CSIR IN MEDIA

CSIR

NEWS BULLETIN
01 TO 05 MAY 2021

IIIT-H model to predict Covid-19 outcome using ML

CSIR-IGIB

05th May, 2021

Hyderabad: Researchers at the International Institute of Information Technology Hyderabad (IIIT H) have come up with a Mortality Prediction Model to help in prioritising healthcare based on risk and mortality prediction.

As part of a joint project funded by Intel Corp, under its Pandemic Response Technology Initiative along with CSIR-IGIB (Council of Scientific and Industrial Research – Institute of Genomics and Integrative Biology), researchers from IIITH have used machine learning models to categorize risk and predict mortality in Indian patients.

"Using the same dataset of Covid positive patients from Wuhan, we have identified 5 biomarkers that can be used to predict mortality with 96% accuracy," said Akshaya Karthikeyan, IIITH researcher from the Centre for Computational Natural Sciences and Bioinformatics (CCNSB). She said that an early prediction can help accelerate the decision-making process of healthcare professionals for appropriate treatments.

Akshaya, who is the lead author of the paper titled 'Machine Learning Based Clinical Decision Support System for Early Covid-19 Mortality Prediction,' said that they have attempted to provide a mortality prediction as early as 16 days before the outcome.

Even as several algorithms provide much-needed insights into the risk and mortality rate, the researchers said that the biggest drawback is that all these algorithms have been trained on patient data obtained either from China or the USA. In a bid to fix this flaw, they conducted an India-specific study – this time on 544 Covid positive patients from the MAX group of hospitals in New Delhi.

"First, we tested out the neural network created by Akshaya on the Indian dataset. Unlike the high (96%) accuracy of mortality prediction demonstrated in the early stages of Covid-19 diagnosis, we found that Indian mortality could be predicted with an accuracy of only 58%," said Shanmukh Alle, lead researcher adding that one of the biggest puzzles was that Indian patients who were at high-risk and expected to die based on the Wuhan dataset actually survived.

Shanmukh said that evidence was found linking mortality with the usage of steroids. "This is in line with the early treatment protocols by the Indian government mandating the use of steroids and immunosuppressant drugs," he said adding that predicting patients' risk, that is, if they are at high-risk or low-risk based on respiratory support needed (if at all) is important in order to effectively allocate scarce resources.

"For this, biomarkers such as blood parameters, oxygen saturation levels and diabetes comorbid conditions were identified. For mortality prediction, however, only blood parameters were considered. Two different machine learning methods were used for risk stratification and for mortality prediction, respectively, both of which have yielded very good results," he added.

Published in:
Timesofindia

CCMB director Rakesh Mishra retires

CSIR-NGRI,CCMB 05th May, 2021

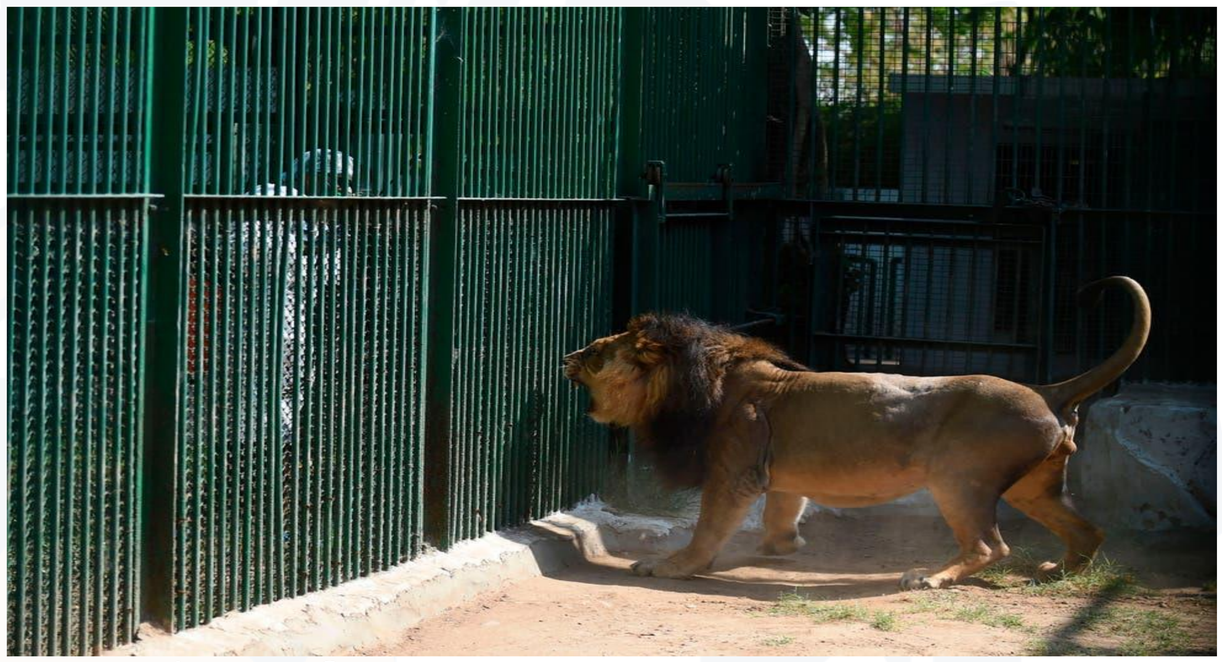
HYDERABAD: Following superannuation of DR Rakesh Mishra as the director of the Centre for Cellular and Molecular Biology, Dr VM Tiwari, director, CSIR-NGRI, has assumed the additional charge of the post of director, CCMB, Hyderabad with effect from April 30, 2021. Dr VM Tiwari will hold the charge till the joining of a regular director..., CCMB said.

Published in:
Timesofindia

Eight Asiatic lions at Indian zoo test positive for Covid

CSIR-CCMB

05th May, 2021



Eight Asiatic lions have tested positive for Covid-19 at a zoo in Hyderabad, India, in the first such case reported in the country.
Following analysis of the genomes of the coronavirus samples from these lions, the CSIR-Centre for Cellular and Molecular Biology (CSIR-CCMB) in Hyderabad, which houses one of India's four designated Covid-19 testing centres for captive animals, said the felines were not infected by any variant of concern.

Veterinarians at the Nehru Zoological Park reportedly noticed the lions showing Covid-like symptoms in the last week of April. Of the 12 lions at the zoo, eight were found coughing with other symptoms including nasal discharge and loss of appetite, but the felines are reportedly "doing well" currently.

"The lions have been now isolated at the zoo from other animals, and are receiving due care and necessary treatment. They are also responding well to the treatment and recovering," said Dr S Kukrety, Director of Zoos.

India's Ministry of Environment, Forest and Climate Change later noted that the eight infected lions "have responded well to the treatment and are recovering", adding that they are "behaving normally and eating well."
It said the zoo has been closed to visitors to prevent animals from human contact with measures also in place for zoo staff.

On Saturday, the state's Chief Wildlife Warden had announced the park would be closed for visitors from 2 May until further notice.

"In view of the rapid spread of SARS Cov-2 in the country, the Ministry of Environment Forests and Climate Change, New Delhi has issued an advisory to close all Zoological Parks, National Parks, Tiger Reserves and Wildlife Sanctuaries for visitors till further orders to control the spread of the Covid-19 pandemic," the announcement said.

Wildlife biologist and conservation scientist Ravi Chellam said while there are chances of transmission of the virus in captive environments such as in zoos, the possibility of lions getting infected in the wild is negligible.

"In New York, last year, tigers and lions were reported to be positive for infection, and lab studies have also shown that cats can get the virus. Tigers, lions and other species of cats differ at the species level, but it is very likely that they are all susceptible to the coronavirus," Dr Chellam, whose doctoral research was on the ecology of Asiatic lions and who has been involved with research and conservation of the felines since 1985, told The Independent.

"The coronavirus transmission is airborne so unless humans are in close proximity to wild animals in closed indoor settings, lesser than six feet, and they are unmasked, the chances for human to animal transmission is negligible. So the chances of humans infecting captive animals if people are following the due safety protocols, is very very low," he added.

Though lions are also found significantly outside national parks in India's Gir forest, interacting with humans and their lifestock, "more or less on a regular basis," the wildlife biologist said the chances of them contracting the virus in a freeranging condition from humans is "close to zero."

Karthikeyan Vasudevan, Scientist-in-charge at the Laboratory for Conservation of Endangered Species at CSIR-CCMB, said the need of the hour is to strictly follow the safety regulations in Indian zoos to avoid transmitting the infection to the animals.

“We have to carefully document the different symptoms that coronavirus infection causes in animals as well as develop non-invasive ways to procure samples from animals. Getting swab samples from animals is very difficult,” Dr Vasudevan noted in a statement.

Published in:
Independent

CSIR-CMERI Oxygen Enrichment Technology For The MSMEs To Step-In For An Oxygen Sufficient India

CSIR-CMERI

04th May, 2021

New Delhi: An awareness session on Oxygen related technologies was organised through digital platform by MSME – Development Institute, Jaipur in association with CSIR – Central Mechanical Engineering Research Institute, Durgapur on 04.05.2021. Prof. (Dr.) Harish Hirani, Director, CSIR-CMERI delivered the Chief Speaker's address in the programme. Mr. Sanjeev Saxena, Additional Director of Industries, Govt. of Rajasthan, Mr. V. K. Sharma, Director, MSME-DI, Jaipur, Dr. Rohit Jain, President, CIDA, and Mr. Mahendra Mishra, General Secretary, Laghu Udyog Bharti including100 number of MSEs, entrepreneurs and industrialists participated in the said awareness programme.

Prof. Harish Hirani, Director, CSIR-CMERI emphasised upon the use of Oxygen Concentrators which has the potential to be the life saver. The proper management of the Liquid Oxygen cylinders and having the alternative strategies of Oxygen Concentrators may help us to fight the pandemic efficiently. Prof. Hirani also said that CSIR-CMERI envisages the need of networking of more and more number of MSE entrepreneurs so that the manufacturing of Oxygen Concentrators can be started at mass scale rapidly to fulfil the demand of Oxygen. In this regard he cited the example of few of the MSEs who already possess the capabilities in the resources like Compressors, Analysers, Manufacturing capacity etc. which need to be integrated and these entrepreneurs need to come forward for timely starting of the manufacturing process. One of the Government PSU companies has already issued tender for one lakh Oxygen Concentrators for mitigating the Oxygen demand.

The Oxygen Enrichment Unit (OEU) helps in saving of Oxygen in comparison to the Oxygen cylinders. Sometimes very high flow of Oxygen using the cylinders may cause Oxygen Toxicity which may be very fatal to the human being. Proper handling of the OEU, trained technical personals are also needed and CSIR-CMERI can provide assistance in skill development of such technical personnel. CSIR-CMERI has already transferred the technology to four MSEs and the same is also being transferred to two more companies very shortly. Some of them are to start production from 2nd week of May 2021.

Mr. Sanjeev Saxena, Additional Director of Industries, Govt. of Rajasthan, appreciating the efforts of CSIR-CMERI said that both the Central and State Governments are working on the arrangement of supply of Oxygen to the needy persons. At some places Army also is doing their bit for revival of the closed Oxygen plant in their region. The Government has also provided funds to fight the battle. He added that MSMEs can take the benefit of CSIR-CMERI technology in establishing the manufacturing unit to provide supply of Oxygen to the needful and avail the financial help through subsidy as per concerned Government guidelines. Rajasthan Govt. is running a scheme under Rajasthan Nivesh Protsahan Yojana where MSMEs may avail the financial assistance up to 30th September 2021.

Mr. V. K. Sharma, Director, MSME-DI, Jaipur, acknowledged Prof. Hirani for coming forward with details and providing guidance amidst the Oxygen crisis. He said that he also faced some issues in marketing of liquid Oxygen cylinders and suggested that when embedded with solar system it may deliver better results. He assured that the office of MSME-DI, Jaipur is with all the MSME entrepreneurs in their endeavours and the would provide all possible support to these industries.

Dr. Rohit Jain, President, CIDA stated that CSIR-CMERI's technology can prove to be a milestone for the MSMEs in bridging the demand and supply gap of Oxygen in the current pandemic period. He urged the MSMEs to take the advantage of the technology, which may be turn to be a good opportunity for them.

The programme was very interactive. The entrepreneurs, MSMEs, and start-ups attending it were keenly interested about the CSIR-CMERI developed Concentrator and were eager to know the details of the technology, procedure for transfer of technology, ToT Fee, its cost aspects, capital and finance required to start production, statutory requirement towards testing of the technology, how to start up the fabrication immediately, use of Oxygen Concentrator in cutting and other industries, requirement of Concentrator plant in the post COVID era, whether Oxygen can be stored through Concentrator, consequences of continuous operation of the device, working capabilities of the device beyond the temperature of 40°C., Director, CSIR-CMERI responded to each of the above queries to the satisfaction of all, which was appreciated by the participants.

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Indiaeducationdiary

CCMB's dry swab RT-PCR test now available for labs

CSIR-CCMB

04th May, 2021

The dry swab based direct RT-PCR method of COVID-19 testing, developed by CSIR-Centre for Cellular and Molecular Biology (CCMB) and approved by ICMR can now be adopted in testing labs across the country. This method is easier to carry out than the current procedures, and can ramp up testing by 2-3 fold using the current infrastructure in the testing labs.

The CCMB has offered to train ICMR-approved government as well as private COVID-19 testing centres to help them adopt this method. It aims to train staff at 500 testing centres across India, starting this week. Most of these sessions will be online. The willing centres can book their slots on -- http://e-portal.ccmb.res.in/dst_slotbooking/ .

Those in and around Hyderabad can also avail physical training sessions by reaching out to the Director of CCMB. This method needs no Viral Transport Medium (VTM) for sending samples from sample collection centres to testing centres. This requires much lesser sample packing, and there is no contamination between samples, said a press release.

In this method, the RNA isolation steps have been replaced by a single-step addition of an easily available reagent. Extract from this step can be directly used for RT-PCR without compromising on the quality of results. These make the tests faster, cheaper, safer for the healthcare workers, and increase throughput with existing resources and setup.

"India is struggling with a steep surge in COVID-19 cases. The testing centres are overwhelmed with the number of samples that they have to test. It is an absolute need to increase our testing capacity within the existing set up. We are positive that the dry swab based direct RT-PCR method will help in the cause immensely," said CCMB advisor Dr Rakesh Mishra.

The technology has been licensed to various healthcare companies such as Apollo Hospitals, Meril Life, Spice Health and Capital Health Pvt Ltd to manufacture and commercialise these testing kits. Many other industry partners are expected to come on board soon.

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Thehindu

CSIR-CCMB

04th May, 2021

CCMB to train ICMR-approved labs on dry swab Covid testing

T.S.S. SIDDHARTH | DC
HYDERABAD, MAY 3

The dry swab-based direct RT-PCR method of Covid-19 testing, developed by CSIR-Centre for Cellular and Molecular Biology (CCMB), Hyderabad, and approved by ICMR will now be adopted for use in testing labs across the country. This method is easier to carry out than the current procedures, and can ramp up testing by two to three-fold using the current infrastructure in the testing labs, according to a release issued here on Monday.

The CCMB has now offered to train ICMR-approved government and private Covid-19 testing centres to help them adopt this method. It aims to train 500 testing centres across India, starting this week on.

Most of these sessions will be online to reach out to centres out of Hyderabad. The willing centres can book their slots here: http://e-portal.ccmb.res.in/dst_slot-booking/. Those in and around Hyderabad can also avail physical training sessions by reaching out to the Director at CCMB.

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Deccan Chronical, Times Of India, Hans India, The Hindu, Telangana Today, Economic Times

CSIR-CCMB

04th May, 2021

" CCMB offers training of ICMR-approved testing centres to adopt a faster COVID-19 testing method ".

కొత్తగా డ్రై స్వాబ్ ఆర్టీపీసీఆర్ టెస్ట్

- ఆమోదించిన సీసీఎంబీ, సీఎస్ఐఆర్, ఐసీఎంఆర్
- ఈ పద్ధతి ద్వారా కచ్చితంగా వేగంగా కరోనా రిపోర్ట్‌లు
- దేశంలో 500 కేంద్రాల్లో ట్రైనింగ్‌కు ఏర్పాటు
- ఆన్‌లైన్‌లో శిక్షణ ఇవ్వనున్న సీసీఎంబీ

దిశ, తెలంగాణ బ్యూరో: కరోనా వ్యాధి నిర్ధారణ చేపట్టేందుకు కొత్తగా డ్రై స్వాబ్ ఆర్టీపీసీఆర్ టెస్ట్‌ను సీసీఎంబీ, సీఎస్ఐఆర్, ఐసీఎంఆర్ సంస్థలు ఆమోదించాయి. ఈ టెస్ట్‌లతో కరోనా వ్యాధిని వేగంగా గుర్తించ వచ్చని సోమవారం ఓ ప్రకటన విడుదల చేశారు. ప్రస్తుత కరోనా వ్యాధి నిర్ధారణ కోసం అవలంభిస్తున్న పద్ధతుల కంటే డ్రై స్వాబ్ ఆర్టీపీసీఆర్ పరీక్ష నిర్వహించడం సులభమని తెలిపారు. ఈ పద్ధతిని అవలంబించేందుకు దేశవ్యాప్తంగా 500 ప్రభుత్వ, ప్రైవేటు సెంటర్లలో ప్రత్యేక శిక్షణ లను అందిస్తామని సీసీఎంబీ, ఐసీఎంఆర్ సంస్థలు తెలిపాయి. వారం రోజుల్లో సెషన్లు ఏర్పాటు చేసి ఆన్‌లైన్ ద్వారా శిక్షణలు అందిస్తామన్నారు. ట్రైనింగ్ తీసుకునేందుకు ఆసక్తి ఉన్న వారు సీసీఎంబీ వెబ్‌సైట్ ద్వారా స్లాట్ బుక్ చేసుకోవాలని సూచించారు. హైదరాబాద్ పరిసర ప్రాంతాల్లోని వారు నేరుగా సీసీఎంబీ డైరెక్టర్‌ను సంప్రదించి ట్రైనింగ్ తీసుకోవచ్చని తెలిపారు. నూతన డ్రై స్వాబ్ ఆర్టీపీసీఆర్ పద్ధతిలో శాంపిల్స్‌ను ఒక చోట నుంచి మరో చోటుకు తీసుకెళ్లాల్సిన అవసరం లేదని వివరించారు. ఈ టెస్ట్‌లకు అతి తక్కువ శాంపిల్స్ అవసరమవుతాయని తెలిపారు. అత్యంత వేగంగా, చౌకగా, ల్యాబ్ టెక్నీషియన్లకు ఎలాంటి ఇబ్బందులు తలెత్తకుండా నిర్వహించే ఈ టెస్ట్‌ల ద్వారా ఫలితాలు ఆర్టీపీసీఆర్ రిజల్ట్‌తో సమానంగా వస్తాయని స్పష్టం చేశారు. పెరుగుతున్న కేసులను త్వరితగతిన గుర్తించేందుకు డ్రై స్వాబ్ ఆర్టీపీసీఆర్ పరీక్షలు ఉపయోగపడుతాయని సీసీఎంబీ, ఐసీఎంఆర్ సంస్థలు అభిప్రాయ పడ్డాయి.

Published in:

Disha Telugu, Eenadu

CSIR-IICT

03rd May, 2021

Virus second wave affects trial of new drugs

IICT has lined up at least 3 potential repurposed drugs for clinical trials

V. GEETANATH
HYDERABAD

The surging second wave of COVID-19 pandemic has been putting tremendous strain on the healthcare facilities in both the public and private sector with scores of patients lining up for admission. This has also had an effect on the ongoing clinical trials for various drugs and vaccine candidates even as hospitals and staff remain busy with patient care.

CSIR-Indian Institute of Chemical Technology (IICT) has lined up at least three potential repurposed drugs – Niclosamide, Colchicine and Chlorpromazine – in association with other CSIR labs for clinical trials. "While this is the time to initiate clinical trials with many patients being admitted in hospitals, we are conscious that it will also put pressure on doctors partnering for clinical trials because, they have to monitor these patients much more closely and record many more parameters," pointed out IICT director S. Chandrasekhar.

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>
> S. CHANDRASEKHAR, IICT Director

The institute has pioneered the process technology of Favipiravir and Remdesivir, repurposed for treatment of COVID-19 and is also working closely with indigenous pharmaceutical industries for development of the next generation of antivirals and other drugs.

"CSIR is open to providing non-exclusive licence to the processes we develop so that drugs are available in quantities at affordable cost. A challenge with Favipiravir and Remdesivir long storage is the shelf life. Currently, companies have data for less than one year and if more data is available, the production can be ramped up," he explained.

Drug firms had to shed the production lines by December last year due to reduced demand and now the sudden increase has led to panic-buying and shortage. "We expect the firms to ramp up production during these months and the situation could ease up in the coming days once the regulatory approvals come in for infrastructure upgrade of the existing facilities for more production," he added.

IICT has also been instrumental in developing a crucial adjuvant for Bharat Biotech International Limited for bringing out Covaxin in association with Indian Council of Medical Research and the National Institute of Virology. "We are further improving the process so that the scale up is easier to provide more adjuvants to Bharat Biotech as they enhance the vaccine production to meet the demand within the country and internationally in a more cost-effective manner," he said.

Published in:
Thehindu

UK variant spread increased 10 folds in Kerala from Feb to Mar

CSIR-IGIB,CCMB

02nd May, 2021

Kerala Chief Minister Pinarayi Vijayan recently said that variants that were first detected in the United Kingdom and South Africa have been identified in the state. In addition, the 'double mutant' variant that is widely prevalent in Maharashtra, has also been reported in Kerala.

"Of the total cases now detected 40% are from these variants, which include 30% of the UK variant, while 7% is the double mutant strain and 2% is the one from South Africa"

The state began surveillance in December 2020 when a new coronavirus variant was identified in the UK. At that time, the caseload in Kerala was on a diminishing trend since September and the average number of daily reported cases stood around 6,000.

With the start of the second COVID-19 wave in February, Kerala began sequencing samples to identify the variants in the state. "Three new variants have been found in the state from the samples collected prior to the elections. Two of these are the B.1.67 (double mutant) variant and the B.1.351 (South Africa) variant. These variants were found in samples collected from March 2021 but they were not found in samples collected prior to that. B.1.67 is an Indian variant that has been rampantly present in Maharashtra while B.1.351 is a South African variant," Vinod Scaria, a scientist at the CSIR-Institute of Genomics and Integrative Biology (CSIR-IGIB), New Delhi, told TNM.

Kerala had tied up with CSIR-IGIB in November 2020 for genome sequencing to understand

the mutation of the novel coronavirus. Experts say that it is normal for the coronavirus to mutate. The district-wise sequencing of samples is still going on while a state-wise study was completed in 2020. The report of the study, conducted in association with the Kozhikode Medical College, was submitted to the government but its details haven't been published yet.

Fast spread, from 3% to 30% in one month

According to Vinod, the spread of the UK variant increased 10 times from February to March in Kerala. "The third is the B.1.1.7 (UK) variant, which has been found in large proportions in the state. It'd been found in the state back in February but only in 3% of the samples. But in March it was found in 30% of samples collected. This indicates how fast the virus spreads – from February to March the spread increased from 3% to 30%," Vinod said.

However, the South Africa variant has been found in very less proportion in Kerala.

Two ways of studying mutation

The mutation is studied in two ways in Kerala; one is by genome sequencing and second is by sequencing spike protein in a sample. Genome sequencing involves studying the order of bases present in the entire genome organism. The second method is faster and hence can be done for more samples. There are 12 centres in Kerala, both under the Kerala and Union governments, carrying out genome sequencing and spike protein sequencing. CSIR-IGIB is also entrusted with genome sequencing.

Last year the study was done in Kozhikode and adjoining areas by collecting 200 samples. Now the study is being done in all districts by collecting 100 samples from each district. "With this, we can say what variant is spreading in each district. The district-wise study is more relevant as population dynamics are not the same in all the districts of the state. The presence of the UK variant is high in border districts such as Palakkad, Wayanad and Kasaragod. Also, it is higher in bigger cities like Kozhikode and Ernakulam, where a large number of people mingle with each other and so the probability of transmission is high," Vinod said.

Infectious variants

Both the variants that were first detected in the UK and South Africa are infectious and are classified as Variants of Concern (VoC). "Because these variants transmit rapidly, we're seeing more people needing hospitalization. It can even lead to increase in the mortality rate," Vinod said, adding that the UK variant is the one that has been found rampant in Delhi.

"The public should consider this a serious message as the infectivity (transmission from one person to another) is high with these viruses."

"Mutation will keep on happening and we may not be able to identify each mutation. The only way to prevent the transmission is for people to be more cautious, practice physical distancing, and if possible wear double masks," Vinod said. Double masking is being widely advised ever since the second wave as protection from getting infected. Double masking is wearing a cloth mask over a surgical mask, as not all people are able to afford N95 masks.

"It's up to people to be more cautious rather than for the government to come out with stringent measures such as a lockdown. Also, there's no point in finding solace in saying that the caseload is less in one district because the situation is grave," Dr Chandni added.

Vaccine efficacy against mutated variants

According to Vinod, COVID-19 vaccines have efficacy against the mutant variant too. The Union Health Ministry recently stated that both Covishield and Covaxin are effective against the UK variant. While Covishield is less effective against the South African variant, studies are underway to understand Covaxin's efficacy against the same. Hyderabad's CCMB to study whether COVID-19 vaccine works against double mutant variant.

Published in:
Thequint

Makeshift hospitals to come up in 2 dists

CSIR-CBRI

01st May, 2021

In order to further ramp up the existing health infrastructure and create more hospital beds for critical patients, the Punjab Government will set up two makeshift hospitals equipped with the ICU facility for Covid patients in Mohali and Bathinda. Besides, nine smaller hospitals at various district hospitals would come up in the state.

This was stated by Chief Secretary Vini Mahajan after chairing a meeting with officials here on Saturday. She directed the Medical Education and Research department to make functional both hospitals by the month-end.

Principal Secretary Medical Education and Research (PSMER) DK Tiwari said 2.66 acres near the Bathinda refinery and 23,000 sq ft land in Mohali had been identified for the purpose and both hospitals would have the capacity of 104 beds each. The lifespan of these hospitals would be 25 years.

The implementation partner for raising the Mohali hospital would be PSA-PM/ IITM through CSR funding and Mohali medical college would ensure coordination and procurement of equipment. For Bathinda, implementation partner CSIR/CBRI would work with HMEL to ensure equipment procurement.

PSA-PMO Dr Sapna Poti said field survey had been done in Mohali to set up the hospital within three to four weeks by using Madras IIT's innovation which has already been

replicated at eight places. “Support of Murugappa/ Tata groups is being taken to ramp up the facilities,” she said.

Col Jasdeep Sandhu, Director, Civil Military Affairs, Western Command, said he had visited the Mohali site and felt the need to utilise the existing beds promptly as the field hospital unit could move in three days.

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CSIR-CMERI

01st May, 2021

Webinar of MSME DI, Ahmedabad on Oxygen Enrichment Unit developed by CSIR-CMERI

Ahmedabad

Amidst the severe crisis of medical grade oxygen requiredfor the COVID-19 patients, MSME DI, Ahmedabad conducted a webinar on 29.04.2021 on the Oxygen Enrichment Unit developed by CSIR-CMERI. Prof. (Dr.) Harish Hirani, Director, CSIR-CMERI was invited as the Chief Speaker. Mr. Ranjeeth Kumar S., IAS, Commissioner, MSME, Government of Gujrat; Mr. Vikas Gupta, Jt. Director & HOO, MSME .Govt. of India, Ahmedabad and Mr. P. N. Solanki, IEDS, Dy Director, MSME -DI Ahmedabad also participated in the above webinar.

Prof. Harish Hirani, Director, CSIR-CMERI, while interacting with the MSME representatives requested the Commissioner, MSME, Gujarat to explore the possibilities of Import Duty waiver for Individual Components of the Oxygen Enrichment Unit such as Compressor, Zeolite etc. Oxygen is playing the role of a Life-Saver for the COVID patients and the CSIR-CMERI developed Oxygen Enrichment Unit can pitch-in to play a very crucial role in this regard. Oil-Free Compressors are better in terms of performance for Medical Usage and in this regard even Zeolite plays a crucial role. The CSIR-CMERI Oxygen Enrichment Unit, focuses upon Severe and Critical COVID cases. The usage of Oxygen Cylinders as evident in few cases, sometimes becomes risky due to its leakage. Besides, the Transportation Logistics Expenditure accounts a major component of the cost.

The Oxygen Enrichment Unit (OEU) may also facilitate the setting up of Mini-ICUs in Smaller Clinics, Dispensaries and Isolation Centres. The OEU can also be used along with the CSIR-NAL developed Bi-PAP system. Essentially the OEU has two parts namely i) Fixed Compressor Unit and ii) Portable Enrichment Unit. If innovatively used by the MSMEs, a Single Air Compressor strategically placed outside the room can help serve 4-6 patients at one go. The technology can also be customised as per the requirements of the situation. This would help Shape-Up the technology as per local requirements and help boost the local manufacturing scenario, thereby paving the way for an AtmaNirbhar Bharat. The Raw Materials that would be required for the OEU are:

Oil-Free Reciprocating Compressor (Continuous Duty)

Oxygen Grade Zeolite Sieves

Pneumatic Components

Prof. Harish Hirani after briefing the MSMEs on the facilities required to Start Manufacturing the Technology and the Space Requirements for the same shared that the CSIR-CMERI developed OEU Prototype costs around Rs. 35,000/, however when productions are Scaled-Up, the cost for the same might be brought down considerably. CSIR-CMERI commits to provide all sorts of assistance to the MSME partners in terms of Technical Training and Raw Materials sourcing.

Mr. Ranjeeth Kumar S., IAS, Commissioner, MSME, Government of Gujrat requested MSME officials to make a complete list of the resources as well as the details of the interested entrepreneurs and share amongst them for initiation and ramping up of mass production at the earliest.

Mr. Vikas Gupta, Jt. Director & HOO, MSME .Govt. of India appreciating the technology thanked CSIR-CMERI for developing OEU to fight the pandemic and stated that it would be very useful for patients at home isolation and small hospitals and there is tremendous for MSMEs for manufacturing the unit.

Mr. P. N. Solanki, IEDS, Dy. Director, MSME DI Ahmedabad on the occasion expressing on the present oxygen crisis said that though such Oxygen Concentrators were available since long, most of the technologies were imported.

Published in:

Western Times

The device to pre-detect the disturbance in the Ice Mountains

CSIR-NGRI

29th April, 2021

- **Early warnings with seismographs**
- **Information with high accuracy on calamities**
- **NGRI developed for the first time in the country**
- **Institute's Chief Scientist Dr. Purnachandra Rao with EENADU**

Major accidents are taking place upon breaking of landslides in the Himalayas. Ice Mountains are melting with global warming. Over 100 persons were died on raging of floods suddenly upon melting of ice on the mountain peaks in Uttarakhand February this year. Similar calamities are occurring every two three years in the Himalayas. So far, in the absence of early warning system, often loss of property, life is happening. Chief Scientist of National Geophysical Research Institute (NGRI) Dr. N. Purnachandra Rao told to 'EENADU' face to face that a system to detect this kind of threat early with the help of seismographs is developed for the first time.

Q. What kind of disasters are lurking in the Himalayas?

Ans.: Not just earth quakes, many disasters are lurking for the Himalayas, like landslides, flooding due to melting of ice sheets, ice forms like ponds on mountains and with the global warming suddenly they are breaking down. An accident happened on 7th February in Uttarakhand is an example for this. The rocks at an altitude of 5600 meters on the mountain fell down. Along with them ice melted and the flood raged into the Rishi Ganga. Eleven persons were died due to ice slide on 23rd April. Threat increased to the Himalayas with atmospheric changes, and global warming.

Q. How the Satellite system is used to know the information of the disaster?

Ans.: So far we are collecting the information related to the disasters in the Himalayas through satellite images. These images are useful only to know the situation there, after

everything happened. Furthermore, after an image sent from the satellite, it takes some time to come another. Before this information arrives, sometimes severe damage is happening. Here information gap is becoming a large abyss. There is no Real Time Monitoring.

Q. How the new system works with help of seismographs?

Ans.: NGRI installed 80 seismographs at several places in the Himalayas a few years ago. We can say it is a very broad network. Even a small noise is also recorded in the seismograph. Moreover, that matter reaches the monitoring station within seconds. Information is received with a speed of three to six km/s. We have observed the sound is recorded on landslide, breaking of ice sheets also. Half an hour will take for the flood to meet with the river after breaking of ice slide from such a height. Within this time, if the mechanism is alerted there, loss of life can be avoided and the people can be saved.

Q. How you overcome the challenges in this process?

The earthquakes occurring with big noise can be easily identified in the graph. Identifying based on signals is easy. However, in this, the noises of the traffic, raining are also recorded. Identifying the noises coming particularly when the landslide occurs is difficult at one station. It is possible to identify them when same type of noises are recorded in several seismographs located there. To identify these as well, our team have developed a new methodology. This works with accuracy. The accuracy of one hundredth of a second made possible. As a result, they can be easily tracked.

Q. Whether the existing seismographs are adequate? Or more need to be setup?

Ans.: The number of existing ones is also very high. These are adequate. Somewhere the locations need to be changed. Developing an early warning system with the help of seismograph is first of its kind in the country. Several countries in the world are making attempts. We are working together with Germany having experience in collecting this kind of information. Nowhere is it implemented, if ours is available and the information is received accurately, it will be the first in the world.

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