: Children are as susceptible as adults and older individuals to develop an infection but not a severe disease. It is highly unlikely that the third wave will predominantly or exclusively affect children.

Q. Are children likely to suffer from severe disease as being witnessed in the adult population in the current wave?

A. Fortunately, children have been relatively less affected so far due to several factors. The most important reason is the lesser expression of specific receptors to which this virus binds to enter the host and also the immune system of the children. A very small percentage of infected children may develop moderate to severe disease. If there is a massive increase in the overall numbers of infected individuals, a larger number of children with moderate to severe disease may be seen. Apart from the infection, parents should watch out for mental health issues in children and keep a watch to prevent child abuse and violence. Also, it is worth limiting screen time and prepare children for safe school reopening as per the Indian Academy of Pediatrics (IAP) guidelines.

Key Message: Almost 90% of the infections in children are mild/asymptomatic. Therefore, the incidence of severe disease is not high in children.

Q. Can we rule out the possibility of severe infections in children in the third wave?

A. As explained, the spectrum of illness is likely to be much less severe in children than adults; there is only a remote possibility of children being more severely affected than adults in the next wave. As per data collected during the first and second waves, severe COVID infections in children were not reported and only in few cases they were admitted to ICU. However, we

need to be watchful about how the mutant strains will behave. The dictum here is better be ready and prepared for the worst and hope for the best!

Key Message: Severe COVID cases in children are rare. Further, there is no evidence indicating that children will have severe disease in the third wave.

Q. Severe disease due to COVID-19 is already occurring in children. Why it is so?

A. Yes, a severe illness related to COVID-19 is known to occur in children. This includes pneumonia and Multisystem inflammatory syndrome in children (MIS-C). However, COVID pneumonia in children is uncommon as compared to adults. In some cases, after 2-6 weeks of asymptomatic or symptomatic COVID-19 infection, MIS-C may be seen due to immune dysregulation with the incidence of 1-2 cases per 100,000 population; some of these cases also may be severe. It's a treatable condition with a good outcome if diagnosed early. Also, most children suffering from MIS-C cannot transmit the infection to others.

Key Message: Children occasionally get the severe disease and may need ICU care, both during the acute illness and after 2-6 weeks due to MIS-C caused by COVID-19. But the majority are likely to recover if treated on time.

Q. What preparations are being made in case the 3rd wave comes and affects the children?

A. Most affected children get a mild disease with fever and need supervised home care with monitoring. We have learned a lot about COVID-19 illness from our shared experiences in adult medicine in the last 15 months. IAP guidelines on the management of COVID-19 in children are in place, and paediatricians have been sensitized and trained on its management. We need to be ready for a more significant number of patients seeking consultations; educating the parents on different platforms regarding illness and warning signs; and arranging more COVID wards for children with more special wards such as high-dependency units (HDU) and intensive care units (ICU). The preventive behaviours are the same for children. Parents should also be ideal role models for their children regarding mask etiquette, hand hygiene, and social distancing. Children above the age of 2 to 5 years can be trained to use a mask; however, the adults have to follow the COVID-appropriate behaviour. IAP has also set guidelines for the safe reopening of schools for the safety of the children.

Key Message: We need to be prepared with more in-patient beds and intensive care beds for children. IAP has already developed the management protocol for disease categories in children. There is no reason to panic. Our preparations are in full swing.

Q. What is the plan for vaccinating children?

A. So far, the global data show that compared to children, older adults are a thousand times more likely to die from COVID-19 disease. So, it has been a priority to vaccinate the high-risk elderly age group first. Thereafter, the emphasis should be on adults who also have more severe diseases as compared to children. When there is the remote possibility of children getting affected, some countries consider vaccinating children and adolescents. The same vaccines being used in adults can be used in children only after adequate trials. One of the India-made vaccines will soon undergo trials in children, and if proven immunogenic and safe, it could be fast-tracked for mass vaccination in children.

Key Message: Children do get the severe disease, even if the number is small. Thus, there is no harm in considering vaccination for them. The safety and efficacy, however, are being assessed in trials for this age. The national Expert Group on Vaccine Administration for COVID-19 will develop a plan as and when new scientific data emerge.

Source

https://iapindia.org/pdf/hA5Gnpt_IQv63Bk_IAP%20view%20point%20for%203rd%20wave%20Covid%2022%20May%202021.pdf

2. COVID-19 and White Fungus Infection

Q. What is White Fungus?

A. White Fungus, also known as candidiasis, is an opportunistic infection, which could spread fast to various body parts and if not treated could be serious. According to the Centre for Diseases Control and Prevention (CDC), White Fungus or invasive candidiasis can affect the blood, heart, brain, eyes, bones, or other parts of the body.

Q. Who are at high risk to get White Fungus infection?

A. The White Fungus is all around us as it is found naturally in the environment. It primarily affects people with low immunity, who come in contact with objects that contain these fungal spores. For instance, COVID-19 patients on oxygen support can come in contact with these fungal spores if their ventilators and oxygen support equipment are not sanitized properly. Further, overuse of steroids and use of tap water in the humidifier attached to an oxygen cylinder can also heighten the risk of contracting White Fungus.

Q. Who can get infected by white fungus?

A. Invasive candidiasis is caused by a yeast (a type of fungus) called Candida. Candida can normally live inside the body, in areas like the mouth, throat, gut, and vagina, without causing any problems. However, individuals with low immunity, like patients recovering from a serious COVID-19 infection, are particularly at risk of contracting this fungal infection. In their bodies, the fungus can enter the bloodstream or internal organs to cause an infection.

People who are at high risk for developing this infection include:

- Have been admitted in the intensive care unit (ICU) for a prolonged period;
- Have weakened immune system (for example, people on cancer chemotherapy, people who have had an organ transplant, and people with low white blood cell counts);
- Have recently had surgery, especially multiple abdominal surgeries;
- Have recently received lots of antibiotics or steroids in the hospital;
- Receive total parenteral nutrition (food through a vein);
- Have kidney failure or are on hemodialysis;
- Have diabetes;
- Have a central venous catheter.

Q. Is White Fungus contagious?

A. White Fungus is not contagious in most cases, as it cannot spread directly from person to person. However, there exist some species of fungus that cause this infection on the skin. In

such instances of external infection, the fungus can possibly be transferred from the patient to another individual who is at risk.

Q. What are the symptoms of White Fungus?

A. Only CT scans or X-Rays can reveal and completely confirm the White Fungus infection. Health experts report that it is more dangerous than Black Fungus, as it affects the lungs as well as other parts of the body like the nails, skin, stomach, kidney, brain, private areas, and mouth.

Moreover, the White Fungus can also infect the lungs the same way COVID-19 does. In fact, patients who get infected with White Fungus displayed COVID-19-like symptoms despite having tested negative for the virus. According to some reports, the oxygen saturation level of one of the four patients infected with White Fungus dropped from normal levels. However, the oxygen levels became normal after the antifungal medication was administered.

Q. How can White Fungus be treated?

A. Patients infected with White Fungus should be examined carefully, perhaps with a fungus culture test of their phlegm or mucus, to detect the extent of fungal infection in their body. After detection of the infection, antifungal medications have been used to treat the patients, and they have led to an improvement in their condition. The type and dose of antifungal medication used to treat White Fungus will depend on the patient's age, immune status, location, and severity of the infection.

3. Related to Use of Oxygen during current COVID-19 Pandemic

Q. What is the normal respiratory rate of a healthy adult person?

A. Standard respiratory rates for a healthy adult range from 12 to 20 breaths per minute.

Q. Are 8 breaths per minute normal?

A. No. A patient needs to be evaluated medically.

Q. How many litres of oxygen per minute do we breathe?

A. The average tidal volume, i.e., the average amount of air inhaled and exhaled per breathing cycle, is 0.5 litre (500 ml). Minute ventilation (VE) is the total volume of air entering the lungs in a minute is 6 litres per minute.

Q. What should be the normal oxygen saturation as recorded by a Pulse Oximeter?

A. The normal oxygen saturation level in the blood (SpO2) should be 95% or higher. Some people with chronic lung disease, such as Chronic Obstructive Pulmonary Disease (COPD) or sleep apnea, may have normal levels of around 90%. The "SpO2" reading on a pulse oximeter shows the percentage of oxygen in the blood. If your home SpO2 reading is lower than 94%, call your healthcare provider.

Q. How do I check my oxygen level at home without a Pulse Oximeter?

A. If you do not have a portable finger pulse oximeter in your home, you can also learn how to assess signs and symptoms of low oxygen levels. Two classic signs of a low oxygen level are a rapid heart rate and a fast breathing rate. An average heart rate is 60–100 beats per minute and an average breathing rate is 12–20 breaths per minute. However, under low oxygen conditions, body responses include an increase in heart rate and breathing rate. Another sign of a low blood oxygen level is cyanosis or a bluish color change on your lips, nose, or fingertips. As your body loses oxygen, the blood cells in your body change colour in your bloodstream to a dark blue, which can be seen from the outside of your skin if it is severe. Cyanosis is typically a late sign of low oxygen levels and is considered a medical emergency. If you notice this bluish discolouration, you should immediately visit the nearest hospital.

Q. Do we see many cases of silent hypoxia in this wave? How can this be addressed?

A. Silent hypoxia or happy hypoxia is referred to as the early stage of COVID-19. As the oxygen level drops, one may start feeling shortness of breath, confusion, and other symptoms. Keep watching for these signs and do not ignore them. This is true for young people as well. If you monitor low oxygen level, change in lip colour from natural to blue or persistent sweating, consult the covid helpline or doctor. They could be the early sign of silent hypoxia.

Q. In brief, how can proning help enhance blood oxygen levels?

A. Proning is a medically accepted process to improve the distribution and exchange of oxygen in the lungs. A patient is safely placed from their back onto their abdomen (stomach), i.e., having face down to improve breathing and oxygenation. It has been shown beneficial for COVID-19 patients with compromised breathing comfort, especially during home isolation.

Q. Is pure oxygen used in hospitals?

A. Medical oxygen contains high purity oxygen used for medical treatments and is developed for use in human body. Cylinders contain a compressed oxygen gas and no gases are allowed in the cylinder to prevent contamination.

Q. What is the use of Medical Oxygen?

A. Oxygen is used for treatment in hospitals. Hence, it is considered a drug or a pharmaceutical product.

Q. What is the need for Medical Oxygen?

A. The human body requires oxygen to survive, and typically, we breathe in from air. However, if you have lung disease or other medical conditions such as COVID-19, you may not get enough oxygen due to compromised lungs. That can leave you short of breath and cause problems with your heart, brain, and other parts of your body.

Q. Can breathing 100 per cent oxygen harm your body?

A. Yes. Breathing 100% oxygen also eventually leads to collapse of the alveoli (atelectasis).

Q. Can you get excess (more than required) oxygen from an Oxygen Concentrator?

A. It is possible to get excess (more than required) oxygen from an oxygen concentrator. However, this is quite rare when oxygen concentrators are used as directed and prescribed. All supplemental oxygen requires a prescription from a doctor, who carefully chooses your oxygen requirement.

Q. What is the role of oxygen during COVID-19 Disease?

A. The demand for medical oxygen is increased in COVID-19 as the disease primarily affects the lungs and, in severe cases, causes death due to Acute Respiratory Distress Syndrome (ARDS) and pneumonia.

Q. When does a patient require medical oxygen in a COVID-19 positive case?

A. As per AIIMS/ICMR-Covid-19/National Task Force/Joint Monitoring Group (Dte.GHS), MoHFW, Government of India, Clinical Guidelines for Management of Adult COVID-19 Patient issued on 22 Apr 2021, moderate and severe cases of COVID-19 where the infection induces shortage of oxygen in the body due to its impact on lungs require medical oxygen and immediate oxygen therapy. Oxygen acts as a life-saver for COVID patients.

Q. What is moderate COVID-19 cases?

A. In moderate COVID-19 cases a patient has upper respiratory tract symptoms (and/or fever) with shortness of breath. They have a respiration rate more than or equal to 24/minute and SpO2 90% to 93% with ambient air.

Q. What is severe COVID-19 cases?

A. In severe Covid-19 case, a patient has upper respiratory tract symptoms (and/or fever) with shortness of breath. They have a respiration rate more than 30/minute and SpO2 less than 90% in room air.

Q. When does a patient require Mechanical Ventilator Support?

A. A patient may be put on a mechanical ventilator if it becomes very difficult to breathe or get enough oxygen into their blood. This condition is called respiratory failure. Mechanical ventilators are machines that act as bellows to move air in and out of the patient's lungs. The respiratory therapist and doctor set the ventilator to control how often it pushes air into the lungs and how much air the patient gets. The patient may be fitted with a mask to get air from the ventilator into there lungs. Or they may need a breathing tube if their breathing problem is more serious.

Q. Can Mechanical Ventilation be given at home?

A. Mechanical ventilators are mainly used in hospitals and transport systems such as ambulances and medical evacuation by air transport etc. In some cases, they can be used at home if the illness is long-term and the caregivers at home receive training and have adequate nursing and other resources at home. Being on a ventilator may make a patient more susceptible to pneumonia, damage to the vocal cords, or other problems.

Q. What is the 6-minute walk test for COPD?

A. The 6-min walk test (6MWT) is an exercise test that measures functional status in chronic obstructive pulmonary disease (COPD) patients and provides information on oxygen desaturation. This test is also being used for COVID-19. In case of COVID-19 symptoms, SpO2 level must be checked before taking a walk. Now, walk for 6 minutes without a break on an even surface and measure the SpO2 level. It may fall 1-2%, but consult a medical professional if it falls below 93%.

Source:

https://ndma.gov.in/sites/default/files/2021-03/FAQs-on-Use-of-oxygen-.pdf

4. Related to drugs and medications fighting the disease

Q. Is Remdesivir effective in the treatment of COVID-19?

A. No study has conclusively been able to prove that Remdesivir is beneficial in the treatment of COVID-19. However, India has approved Remdesivir under the National Clinical Management Protocol for COVID-19, which was developed after many interactions by a committee of experts. The protocol acts as the guiding document for the treatment of COVID-19 patients in India. Remdesivir is listed as an investigational therapy in the protocol, i.e., where informed and shared decision-making is essential, besides noting contraindications mentioned in the detailed guidelines.

Q. What Is Remdesivir? How Does Remdesivir Work?

A. Remdesivir is an investigational drug used to treat viral infections. It is classified as a broad-spectrum antiviral with potential antiviral activity against a variety of RNA viruses.

The drug works against the novel coronavirus by inhibiting replication of the virus in the body. Remdesivir functions as a prodrug that is modified in the body before it becomes an active drug. It is classified as a nucleoside analog, one of the oldest classes of antiviral medications, and resembles the RNA base adenosine. In general, nucleoside and nucleotide analogues simulate the structure of a true nucleoside or nucleotide. The simulated structure may then be incorporated into the virus. Remdesivir works when the enzyme replicating the genetic material for the novel coronavirus—RNA polymerase—incorporates the adenosine analogue in place of the natural molecule into the growing RNA strand. By introducing the modified agent, Remdesivir, replication of the novel coronavirus is interrupted, and the virus ceases to multiply and cannot infect more cells in the body.

Q. When should a patient of COVID-19 take Remdesivir?

A. The timing of the drug, when it is administered, is most important. Taking it too early or too late could do more harm than good. Remdesivir is applicable only in hospitalised patients who showed very low oxygen saturation and infiltrated their chest X-ray or CT scan. The optimal timing for Remdesivir is usually after five to seven days of having the virus. Early to mild or asymptomatic patients should not take Remdesivir. Also, it is of no use if it's given very late because it would create a cytokine storm. A cytokine storm is when the immune system goes into overdrive. The body starts to attack its cells and tissues instead of just the virus.

Q. Is Remdesivir can be taken at home?

A. Remdesivir comes in a vial and has to be injected only after prescription and in the presence of a health practitioner. It is for patients who are hospitalised and severe. Therefore, it should not be given at home. It is for patients who need to be admitted and need hospital care.

Q. Are steroids effective in the treatment of COVID-19?

A. There is no evidence to support the use of steroids in the treatment of COVID-19. World Health Organization (WHO) recovery trial showed that steroids do have a beneficial effect. But again, the timing is critical. The recovery trial clearly showed that if we give steroids too early, it showed a harmful effect before oxygen saturation. Steroids are most effective during the later part of the disease when there is more inflammation and oxygen saturation is falling. Steroids are only helpful for moderate or severe cases.

Q. Is plasma a good way to fight off COVID-19?

A. Convalescent plasma has been a therapy devised to passively transfer antibodies from a recovered person to a new patient. While the therapy has been received with different opinions by the medical community, the important aspect is timing. It's better if plasma therapy is used early before clinical worsening. Also, plasma with high titer neutralising antibodies would have better results. Hence, to achieve good results, correct patient selection, timing and a good quality plasma donor are needed for success in this form of treatment.

Q. Should a person with COVID-19 take Tocilizumab?

A. Tocilizumab is a drug of last resort. It should only be used when a COVID-19 infection in a patient is worsening despite steroids, Remdesivir and other treatments like anticoagulants. Tocilizumab is required in less than 2% of COVID-19 patients. Very few patients need this drug because it's only for treating a cytokine storm and has a limited role.

Q. Is Favipiravir effective in treating COVID-19?

A. Favipiravir is another antiviral that is being promoted for the treatment of COVID-19. It was initially doled out as a treatment of influenza after the H1N1 pandemic. There is not enough evidence in robust studies to show that it is a good drug. Since it's not a proven treatment, India's national guidelines also don't recommend its use.

Q. Is it possible to treat COVID-19 without any of the drugs mentioned above?

A. People with mild COVID-19 or those who are asymptomatic will improve with just symptomatic treatment. Mild COVID-19 infection can be treated with paracetamol, good hydration and multivitamins —without any treatment. Giving treatment when it is not required may be doing more harm than good.

5. Related to Black Fungus and COVID-19 Disease

Q. What is Black Fungus?

A. Black fungus, also known as MUCORMYCOSIS, is a rare fungal infection. It is called "black" because of the colour of the fungal growth. It is caused by exposure to mucor mould found in soil, manure, and rotten/decaying fruits and vegetables. It is ubiquitous and even present in the nose/mucosa of healthy individuals. This disease usually affects the sinuses, eye orbit, and brain. That is why it is also called "rhino-orbital-cerebral" mucormycosis. It may be life-threatening in immunocompromised individuals (cancer patients, HIV/AIDS) and people with uncontrolled diabetes.

Q. What are the risk factors for acquiring Black Fungus infection?

A. Risk Factors are:

- Uncontrolled Diabetes Mellitus
- Treated for COVID-19 with corticosteroids
- Treated for COVID-19 with immunomodulators
- Treated for COVID-19 with mechanical ventilation
- Prolonged oxygen therapy
- Prolonged ICU stay
- Immunocompromised state

Q. Why the sudden increase in Black Fungus cases?

A. It may be triggered by extensive use of steroids, which is a life-saving treatment for moderate to severe COVID-19 infection. Steroids lower the immunity and cause a sudden up-shooting of blood sugar levels in diabetes and non-diabetic patients. For patients on humidified oxygen, care should be taken to make sure there is no water leak to prevent the growth of the fungus.

Q. How serious is Black Fungus?

A. Black fungus infection causes a vision-threatening and life-threatening condition.

Q. Do all COVID-19 patients need to be worried about Black Fungus infection?

A. No. As discussed, high-risk patients need to be alert. Also, during COVID-19 recovery, everyone should watch out for early signs and symptoms.

Q. What are the precautions one can take to avoid this disease?

A. Following precautions one can take:

- Boost immune system with diet, hydration and exercise.
- Rational use of steroids by follow guidelines.
- Strict Blood sugar monitoring and control in all patients who are on steroids.

Q. What are the early signs of Black Fungus?

A. some of the early signs are:

- Facial pain
- Facial swelling/puffiness/discolouration
- Sinus headache
- Stuffy nose
- The blurring of vision/decreased vision
- Double vision
- Drooping of eyelid
- Blood-stained nasal discharge
- Dental pain

Q. Is Black Fungus treatable?

A. Yes. Early diagnosis and a prompt multi-speciality team of medical professionals can manage it.

Q. Which specialist should I visit for Black Fungus?

A. ENT and eye specialists are central to this disease. The team includes care coordination with neurosurgeon endocrinologist and microbiologist.

Source:

https://www.eyeqindia.com/frequently-asked-questions-on-covid-and-black-fungus/#toggle-id-9

6. Related to Indoor Air and COVID-19 Disease

Q. Will running an evaporative cooler help protect my family and me from COVID-19?

A. Evaporative coolers (or "swamp coolers") can help protect people indoors from the airborne transmission of COVID-19 because they increase ventilation with outside air to cool indoor spaces. Evaporative coolers are used in dry climates. They use water to provide cooling and improve relative humidity in indoor microenvironments. When operating as intended (with open windows), these devices produce substantial increases in ventilation with outdoor air. Some evaporative coolers can be performed without using water when temperatures are milder to increase ventilation indoors. Avoid using evaporative coolers if air pollution outside is high and the system does not have a high-efficiency filter.

Q. Is ventilation important for indoor air quality when cleaning and/or sanitising for COVID-19 indoors?

A. When cleaning and disinfecting for COVID-19, ventilation is essential—in general, increasing ventilation during and after cleaning help to reduce exposure to cleaning and disinfection products and by-products. Increasing ventilation, for example, by opening windows or doors, can also reduce risks from particles resuspended during cleaning, including those potentially carrying SARS-CoV-2 (or other contaminants). Avoid ventilation with

outdoor air when outdoor air pollution is high or when it makes your home too cold, hot, or humid.

Q. Will an air cleaner or air purifier help protect my family and me from COVID-19 in my home?

A. When appropriately used, air purifiers can help reduce airborne contaminants, including viruses, in a home or confined space.

Q. How can I increase ventilation at home to help protect my family from COVID-19?

A. Ensuring proper ventilation with outside air is a standard best practice for improving indoor air quality. To increase ventilation in your home, one can:

- Open the windows or screened doors, if possible;
- Operate an air conditioner that has an outdoor air intake or vent; and
- Operate a bathroom fan when the bathroom is in use and continuously, if possible.

However, the practices mentioned here are not enough to protect people from COVID-19. When used along with other best practices recommended by the Ministry of Health and Family Welfare, Govt. of India, the above methods can be part of a plan to protect yourself and your family.

Source:

https://www.epa.gov/coronavirus/indoor-air-and-coronavirus-covid-19

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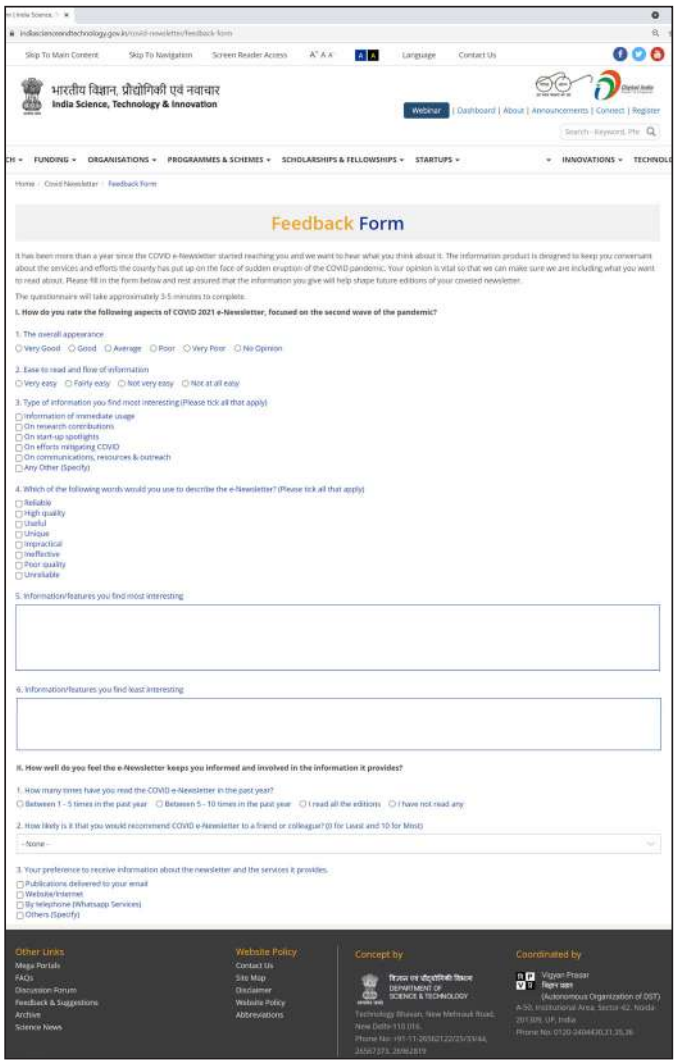
FEEDBACK FORM

COVID 2021

Nation's S&T Efforts Against COVID-19

It has been more than a year since the COVID e-Newsletter started reaching you and we want to hear what you think about it. The information product is designed to keep you conversant about the services and efforts the county has put up on the face of sudden eruption of the COVID pandemic. Your opinion is vital so that we can make sure we are including what you want to read about. Please fill in the form below and rest assured that the information you give will help shape future editions of your coveted newsletter.

The questionnaire will take approximately 3-5 minutes to complete.



For suggestions and feedback, click at:

https://www.indiascienceandtechnology.gov.in/covid-newsletter/feedback-form

COVID-19

Science & Technology Efforts in India

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