May
2021

समाचार पत्रों से चयित अंश
Newspapers Clippings

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खंड : 46 अंक : 99 21 मई 2021

Vol.: 46 Issue : 99 21 May 2021

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THE NEW INDIAN EXPRESS

Fri, 21 May 2021

First set of DRDO oxygen plants getting ready, to be commissioned

The first set of three medical oxygen plants being readied in Karnataka on behalf of the Defence Research and Development Organisation (DRDO), are likely to commissioned by this month-end

By S Lalitha

Bengaluru: The first set of three medical oxygen plants being readied in Karnataka on behalf of the Defence Research and Development Organisation (DRDO), are likely to be commissioned by this month-end. The National Highway Authority of India (NHAI) has completed work on two structures inside which they will be housed, while a third is getting ready.

The structure for DRDO's proposed medical oxygen plant at Koppal Institute of Medical Sciences in Karnataka

These plants will help generate oxygen in a cost effective way. Speaking to TNIE, General Manager (Technical) and Project Director, NHAI, S P Somashekar said the concrete structures, spanning 600 sq feet, were completed at the ESI Hospital at Koppal Institute of Medical Sciences and ESI Hospital in Kalaburagi. "The third one at C V Raman Hospital in Bengaluru is getting ready and we will hand them over by this weekend," he said. "They will house an oxygen tank and compressor apart from electrical equipments. They can generate up to 1,000 litres of oxygen per minute, "he added.

A DRDO spokesperson told TNIE that medical oxygen plant technology is being used, which has been developed by DRDO for generating oxygen onboard its light combat aircraft, Tejas. "The system can cater to 190 patients at a flow rate of 5 litres per minute and charge 195 cylinders per day."

Though it was announced that 500 such plants were to be readied within three months across the country, the actual number could be lesser with non-availability of sites cited as a reason, said a source. State Deputy Director of Medical Health, Dr Selvaraj said, "A total of 31 pressure swing adsorption technology plants have been approved as of now. They will totally produce 22,500 litres of oxygen per minute."

Fifth Oxygen Express Chugs into K'TAKA

The fifth Oxygen Express entered the inland container depot in Whitefield on Thursday carrying 160 tonnes of the gas, the highest such consignment brought in a single train so far. Altogether eight cryogenic cylinders carried 20 tonnes each. According to release, the train reached ICD at 1.05 am from Tatanagar in Jharkhand.

https://www.newindianexpress.com/states/karnataka/2021/may/21/first-set-of-drdo-oxygen-plants-getting-ready-to-be-commissioned-2305397.html

जागरण

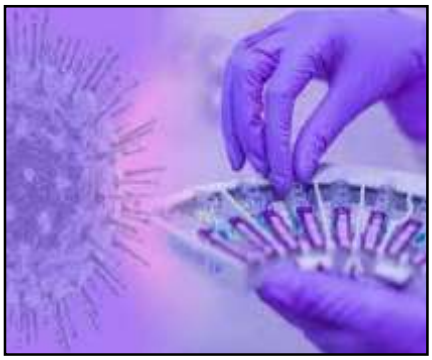
Fri, 21 May 2021

2-डीजी पर केंद्र को पूरा भरोसा, जारी रहेंगे तीसरे चरण के क्लीनिकल ट्रायल

रक्षा अनुसंधान एवं विकास संगठन (DRDO) की ओर से विकसित की गई दवा 2-डीजी के बारे में सरकार का कहना है कि यह कोरोना के इलाज में बेहद उपयोगी होगी। साथ ही इस महामारी के खिलाफ जारी लड़ाई में निर्णायक साबित हो सकती है।

By Pooja Singh

नई दिल्ली: रक्षा अनुसंधान एवं विकास संगठन (DRDO) की ओर से विकसित की गई दवा 2-डीजी के बारे में सरकार का कहना है कि यह कोरोना के इलाज में बेहद उपयोगी होगी। साथ ही इस महामारी के खिलाफ जारी लड़ाई में निर्णायक साबित हो सकती है।



आंकड़ों से यह पता चला है कि देश के दो दर्जन से भी अधिक सरकारी और निजी अस्पतालों में अगस्त माह तक इसके तीसरे चरण के क्लीनिकल परीक्षण जारी रहेंगे। इस परीक्षण में 220 मरीजों को शामिल किया जाएगा। दरअसल, 2-डीजी दवा का तीसरे चरण का क्लीनिकल परीक्षण जनवरी में शुरू हुआ था जबकि दूसरे चरण का परीक्षण पिछले वर्ष जून से सितंबर के बीच हुआ था, जिसमें 110 मरीजों को शामिल किया गया था।

कई विशेषज्ञों का कहना है कि इस दवा का इस्तेमाल कैंसर रोगियों के इलाज के लिए भी किया जाता है। बता दें कि भारत के औषधि महानियंत्रक ने पिछले वर्ष मई में ही डा. रेड्डीज लैब को 2-डीजी दवा के कोरोना मरीजों पर क्लीनिकल परीक्षण की मंजूरी प्रदान की थी।

https://www.jagran.com/news/national-2dg-clinical-trials-of-third-phase-will-continue-develop-by-drdo-know-all-details-21662681.html

Fri, 21 May 2021

DRDO's 2G drug a 'repurposed' medicine, not new: ICMR

India's first indigenous anti-COVID drug 2-DG is a "repurposed" medicine, the Indian Council of Medical Research said on Thursday. According to ICMR DG Dr. Balram Bhargava, the drug was earlier used for cancer treatment

New Delhi: India's first indigenous anti-COVID drug 2-DG is a "repurposed" medicine, the Indian Council of Medical Research said on Thursday. According to ICMR DG Dr. Balram Bhargava, the drug was earlier used for cancer treatment.

DRDO's 2G drug a 'repurposed' medicine, not new: ICMR

"DRDO's 2 DG drug is a repurposed medicine, not a new medicine. It was earlier used for cancer treatment. Its trial results have been given to DCGI," Dr. Bhargava said at a press conference today.

Meanwhile, the government will consider including the drug in the national COVID-19 treatment protocol after examining the data of the medicine. Days back, the Drugs Controller General of India (DCGI) granted permission for emergency use of the drug after looking at the data.

The drug 2-deoxy-D-glucose has been developed by Institute of Nuclear Medicine and Allied Sciences (INMAS), a lab of Defence Research and Development Organisation (DRDO), along with Dr Reddy's Laboratories (DRL), Hyderabad.

The drug could be a game-changer in the battle against pandemic as it helps in faster recovery of hospitalised patients and reduces oxygen dependence.

The 2-DG (2-deoxy-D-glucose) is an anti-COVID-19 therapeutic application of the drug.

According to a PTI report, clinical trial results have shown that this molecule helps in faster recovery of hospitalised patients and reduces supplemental oxygen dependence. Higher proportion of patients treated with 2-DG showed RT-PCR negative conversion in COVID patients.

https://www.indiatvnews.com/news/india/drdo-2g-drug-repurposed-medicine-not-new-icmr-statement-705886

NDTV

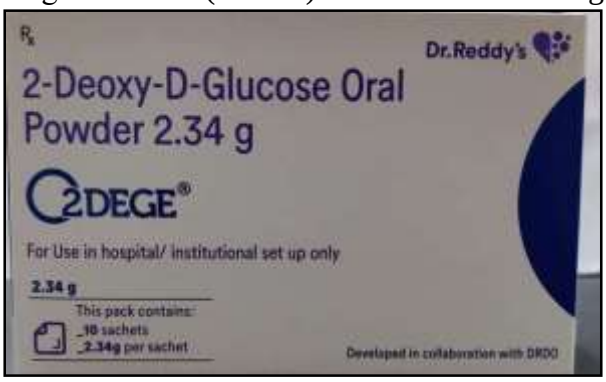
Fri, 21 May 2021

Explainer: All about DRDO's new COVID Drug

India's new COVID-19 drug has got an emergency approval for as an adjunct therapy in moderate to severe COVID patients by Drugs Controller General of India

By Anisha Bhatia, Edited By Sonia Bhaskar

New Delhi: Defence Research and Development Organisation's (DRDO) new COVID-19 drug – 2-DG has been recently granted permission for as an adjuvant therapy (treatment given in addition to the primary treatment) in moderate to severe COVID patients by the Drugs Controller General of India (DCGI).



This drug has been jointly developed by DRDO in collaboration with Dr Reddy's Laboratories

Here's a quick lowdown on this new drug and how it helps in the COVID-19 treatment and what is the opinion of the experts:

DRDO's Anti-COVID Drug – 2-DG

Basically 2-DG stands for 2-deoxy-D glucose, which is essentially a modified glucose, the type that so far has been used in therapeutic treatments as anti-cancer and anti-viral agent. Now, Defence Research and Development Organisation (DRDO) has said that it should be only used as an additional treatment in moderate to severe COVID patients and not the mild ones.

This drug has been jointly developed by Institute of Nuclear Medicine and Allied Sciences (INMAS), a lab of the Defence Research and Development Organisation (DRDO), in collaboration with Dr Reddy's Laboratories (DRL), Hyderabad.

The company claims that the drug can be produced easily in huge quantities as well.

The drug essentially comes in a powder form in a sachet and is to be taken twice a day by dissolving it in water, for at least a week.

But how does the DRODO drug help the COVID-19 patients?

The claim so far is that it leads to faster recovery in COVID patients who are hospitalised. It also claims that it reduces the dependence ON oxygen supplement in patientS and works against all the variants of the virus.

What is the Technology behind DRDO's 2-DG COVID Drug?

For the virus to multiply fast in the body it needs glucose for energy. When the virus feeds on this modified glucose for energy, the claim is that it will get arrested. Which means it will stop from multiplying at that same rate.

What is The Evidence on the Effectiveness of DRDO's 2-DG COVID Drug?

The initial clinical data found that the molecule works effectively against SARS-COV2, then DRDO and DRL conducted phase 2 clinical trials on 110 patients. Phase 3 trials were carried out on 220 patients admitted. And at the end of the trials, they concluded that the patients became free from the supplemental oxygen by Day 3.

Experts View on DRDO's 2-DG COVID Drug

Talking about the drug and why it was given an emergency approval in the country, Dr Sudhir Chandna, Additional Director Institute of Nuclear Medicine and Allied Sciences, DRDO said,

The data that has been submitted to the drug controller has undergone thorough scrutiny and the peer review publication of the data is in process and will be done very shortly. The one reason why we went for an emergency approval is that we saw that our drug had some indication that really

seemed to help COVID patients and their oxygen dependency. Data from all our clinical trials have suggested that the use of drug in COVID patients reduces the oxygen dependency and can save lives.

Highlighting why the number of patients in the clinical trials were this low, Dr Sudhir Chandna said,

Well, the number 220 was not given by us, when clinical trials happen, they happened with full protocol. Initially we were given just a few of the patients to show the proof of confirmation for the dose and if it is safe and effective. And once that was done, the drug controller gave us the permission to carry on with the phase 2 of the trials with dose ranging, in which we increase the dosage of the drugs. So, when the trial was concluded and when the data was presented to the drug controller, it was so distinctive and the proof of its effectiveness was solid that in the phase three trial we were given relatively less people as a part of the trials under the power analysis guidelines. So, in phase three we got the approval for 220 patients and that's how the trials were carried out. However, if our results were not as distinctive and as good, then in Phase 3, the number of patients would have increased.

On the other hand, Dr Sumit Ray, Head, Critical Care, Holy Family said that this is not how it should have been done and added,

Though I have a lot of faith in DRDO and India's pharmaceuticals, but having said that, I believe, this is not how science works. You have to and have to do peer review of the findings, you have to tell, what are the targets and what is the drug or medicine is targeting to reduce – mortality, oxygen use or ventilator use. What are the outcomes we are looking at – this all should be in public domain and research domain. And that has not been done in this case. It was also done in the other vaccines for COVID-19 and that is why there was vaccine hesitancy earlier. I believe, the drug can also have complications and side-effects, but no-one is talking about that.

Further giving an example of the plasma therapy, which was continued in the country for the treatment of COVID-19 patients, Dr Ray added,

The way the research has changed for the treatment of COVID now is a point to worry. In the initial phase of the pandemic, the research was done differently and was very different from now what we are seeing. I think, now we are rushing into things and the same was the case with plasma therapy. Most of the doctors initially had said that plasma therapy will not work, but we did it, without even having strong evidence for it. The same should not happen with this drug.

Reiterating the same point of lack of evidence in the public domain, Dr Yatin Mehta, Chairman, Medanta Critical Care said,

I think, we are getting too excited about the drug. It's too early to do that. We should first follow the full protocol for releasing a drug, which include scientific paper and peer review studies, which has not be done in this case. I sincerely hope the drugs works, but I also think, trying it out on just 220 is a very small number.

On the contrary, Dr Dinesh Singh, Senior Director, Max Super Hospital, Vaishali who HAS had some experience in handling this drug in past for his patients says,

As far as my experience in handling this drug in patients with brain tumour and cancer, I have seen that if you give low dosage of this modified glucose to patients it is treated safe. Even in this trial, we are just giving 45 milligrams per kilogram body weight of the dosage.

Whereas, Dr Ray says that the evidence of this glucose working even in cancer patients is very less. He said,

Basically, this is a dummy glucose, which helps in slowing the process of cells or virus from multiplying. It sounds very good, but it has not worked in past, nor we have much data on the same to prove its efficacy. What we need to know for this new drug is data, which is currently not there at all, at least in the public domain. Why can't the data for our vaccines be more transparent like FDA, the way they had put the data for Pfizer and Moderna vaccine, is something we should look at. Every single information for both these vaccines were put live on the public domain.

https://swachhindia.ndtv.com/explainer-all-about-drdos-new-covid-drug-59380/

TIMESNOWNEWS.COM

Fri, 21 May 2021

DRDO's new 2-DG COVID-19 drug

2-DG is an oral drug to be administered upon prescription to hospitalised moderate to severe COVID-19 patients along with existing standard of care, as per Dr Reddy's Laboratories

The Defence Research and Development Organisation's 2-deoxy-D-glucose or '2-DG' drug is the latest indigenous addition to India's Covid-19 management efforts. On May 1, the Drugs Controller General of India (DCGI) had cleared the formulation for emergency use as an adjunct therapy in moderate to severe Covid patients and the first batch of the homegrown anti-Covid drug was released on May 17 in the presence of Defence Minister Rajnath Singh and Health Minister Dr Harsh Vardhan. The 2-DG has been developed by DRDO's Institute of Nuclear Medicine and Allied Sciences (INMAS) in collaboration with Hyderabad-based pharmaceutical giant Dr Reddy's Laboratories (DRL).

Defence Minister Rajnath Singh hands over the first batch of 2-DG anti-Covid drug to Union Health Minister Dr Harsh Vardhan

According to *Financial Express Online*, Dr Reddy's Laboratories confirmed in an email that "2-DG is an oral drug to be administered upon prescription to hospitalised moderate to severe COVID-19 patients along with existing standard of care." As per the government release, clinical trial data show that the drug helps hospitalised Covid patients recover faster and reduces their dependence on supplemental oxygen. The release explains that the drug accumulates in virus-infected cells, stopping viral synthesis and energy production thus preventing the growth of infection. According to DRDO chairperson Dr G Satheesh Reddy, it should also work against various strains of the Covid-19 virus. The selective action makes 2-DG a unique drug and could be of immense benefit in managing Covid infection in those hospitalised.

DRDO scientists, in collaboration with the Centre for Cellular and Molecular Biology (CCMB), Hyderabad, started testing the 2-DG formulation in April 2020. Initial lab experiments revealed that the drug was effective in inhibiting viral growth of SARS-CoV-2, the coronavirus that leads to the Covid-19 disease.

In May 2020, DCGI's Central Drugs Standard Control Organization (CDSCO) permitted Phase-II clinical trials of 2-DG in Covid patients. According to the government release, DRDO and Dr Reddy's Laboratories conducted Phase-II trials on 110 patients across the country between May and October 2020. At this stage, 2-DG was found to be safe and effective in Covid patients and reported to have shown significant improvement in their recovery. The release mentions that patients treated with 2-DG showed "faster symptomatic cure than Standard of Care (SoC) on various endpoints".

Based on encouraging data from the Phase-II trial, the DCGI flagged off Phase-III clinical trials in November 2020. During the last stage trials between December 2020 and March 2021, 2-DG is said to have been administered to 220 patients admitted to 27 Covid hospitals in Delhi, Uttar Pradesh, West Bengal, Gujarat, Rajasthan, Maharashtra, Andhra Pradesh, Telangana, Karnataka and Tamil Nadu. At this stage, a significant number of patients are said to have shown symptomatic improvement, with 42% of patients becoming free from supplemental oxygen dependence by Day 3 as compared to 31% of patients treated in accordance with the existing standard of care. The trend of early relief from oxygen dependence is reported to have been consistent in patients aged more than 65 years as well.

The indigenous anti-Covid drug comes as a ray of hope in India's struggle against the pandemic. Being a generic molecule and analogue of glucose, the drug can be easily produced. The government release informed that it comes in a powdered form in a sachet and can be taken orally

by dissolving it in water. Since the drug reduces oxygen dependency, it would prevent black marketing of oxygen equipment.

Earlier, the DRGO Chairperson had said that the first batch of 2-DG would be available only in AIIMS, Armed Forces Hospitals, DRDO hospitals and other places in need. The lab is hoping to ramp up production of the drug up to one lakh sachet per day by the first week of June. DRDO's industry partner, Dr Reddy's Laboratories, will oversee the commercial launch of the drug next month and the scale of production is expected to determine the price of 2-DG.

On Tuesday, 19 May, the government announced that it will consider including 2-DG in the national Covid-19 treatment protocol after examining the trial data. NITI Aayog member Dr VK Paul, in a press conference, said that the COVID-19 National Task Force will examine the data and discuss if the drug could be added to the national treatment protocol.

https://www.timesnownews.com/india/article/drdo-s-new-2-dg-covid-19-drug/759573

Fri, 21 May 2021

PM केयर्स फंड के जरिए लगाए गए 150 वेंटिलेटर, DRDO कोविड केयर सेंटर छतरपुर का ITBP के आईजी ने लिया जाएजा

पीएम केयर्स ट्रस्ट फंड से 150 जीपीएस आधारित वेंटिलेटर बेड ने काम करना शुरू कर दिया। आईटीबीपी आईजी आनंद स्वरूप ने आज वेंटिलेटर वार्डों का दौरा किया और अधिकारियों के साथ केंद्र में व्यवस्थाओं की समीक्षा की।

By Sumit Choudhary, Edited By तनुजा जोशी

नई दिल्ली सरदार पटेल कोविड केयर सेंटर में उन मरीजों की सेवा करना जारी है जिन्हें ऑक्सीजन सहायता की आवश्यकता होती है। यह राष्ट्रीय राजधानी के सर्वश्रेष्ठ शिविर अस्पतालों में से एक साबित हुआ है। केंद्र के इस भरोसे ने सरकार के विश्वास को और बढ़ा दिया है और आज यहां पीएम केयर्स ट्रस्ट फंड से उपलब्ध कराए गए 150 जीपीएस आधारित वेंटिलेटर बेड को चालू कर दिया गया है। यह 500 ऑक्सीजन बेड के अतिरिक्त होगा जो पहले से ही केंद्र में काम कर रहे हैं। वेंटिलेटर का उपयोग कोरोना मरीजों को महत्वपूर्ण देखभाल प्रदान करने के लिए किया जाएगा।

Sardar Patel Covid Care Center

केंद्र भारत-तिब्बत सीमा पुलिस (ITBP) और दिल्ली सरकार के सहयोग से एक महत्वपूर्ण केंद्र के रूप में कार्य कर रहा है और उन मरीजों को आवश्यक चिकित्सा देखभाल प्रदान कर रहा है जिन्हें ऑक्सीजन सहायता की आवश्यकता है। गृह मंत्रालय (MHA) ने एसपीसीसीसी, राधा स्वामी ब्यास, छतरपुर, नई दिल्ली के लिए डॉक्टरों और पैरामेडिकल स्टाफ को उपलब्ध कराने के लिए बल को अनिवार्य कर दिया था।

केंद्र ने 19 मई, 2021 तक कुल 1 हजार 223 मरीजों को भर्ती किया, जिनमें से 935 को छुट्टी दे दी गई है। वर्तमान में, केंद्र में 200 बेड पर मरीजों का इलाज जारी है। गंभीर मरीजों को यहां एंटी वायरल

उपचार दिया गया और उनका ऑक्सीजन स्तर बेहतर होता जा रहा है। ऑक्सीजन सहायता की आवश्यकता वाले किसी भी कोरोना मरीजों के लिए वॉक-इन भर्ती की गई है।

केंद्र कर रहा पर्याप्त ऑक्सीजन की आपूर्ति

दिल्ली जिला प्रशासन की ओर से मरीजों के लिए केंद्र को पर्याप्त ऑक्सीजन की आपूर्ति और दवाएं उपलब्ध कराई जा रही हैं। केंद्र ने मरीजों के इलाज का अच्छा ट्रैक रिकॉर्ड जारी किया है। ऐसे कई उदाहरण हैं जब कई रोगियों जिनके ऑक्सीजन का स्तर 60 तक भी कम था, उन्हें बहुत आवश्यक देखभाल प्रदान की गई और उनमें से कई 80 और 90 के स्तर तक ठीक हो गए।

आईटीबीपी के वरिष्ठ अधिकारी मरीजों से मिलने और उनकी प्रतिक्रिया लेने के लिए नियमित रूप से केंद्र के वार्डों का दौरा कर रहे हैं।

https://www.tv9hindi.com/india/ig-of-itbp-visits-sardar-patel-covid-care-center-to-check-ventilator-wards-of-pm-cares-fund-662956.html

हिन्दुस्तान

Fri, 21 May 2021

डॉ. सूर्यकान्त वाराणसी के डीआरडीओ अस्पताल की व्यवस्था देखेंगे

लखनऊ: प्रधानमंत्री नरेंद्र मोदी के संसदीय क्षेत्र वाराणसी में कोविड-19 संक्रमण से बचाव व इलाज के लिए डीआरडीओ द्वारा संचालित पंडित राजन मिश्र कोविड चिकित्सालय की व्यस्था को चुस्त-दुरुस्त बनाया जाएगा। इसके लिए चिकित्सा विभाग ने किंग जार्ज चिकित्सा विश्वविद्यालय के रेस्परेटरी मेडिसिन विभाग के अध्यक्ष डॉ. सूर्य कान्त को दो दिन प्रवास पर वाराणसी भेजा है। वहां की व्यवस्था को परखने के साथ ही जरूरी कदम उठाये जाने के बारे में डॉ. सूर्यकांत से संस्तुति मांगी गयी है।

वाराणसी जिलाधिकारी डीआरडीओ अस्पताल से समन्वय स्थापित करेगे। डॉ. सूर्यकान्त की अध्यक्षता में बनी इस एक सदस्यीय समिति को सहयोग प्रदान किया जाएगा। इससे पहले भी कोरोना के बढ़ते संक्रमण पर काबू पाने के लिए डॉ. सूर्य कान्त को आगरा, कानपुर और मेरठ भेजा जा चुका है।

https://www.livehindustan.com/uttar-pradesh/lucknow/story-dr-suryakant-will-see-the-arrangement-of-drdo-hospital-in-varanasi-4047145.html

Greater Kashmir

Fri, 21 May 2021

Govt appoints in-charge Medical Superintendents to Covid-19 DRDO hospitals in Srinagar, Jammu

By Mukeet Akmali

Srinagar: Amid spike in COVID-19 positive cases and burden on healthcare institutions across Jammu and Kashmir, the J&K government Thursday ordered transfers and postings of incharge Medical Superintendents to oversee functioning of Defence Research and Development Organisation (DRDO) established 500-bedded COVID hospitals – one each in Srinagar and Jammu.

"Consequent upon the establishment of two 500-bedded temporary COVID hospitals, one each at Jammu and Srinagar vide Government Order No 398-JK (HME) of 2021 dated 18 May 2021 and in order to make these health institutions functional, the transfers and postings of the doctors are hereby ordered with immediate effect in the first instance," reads an order issued by Financial Commissioner, Health and Medical Education, Atal Duloo.

Programme Manager, State Health Society, J&K, Dr Narinder Bhutyal, on deputation basis has been transferred and posted as In-charge Medical Superintendent in the 500-bedded temporary COVID Hospital, Jammu, besides Dr Parveen Yograj, Incharge DIO, Rajouri has been transferred and posted as Programme Manager, State Health Society, J&K on deputation basis.

Dr Abdul Rashid Parra, Consultant Anesthesia, National Health Mission on deputation basis has been transferred and posted as Incharge Medical Superintendent in the 500-bedded temporary COVID Hospital, Srinagar.

A 500-bedded makeshift COVID-19 hospital being built by the Defence Research and Development Organisation (DRDO) at Khonmoh on Srinagar outskirts was expected to be operational by the first week of June.

The work on the hospital is being carried out by the DRDO which would have 125 ICU and 375 oxygen-supported beds.

Inspecting the pace of work at the site on Thursday, Deputy Commissioner, Srinagar Muhammad Aijaz Asad was informed that the work on this COVID health facility wad being carried out at a fast pace and would be made operational soon.

The deputy commissioner exhorted upon the project manager DRDO to speed up the pace of work by mobilising additional men and machinery on the job.

He directed them to work in double shifts and set a May 30 deadline for making the hospital fully operational.

https://www.greaterkashmir.com/news/kashmir/govt-appoints-in-charge-medical-superintendents-to-19-drdo-hospitals-in-srinagar-jammu/

BRIGHTER KASHMIR

Fri, 21 May 2021

DC Srinagar takes stock of under construction 500 bedded Covid Hospital at Khonmoh

The Deputy Commissioner (DC) Srinagar, Mohammad Aijaz Asad today visited Khonmoh to inspect the ongoing works for setting up of 500 bedded Covid Hospital.

The work on the hospital is being carried out by the DRDO which would have 125 ICU and 375 Oxygen supported beds.

While inspecting the pace of work at the site, the DC was informed that the work on said Covid health facility is being carried out on fast pace and would be made operational soon.

The Deputy Commissioner exhorted upon the Project Manager DRDO to speed up the pace of work by mobilizing additional men and machinery on job. He directed them to work in double shifts and sets May 30 deadline for making hospital fully operational.

On the occasion, it was informed that supply of power has been provided to the hospital while rest of power setup in the hospital would be completed within two days.

The DC also directed the PHE authorities to ensure supply of water to the hospital by May 26. The Project Manager DRDO thanked Deputy Commissioner for his intervention in smooth movement of trucks carrying pre fab material.

The DC said as soon as this 500 bedded hospital is made functional it will further augment the bed capacity to facilitate Covid-19 patients besides it will further strengthen the measures undertaken by the Administration to fight Covid-19 in the district.

http://brighterkashmir.com/dc-srinagar-takes-stock-of-under-construction-500-bedded-covid-hospital-at-khonmoh

हिन्दुस्तान

Thu, 20 May 2021

डीआरडीओ के अस्पताल का किया निरीक्षण

राजकीय मेडिकल कॉलेज हल्द्वानी के मैदान में डीआरडीओ द्वारा बनाए जा रहे 500 बेड के कोविड अस्पताल का जिला एवं पुलिस प्रशासन ने बुधवार को निरीक्षण किया।

बुधवार को सिटी मजिस्ट्रेट प्रत्यूष सिंह व एसपी सिटी डॉ. जगदीश चंद्र मेडिकल कॉलेज के ग्राउंड पहुंचे। इस दौरान उन्होंने 500 बेड के कोविड अस्पताल के निर्माण कार्य का निरीक्षण किया। सिटी मजिस्ट्रेट ने कहा कि अस्पताल का काम पूरी तेजी से चल रहा है। उन्होंने कहा कि अस्पताल के काम को तेजी से करने के लिए जो भी मदद प्रशासन से मांगी जा रही है, वह तुरंत उपलब्ध करायी जा रही है। उन्होंने अस्पताल के जल्द शुरू होने की उम्मीद जताई।

https://www.livehindustan.com/uttarakhand/haldwani/story-inspection-of-drdo-hospital-4042905.html

Defence News

Defence Strategic: National/International

Press Information Bureau
Government of India

Ministry of Defence

Thu, 20 May 2021 2:04PM

INS Rajput to be Decommissioned on 21 May 21

On the 21st of May, a glorious era will come to an end with the decommissioning of the first destroyer of the Indian Navy - INS Rajput. INS Rajput, the lead ship of the Kashin-class destroyers built by the erstwhile USSR was commissioned on 04 May 1980 and has rendered yeoman service to the Indian Navy for over 41 years. INS Rajput will now be decommissioned at a solemn ceremony at Naval Dockyard, Visakhapatnam. Owing to the ongoing COVID pandemic, the ceremony will be a low-key event attended only by in-station officers and sailors with strict observance of COVID protocols.

INS Rajput was constructed in the 61 Communards Shipyard in Nikolaev (present-day Ukraine) under her original Russian name 'Nadezhny' meaning 'Hope'. The keel of the ship was laid on 11 Sep 1976 and she was launched on 17 Sep 1977. The ship was commissioned as INS Rajput on 04 May 1980 at Poti, Georgia by His Excellency Shri IK Gujral, the Ambassador of India to USSR with Capt Gulab Mohanlal Hiranandani as her first Commanding Officer. Over her four decades of glorious service to the nation, the ship has the distinction of serving in both Western and Eastern Fleets.

With the motto "*Raj Karega Rajput*" firmly etched in their minds and indomitable spirit, the gallant crew of INS Rajput have remained ever vigilant and always 'on call' to protect the maritime interest and sovereignty of the nation. The ship has participated in several operations aimed at keeping the nation secure. Some of these include Operation *Aman* off Sri Lanka to assist IPKF, Operation *Pawan* for patrolling duties off the coast of Sri Lanka, Operation Cactus to resolve hostage situation off the Maldives, and Operation *Crowsnest* off Lakshadweep. In addition, the ship participated in numerous bilateral and multi-national exercises. The ship was also the first Indian Naval Ship to be affiliated with an Indian Army regiment – the *Rajput Regiment.*

In her glorious 41 years, the ship had 31 Commanding Officers at her helm with the last CO taking charge of the ship on 14 Aug 2019. As the sun sets on 21 May 21, the Naval Ensign and the Commissioning Pennant will be hauled down for the last time onboard INS Rajput, symbolising the decommissioning.

https://pib.gov.in/PressReleasePage.aspx?PRID=1720221

Press Information Bureau
Government of India

Ministry of Defence

Thu, 20 May 2021 8:22PM

India & Oman renew MoUs on military cooperation & maritime issues

India and Oman renewed the Memoranda of Understanding (MoUs) on military cooperation along with its annexure as well as on maritime issues on May 20, 2021. The signing ceremony of MoU on military cooperation was held at the Ministry of Defense, Muscat. The document was signed by Secretary General of Ministry of Defense, Oman Dr Mohammed bin Nasser Al Zaabi and Ambassador of India to Oman Shri Munu Mahawar.

The MoU on cooperation on maritime issues was signed at the Maritime Security Centre by Commander of Royal Navy of Oman, the Head of Maritime Security Committee, Rear Admiral Saif bin Nasser Al Rahbi and Shri Munu Mahawar.

https://pib.gov.in/PressReleasePage.aspx?PRID=1720411

Science & Technology News

PHYS.ORG

Fri, 21 May 2021

Thin is now in to turn terahertz polarization

It's always good when your hard work reflects well on you.

With the discovery of the giant polarization rotation of light, that is literally so.

The ultrathin, highly aligned carbon nanotube films first made by Rice University physicist Junichiro Kono and his students a few years ago turned out to have a surprising phenomenon waiting within: An ability to make highly capable terahertz polarization rotation possible.

Ultrathin, broadband polarization rotators are made possible by ultrathin carbon nanotube films developed at Rice University in 2016. The films of highly aligned single-walled nanotubes were first made in 2016. Credit: Kono Laboratory/Rice University

This rotation doesn't mean the films are spinning. It does mean that polarized light from a laser or other source can now be manipulated in ways that were previously out of reach, making it completely visible or completely opaque with a device that's extremely thin.

The unique optical rotation happens when linearly polarized pulses of light pass through the 45-nanometer film and hit the silicon surface on which it sits. The light bounces between the substrate and film before finally reflecting back, but with its polarization turned by 90 degrees.

This only occurs, Kono said, when the input light's polarization is at a specific angle with respect to the nanotube alignment direction: the "magic angle."

The discovery by lead author Andrey Baydin, a postdoctoral researcher in Kono's lab, is detailed in *Optica*. The phenomenon, which can be tuned by changing the refractive index of the substrate and the film thickness, could lead to robust, flexible devices that manipulate terahertz waves.

Kono said easy-to-fabricate, ultrathin broadband polarization rotators that stand up to high temperatures will address a fundamental challenge in the development of terahertz optical devices. The bulky devices available until now only enable limited polarization angles, so compact devices with more capability are highly desirable.

Because terahertz radiation easily passes through materials like plastics and cardboard, they could be particularly useful in manufacturing, quality control and process monitoring. They could also be handy in telecommunications systems and for security screening, because many materials have unique spectral signatures in the terahertz range, he said.

"The discovery opens up new possibilities for waveplates," Baydin said. A waveplate alters the polarization of light that travels through it. In devices like terahertz spectrometers used to analyze the molecular composition of materials, being able to adjust polarization up to a full 90 degrees would allow for data gathering at a much finer resolution.

"We found that specifically at far-infrared wavelengths—in other words, in the terahertz frequency range—this anisotropy is nearly perfect," Baydin said. "Basically, there's no attenuation in the perpendicular polarization, and then significant attenuation in the parallel direction.

"We did not look for this," he said. "It was completely a surprise."

He said theoretical analysis showed the effect is entirely due to the nature of the highly aligned nanotube films, which were vanishingly thin but about 2 inches in diameter. The researchers both observed and confirmed this giant polarization rotation with experiments and computer models.

"Usually, people have to use millimeter-thick quartz waveplates in order to rotate terahertz polarization," said Baydin, who joined the Kono lab in late 2019 and found the phenomenon soon after that. "But in our case, the film is just nanometers thick."

"Big and bulky waveplates are fine if you're just using them in a laboratory setting, but for applications, you want a compact device," Kono said. "What Andrey has found makes it possible."

More information: Andrey Baydin et al, Giant terahertz polarization rotation in ultrathin films of aligned carbon nanotubes, *Optica* (2021). DOI: 10.1364/OPTICA.422826

Journal information: *Optica*

https://phys.org/news/2021-05-thin-terahertz-polarization.html

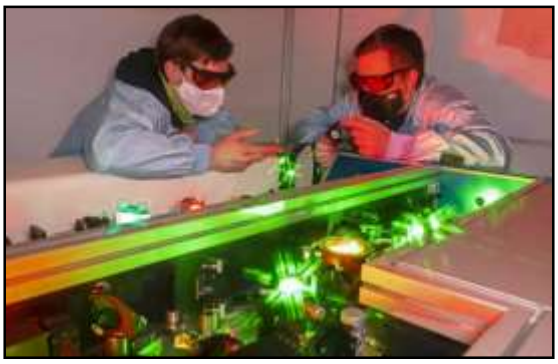
PHYS.ORG

Fri, 21 May 2021

Research team develops new method for studying atomic structures in material surfaces

Chemical reactions, such as those that occur when charging and discharging a battery, take place primarily on surfaces and at interfaces. While it is very easy to study the macroscopic products of a reaction, it has so far been difficult to gain a more accurate picture of the course of chemical reactions at the atomic level. This requires measurement methods that allow observations to be made on the extremely short time scales on which chemical reactions take place.

In principle, spectroscopic methods with very short laser pulses for temporal resolution are suitable for this. At the same time, the laser light must be of a very short wavelength, as physicist Tobias Helk of Friedrich Schiller University Jena explains: "To be able to specifically investigate individual elements using core electron resonance, laser light with a wavelength of a few nanometres is required—i.e., radiation in the extreme ultraviolet (XUV) or X-ray range of the spectrum."



First author of the current study Tobias Helk (l.) and Dr Frederik Tuitje in a laser laboratory at the University of Jena. Credit: Jens Meyer/University of Jena

To observe chemical processes, it is also important to be able to study the interfaces between media and material surfaces where chemical reactions take place, adds Helk. In addition to short wavelengths and short durations, the laser pulses must also have an extremely high intensity to be able to cause non-linear effects, as they are called, which allow the measurement signal to be traced back to the interface.

So far, however, there are very few methods for generating such intense laser radiation in the XUV and X-ray range. "Until now, this has only been possible at large-scale research facilities such as the FLASH free-electron laser at DESY," says Prof. Christian Spielmann of the Institute of Optics and Quantum Electronics at the University of Jena. However, he and his team, together with researchers from the USA and France, have now found a way to make such investigations possible in a standard laser laboratory.

Non-linear frequency doubling on a titanium surface

To this end, a soft X-ray laser from the Laboratoire d'Optique Appliquee in Palaisseau (France) was used as the light source. "In our experiment, we set up a special focusing geometry, consisting of a elliptically shaped mirror that enables us to concentrate the laser radiation onto a very small area," says doctoral candidate Helk, lead author of the study. The radiation with a wavelength of 32.8 nanometres was focused on an ultra-thin titanium foil and its non-linear interaction with the matter particles was analyzed.

"As is already known from studies with radiation in the visible and infrared range, light with new properties can be generated through the interaction of light particles and matter particles," explains Helk. In a process known as non-linear frequency doubling (or second harmonic generation), for example, two photons of the irradiated light are absorbed by the material and a photon with twice the frequency (twice the energy) is emitted.

And it is precisely this effect that the researchers were able to demonstrate. With a spectrometer, they separated the radiation resulting from the interaction with the titanium foil and recorded it using a camera. By comparing simulations with the measurement results, they were also able to show that the resulting radiation originates on the surface of the titanium foil and not within the material.

"Being able to perform this form of surface spectroscopy in the XUV range on a laboratory scale opens up completely new perspectives. For example, chemical processes on surfaces or at hidden interfaces can now be studied from the perspective of a single atom in otherwise complex chemical environments," says Prof. Michael Zürch of the University of California, describing the significance of the result. Furthermore, the short duration of the pulses used enables the investigation of dynamic processes at interfaces, such as those that occur during the charging and discharging of batteries.

More information: Tobias Helk et al, Table-top extreme ultraviolet second harmonic generation, *Science Advances* (2021). DOI: 10.1126/sciadv.abe2265

Journal information: *Science Advances*

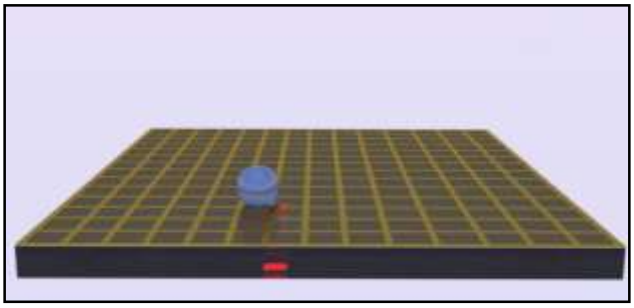
https://phys.org/news/2021-05-team-method-atomic-material-surfaces.html

PHYS.ORG

Fri, 21 May 2021

Opening up possibilities with open-top optofluidic device

Microfluidic technologies have seen great advances over the past few decades in addressing applications such as biochemical analysis, pharmaceutical development, and point-of-care diagnostics. Miniaturization of biochemical operations performed on lab-on-a-chip microfluidic platforms benefit from reduced sample, reagent, and waste volumes, as well as increased parallelization and automation. This allows for more cost-effective operations along with higher throughput and sensitivity for faster and more efficient sample analysis and detection.

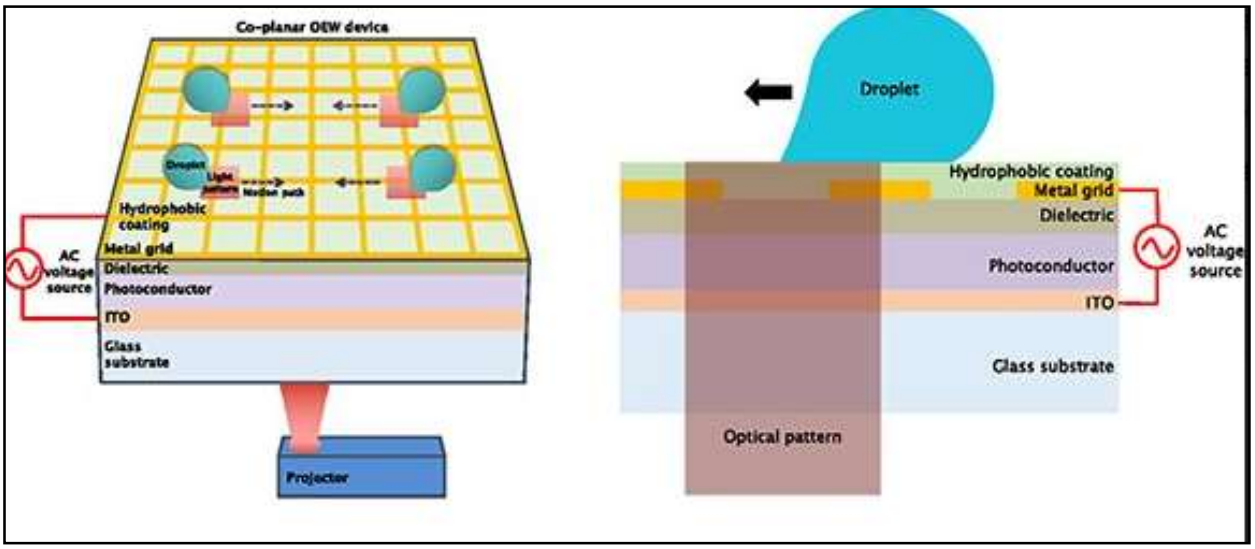


Schematic of the co-planar light-actuated optoelectrowetting microfluidic device that features an integrated metal mesh grid. A droplet on the device surface is actuated and moved around the two-dimensional plane under the influence of an incident optical pattern. Credit: Jodi Loo et al. doi: 10.1117/1.JOM.1.3.034001.

Optoelectrowetting (OEW) is a digital optofluidic technology that is based on the principles of light-controlled electrowetting and enables the actuation and manipulation of discrete droplets. OEW devices have many advantages, such as the ability for large-scale, real-time, and reconfigurable control of picoliter- to microliter-sized droplets by adjusting the number and size of low-intensity optical light patterns incident on the device. With each individual droplet on the OEW device acting as its own bioreaction chamber, the OEW device also has the ability to support multiplex capabilities. This can prove to be beneficial in applications such as single-cell analysis and genomics or combinatorial libraries.

Previous traditional OEW devices provide a flexible platform to perform chemical and biological assays such as real-time isothermal polymerase chain reaction with basic droplet manipulation techniques. However, in these OEW devices, droplets are sandwiched between a bottom active OEW substrate and a top layer ground electrode substrate, forcing any input/output fluidic configurations to be integrated from the side openings. Although feasible, this can prove to be limiting for system integration.

Researchers from the University of California, Berkeley, created a single-sided, co-planar OEW device that allows for individualized and parallel droplet actuation and benefits from easier droplet accessibility from above for more input/output configuration schemes. This was achieved by eliminating the need for a top cover electrode found in traditional OEW devices by fabricating a metal mesh grid integrated on the OEW device. Droplets can still move freely around the two-dimensional device surface and are now accessible from above due to the open-top design.



Light is selectively illuminated on the photoconductor layer under part of a droplet's contact line to achieve an electromechanical force imbalance within the droplet. This causes the droplet to move toward the light pattern. Credit: Jodi Loo et al. doi: 10.1117/1.JOM.1.3.034001.

In their research, recently published in SPIE's new *Journal of Optical Microsystems*, they have also derived a theoretical model of the co-planar OEW device to better understand how the integrated metal mesh grid affects device and droplet performance. Analysis gathered from the co-planar OEW model was used to optimize the co-planar device structure and operation. They have demonstrated the ability for basic droplet manipulation, such as individual droplet operations in parallel, merging of multiple droplets, and the ability to handle and move droplets with varying volumes simultaneously.

The co-planar device improves on the traditional OEW device's droplet actuation performance with speeds more than two times faster, up to 4.5 cm/s. Higher droplet speeds on the co-planar OEW device achieved despite a marginal reduction in effective force compared to the traditional OEW device can be partly attributed to the reduction in friction due to elimination of the top cover.

In addition, the ability to operate co-planar OEW devices with 95% reduced light intensity was demonstrated. To showcase the benefit of having exposed droplets to accommodate a wider range of input/output configurations, a droplet-on-demand dispensing system from above was integrated with the co-planar OEW device to inject, collect, and position individual droplets and form large-scale droplet arrays of up to 20 by 20, covering the whole device surface area. Creating larger OEW devices should allow for even more droplets to be accommodated on chip.

With this research, the team has developed an OEW platform for reliable droplet manipulation that can accomplish most basic biological and chemical benchtop techniques. The co-planar OEW device expands the flexibility and range of possibilities for optofluidic technologies to realize greater system integration capabilities and biological and chemical applications.

More information: Jodi Loo et al, Co-planar light-actuated optoelectrowetting microfluidic device for droplet manipulation, *Journal of Optical Microsystems* (2021). DOI: 10.1117/1.JOM.1.3.034001

https://phys.org/news/2021-05-possibilities-open-top-optofluidic-device.html

Fri, 21 May 2021

New Research shows alarming risk of COVID-19 from aerosols to healthcare workers

Analysis shows coughing, deep breathing and shouting creates more than 100-fold greater amounts of aerosols than oxygen therapies, potentially increasing risk to frontline staff who wear only surgical masks

New research published in *Anaesthesia* (a journal of the Association of Anaesthetists) challenges the guidance that special aerosol precautions are only needed when using oxygen therapies for COVID-19 patients, and raises concerns about safety of staff and patients in hospital wards, if they are not protected from infectious aerosols.

The study set out to examine whether oxygen therapies used for patients with severe COVID-19 produce large amounts of small respiratory particles called aerosols, which can transmit virus and can evade routine precautions used on hospital wards. The study found these oxygen therapies do not produce excessive amounts of aerosols and in fact reduce aerosols suggesting these therapies can be made widely available.

The study also showed that respiratory activities such as coughing and deep breathing are a major source of aerosol particles, and this has the potential to expose healthcare workers to an increased risk of infection. Importantly, the authors make clear that this study used 10 healthy volunteers to produce the aerosols measured, not patients infected with SARS-CoV-2.

The authors of the study, who include Dr. Nick Wilson (Royal Infirmary of Edinburgh, NHS Lothian, Scotland), Prof Euan Tovey (University of Sydney), Prof Guy Marks (University of New South Wales, Sydney) and Prof Tim Cook (Royal United Hospitals Bath NHS Foundation Trust, Bath, UK) say that their findings could in part explain why staff working in wards who wear only surgical masks have around two to three times higher rates of infection and hospitalization than those working in ICU where more complete personal protective equipment such as N95/FFP3 respirator masks are used.

The researchers built a new chamber providing extremely clean air, in which 10 healthy volunteers sat. They breathed into a large cone, and the researchers collected the particles that were breathed out and used a specialized machine called an ‘optical particle counter’ to measure the number and size of the particles. In contrast to previous studies the researchers collected almost all particles breathed out and this enabled a clear comparison between the amounts of aerosols generated by respiratory activities and oxygen therapies.

First, the volunteers performed respiratory activities including breathing, talking, shouting, coughing, and exercising, designed to mimic respiratory activity of patients with respiratory infections such as COVID-19. This showed that increased respiratory activity (such as coughing and deep breathing) which is common in patients with COVID-19 increases aerosols by more than 100 times.

The volunteers then repeated the experiments while receiving oxygen therapies commonly used in hospitalized patients with severe COVID-19, first the delivery of oxygen at high flow into the nose (high flow nasal oxygen) and then oxygen delivered under pressure through a tight-fitting facemask (non-invasive ventilation). Aerosol numbers were not increased and during increased respiratory activities and were actually reduced.

There is much debate over the role of respiratory particles in guidelines for preventing transmission of COVID-19. Larger particles (larger than 1/200th of a millimeter) are traditionally called 'droplets' and are deemed to travel only 1-2 meters from an infected patient before falling to the ground. Aerosols are smaller particles (smaller than 1/200th of a millimeter) and stay floating in the air for prolonged periods, spread further, may accumulate in poorly ventilated spaces, can be inhaled deep into the lungs and bypass looser fitting facemasks. Much current guidance is designed to protect from droplets and infection spread by aerosols is only considered a risk when caused by medical therapies. In this new study, the volunteers produced up to 100 times more aerosol particles with activities such as coughing than they did during treatment with oxygen therapies.

This challenges the current guidelines which state healthcare staff looking after patients with COVID-19 who are coughing and have breathing difficulty only need PPE that protects against the larger droplets. 'Droplet protection' includes surgical masks but does not prevent aerosol particles passing around the edges of the masks and being inhaled. N95/FFP3 respirators which are tightfitting and filter better, block more aerosols but guidelines currently recommend these only for staff looking after patients receiving the advanced oxygen therapies.

Study lead author Dr. Nick Wilson explains: "More than 90% of the total number of particles produced by both activities and therapies were the smaller aerosols. Aerosols are important as they can travel long distances in the air, evade loose fitting surgical facemasks and be inhaled deep into the lung. This raises concerns about the safety of those around patients with COVID-19."

Prof Euan Tovey says: "The coughing and labored breathing common in patients with COVID-19 produces a lot more droplets and aerosols than is produced by patients being treated with oxygen therapies. Surgical facemasks provide inadequate protection against aerosols and staff safety can only be increased by more widespread use of specialized tight-fitting respirators (N95 or FFP3 masks) and increased indoor ventilation. Also, as the respiratory therapies did not significantly increase aerosols, these treatments should be made widely available to patients with COVID-19 who need them."

Prof Guy Marks says: "The study also has implications beyond hospitals. The generation of both droplets and particularly aerosols by everyday breathing activities reinforces the importance of maintaining social distance, having excellent ventilation in buildings and transport, being outside where possible, and using effective masks both to protect from breathing in virus and reducing the amount of virus they spread when breathing out."

Prof Tim Cook concludes: "Our findings strongly support the re-evaluation of guidelines to better protect hospital staff, patients and all those on the front line who are dealing with people who have, or are suspected of having, COVID-19."

Reference: "The effect of respiratory activity, non-invasive respiratory support and facemasks on aerosol generation and its relevance to COVID-19" by N. M. Wilson, G. B. Marks, A. Eckhardt, A. M. Clarke, F. P. Young, F. L. Garden, W. Stewart, T. M. Cook and E. R. Tovey, 30 March 2021, *Anaesthesia*. DOI: 10.1111/anae.15475

https://scitechdaily.com/new-research-shows-alarming-risk-of-covid-19-from-aerosols-to-healthcare-workers/