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समाचार पत्रों से चयित अंश Newspapers Clippings

A Daily service to keep DRDO Fraternity abreast with DRDO Technologies, Defence Technologies, Defence Policies, International Relations and Science & Technology

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COVID 19: DRDO's Contribution



Press Information Bureau
Government of India

Ministry of Defence

Mon, 19 April 2021 4:32PM

DRDO develops SpO₂ based Supplemental Oxygen Delivery System: A boon in current COVID-19 pandemic

Defence Research and Development Organisation (DRDO) has developed SpO₂ (Blood Oxygen Saturation) supplemental Oxygen Delivery System for soldiers posted at extreme high-altitude areas. Developed by Defence Bio-Engineering & Electro Medical Laboratory (DEBEL), Bengaluru of DRDO, the system delivers supplemental oxygen based on the SpO₂ levels and prevents the person from sinking in to a state of Hypoxia, which is fatal in most cases, if sets in. This automatic system can also prove to be a boon during the current Covid-19 situation.

Hypoxia is a state in which the amount of oxygen reaching the tissues is inadequate to fulfill all the energy requirements of the body. This is exactly the situation that gets replicated in a Covid patient due to the virus infection and has been a leading factor in the current crisis.

The electronic hardware of the system is designed for functioning at extreme altitudes featuring low barometric pressures, low temperatures and humidity. The software safety checks incorporated into the system are critical in ensuring the functional reliability of the system in field conditions.

Oxygen Regulator

The system reads SpO₂ levels of the subject from a wrist-worn pulse oximeter module through wireless interface and controls a proportional solenoid valve to regulate the oxygen supply to the subject. The oxygen is delivered from a lightweight portable oxygen cylinder through nasal nares. The system is available in various sizes from one litre and one kg weight with 150 litres of oxygen supply to 10 litres & 10 kg weight with 1,500 litres of oxygen supply which can sustain for 750 minutes with a continuous flow of two liters per min (lpm).

Since the system is indigenously developed for operation in field conditions, it is unique with its dual qualities of being robust & cheap and is already in bulk production with the industry.

The system is a boon in the current pandemic as it can be used in the household for moderate Covid patients for Oxygen flow therapy with flow controlled at 2/5/7/10 lpm flow. The automatic usage has huge advantage in the household, as the oximeter would give an alarm for lower SpO₂ value. It will automatically increase/decrease the O₂ flow based on SpO₂ setting which can be auto



adjusted at 2, 5, 7, 10 lpm flow rate. The optimal O2 flow rate conserves the O2 resources/O2 management and greatly increases the endurance.

With its availability and simple to use facility by a common person, the system shall greatly reduce the workload and exposure time of doctors and paramedics to monitor the SpO2 levels of the patient. The automated Calibrated Variable Flow Control for Low O2 levels (User pre-set, <90%, <80%) through a calibrated Flow Control Valve (PFCV) will facilitate in economising the oxygen supply (1-10 lpm with ± 0.5 lpm). A moderate Covid patient requires longtime moderate O2 supply 10Litre/150bar–10kg–1500 litres which can sustain up to 750 minutes.



This automated, easy to use Oxygen Delivery System now available is a great boon particularly in these critical times when medical resources are stretched to their limits. Its proliferation would mitigate the crisis in management of such huge number of covid patients in many ways all across the country.

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=1712666>



पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Mon, 19 April 2021 4:32PM

वर्तमान कोविड-19 वैश्विक महामारी में एक वरदान: रक्षा अनुसन्धान एवं विकास संगठन द्वारा एसपीओ2 (SpO2) आधारित पूरक ऑक्सीजन वितरण प्रणाली का विकास

रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) ने दुर्गम पहाड़ियों में अत्यधिक ऊंचाई वाले इलाकों पर तैनात सैनिकों के लिए एसपीओ2 (SpO2- ब्लड ऑक्सीजन सैचुरेशन) आधारित पूरक ऑक्सीजन वितरण प्रणाली विकसित की है। डीआरडीओ की डिफेन्स बायो-इंजीनियरिंग एंड इलेक्ट्रो मेडिकल लैबोरेट्री (डीईबीईएल), बेंगलुरु द्वारा एसपीओ2- स्तरों पर विकसित यह प्रणाली अतिरिक्त मात्रा में ऑक्सीजन आपूर्ति करती है और व्यक्ति को ऐसी बेहोशी- हाईपोक्सिया में जाने से बचाती है जो कई स्थितियों में घातक सिद्ध होती है। यह स्वचालित प्रणाली वर्तमान समय में फैली हुई वैश्विक महामारी कोविड-19 परिस्थितियों में भी एक वरदान सिद्ध हो सकती है।



हाईपोक्सिया वह स्थिति है जब शरीर के ऊतकों में पहुँच रही ऑक्सीजन की मात्रा शरीर की आवश्यकता पूरी करने के लिए अपर्याप्त हो, ठीक ऐसी ही स्थिति वायरस संक्रमण से ग्रस्त कोविड रोगियों में दिखती है और इस समय चल रही संकटपूर्ण स्थिति का प्रमुख कारण भी है।

इस प्रणाली का इलेक्ट्रॉनिक हार्डवेयर अत्यधिक ऊंचाई वाले पहाड़ी स्थानों के कम बैरोमेट्रीक दबाव, कम तापमान और आर्द्रता वाली स्थितियों में काम कर सकने के लिए बनाया गया है। इसमें लगाए गए सॉफ्टवेयर सिक्योरिटी चेक्स (अवरोधक) जमीनी परिस्थितियों में इस प्रणाली की कार्यात्मक विश्वसनीयता को सुनिश्चित करने के लिए आवश्यक रूप से महत्वपूर्ण हैं।

ऑक्सीजन रेगुलेटर

यह प्रणाली हाथ की कलाई में पहने जाने वाले वायरलेस इंटरफेस के माध्यम से पल्स ऑक्सीमीटर मौड्यूल का उपयोग



करके रोगी का एसपीओ₂ स्तर देख लेते हैं और ऑक्सीजन आपूर्ति को सुचारू बनाने वाले एक प्रोपोर्शनल सोलेनोयड वाल्व को नियंत्रित करती है। ऑक्सीजन की आपूर्ति एक पोर्टेबल कम भार वाले ऑक्सीजन सिलेंडर से नाक में की जाती है। यह प्रणाली एक लीटर से एक किलोग्राम भार वाले सिलेंडर जिसमें 10 लीटर से 150 लीटर तक की ऑक्सीजन आपूर्ति से लेकर 10 लीटर एवं 10 किलोग्राम भार वाले 1,500 लीटर की ऑक्सीजन को दो लीटर प्रति मिनट (एलपीएम) की दर से 750 मिनट तक ऑक्सीजन की आपूर्ति करने में सक्षम है।

चूँकि यह प्रणाली क्षेत्रीय स्थितियों में काम करने के लिए स्वदेश में ही विकसित की गयी है इसलिए इसका मजबूत, दुरुस्त और कम लागत वाला होना इसकी विशेषता है। इसका उद्योग जगत पहले से ही बड़ी मात्रा में उत्पादन भी कर रहा है।



वर्तमान वैश्विक महामारी की परिस्थितियों में यह प्रणाली एक वरदान ही है क्योंकि 2/5/7/10 एलपीएम के नियंत्रित ऑक्सीजन बहाव के साथ इसे मध्यम श्रेणी के कोविड रोगियों को उनके घरों में ही ऑक्सीजन की आपूर्ति के लिए प्रयोग किया जा सकता है। इसका स्वचालित होना ही घरों में सबसे अधिक लाभकारी है क्योंकि एसपीओ₂ स्तर कम होते ही इसका ऑक्सीमीटर चेतावनी (अलार्म) देने लगता है। एसपीओ₂ सेटिंग पर आधारित इसका प्रवाह स्वयं ही ऑक्सीजन की मात्रा को घटा/ बढ़ा सकता है। और इसे 2,5, 7, 10 एलपीएम दर पर एडजस्ट किया जा सकता है। सर्वश्रेष्ठ ऑक्सीजन (O₂) प्रवाह शरीर में ऑक्सीजन के स्रोत/ प्रबंधन को सुरक्षित रखता है और व्यक्ति की सहन शक्ति को बहुत बढ़ा देता है।

इसकी उपलब्धता और जन सामान्य द्वारा इसका आसानी से इस्तेमाल की सुविधा के कारण यह प्रणाली रोगियों के एसपीओ₂ स्तर की निगरानी कर रहे स्वास्थ्य कर्मियों और चिकित्सकों के काम का बोझ एकदम से कम करने के साथ-साथ उन्हें संक्रमण से भी बचाएगी। कम ऑक्सीजन स्तर (यूजर्स प्री-सेट, <90%, <80%) एक कैलिब्रेटेड फ्लो कंट्रोल वाल्व (पीएफसीवी) के माध्यम से स्वचालित कैलिब्रेटेड परिवर्तनीय प्रवाह नियन्त्रण किए जाने से ऑक्सीजन की कम लागत पर उचित आपूर्ति (±0.5 एलपीएम के साथ 1-10 एलपीएम) हो सकेगी। एक मध्यम श्रेणी के कोविड रोगी को 10 लीटर/ 150 बार- 10 किग्रा-1500 लीटर ऑक्सीजन की लम्बे समय तक नियंत्रित आपूर्ति की आवश्यकता होती है जो 750 मिनट तक चल सके।

इस स्वचालित आसानी से प्रयोग की जा सकने वाली ऑक्सीजन आपूर्ति प्रणाली का ऐसे संकट के समय उपलब्ध हो जाना किसी वरदान जैसा ही है जब उपलब्ध चिकित्सीय संसाधनों का उनकी अधिकतम सीमा तक उपयोग कर लिया गया हो। इसकी उपलब्धता को बढ़ाने से देशभर में बहुत बड़ी संख्या में सामने आ रहे कोविड रोगियों के उपचार का प्रबन्धन करने में आ रही कठिनाइयों से निजात मिल सकेगी।

<https://pib.gov.in/PressReleasePage.aspx?PRID=1712732>

DRDO develops SpO₂ based Supplemental Oxygen Delivery System: A boon in current COVID-19 pandemic

New Delhi: Defence Research and Development Organisation (DRDO) has developed SpO₂ (Blood Oxygen Saturation) supplemental Oxygen Delivery System for soldiers posted at extreme high-altitude areas. Developed by Defence Bio-Engineering & Electro Medical Laboratory (DEBEL), Bengaluru of DRDO, the system delivers supplemental oxygen based on the SpO₂ levels and prevents the person from sinking in to a state of Hypoxia, which is fatal in most cases, if sets in. This automatic system can also prove to be a boon during the current Covid-19 situation.

Hypoxia is a state in which the amount of oxygen reaching the tissues is inadequate to fulfill all the energy requirements of the body. This is exactly the situation that gets replicated in a Covid patient due to the virus infection and has been a leading factor in the current crisis.

The electronic hardware of the system is designed for functioning at extreme altitudes featuring low barometric pressures, low temperatures and humidity. The software safety checks incorporated into the system are critical in ensuring the functional reliability of the system in field conditions.

The system reads SpO₂ levels of the subject from a wrist-worn pulse oximeter module through wireless interface and controls a proportional solenoid valve to regulate the oxygen supply to the subject. The oxygen is delivered from a lightweight portable oxygen cylinder through nasal nares. The system is available in various sizes from one litre and one kg weight with 150 litres of oxygen supply to 10 litres & 10 kg weight with 1,500 litres of oxygen supply which can sustain for 750 minutes with a continuous flow of two liters per min (lpm).

Since the system is indigenously developed for operation in field conditions, it is unique with its dual qualities of being robust & cheap and is already in bulk production with the industry.

The system is a boon in the current pandemic as it can be used in the household for moderate Covid patients for Oxygen flow therapy with flow controlled at 2/5/7/10 lpm flow. The automatic usage has huge advantage in the household, as the oximeter would give an alarm for lower SpO₂ value. It will automatically increase/decrease the O₂ flow based on SpO₂ setting which can be auto adjusted at 2, 5, 7, 10 lpm flow rate. The optimal O₂ flow rate conserves the O₂ resources/O₂ management and greatly increases the endurance.

With its availability and simple to use facility by a common person, the system shall greatly reduce the workload and exposure time of doctors and paramedics to monitor the SpO₂ levels of the patient. The automated Calibrated Variable Flow Control for Low O₂ levels (User pre-set, <90%, <80%) through a calibrated Flow Control Valve (PFCV) will facilitate in economising the oxygen supply (1-10 lpm with ± 0.5 lpm). A moderate Covid patient requires longtime moderate O₂ supply 10Litre/150bar–10kg–1500 litres which can sustain up to 750 minutes.



This automated, easy to use Oxygen Delivery System now available is a great boon particularly in these critical times when medical resources are stretched to their limits. Its proliferation would mitigate the crisis in management of such huge number of covid patients in many ways all across the country.

<https://orissadiary.com/drdo-develops-spo2-based-supplemental-oxygen-delivery-system-a-boon-in-current-covid-19-pandemic/>

THE TIMES OF INDIA

Tue, 20 April 2021

DRDO oxygen delivery system can aid Covid patients

Bengaluru: Defence Research and Development Organisation's (DRDO) Bengaluru lab — Defence Bio-Engineering & Electro Medical Laboratory (DEBEL) — has developed a Blood Oxygen Saturation (SpO₂) supplemental oxygen delivery system for soldiers posted at extreme high-altitude areas, which it said on Monday, can also be used to tackle Covid-19.

“The automatic system delivers supplemental oxygen based on the SpO₂ levels and prevents the person from sinking into a state of Hypoxia, which is fatal in most cases, if it sets in,” a DRDO statement read.

Hypoxia is a state in which the amount of oxygen reaching the tissues is inadequate to fulfill all the energy requirements of the body. “This is exactly the situation that gets replicated in a Covid-19 patient due to the virus infection and has been a leading factor in the current crisis,” the statement read.

The electronic hardware of the system is designed for functioning at extreme altitudes featuring low barometric pressures, low temperatures and humidity, the DRDO said, adding that the software safety checks incorporated into the system are critical in ensuring the functional reliability of the system in field conditions.

“The system reads SpO₂ levels from a wrist-worn pulse oximeter module through wireless interface and controls a proportional solenoid valve to regulate the oxygen supply to the subject. The oxygen is delivered from a lightweight portable oxygen cylinder through nasal nares. The system is available in various sizes from one litre and one kg weight with 150 litres of oxygen supply to 10 litres & 10 kg weight with 1,500 litres of oxygen supply which can sustain for 750 minutes with a continuous flow of two liters per min (lpm),” the statement read.

Since the system is indigenously developed for operation in field conditions, it is unique with its dual qualities of being robust & cheap and is already in bulk production with the industry.

“The system is a boon in the current pandemic as it can be used in the household for moderate Covid-19 patients for oxygen flow therapy with flow controlled at two, five, seven or 10 litres per minute flow. The automatic usage has a huge advantage in the household, as the oximeter would give an alarm for lower SpO₂ value. It will automatically increase/decrease oxygen flow based on SpO₂ setting which can be auto adjusted. The optimal oxygen flow rate conserves the oxygen resources/ management and greatly increases the endurance,” DRDO said.

With its availability and simple to use facility by a common person, the system shall greatly reduce the workload and exposure time of doctors and paramedics to monitor the SpO₂ levels of the patient, it added.

<https://timesofindia.indiatimes.com/india/drdo-oxygen-delivery-system-can-aid-covid-patients/articleshow/82145217.cms>



DRDO develops supplemental oxygen delivery system for treatment of Covid patients

Amid a massive oxygen supply crunch in the country due to growing coronavirus cases, the Defence Research and Development Organisation has created supplemental oxygen delivery system

By Abhishek Bhall

Amid a massive shortage of oxygen cylinders in the country due to resurgence in coronavirus cases, the Defence Research and Development Organisation (DRDO) has developed SpO₂ (Blood Oxygen Saturation) supplemental oxygen delivery system.

The device can be used by soldiers posted at extreme high-altitude areas and also help Covid-19 patients.

"Being ever in the forefront to support the Indian Soldier in most difficult terrain and adverse circumstances, the (DRDO) has developed yet another system, which is of great value not only to the Indian Army soldiers fighting in the Extreme High Altitudes Areas but also would be a boon to the country in this extreme crisis of Covid 19 pandemic," DRDO said in a statement on Monday.

The system is a boon in the current pandemic as it can be used in the household for moderate/mild Covid patients as it provides oxygen flow therapy, it said.

Developed by the Defence Bio-Engineering & Electro Medical Laboratory (DEBEL) in Bengaluru, the system delivers supplemental based on the SpO₂ levels and prevents the person from sinking into a state of Hypoxia, DRDO said.

Hypoxia is a condition in which the human body is deprived of adequate oxygen supply at the tissue level. This is exactly the situation that gets repeated in a Covid-19 patient due to the virus infection. In serious cases, oxygen is critical to treat a coronavirus-infected patient.

Various states in the country -- Maharashtra, Delhi, Madhya Pradesh and others -- have been facing severe shortage of oxygen cylinders due to the steep increase in daily coronavirus cases.

To tackle this, the newly developed supplemental oxygen delivery system will be a great boon and would help to treat a number of coronavirus patients across the country, the DRDO said.

"This automated, easy to use Oxygen Delivery System now available is a great boon particularly in these critical times when medical resources are stretched to their limits. Its proliferation would mitigate the crisis in management of such a huge number of covid patients in many ways all across the country," DRDO said in the press note.

DRDO said the system reads SpO₂ levels of the subject from a wrist-worn pulse oximeter module through wireless interface and controls a proportional solenoid valve to regulate the oxygen supply to the subject.

<https://www.indiatoday.in/india/story/drdo-develops-supplemental-oxygen-delivery-system-for-treatment-of-covid-patients-1792765-2021-04-19>



The device can be used by soldiers posted at extreme high-altitude areas and also help Covid-19 patients. (India Today)

DRDO ने SpO2 सप्लीमेंट ऑक्सीजन डिलीवरी सिस्टम किया तैयार, कोरोना मरीजों के लिए वरदान

By Love Gaur

हैदराबाद: रक्षा मंत्रालय ने सोमवार को जानकारी देते हुए बताया कि डीआरडीओ (डिफेंस रिसर्च एंड डेवलेपमेंट ऑर्गनाइजेशन) की ओर से SpO2 (रक्त ऑक्सीजन परिपूर्णता) विकसित किया है, जिसकी तस्वीर भी रक्षा मंत्रालय की ओर से जारी की गई है। DRDO ने SpO2 सप्लीमेंट ऑक्सीजन डिलीवरी सिस्टम विकसित किया है, जो ऑक्सीजन फ्लो थेरेपी के लिए जरिए कोरोना रोगियों के लिए इस्तेमाल किया जा सकता है।

सैनिकों के इस्तेमाल के लिए डीआरडीओ की ओर से विकसित उपकरण अब कोविड - 19 रोगियों के लिए काम आएगा। डीआरडीओ ने सोमवार को कहा कि कोविड-19 महामारी के इस चरम संकट में उच्च ऊंचाई वाले क्षेत्र भी देश के लिए वरदान साबित होंगे। डिफेंस बायो-इंजीनियरिंग एंड इलेक्ट्रो मेडिकल लेबोरेटरी (DEBEL),

DRDO के बंगलुरु ने सैनिकों के लिए अत्यंत उच्च ऊंचाई पर एक SpO2 (रक्त ऑक्सीजन संतृप्ति) सप्लीमेंट ऑक्सीजन डिलीवरी सिस्टम विकसित की है। यह स्वचालित प्रणाली SpO2 स्तरों के आधार पर पूरक ऑक्सीजन वितरित करती है और व्यक्ति को हाइपोक्सिया की स्थिति में जाने से रोकती है, जो कि ज्यादातर मामलों में घातक होता है।

दरअसल, देश में कोरोना की दूसरी लहर ने जमकर कोहराम मचा रखा है। हर राज्य में अस्पताल में बेड से लेकर ऑक्सीजन सप्लाई में परेशानी का सामना करना पड़ रहा है। कोविड सेंटर में बेड और ऑक्सीजन ना होने के चलते रोगियों को बेहतर उपचार नहीं मिल पा रहा है। यहां तक कई राज्यों में तो मरीजों ने दम तक तोड़ दिया। दिल्ली से लेकर महाराष्ट्र तक सभी राज्यों के कमोबेश यहीं हालात हैं। ऐसे में अब डीआरडीओ की तरफ से तैयार किया गया सिस्टम कोरोना मरीजों के काम आएगा।

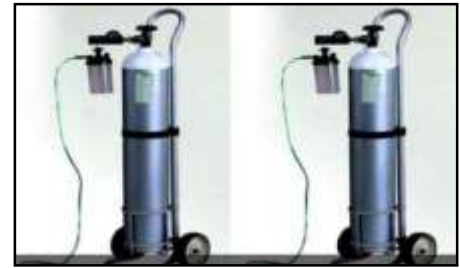
<https://hindi.oneindia.com/news/hyderabad/drdo-develops-spo2-supplemental-oxygen-delivery-system-for-covid-patients-614017.html>



DRDO ने बनाया सप्लीमेंटल ऑक्सीजन डिलीवरी सिस्टम, कोरोना मरीजों को मिलेगी मदद

Supplemental Oxygen Delivery System: इस सिस्टम का इस्तेमाल कोरोना वायरस के मॉडरेट लक्षणों वाले मरीजों के इलाज में ऑक्सीजन फ्लो थेरेपी के जरिए इस्तेमाल किया जा सकेगा

नई दिल्ली: कोरोना वायरस संक्रमण (Coronavirus) के चलते देश भर में ऑक्सीजन की मांग अचानक बहुत बढ़ गई है। यूपी, दिल्ली, राजस्थान और एमपी से लेकर महाराष्ट्र और बंगाल तक ऑक्सीजन के लिए लोग भटक रहे हैं। ऐसे में रक्षा अनुसंधान और विकास संगठन (DRDO) ने सप्लीमेंटल ऑक्सीजन डिलीवरी सिस्टम का विकास किया है। इस सिस्टम का इस्तेमाल कोरोना वायरस के मॉडरेट लक्षणों वाले मरीजों के इलाज में ऑक्सीजन फ्लो थेरेपी के जरिए किया जा सकेगा। एनआई ने इस बारे में रक्षा मंत्रालय के हवाले से जानकारी दी है।



रक्षा अनुसंधान और विकास संगठन (DRDO) ने सप्लीमेंटल ऑक्सीजन डिलीवरी सिस्टम का

इससे पहले केंद्र सरकार ने रविवार को कहा कि उसने देश के विभिन्न स्वास्थ्य केंद्रों में 162 प्रेशर स्विंग ऐड्सॉप्शन (पीएसए) ऑक्सीजन संयंत्र लगाने की पहल की है। वहीं, रेलवे ने ऑक्सीजन की ढुलाई के लिए विशेष रेलगाड़ी चलाने की घोषणा की है। केंद्रीय स्वास्थ्य मंत्री हर्षवर्धन ने कहा कि रेमडेसिविर दवा का उत्पादन दोगुना करने, निर्बाध ऑक्सीजन की आपूर्ति करने और कोविड-19 टीका मुहैया कराने के साथ-साथ स्वास्थ्य अवसंरचना को बढ़ाने के लिए राज्यों की पूरी मदद की जा रही है।

उन्होंने बताया कि स्वास्थ्य केंद्रों में 162 पीएसए ऑक्सीजन संयंत्र स्थापित करने का कार्य चल रहा है और 24 घंटे का प्रकोष्ठ राज्यों के साथ समन्वय कर रहा है। मंत्रालय ने ट्वीट किया, "इनसे मेडिकल ऑक्सीजन क्षमता 154.19 एमटी (मीट्रिक टन) बढ़ जाएगी।" पीएसए संयंत्र ऑक्सीजन का उत्पादन करते हैं और अस्पतालों को चिकित्सा ऑक्सीजन की अपनी जरूरत के संदर्भ में आत्मनिर्भर बनने में मदद करते हैं। इनसे चिकित्सा ऑक्सीजन की आपूर्ति को लेकर नेशनल ग्रिड पर बोझ भी घटेगा।

मंत्रालय ने इससे पहले 50,000 मीट्रिक टन चिकित्सा ऑक्सीजन के आयात के लिए निविदा निकालने का निर्णय लिया। सभी राज्यों को भेजे पत्र में केंद्रीय गृह सचिव अजय भल्ला ने कहा कि कोविड-19 के मामलों में तेजी से बढ़ोतरी और इस कारण मेडिकल ऑक्सीजन की बढ़ती मांग के मद्देनजर केंद्र सरकार की तरफ से गठित उच्चाधिकार प्राप्त एक समिति ने औद्योगिक इस्तेमाल के लिए ऑक्सीजन आपूर्ति की समीक्षा की है, ताकि देश में मेडिकल ऑक्सीजन की मांग पूरी की जा सके और लोगों की जान बचाई जा सके। इसी के मुताबिक उच्चाधिकार प्राप्त समिति ने 22 अप्रैल से निर्माताओं और आपूर्तिकर्ताओं द्वारा औद्योगिक उद्देश्य के लिए ऑक्सीजन की आपूर्ति अगले आदेश तक प्रतिबंधित कर दी है। इसमें नौ विशिष्ट उद्योगों को छूट दी गई है। उन्होंने महाराष्ट्र, मध्य प्रदेश, गुजरात, दिल्ली और उत्तर प्रदेश जैसे राज्यों का हवाला दिया जहां कोविड-19 के बढ़ते मामलों की वजह से ऑक्सीजन की मांग बढ़ रही है।

<https://hindi.news18.com/news/nation/drdo-develops-spo2-blood-oxygen-saturation-supplemental-oxygen-delivery-system-which-can-be-used-for-moderate-covid-patients-for-oxygen-flow-therapy-ministry-of-defence-3563536.html>

DRDO to make 1000-bed temporary hospital in Varanas

The Defence Research and Development Organisation (DRDO) will make a 1000-bed temporary hospital in the BHU stadium

Varanasi: The Defence Research and Development Organisation (DRDO) will make a 1000-bed temporary hospital in the BHU stadium. A decision to that effect was taken at a meeting of officials of DRDO and district administration, on Monday.

Divisional commissioner Deepak Agrawal, district magistrate Kaushalraj Sharma, municipal commissioner Gaurang Rathi, and officials of DRDO, BHU and CPWD attended the meeting. MLA AK Sharma chaired the meeting.

According to the district magistrate, the temporary hospital will be housed in a huge tent (German hanger). The hospital is likely to be ready within the next two weeks. The temporary hospital will be equipped with all facilities including oxygen, water supply and a pharmacy.

A team of CPWD and Varanasi Nagar Nigam officials visited BHU to make water supply, electricity and sewer connection arrangements.

90 trauma centre beds reserved for Covid-19 patients

Ninety beds of the trauma centre, BHU, have been reserved for Covid-19 patients in view of the growing demand for beds. The decision for reserving beds for patients at the Covid-19 centre was taken in a meeting attended by BHU authorities and divisional commissioner Deepak Agarwal and district magistrate Kaushalraj Sharma.

According to officials, the remaining 90 beds will be used for the treatment of other patients. A senior official of the BHU said that the arrangement will be effective from Tuesday, on which day admission of patients to the 90 reserved beds will begin.

There are around 1,600 beds in various government and private hospitals. Of them, over 1,200 beds are occupied. There are around 240 ventilator beds. Around 200 beds are occupied, a senior official of the health department said.

<https://www.hindustantimes.com/cities/others/drdo-to-make-1000-bed-temporary-hospital-in-varanasi-101618846291581.html>

DRDO to develop 1K bed Covid facility at BHU

Varanasi: In view of the increasing requirements of Covid facilities for critical patients, the officials on Monday decided that a 1,000 bed facility will be developed at Banaras Hindu University's sports stadium with the help of the DRDO. This facility is likely to become functional in a fortnight.

The decision for establishing a 1,000-bed Covid facility in giant German hangers was taken at a meeting of the officials including divisional commissioner Deepak Agrawal, district magistrate Kaushal Raj Sharma, municipal commissioner Gaurang Rathi, DRDO, BHU, CPWD and electricity and other departments under the leadership of MLC AK Sharma at circuit house on Monday.

During the meeting, the officials discussed the future challenges in view of the current ground realities after which the decision for establishing a 1,000-bed temporary hospital for critical Covid patients was taken. The officials said that work will be done under the direction of the DRDO round-the-clock to erect giant German hangers at BHU sports ground within 14 days. These giant tents will be equipped with all basic and modern facilities including power, water supply lines, sewage line, oxygen supply system, pharmacy, mortuary and others.

Officials asked the BHU to provide the data of doctors, paramedical staff and technicians at the earliest in order to make all the necessary arrangements of man power that will be required to operate the proposed Covid facility to provide treatment maximum patients at one place.

<https://timesofindia.indiatimes.com/city/varanasi/drdo-to-develop-1k-bed-covid-facility-at-bhu/articleshow/82150579.cms>

अमर उजाला

वाराणसी: बीएचयू के स्टेडियम में बनेगा एक हजार बेड वाला अस्थायी अस्पताल, डीआरडीओ दो सप्ताह में पूरा करेगा काम

सार

प्रधानमंत्री नरेंद्र मोदी के संसदीय क्षेत्र वाराणसी में कोरोना के बढ़ते मामलों को देखते हुए एक हजार बेड वाला अस्थायी अस्पताल बनाने का निर्णय लिया गया है।

विस्तार

प्रधानमंत्री नरेंद्र मोदी के संसदीय क्षेत्र वाराणसी में कोरोना के बढ़ते मामलों को देखते हुए एक हजार बेड वाला अस्थायी अस्पताल बनाने का निर्णय लिया गया है। जिला प्रशासन के अनुसार कोरोना की विस्फोटक स्थिति को देखते हुए आज सोमवार को एमएलसी ए.के. शर्मा की अध्यक्षता में हुई बैठक में यह निर्णय लिया गया।

बैठक में मण्डलायुक्त दीपक अग्रवाल, जिलाधिकारी कौशलराज शर्मा, नगर आयुक्त गौरांग राठी सहित डीआरडीओ, बीएचयू, सीपीडब्ल्यूडी, विद्युत के अधिकारी शामिल रहे। जिला प्रशासन के अनुसार, यह अस्थायी अस्पताल काशी हिन्दू विश्वविद्यालय के स्टेडियम में बनेगा और तमाम सुविधाओं से लैस होगा। डीआरडीओ इस अस्पताल का निर्माण कार्य दो सप्ताह में पूरा करेगा। सर्किट हाउस में एमएलसी व कोविड प्रभारी ए.के. शर्मा की अगुवाई में प्रशासनिक अधिकारियों की सोमवार को बैठक हुई। इसमें अस्थाई अस्पताल

के निर्माण से लेकर संचालन तक पर चर्चा की गई। एमएलसी एके शर्मा ने बताया कि जर्मन हेंगर से निर्मित यह अस्पताल अगले दो हफ्तों में डीआरडीओ द्वारा 24 घंटे कार्य करते हुए तैयार कर लिया जायेगा। इस अस्पताल के लिए विद्युत आपूर्ति, पानी तथा सीवर के कनेक्शन के लिए फील्ड विजिट संबंधित अधिकारियों द्वारा सोमवार से ही प्रारंभ कर दिया गया है।

फार्मसी, आक्सीजन सप्लाई, मर्चरी आदि की भी व्यवस्था की जाएगी

डीआरडीओ के द्वारा फार्मसी, आक्सीजन सप्लाई, मर्चरी आदि की भी व्यवस्था की जाएगी। यहां बता दें कि वाराणसी के सांसद और प्रधानमंत्री नरेंद्र मोदी ने रविवार को कोविड की बिगड़ी व्यवस्था पर प्रशासनिक अधिकारियों व जनप्रतिनिधियों के साथ वर्चुअल बैठक की थी। इसके बाद से माना जा रहा था कि व्यवस्था में सुधार होगा। कारण, सुविधाओं के अभाव में मरीज दर-दर भटक रहे हैं। उधर, आक्सीजन और रेमडेसिविर इंजेक्शन की आपूर्ति को लेकर कवायद की जा रही है। बैठक में एमएलसी एके शर्मा के अलावा मंडलायुक्त दीपक अग्रवाल, जिलाधिकारी कौशलराज शर्मा, नगर आयुक्त गौरांग राठी सहित डीआरडीओ, बीएचयू, सीपीडब्ल्यूडी, विद्युत के अधिकारी मौजूद रहे।



प्रतीकात्मक तस्वीर - फोटो: Social Media

<https://www.amarujala.com/uttar-pradesh/varanasi/one-thousand-bed-temporary-hospital-to-be-built-in-bhu-stadium-drdo-will-complete-in-two-weeks>



Tue, 20 April 2021

Defence Minister Rajnath Singh directs DRDO to provide 150 jumbo oxygen cylinders to UP govt

DRDO supplied 150 jumbo cylinders of medical oxygen to the Uttar Pradesh government on Monday (April 19)

Edited By Rahul Jaywant Bhise

Highlights

1. *DRDO on Monday (April 19) supplied 150 jumbo cylinders of medical oxygen to the Uttar Pradesh government*
2. *Union Defence Minister Rajnath Singh gave the directions to DRDO*
3. *The COVID-19 situation in India continues to deteriorate*

New Delhi: The Defence Research and Development Organisation (DRDO) on Monday (April 19) supplied 150 jumbo cylinders of medical oxygen to the Uttar Pradesh government, as per directions by Union Defence Minister Rajnath Singh.

An additional 1,000 cylinders would be provided by the DRDO later. The oxygen would be supplied to hospitals in Lucknow for COVID-19 patients. The COVID-19 situation in Uttar Pradesh has deteriorated further with Chief Minister Yogi Adityanath himself testing positive on Wednesday (April 14).

The state government on Friday announced a



Photo courtesy: PTI

lockdown across the state on all Sundays till May 15. All districts of Uttar Pradesh are under lockdown from 8 pm on Saturday (April 17), which will continue till 7 am, Monday.

According to the Union Health Ministry, Uttar Pradesh currently has a total of 1,91,457 active COVID-19 cases, with 6,50,333 total infections and 9,830 deaths.

The COVID-19 situation in India continues to deteriorate, as the country yet again reported the highest single-day spike of coronavirus cases with over 2.73 lakh fresh infections and 1,619 deaths in the last 24 hours.

According to the Health Ministry, India reported at least 2,73,810 new COVID-19 cases, taking the total number of positive cases in the country to 1,50,61,919. There are currently 19,29,329 active cases in the country as of Monday.

<https://zeenews.india.com/india/defence-minister-rajnath-singh-directs-drdo-to-provide-150-jumbo-oxygen-cylinders-to-up-govt-2355895.html>



Tue, 20 April 2021

डीआरडीओ ने लखनऊ में युद्ध स्तर पर शुरू किया अस्पताल बनाने का काम

डीआरडीओ लखनऊ के अवध शिल्प ग्राम में 300 बेड वाले कोविड केअर अस्पताल को बनाएगा। खास बात यह है कि इस अस्पताल में ऑक्सीजन वाले एल 2 श्रेणी के बेड के साथ वेंटिलेटर वाले आईसीयू वार्ड भी उपलब्ध होंगे।

By Rafiya Naz

लखनऊ: दिल्ली के बाद डीआरडीओ को जो मिशन मोड पर जिस कोविड केअर अस्पताल का निर्माण करना है। उसका काम सोमवार को तेजी पकड़ने लगा। डीआरडीओ की टीम ने अवध शिल्प ग्राम के बाहरी परिषर में होल्डिंग एरिया बनाने का काम सोमवार को शुरू कर दिया। अस्पताल के ले आउट के अनुसार ही यहां सभी ब्लॉकों का अलग अलग आकार दिया जाएगा।

डीआरडीओ लखनऊ के अवध शिल्प ग्राम में 300 बेड वाले कोविड केअर अस्पताल को बनाएगा। खास बात यह है कि इस अस्पताल में ऑक्सीजन वाले एल 2 श्रेणी के बेड के साथ वेंटिलेटर वाले आईसीयू वार्ड भी उपलब्ध होंगे। डीआरडीओ के एक वरिष्ठ अधिकारी के मुताबिक अस्पताल बनाने में सेना की भी मदद ली जा रही है। मौजूदा पक्के ढांचे का इस्तेमाल वार्ड तैयार करने में किया जाएगा। इससे ऑक्सीजन आपूर्ति, वेंटिलेटर कनेक्शन और



एडवांस लाइफ सपोर्ट सिस्टम को बिना देरी के चलाया जा सकेगा। अस्पताल में तैनात होने वाले डॉक्टर और पैरामेडिकल स्टाफ के ठहरने और रोगियों के स्वास्थ्य की मॉनिटरिंग के लिए भी अलग ब्लॉक बनाये जाएंगे। जिन एम्बुलेंस से कोरोना संक्रमित रोगियों को लाया जाएगा। उनके लिए भी एक होल्डिंग ब्लॉक बनेगा। जिससे एक साथ कई मरीजों के आने पर उनको अधिक देर रात इंतजार न करना पड़े। इस कोविड केअर अस्पताल को बनाने में डीआरडीओ की तकनीकी टीम की महत्वपूर्ण भूमिका है। यह टीम जल्द ही अपना ट्रायल रन भी करेगी। जिससे यह सुनिश्चित हो सकेगा कि सभी मेडिकल उपकरण ठीक से काम कर रहे हैं या नहीं। अस्पताल शुरू करने में कम से कम समय लगने पर ही डीआरडीओ का विशेष ध्यान है।

<https://www.jagran.com/uttar-pradesh/lucknow-city-drdo-started-work-for-covid-hospital-in-awadh-shilp-gram-in-lucknow-21573066.html>

Defence Strategic: National/International



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Ministry of Defence

Mon, 19 April 2021 10:05AM

CAS visit to France

Marking the continuity of growing bilateral defence cooperation with the French Air and Space Force, Air Chief Marshal RKS Bhadauria PVSM AVSM VM ADC, Chief of the Air Staff (CAS) left for France today on an official visit. The visit of CAS from 19-23 Apr will enhance potential avenues for strengthening the level of interaction between the two Air Forces.

CAS will hold meetings and discussions with senior military leadership of France and visit operational facilities and airbases. The visit comes after Gen Philippe Lavigne, Chief of Staff, French Air and Space Force (FASF) visited India in February 2020.

The two Air Forces have seen significant operational interaction in the recent past. IAF and FASF engage in the bilateral air exercise series 'Garuda', as well as hop exercises, the last being Ex Desert Knight 21 held at Air Force Station Jodhpur in January 2021. IAF and FASF also participated in Ex Desert Flag hosted by UAE Air Force along with other friendly countries in March 2021.

The visit of CAS will be a significant step in further enhancing mutual cooperation.

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=1712604>



पत्र सूचना कार्यालय
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Mon, 19 April 2021 10:05AM

सीएस का फ्रांस दौरा

फ्रांसीसी वायु एवं अंतरिक्ष बल के साथ लगातार बढ़ते द्विपक्षीय रक्षा सहयोग के मद्देनजर, एयर चीफ मार्शल आरकेएस भदौरिया पीवीएसएम एवीएसएम वीएम एडीसी, आज आधिकारिक यात्रा पर फ्रांस के लिए रवाना हो गए। सीएस की 19-23 अप्रैल की यात्रा के दौरान दोनों वायु सेनाओं के बीच सहयोग को विस्तार देने के अवसरों में वृद्धि होगी।

सीएस फ्रांस के वरिष्ठ सैन्य नेतृत्व के साथ बैठकें और चर्चा करेंगे, साथ ही वह एयरबेसों और परिचालन केंद्रों का दौरा करेंगे। उनकी इस यात्रा से पहले फरवरी 2020 में फ्रांसीसी वायु एवं अंतरिक्ष बल (एफएसएफ) के चीफ ऑफ स्टाफ जनरल फिलिप लेविने भारत के दौरे पर आए थे।

हाल के समय में दोनों वायु सेनाओं में महत्वपूर्ण परिचालन सहभागिता बढ़ी है। आईएफ और एफएएसएफ द्विपक्षीय हवाई युद्धाभ्यास श्रृंखला 'गरुड़' में हिस्सा लेते हैं, साथ ही होप एक्सरसाइजेज में जो आखिरी बार एक्स डेजर्ट नाइट-21 अभ्यास जनवरी 2021 में एयरफोर्स स्टेशन जोधपुर में हुआ था। आईएफ और एफएएसएफ ने मार्च 2021 में अन्य मित्र देशों के साथ संयुक्त अरब अमीरात वायु सेना द्वारा आयोजित एक्स डेजर्ट फ्लैग युद्धाभ्यास में हिस्सा लिया था।

सीएस की यह यात्रा आपसी सहयोग को और आगे बढ़ाने में महत्वपूर्ण साबित होगी।

<https://pib.gov.in/PressReleasePage.aspx?PRID=1712631>



Press Information Bureau
Government of India

Ministry of Defence

Mon, 19 April 2021 7:25PM

INAS 323 commissioned at Goa as first unit of indigenously built ALH MK III enters Naval Service

Indian Naval Air Squadron (INAS) 323, the first unit of the indigenously built ALH Mk III aircraft, was commissioned into the Indian Navy in the presence of Hon'ble Raksha Rajya Mantri Shri Shripad Naik and Vice Admiral R Hari Kumar, Flag Officer Commanding-in-Chief of Western Naval Command, at INS Hansa, Goa on 19 Apr 21. Addressing the gathering, Hon'ble Raksha Rajya Mantri said that the commissioning of INAS 323 marked yet another milestone in the efforts towards enhancing maritime security and safeguarding maritime interests of the nation, as also embodying the spirit of Atma Nirbhar Bharat.

The squadron will operate three state-of-the-art ALH Mk III, a multirole helicopter with Shakti engine manufactured by Hindustan Aeronautics Limited (HAL). The Mk III version of the ALH has an all glass cockpit and will be used for Search and Rescue, Special Operations and Coastal Surveillance. 16 aircraft are under procurement and the aircraft are being delivered in a phased manner to the Indian Navy.

INAS 323 is commanded by Cdr Samik Nundy, an accomplished and experienced ALH pilot with extensive operational experience.

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=1712715>





Press Information Bureau
Government of India

Ministry of Defence

Mon, 19 April 2021 6:01PM

Centre for land Warfare Studies (Claws) Initiates PHD Programme for Army Officers

The Centre for Land Warfare Studies (CLAWS), an autonomous think tank, under the patronage of Indian Army has established a joint initiative with Manipal Academy of Higher Education (MAHE), Mangalore, formerly known as Manipal University, to conduct PhD programme for Army Officers.

CLAWS has taken this initiative to further enhance professional military education (PME) of officers which will eventually benefit the country with better equipped military leaders with in-depth knowledge in respective domains.

Under the initiative, CLAWS has been recognised as a sub-centre of MAHE by virtue of which five of CLAWS faculties will serve as co-supervisors. CLAWS will also initiate the selection process and conduct mandatory research methodology classes, as per guidelines given by the UGC and MAHE, Mangalore.

All details pertaining to the initiative along with application forms are available on the CLAWS website (<https://www.claws.in/>) under the header "UNIVERSITY CELL". Interested candidates are requested to send their duly filled application forms latest by 30 June 2021.

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=1712692>



पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Mon, 19 April 2021 6:01PM

भूमि युद्ध अध्ययन केंद्र (सीएलएडब्ल्यूएस) ने सेना अधिकारियों के लिए पीएचडी कार्यक्रम की शुरुआत की

भारतीय सेना के संरक्षण के तहत एक स्वायत्त थिंक टैंक भूमि युद्ध अध्ययन केंद्र (सीएलएडब्ल्यूएस) ने मणिपाल एकेडमी ऑफ हायर एजुकेशन (एमएएचई), मंगलौर के साथ सेना अधिकारियों के लिए पीएचडी कार्यक्रम संचालित करने को लेकर एक संयुक्त पहल की स्थापना की है। मणिपाल एकेडमी ऑफ हायर एजुकेशन को पहले मणिपाल विश्वविद्यालय के नाम से जाना जाता था।

सीएलएडब्ल्यूएस ने अधिकारियों की व्यावसायिक सैन्य शिक्षा (पीएमई) को आगे और बढ़ाने के लिए यह पहल की है। यह संबंधित क्षेत्रों में गहन ज्ञान से युक्त सैन्य नेताओं के साथ देश को लाभान्वित करेगा।

इस पहल के तहत सीएलएडब्ल्यूएस को एमएएचई के उप-केंद्र के रूप में मान्यता दी गई है, जिससे सीएलएडब्ल्यूएस संकायों में से पांच सह-पर्यवेक्षक के रूप में काम करेंगे। इसके अलावा सीएलएडब्ल्यूएस यूजीसी एवं एमएएचई के दिशानिर्देशों के अनुरूप चयन प्रक्रिया शुरू करेगा और अनिवार्य अनुसंधान पद्धति कक्षाओं का संचालन करेगा।

आवेदन पत्र के साथ इस पहल से संबंधित सभी विवरण सीएलएडब्ल्यूएस वेबसाइट (<https://www.claws.in/>) पर शीर्षक “यूनिवर्सिटी सेल” के तहत उपलब्ध है। वहीं, इच्छुक उम्मीदवारों से अनुरोध किया गया है कि वे अपना विधिवत भरा हुआ आवेदन पत्र 30 जून, 2021 तक भेज दें।
<https://pib.gov.in/PressReleasePage.aspx?PRID=1712721>

The Indian EXPRESS

Tue, 20 April 2021

Army Chief: No firing at LoC since February; hope to settle China issues through talks

Naravane said “legacy issues and differences need to be resolved through mutual consent and dialogue and not by unilateral actions”.

New Delhi: Since the armies of India and Pakistan agreed to adhere to the ceasefire agreement in February, there has been no firing across the Line of Control (LoC) said Army chief General MM Naravane on Monday, and, regarding the standoff with China, he added that the hope is to settle issues through negotiations.

Addressing a symposium organised by the Australian Army, where chiefs of Australian, Indonesia, Singaporean and Japanese armies were present, Naravane said “legacy issues and differences need to be resolved through mutual consent and dialogue and not by unilateral actions”.

The comments come at a time when India and China are involved in an over 11-month long standoff in eastern Ladakh. While disengagement in the Pangong Tso region took place in February, with both sides pulling back from eyeball-to-eyeball situations, in the 11th meeting between senior military commanders on April 9, China refused to withdraw its troops from the Indian side of the Line of Actual Control (LAC) at Hot Springs and Gogra Post.

At the symposium, Naravane said in his address that India has a land border of over 15,000 km, and “active and unsettled borders to our West with Pakistan and to the North and East with China, and of course there are associated challenges”.

“Over time we have developed various mechanisms to address these challenges and move forward,” he said, adding that “progress and development of any nation and the well-being of its citizenry are, to a large extent, contingent on peace and tranquillity on the borders”.

Regarding Pakistan, he said, “we have recently entered into a ceasefire understanding” with their Army in February “and since then there has been no exchange of fire on an otherwise active Line of Control”. This, he stated, “bodes well for the future”.

“With China too, there have been positive developments along the Line of Actual Control, an area where both countries have differing perceptions on the alignment of the land borders. This has led to disengagement of troops in eastern Ladakh. We have recently concluded the 11th round of Corps Commander level talks between the two armies and we hope to settle our other border through further negotiations.”

India, he said, “looks to maintain peace and harmony with all its neighbours and in the region”. “Maintenance of peace and tranquillity requires joint efforts. All nations need to come together to



Army Chief General MM Naravane.

uphold rules-based order, respect international laws and norms and develop mutual respect for each other.”

He also mentioned that India has “strong historical and cultural linkages” with Nepal and Bhutan, and with Bangladesh, he said, “our relations are anchored in shared history and common heritage” and added that both armies have “strong institutional bonding”.

India’s relations with “all its neighbours are on an upward trend,” said Naravane.

The Covid-19 pandemic has “exposed our vulnerability to global supply chains, forcing us to re-engineer our dependencies and work towards self-reliance,” the Army Chief commented, and said for India, it has “become a strategic imperative”.

“The changing character of war is throwing up new challenges for the armed forces the world over. Our own region is witness, that wars are no longer confined to the customary hard core kinetics but being increasingly contested in the ambiguous grey zone.” Naravane said.

“Geo-strategic spaces are being constricted and geo-strategic realities are being altered without physical battles. Conflicts are also steadily moving to the new domains of space, cyber and informatics... The stretching of domains has made the physical boundaries meaningless. Leveraging technology has become a key determinant in future wars.”

Indian Army, its chief asserted, is “on the path of modernization towards a technology-oriented Army” and mentioned that niche technologies “need to be acquired to remain and capable to face future threats”.

<https://indianexpress.com/article/india/army-chief-no-ceasefire-at-loc-since-february-hope-to-settle-china-issues-through-talks-7280751/>

The Tribune

Tue, 20 April 2021

Army tests ability of new beyond-visual-range drone

Trial carried out for delivery of Covid-19 items

By Ajay Banerjee

New Delhi: In an important development, the Indian Army has successfully tested an indigenous UAV for autonomous delivery of load over Punjab.

The test was carried out for delivery of Covid-19 items.

Crucially, the test proved an ability to operate at far-off ranges, at beyond visual line of sight, meaning the drone was remotely controlled either by a radar or another bigger UAV above it, and possibly the payload the drone could carry.

On the morning of April 16, three such ‘Made in India’ drones were tested over three villages of Abohar in Fazilka district in South-western part of Punjab. The task was ‘anti-Covid’ operations and to deliver essential supplies, including masks, liquid-sanitiser and medical canisters, sources from the area have confirmed.

Sources said the Army coordinated these tests with the district administration, it is clear such operations can be on a large scale by increasing the number of drones and enhancing the endurance and payload of each drone. The Army uses a few bigger drones for surveillance.



Photo for representation.

The villages of Gobindgarh, Balluana and Malukpura are located at distance of up to 25 km from the launch point and fall beyond visual line of sight range from base. These tests would probably have been one of the first-of-its-kind in India with a large medical delivery cargo carried by autonomous drones.

As per sources, the crucial part was releasing the payload with pinpoint accuracy. It was made to fly over the earmarked dropping zone, made to descend to a suitable height and release its payloads. Sources from the ground confirm that the payloads were received in good order.

Entire operation did not involve any human contact at the village zone, meaning the coordinates were fed into the drone to drop the payload and return to its base. Such a drone could be used to send supplies to small locality or a village without exposing the relief workers to people infected with the virus.

It can also transport back crucial blood samples and other supplies from isolated places. The civil administration which included the Tehsildar and the DSP of Abohar and elected members of the three villages participated in the trials. Load carriage UAVs operating at beyond visual line of sight ranges will prove very beneficial not only under the Covid-19 operations, but also to support humanitarian disasters all across India in the years ahead.

<https://www.tribuneindia.com/news/nation/army-tests-ability-of-new-beyond-visual-range-drone-73344>

THE | DIPLOMAT
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Tue, 20 April 2021

Managing the Military Problem of Space: The Case of India

*Different countries have approached the military aspects
of space in different ways. Here's India's approach*

By Robert Farley

How are the great powers of the Indo-Pacific managing the military problem of space? In 2020 the United States stood up the U.S. Space Force, an independent service dedicated to the military aspects of space. This represents one institutional solution to space, but hardly the only one. Beginning with India, this series explores how several countries have determined to solve their military space problems through institutional reform.

Historically, the Indian defense establishment has been bedeviled by a set of interconnected problems, including a sclerotic procurement system, poor civil-military relations, and difficult inter-service integration. Space warfare depends on a foundation of cooperation between civilian and military institutions, but if done successfully can facilitate tight integration and even fusion between military and intelligence services. Consequently, India's efforts at developing space capabilities deserve close scrutiny. The Indian Space Research Organization (ISRO), a civilian agency, has coordinated India's military and civilian space programs since the 1960s. However, in 2019 India took major technological and institutional steps toward marshaling a globally competitive space warfare capability.



Credit: Depositphotos

India conducted a successful anti-satellite test in March 2019. Although Indian authorities took steps to limit the extent of the debris field caused by the destruction of the satellite, it nevertheless resulted in some 400 fragments, many of which remained in low earth orbit for some time. The test

placed India in the company of China, Russia, and the United States in terms of fielding a practical anti-satellite capability.

Perhaps more importantly, in 2019 India established two new bureaucracies for space, the Defense Space Research Organization (DSRO) and the Defense Space Agency (DSA). The former is a research organization geared toward facilitating the development of civilian space technology for military purposes, while the latter plays a role similar to that of a combatant command in the United States, integrating space assets from the army, navy, and air force and formulating strategy. The DSA, commanded by an air force officer, began with a staff of some 200 officers drawn from the three services, and took over the duties of some existing military organs, including the Defense Imagery Processing and Analysis Center and the Defense Satellite Control Center.

India conducted its first integrated space warfare exercise in July 2019, bringing together personnel from across the services. The exercise focused on using communications and reconnaissance satellites to integrate intelligence and fires across the range of Indian military assets, indicating a firm understanding of the necessity of access to space.

Some within the Indian defense community have argued for more aggressive reforms, including the establishment of a military space service similar to the U.S. Space Force. This would facilitate the defense of India's growing satellite network, while also laying the groundwork for coercive action against enemy networks. It remains unclear whether India has the technological and financial foundations necessary to support a separate space force in the long term, but India nevertheless remains poised to take advantage of good relations with both Russia and the United States, the world's two most advanced space powers.

<https://thediplomat.com/2021/04/managing-the-military-problem-of-space-the-case-of-india/>

India, France, UAE to test combat skills at Varuna naval exercise from Sunday

The UAE will, for the first time, hold combat readiness war game with Indian and French war ships at the trilateral naval exercises Varuna in the Persian Gulf

By Shishir Gupta

Indian Navy warships will join the French flagship Charles de Gaulle carrier aircraft carrier along with United Arab Emirates (UAE) Navy for the three-day Varuna trilateral exercise to jointly test combat skills and war game in the Persian Gulf area starting April 25, people familiar with the matter said.

This is the first time that the UAE is participating in the Varuna maritime exercise. India and France have been holding the exercise since 1993; it was christened Varuna in 2001.

Officials said the Indian Navy's sole aircraft carrier INS Vikramaditya would not join the exercise since it is under maintenance. But the Indian Navy's participation will seek to make up for INS Vikramaditya's absence by sending two to three destroyers (possibly led by INS Kolkata, the lead ship of the navy's Kolkata-class stealth guided-missile destroyers) and frigates, an attack submarine, a P-8I maritime reconnaissance and anti-submarine warfare aircraft. The Charles de Gaulle carrier strike force comprises two frigates and a replenishment tanker.

The French aircraft carrier and its strike group have been in the neighbourhood for weeks; Charles de Gaulle arrived in the Arabian Sea in mid-March for operations relating to Afghanistan and has held dual operations with the United States aircraft supercarrier Dwight D. Eisenhower Carrier Strike Group. According to the two navies, the two strike groups, which are conducting dual operations, are cooperating at levels of integration that has been "rarely achieved in the past".

USS Eisenhower carrier strike group is part of the fifth fleet, whose area of operations extends from the Red Sea to parts of the Indian Ocean. The US carrier-based squadrons of F-18 Super Hornet aircraft and E-2c Hawkeye airborne early warning aircraft tested war skills with French Rafale M fighters in the Arabian Sea on April 13.

While the fledgling UAE Navy will be part of the Varuna war games, Indian and French naval warships will be involved in complex manoeuvres in the north Arabian Sea and the Persian Gulf by testing interoperability skills in sub-surface, surface and aerial dimensions.

Just as France is considered the oldest US ally, India and France have very deep defence cooperation and converge on the Indo-Pacific doctrine to ensure that no power unilaterally blocks the freedom of navigation from the Gulf of Aden to the western shores of the United States. Both India and France have very close ties with UAE.

Like the four-nation Quad grouping, India-France and Australia have overlapping security objectives in the Indo-Pacific even though the level of war gaming between major maritime powers such as the US, France and India takes a bigger dimension with advanced skill testing and intelligence sharing.

<https://www.hindustantimes.com/india-news/india-france-uae-to-test-combat-skills-at-varuna-naval-exercise-from-sunday-101618814430812.html>

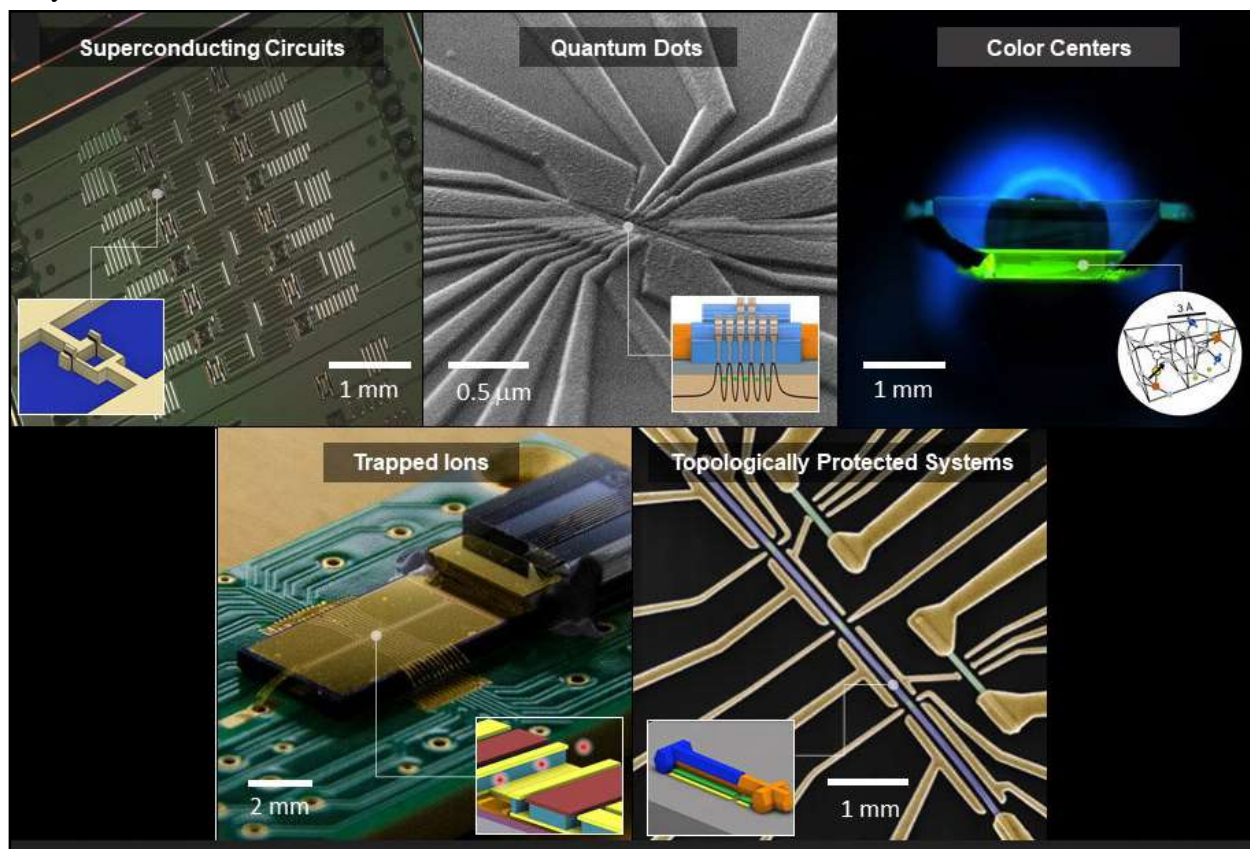


French aircraft carrier Charles de Gaulle has held dual operations with with the United States aircraft supercarrier Dwight D. Eisenhower Carrier Strike Group.(Twitter/EtatMajorFR)

Tue, 20 April 2021

Materials advances are key to development of quantum hardware

A new study outlines the need for materials advances in the hardware that goes into making quantum computers if these futuristic devices are to surpass the abilities of the computers we use today.



At the heart of quantum computers are qubits, which store and manipulate information. A new paper in the journal *Science* calls on materials experts to contribute new ideas to making qubits, which come in several forms. Shown are five different qubit types. Clockwise from top left: Superconducting qubits, silicon quantum dots, diamond color centers, trapped ions and topologically protected systems. Credit: Hanhee Paik, IBM

The study, published in the journal *Science* by an international team, surveyed the state of research on quantum computing hardware with the goal of illustrating the challenges and opportunities facing scientists and engineers.

While conventional computers encode 'bits' of information as ones and zeroes, quantum computers breeze past this binary arrangement by creating 'qubits,' which can be complex, continuous quantities. Storing and manipulating information in this exotic form—and ultimately reaching 'quantum advantage' where quantum computers do things that conventional computers cannot—requires sophisticated control of the underlying materials.

"There has been an explosion in developing quantum technologies over the last 20 years," said Nathalie de Leon, assistant professor of electrical and computer engineering at Princeton

University and the lead author of the paper, "culminating in current efforts to show quantum advantage for a variety of tasks, from computing and simulation to networking and sensing."

Until recently, most of this work has aimed to demonstrate proof-of-principle quantum devices and processors, de Leon said, but now the field is poised to address real-world challenges.

"Just as classical computing hardware became an enormous field in materials science and engineering in the last century, I think the quantum technologies field is now ripe for a new approach, where materials scientists, chemists, device engineers and other scientists and engineers can productively bring their expertise to bear on the problem."

The paper is a call to scientists who study materials to turn to the challenge of developing hardware for quantum computing, said Hanhee Paik, corresponding author and a research staff member at IBM Quantum.

"The progress in quantum computing technologies has been accelerating in recent years both in research and industry," Paik said. "To continue moving forward in the next decade, we will need advances in materials and fabrication technologies for quantum computing hardware—in a similar way to how classical computing progressed in microprocessor scaling. Breakthroughs do not happen overnight, and we hope more people in the materials community will begin to work on quantum computing technology. Our paper was written to give the materials community a comprehensive overview of where we are in materials development in quantum computing with expert opinions from the field."

At the heart of quantum computers are qubits, which work together to churn out results.

These qubits can be made in various ways, with the leading technologies being superconducting qubits, qubits made from trapping ions with light, qubits made from the silicon materials found in today's computers, qubits captured in "color centers" in high-purity diamonds, and topologically protected qubits represented in exotic subatomic particles. The paper analyzed the chief technological challenges associated with each of these materials and proposes strategies for tackling these problems.

Researchers hope that one or more of these platforms will eventually progress to the stage where quantum computing can solve problems that today's machines find impossible, such as modeling the behaviors of molecules and providing secure electronic encryption.

"I think [this paper] is the first time that this kind of comprehensive picture has been assembled. We prioritized 'showing our work,' and explaining the reasoning behind the received wisdom for each hardware platform," de Leon said. "Our hope is that this approach will make it possible for new entrants to the field to find ways to make a big contribution."

The ten co-authors come from research institutions around the world as well as IBM T. J. Watson Research Center, which has a major quantum computing research group. The scientists met during a symposium on materials for quantum computing sponsored by IBM Quantum and the Kavli Foundation and held at the Materials Research Society Fall Meeting in 2019. They then spent much of their time during the pandemic's stay-at-home period last year developing this review paper.

"It was a great experience to work with a group with such diverse expertise, and a lot of our activity involved asking each other tough questions about why we believed the things we did about our respective material platforms," said de Leon, whose research exploits flaws in diamond materials to enable communication between nodes in a future quantum internet.

More information: Nathalie P. de Leon et al, Materials challenges and opportunities for quantum computing hardware, *Science* (2021). [DOI: 10.1126/science.abb2823](https://doi.org/10.1126/science.abb2823)

Journal information: [*Science*](#)

<https://phys.org/news/2021-04-materials-advances-key-quantum-hardware.html>

Researchers use laser paintbrush to create miniature masterpieces

Researchers are blurring the lines between science and art by showing how a laser can be used to create artistic masterpieces in a way that mirrors classical paints and brushes. The new technique not only creates paint-like strokes of color on metal but also offers a way to change or erase colors.

"We developed a way to use a laser to create localized color on a metallic canvas using a technique that heats the metal to the point where it evaporates," said research team leader Vadim Veiko from ITMO University in Russia. "With this approach, an artist can create miniature art that conveys complex meaning not only through shape and color but also through various laser-induced microstructures on the surface."

In *Optica*, The Optical Society's (OSA) journal, Veiko and colleagues show that their new laser tools can be used to create unique colorful paintings, including a miniature version of Van Gogh's painting "The Starry Night."

"We hope that laser painting will attract the attention of modern artists and lead to the creation of a completely new type of art," said research team member Yaroslava Andreeva. "The approach can also be used for modern design and to create color markings on various products."

Painting with light

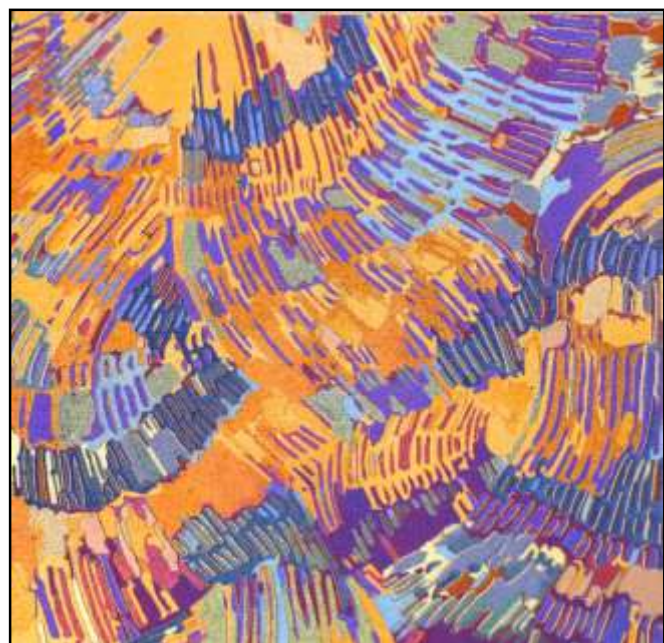
The new study builds on previous work in which the researchers investigated how to use lasers to create color on titanium and stainless steel. "We wanted to do more than offer a wide palette of stable colors," said Galina Odintsova, a member of the research team. "Thus, we worked to create a convenient tool for applying them more like an artist's brush."

For the new technique, the researchers heat the metal to a point where it starts to evaporate—much higher than the melting temperatures used in previously developed approaches. When the metal cools, an extremely thin film of metal oxide forms. Light reflected from the metallic surface and the top of the oxide film interfere in a way that produces different colors depending on the thickness of the film.

"Increasing the laser heating range enough to create the evaporation process makes our color strokes reversible, rewritable, erasable and much more efficient," said Odintsova. "Our marking speed is more than 10 times faster than reported before."



The researchers used their new laser painting method to make a miniature version of Van Gogh's painting "The Starry Night." Credit: Yaroslava Andreeva



Laser miniature artwork on titanium inspired by illustrator Sandra Dieckmann [instagram.com/p/BBcuRdrMtEp/](https://www.instagram.com/p/BBcuRdrMtEp/) Credit: Yaroslava Andreeva

Erasable color

The researchers used a nanosecond ytterbium fiber system equipped with a galvanometric scanner to create strokes that combine surface relief with optical effects, creating nine basic colors. A second pass of the laser at a faster scan rate can erase or change the color of an area. They showed that the surface color of erased areas was indistinguishable from a non-treated surface and that colors could be erased and rewritten several times without affecting the resulting color.

They demonstrated the new laser paintbrush by using it to create a 3 X 2-inch version of "Starry Night" in just 4 minutes. They also made original artwork to demonstrate color mixture and erasing. The researchers point out that pictures made using this laser painting approach are extremely resistant to harsh environments and chemicals and don't require any type of special storage.

The researchers would like to incorporate their new laser painting capabilities into a handheld tool that could be used much like a pen or paintbrush to create colorful pictures or drawings on metals or metallic foils. The approach could also be used to add nanostructured and hybrid materials or periodic surface gratings to achieve a variety of optical effects.

More information: Vadim Veiko et al, Laser paintbrush as a new tool of modern art, *Optica* (2021). DOI: [10.1364/OPTICA.420074](https://doi.org/10.1364/OPTICA.420074)

Journal information: *Optica*

<https://phys.org/news/2021-04-laser-paintbrush-miniature-masterpieces.html>



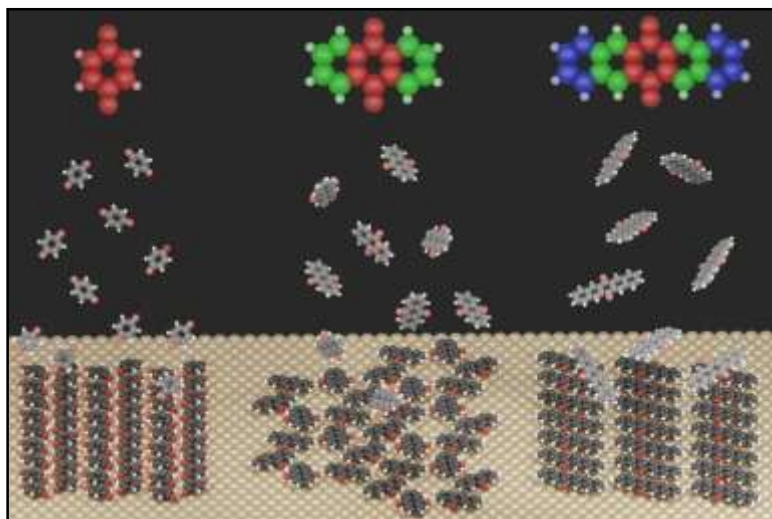
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Understanding interfaces of hybrid materials with machine learning

Using machine learning methods, researchers at TU Graz can predict the structure formation of functionalized molecules at the interfaces of hybrid materials. Now they have also succeeded in looking behind the driving forces of this structure formation.

The production of nanomaterials involves self-assembly processes of functionalized (organic) molecules on inorganic surfaces. This combination of organic and inorganic components is essential for applications in organic electronics and other areas of nanotechnology.

Until now, certain desired surface properties were often achieved on a trial-and-error basis. Molecules were chemically modified until the best result for the desired surface property was found. However, the processes controlling the self-assembly of molecules at interfaces



The illustration shows the strongly different surface structures that form for the three molecules studied when adsorbed on a metal surface. Credit: Jeindl—TU Graz

are so complex that small molecular changes can lead to completely different motifs. Physicists from TU Graz explain this unexpected structure formation in a study published in the renowned journal *ACS Nano*.

For this purpose, the researchers studied quinoid compounds on a silver surface. First author Andreas Jeindl from the Institute of Solid State Physics explains: "Naively, one might expect molecules with slightly different sizes but the same functionalization to form similar motifs. In striking contrast, our joint theoretical and experimental study shows that quinones can form diverse structures. Despite constant initial conditions, the formation of these structures cannot be predicted and planned without detailed knowledge of the relevant interactions."

Three opposing driving forces

The researchers in Graz, together with a team from the FSU Jena, have now started to break down this unpredictability. They found that the structure formation is the result of a trade-off between three opposing driving forces: The interaction between molecules and the metal attempts to force all molecules into the same orientation, while the interaction between molecules sometimes favors different orientations. The geometric shapes of the molecules then act as a third factor, preventing or only partially permitting certain interactions.

Based on this, they were able to establish a design principle with which the structures that form at the interfaces, and subsequently their properties, can be predicted—at least for a first class of molecules. An essential role is played by a search algorithm (SAMPLE) based on machine learning. Jeindl elaborates: "We were able to show in this publication that the structures predicted by our algorithm are in excellent agreement with experimental characterizations of organic-inorganic interfaces—both in how the molecules orient themselves on the surface and in how the motifs repeat on the surface. Moreover, our analysis, for the first time, allowed a detailed and quantitative break down of the driving forces, not only of the experimentally formed structures, but de facto of all conceivable structures. This is an important look behind-the-scenes of structure formation."

Interfacial properties with modular building blocks

The non-intuitive interplay of similarly important interaction mechanisms remains a challenge for the design of functional interfaces. With a detailed investigation of all the driving forces, however, the physicists at TU Graz are nevertheless able to devise a design principle for the self-assembly of functionalized molecules for a given class of molecules. Once there are enough analyses for different classes of molecules, the right molecules for the desired interfacial properties can be easily assembled on the computer from modular building blocks.

More information: Andreas Jeindl et al. Nonintuitive Surface Self-Assembly of Functionalized Molecules on Ag(111), *ACS Nano* (2021). DOI: [10.1021/acsnano.0c10065](https://doi.org/10.1021/acsnano.0c10065)

Journal information: [ACS Nano](https://doi.org/10.1021/acsnano.0c10065)

<https://phys.org/news/2021-04-interfaces-hybrid-materials-machine.html>

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Second wave of Covid-19 'less severe' than the first: ICMR DG

He said that only a marginally high proportion of Covid-19 patients are of younger age and that the average of patients in the first wave was 50 years and in this wave, it is 49 years. He also said that the older population continues to be more vulnerable to be admitted in the hospital in the current wave

Dr Balram Bhargava, Director-General (DG) of the Indian Council of Medical Research (ICMR) on Monday said that the ongoing second wave of the novel coronavirus in India is 'less severe' than the previous one.

Dr Bhargava said: "Very clearly, we find that the symptoms are much less. As I mentioned that the symptoms of joint ache, fatigue, muscle ache, loss of smell or sore throat are much less compared to the first wave. However, shortness of breath is higher in this wave." He further said that only a marginally high proportion of Covid-19 patients are of younger age and that the average of patients in the first wave was 50 years and in this wave, it is 49 years. He also said that the older population continues to be more vulnerable to be admitted in the hospital in the current wave.



"From zero to 19 years - the difference was 5.8 percent versus 4.2 percent, and in 20-40 years, the difference was 25 percent versus 23 percent. There is a marginal difference in this. More than 70 per cent were above or equal to 40 years of age. A higher number of asymptomatic individuals got admitted this year, than a higher proportion of patients admitted with breathlessness," he said.

"There is no change in the death rate between the first wave and the second wave. Similar trends are being seen across all the states because this is a countrywide data of a national registry data which has been collected of only hospitalised patients, so this is 10,000 hospitalised patients that are being analysed," added Dr Bhargava.

The ICMR chief further opined that there was a tremendous amount of laxity regarding the pandemic and many instances of Covid-inappropriate behaviour was also seen. He also stressed that the RT-PCR test measures two or more genes in the body and there is no chance of missing the detection of a Covid-19 mutant through the test.

"I would like to emphasise that the RT-PCR test that we are utilising, they measure two or more genes and they never miss a test... We have always used two or more genes for testing and therefore missing is absolutely impossible... It can find any kind of mutant because it measures two or more genes at different sites," he said.

Dr Bhargava further said that the rate of transmissibility of the 'double mutant' found in India has not yet been established. Three main variants from the United Kingdom, South Africa and Brazil have already been found in India. As the second wave of the coronavirus intensifies, India yet again reported the highest single-day spike of Covid-19 cases with over 2.73 lakh fresh infections and 1,619 deaths in the last 24 hours.

With this, the total number of positive cases in the country to 1,50,61,919. There are currently 19,29,329 active cases in the country as of Monday. The death toll reached 1,78,769 as of Monday.

<https://health.economictimes.indiatimes.com/news/industry/second-wave-of-covid-19-less-severe-than-the-first-icmr-dg/82142586>

