

# SCIENCE & TECHNOLOGY EFFORTS IN INDIA ON **COVID-19**

**Exclusive Edition on  
Vaccines & Immunisation**

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Compiled by  
**Vigyan Prasar**  
An Autonomous Organisation  
of Department of Science &  
Technology, Government of India





सत्यमेव जयते  
**FOREWORD**

## डॉ हर्ष वर्धन Dr Harsh Vardhan

स्वास्थ्य एवं परिवार कल्याण, विज्ञान और प्रौद्योगिकी  
व पृथ्वी विज्ञान मंत्री, भारत सरकार

Union Minister for Health & Family Welfare,  
Science & Technology and Earth Sciences  
Government of India

सबका साथ, सबका विकास, सबका विश्वास  
Sabka Saath, Sabka Vikas, Sabka Vishwas

The 2019 Novel Coronavirus (SARS-CoV-2) has spread rapidly throughout the world and has assumed the proportion of a Pandemic. Given the lack of an efficacious vaccine as well as non-availability of suitable chemotherapeutic interventions, mankind is experiencing an unprecedented existential crisis.

2. The Ministry of Science and Technology and the Ministry of Health & Family Welfare, with their various departments, are contributing in various ways towards the national R&D efforts for developing solutions to combat COVID-19. The Department of Science & Technology under the Ministry has launched a nationwide exercise to map and boost development of COVID-19 solutions with R&D, seed capital and scale-up support. All academic and research institutions are being reoriented to focus on the development of diagnostics, vaccines, antivirals, disease models and other R&D to enable a cure for this dreadful disease. Around 15 labs of Council of Scientific & Industrial Research (CSIR), under the Department of Scientific & Industrial Research, across the country are working in close partnership with major private sector Industries, PSUs, MSMEs and other Government departments to develop solutions for COVID-19. The Department of Biotechnology (DBT) under the Ministry has also formed a consortium to support the development of Medical equipment, Diagnostics, Therapeutics, Drugs and Vaccines to meet the Healthcare Challenges. Indian Council of Medical Research (ICMR), under the Ministry of Health & Family Welfare has already isolated the virus strain successfully, which is a first step towards vaccine research. Similarly, various other organizations under Ministry of Human Resource & Development, Ministry of Defence, Ministry of Chemicals & Fertilizers, etc. are also contributing substantively to our R&D efforts. The private sector has also come forward in a big way to supplement these efforts.

3. With a view to spreading awareness about the S&T efforts of the Government of India as well as private sector in finding solutions for COVID-19, Vigyan Prasar - an autonomous institution under Ministry of Science & Technology and engaged in large-scale science communication and popularization activities - has compiled all initiatives being undertaken in this field.

4. This document "Science & Technology Efforts on COVID-19 in India" shall serve as a ready-reckoner for policy makers, scientists, researchers, scholars and other stakeholders who might be interested in understanding and keeping themselves abreast with the latest S&T efforts being made to develop solutions to combat COVID-19.

  
(Dr. Harsh Vardhan)

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# PREFACE

The communication approach that supports the COVID-19 vaccines rollout in India seeks to disseminate timely and transparent information related to vaccines; alleviate all apprehensions around their efficacy; ensure their acceptance; and encourage their uptake. Being true to its mandate of science communication, popularisation and extension, Vigyan Prasar is bringing out a special edition of its e-newsletter on science, technology, and innovation efforts concerning vaccine development, emergency approval, roll-out strategy, sensitisation programme, and awareness plan. In its continuous pursuit of reaching out to the larger audience and public outreach, Vigyan Prasar has been bringing out the compilation of all STI efforts initiated by various wings and agencies of Government of India in the shape of an e-newsletter from 5th April 2020, the early days of COVID-19 pandemic outbreak.

It aims to steer the spirit of Jan Andolan such that citizens feel confident to engage and participate in the vaccination programme. COVID-appropriate Behaviours (CAB) should be continued to be followed not just during and after the vaccination but always. It holds true for people who would not be vaccinated in the initial phases, because practising CAB has the potential to avert any future endemic like situations. Since the vaccine for COVID-19 is new, it is important to orient and train all the stakeholders responsible for the implementation of communication actions.

Eradication of smallpox, near elimination of poliomyelitis and neonatal tetanus, and substantial reduction in impacts of measles are ranked amongst the greatest achievements of humankind ever. Apart from natural infections, vaccines are considered as the safest and most cost-effective intervention to induce protection against COVID-19. The unprecedented global quest for COVID-19 vaccine is aimed at achieving what other public health interventions have not been able to accomplish till date, i.e., to vanquish the pandemic. The vaccine is primarily aimed to protect individuals and creating a pool of immune people that comprises 60-70 per cent of the entire population, thus inducing herd immunity. [ICMR, MoHFW]

Countries, including India, have taken strong measures to contain the spread of COVID-19 through better diagnostics and treatment; vaccines will provide a lasting solution by enhancing immunity and containing the disease spread. Development of and access to a vaccine against COVID-19 may be touted as remarkable milestone but should not be confused as the solution to contain and eliminate the pandemic in short period. We wish and look forward to a behaviour-induced hygienic society and an endemic-free nation in the new decade and a step forward towards becoming Atmanirbhar.

31 Jan 2021

Vigyan Prasar  
New Delhi

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

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

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**SECTION I**

**COVID-19:  
Vaccines & Immunisation**

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# COVID-19: VACCINES & IMMUNISATION

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A vaccine is a biological agent that prevents us from an infectious disease-causing pathogen such as viruses, bacteria or other microorganisms. It guides the body on defending itself against the pathogen attack by generating an immune response. Usually, it is administered in our body in liquid form, either by injection, by oral doses, or by intranasal routes. Immunization is a global health and development success story, saving millions of lives every year. Vaccines reduce risks of getting a disease by working with body's natural defenses to build protection. Now, there are vaccines available to prevent more than 20 life-threatening diseases, helping people of all ages live longer and healthier. Immunization currently prevents 2-3 million deaths globally every year from diseases like diphtheria, tetanus, influenza, and so on.

Vaccines enable the immune system to create antibodies, just like exposing to a disease. As vaccines contain only killed or weakened forms of germs or microorganisms, they do not cause the disease. Immunization is a key component of primary healthcare and an indisputable human right. It is also one of the best health investments. Vaccines are also critical to the prevention and control of endemics, epidemics, and pandemics. They strengthen global health security and play a significant role in the battle against antimicrobial resistance.

The COVID-19 pandemic, since more than a year now, is unleashing a human development crisis. On some dimensions of human development, conditions today are equivalent to levels of deprivation. The crisis is hitting hard on all constitutive elements of it: economy, health and education. The pandemic has posed one of the biggest challenges to the entire humanity. In the wake of its outbreak, our lives have changed in ways we had never imagined before. The pandemic was superimposed on unresolved tensions between people and technology, between people and the planet, between the haves and the have-nots. These tensions were already shaping a new dimension of inequalities pertaining to enhanced capabilities and the new necessities of the 21st century. But the response to the crisis carries the potential to shape strategies on how those tensions can be addressed and how inequalities in human development are reduced.

Here are the snapshots of efforts and science stories related to COVID-19 vaccine development and public immunisation roll out activities:

## **PM launches pan India rollout of COVID-19 vaccination drive**

16th January 2021, New Delhi

Prime Minister, Shri Narendra Modi, launched the pan India rollout of COVID-19 vaccination drive via video conferencing today. This is the world's largest vaccination programme covering the entire length and breadth of the country. A total of 3006 session sites across all States and UTs were virtually connected during the launch.



The Prime Minister started his speech by paying compliments to the scientists who were associated with the development of the vaccines. He said, usually it takes years to prepare a vaccine but here, in such a short time, not one but two made-in-India vaccine were launched. The Prime Minister cautioned the people to be careful about not missing taking two doses. He said that there will be a gap of one month between the doses. He asked people to keep their guards up even after taking the vaccine as only two weeks after taking the second dose, human body will develop necessary immunity against Coronavirus.

The Prime Minister put the unprecedented scale of the vaccination drive in perspective by informing that, in the first round itself, 3 crore people, which is more than population of at least 100 countries of the world, would be vaccinated. He said that this needs to be taken up to 30 crores in the second round when elderly and people with serious co-morbidities will be vaccinated. He said that there are only three countries - India, USA and China, who have the population of more than 30 crore.

The Prime Minister asked people not to give heed to rumours and conspiracy theories as Indian vaccine scientists, medical system, Indian process and institutional mechanism in this regard are trusted globally and this trust is earned with a consistent track record.

The Prime Minister congratulated the country for a united and brave fight against corona. He termed the Indian response to corona as one of self-confidence and self-reliance. He noted a determination of not to let the confidence weaken in every Indian. He dwelled at length on the contribution of doctors, nurses, paramedical staff, ambulance drivers, ASHA workers, sanitation workers, police and other frontline workers who endangered their lives to save other. Some of them didn't even return to their homes as they lost their lives in the fight against the virus, noted a solemn Prime Minister. The frontline warriors brought hope in an environment of despondency and fear, today, by vaccinating them first, country is acknowledging their contribution with gratitude, he said.

The Prime Minister congratulated the countrymen to pass the challenge of discipline and patience during the Janata Curfew. He pointed out that the exercise prepared the country psychologically for the lockdown. Morale of the country was kept high with the campaigns like taali-thali and lighting of diya, the Prime Minister added.

He also talked about evacuation of Indians stuck abroad. In a time when many countries of the world had left their citizens stranded in China, India evacuated not only the Indians but citizens of other countries. He recalled sending of entire lab to a country that was finding it difficult to test evacuating Indians.

The Prime Minister said India's response to the crisis has been acknowledged globally. It was an example of the integrated and unified response from centre, states, local governments, government offices, social bodies who performed efficiently in unison.

After the speech the Prime Minister tweeted, "India begins the world's #LargestVaccineDrive. This is a day of pride, a celebration of the prowess of our scientists and hardwork of our medical fraternity, nursing staff, police personnel and sanitation workers. May everyone be healthy and free from illness." With the Vedic prayer of universal health, happiness and freedom from sorrow

सर्वेभवन्तुसुखिनःसर्वेसन्तुनिरामया ।  
सर्वेभद्राणिपश्यन्तुमाकश्चित्तुःखभाग्भवेत् ।।

**Website link:**

<https://pib.gov.in/PressReleasePage.aspx?PRID=1689021>

## **Union Health Minister Dr Harsh Vardhan nominated to the Board of GAVI, The Vaccine Alliance**

29th December 2020, New Delhi

The Global Alliance has set Dr Harsh Vardhan, Union Minister of Health and Family Welfare for Vaccines and Immunisation (GAVI) as a member on the GAVI Board.

Dr Harsh Vardhan will be representing the South East Area Regional Office (SEARO)/Western Pacific Regional Office (WPRO) constituency on the GAVI Board. Mr Myint Htwe of Myanmar currently holds the seat. Dr Harsh Vardhan will be representing India from 1st January 2021 until 31st December 2023.



The Board typically meets twice a year in June and November/December and holds an annual retreat, generally in March or April. All these meetings are usually attended in person.

The GAVI Board is responsible for the strategic direction and policy-making, oversees the Vaccine Alliance's operations, and monitors programme implementation. With membership drawn from a range of partner organisations and experts from the private sector, the Board provides a forum for balanced strategic decision making, innovation, and partner collaboration. GAVI, the Vaccine Alliance as part of its mission to save lives, reduce poverty, and protect the world against the threat of epidemics, has helped vaccinate more than 822 million children in the world's poorest countries, preventing more than 14 million future deaths.

Dr Ngozi Okonjo-Iweala presently serves as Chair of the GAVI Alliance Board.

**Website link:**

<https://pib.gov.in/PressReleaseDetailm.aspx?PRID=1684403>

## **Initiatives by Department of Biotechnology on COVID-19 vaccination – I**

The Department of Biotechnology (DBT) and its public sector undertaking Biotechnology Industry Research Assistance Council (BIRAC) have been relentlessly working to collaborate across the healthcare innovation ecosystem ranging from biotech companies to entrepreneurs coming up with innovations to academic institutions to address the COVID-19 global healthcare crisis.

Vaccine Discovery Programme supported by the DBT under the National Biopharma Mission, implemented by BIRAC, moves into clinical trials. BIRAC has announced that ZyCoV-D, the plasmid DNA vaccine designed and developed by Zydus and partially funded by the DBT has initiated Phase III clinical trials in healthy subjects.

DBT also provides seed funding for Gennova Biopharmaceuticals Ltd.'s novel mRNA-based COVID-19 Vaccine candidate-HGCO19. DBT-BIRAC has facilitated the establishment of 'first-of-its-kind' mRNA-based vaccine manufacturing platform in India.

With support from the DBT, Bharat Biotech aims to develop a COVID-19 vaccine based on an inactivated Rabies virus platform. An MoU has been signed by Bharat Biotech International Ltd (BBIL), Hyderabad and Thomas Jefferson University, USA.

Aurobindo Pharma and Covaxx, a US-based company, have entered into an exclusive licence agreement to develop, commercialise, and manufacture UB-612, the first multipeptide-based vaccine to fight COVID-19, for India and UNICEF. It is the first multipeptide, synthetic peptide-based vaccine candidate in clinical trials and does not require special cold storage facilities.

The PACT (Partnerships for Accelerating Clinical Trials) programme has been launched for supporting COVID-19 vaccine development activities in partnering countries. The initiative is being implemented by BIRAC and Clinical Development Services Agency (CDSA), under the aegis of the National Biopharma Mission and Ind-CEPI Mission of the DBT. PACT will facilitate systematic and uniform clinical testing of biomarkers to advance our understanding of the mechanisms of response and resistance to diseases.

DBT is working with the PM-Task force for supporting COVID-19 vaccine development efforts through the PM CARES fund (Prime Minister's Citizen Assistance Relief in Emergency Situations fund).

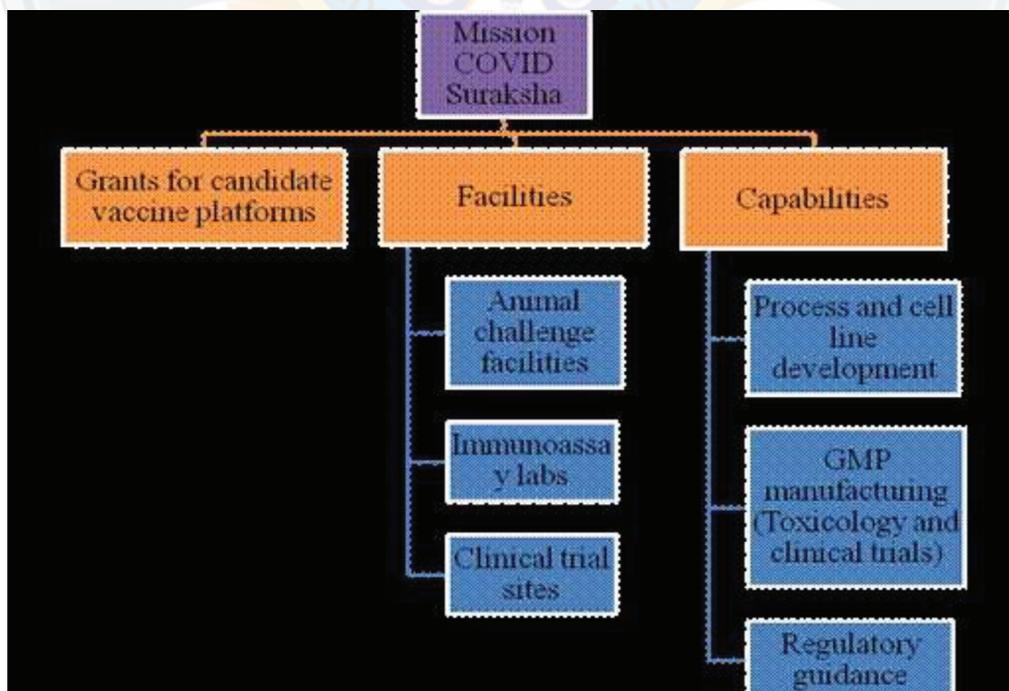
DBT-BIRAC-supported nation's first indigenously developed DNA vaccine candidate against COVID-19, ZyCoV-D by M/s Zydus Cadila has been approved by Drugs Controller General of India (DCGI) for conduct of the Phase III clinical trials.

DBT-BIRAC held a preliminary discussion with Janssen Pharmaceuticals Ltd. for understanding the strategy for introduction of their COVID-19 vaccine candidate in India.

Russian Direct Investment Fund (RDIF) announced that Russia will jointly produce Sputnik V vaccine with India. About 300 million doses of the Sputnik V vaccine are proposed to be manufactured in India in 2021. A discussion of Secretary, DBT and officials of DBT-BIRAC with Dr. Reddy's team was held on 4th January, 2021. Dr. Reddy's team updated on the current status of the clinical trials of Sputnik V in India, the manufacturing capacity, and cold-chain logistics from a programmatic standpoint.

The Department proposes to launch the Indian COVID Vaccine Development Mission - Mission COVID Suraksha, with an aim to consolidate the efforts for COVID-19 vaccine development and accelerate development of at least 6 vaccine candidates to ensure their licensure and introduction within the next 12-15 months. The concept note for the Mission was also presented in the 10th meeting of the PMO-constituted Task Force for Focused Research on Corona Vaccine and other S&T issues held on August 18, 2020. Also, the DPR was submitted to the office of the Hon'ble Minister of S&T. The draft EFC memo for Mission COVID Suraksha was approved by the Office of the Hon'ble Minister of Science and Technology, Health and Family Welfare and Earth Sciences and by Hon'ble Finance Minister and release of the first tranche of the grant is in process. Two requests for Expression of Interest (REoIs) for COVID-19 vaccine development and supporting ecosystem were issued by DBT-BIRAC under Mission COVID Suraksha.

To facilitate Phase III clinical trials of global and national vaccine candidates, five clinical trial sites [INCLIN Trust International, Palwal; KEM, Vadu, Pune; Society for Health Allied Research



(SHARE), Hyderabad; National Institute of Epidemiology, Chennai; and Christian medical College (CMC), Vellore] and six DHS sites, spread across the Nation, are being prepared.

Meeting between Officials of Qatar and India was held to explore bilateral cooperation for research/training in the areas of diagnostics, therapeutics and vaccines for COVID-19 on 27 October, 2020. Member, Health, NITI Aayog; Secretary, DBT; and DG, ICMR participated in the meeting.

A business meeting of the Joint Working Group (JWG) of the Indo-US Vaccine Action Programme (VAP) was held on 15 December 2020, which included a special session on COVID-19 vaccine development efforts in India and USA.

The DBT had shared a brief update with NITI Aayog, on the efforts for COVID-19 vaccine development and strengthening supporting ecosystem, for inclusion in the statement from India on ACT Accelerator.

The 12th Meeting of the COVID-19 Working Group of the National Technical Advisory Group on Immunisation (NTAGI) was held on 16 December, 2020, whereby there was a discussion on Geographic variation in the outcome of COVID-19 Disease and Contraindications of use of COVID-19 Vaccines.

In the 4th meeting of the Standing Working Group on Immunization Vaccine Research Capacity Building held on 16 December, 2020, a discussion was held on research questions on COVID-19 vaccine/s use and implementation.

Working upon NEGVAC's interest, DBT/BIRAC officers held a discussion with Austrian Scientists/Officers on 20 November 2020 for exploring potential areas of cooperation for COVID-19 research.



**Epidemic preparedness through rapid vaccine development: Support of Indian vaccine development**

<b>Current Vaccine Portfolio:</b>	<b>Skill Development:</b>
1. mRNA platform for SARS-CoV-2-Genova Biopharmaceuticals Ltd.	E-course series "Strengthening Clinical Trial Research Capacity in Neighboring Countries"
2. Inactivated Virus platform for Chikungunya-Bharat Biotech International Ltd.	



Officials from Vietnam's Office of Science and Technology in India (VOST), Embassy of Vietnam in India, met with DBT, BIRAC officers on 8 December 2020 to explore opportunities for cooperation on COVID-19 research activities.

Information pertaining to the availability of ultra-low temperature storage facilities at DBT Autonomous Institutions of DBT was shared with MoHFW, as part of the exercise to map the availability of cold chain facilities in the nation.

Production capacity of Indian vaccine manufacturers for their vaccine platforms is being solicited by BIRAC, for consolidating relevant inputs for the COVAX Vaccine Request format shared by the MoHFW.

CDSCO had undertaken an inspection of the laboratory infrastructure and the facilities at NCCS, Pune and NIAB, Hyderabad for assessing their functioning as Central Drug Laboratories for COVID-19 vaccine testing. A detailed project report has been requested to be submitted to MoHFW for expansion of the facilities.

MEA accorded 'in principle' approval for financial support for Phase III trial of COVAXIN in Bangladesh by Bharat Biotech International Ltd. Signing of a tripartite Heads of Agreement (HoA) with BBIL and ICMR to finalize the modalities and issues related to the conduct of a COVAXIN-based Phase III Efficacy trial in Bangladesh is under consideration. The revised budgetary requirement provided by BBIL has been shared with MEA. DBT-BIRAC is facilitating the same.

A discussion of Secretary, DBT with Officials from Myanmar was held on 21 December, 2020 to explore opportunities for association with DBT and procurement and deployment of Indian COVID-19 vaccines in Myanmar.

A discussion was held with the leadership of CEPI on 21 December 2020 to discuss the potential contribution of CEPI to the clinical development of the RBD-based protein subunit vaccine candidate for COVID-19, which was positively reviewed in the third call for proposals given by CEPI for COVID-19 vaccine candidate development.

**Website link:**

<https://pib.gov.in/PressReleaselframePage.aspx?PRID=1689929>

## **Initiatives by Department of Biotechnology on COVID-19 vaccination – II**

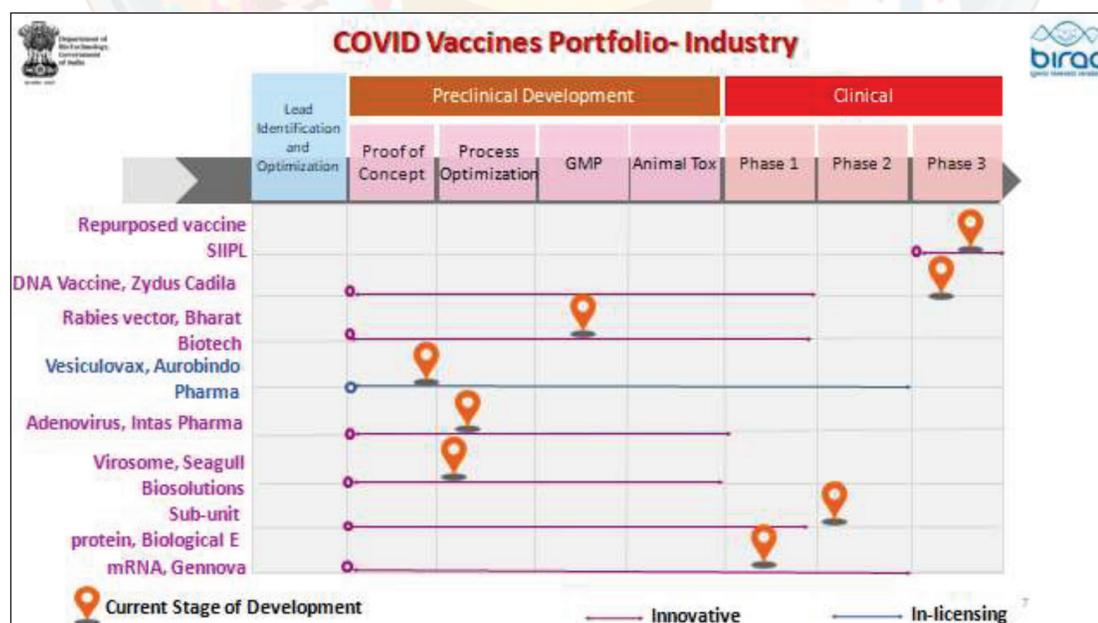
The availability of a safe and efficacious vaccine for COVID-19 is crucial in effective control of the pandemic. Hence, the Government of India is supporting vaccine development and manufacturing activities through both national efforts and international partnerships. From providing support for candidate vaccine development efforts and strengthening the supporting ecosystem, to issuing enabling regulatory guidelines, the Government of India responded proactively to accelerate national COVID-19 vaccine development efforts.

### **Candidate Vaccine development**

Nationally, several Indian industry and academia groups are involved in development of COVID-19 vaccine candidates. About 6 vaccine candidates are in clinical stage of development and about 3 vaccine candidates are in advanced pre-clinical stage of development. Additionally, more than 10 vaccine candidates are in early stages of development. The information about vaccine candidates in clinical stage and advanced pre-clinical stage of development is provided below:

## DBT-BIRAC Support for Candidate Vaccines for COVID-19

S. No.	COVID-19 Vaccine Developer/ Manufacturer	Vaccine Platform	Stage of Development
1.	Serum Institute with Oxford University Astra Zeneca (ICMR)	Non-replicating Viral Vector (ChAdOx1-S)	Phase III/ Emergency Use Authorization provided in January 2021
2.	Bharat Biotech – ICMR	Inactivated whole virion candidate vaccine (BBV152)	Phase III/ Emergency Use Authorization provided in January 2021
3.	Dr. Reddy's Laboratories	Non-replicating viral vector (Sputnik V)	Clinical Trial (Phase III)
4.	Cadila Healthcare (Zydus Cadila)	DNA Vaccine (ZyCoV-D)	Clinical (Phase III)
5.	Biological E/ Collaboration	Subunit (RBD219-N1-C1)	Clinical (Phase I / II)
6.	Gennova and HDT Biotech Corporation	mRNA (HGCO19)	Clinical (Phase I/ II)
7.	Serum Institute – Novavax	Protein Subunit Nanoparticle based (NVX-CoV2373)	Clinical Trial under consideration
8.	Bharat Biotech & Thomas Jefferson University, USA	Rabies vaccine platform (RABV-COVID-19-S1, CORORAB)	Advanced Pre-clinical
9.	Bharat Biotech and FluGen Inc & University of Wisconsin	Subunit Coroflu, an intranasal vaccine based on influenza platform (BBV150)	Advanced Pre-clinical
10.	Aurobindo Pharma Limited with Auro Vaccines	Attenuated rVSV-vectored Vaccine	Advanced Pre-clinical

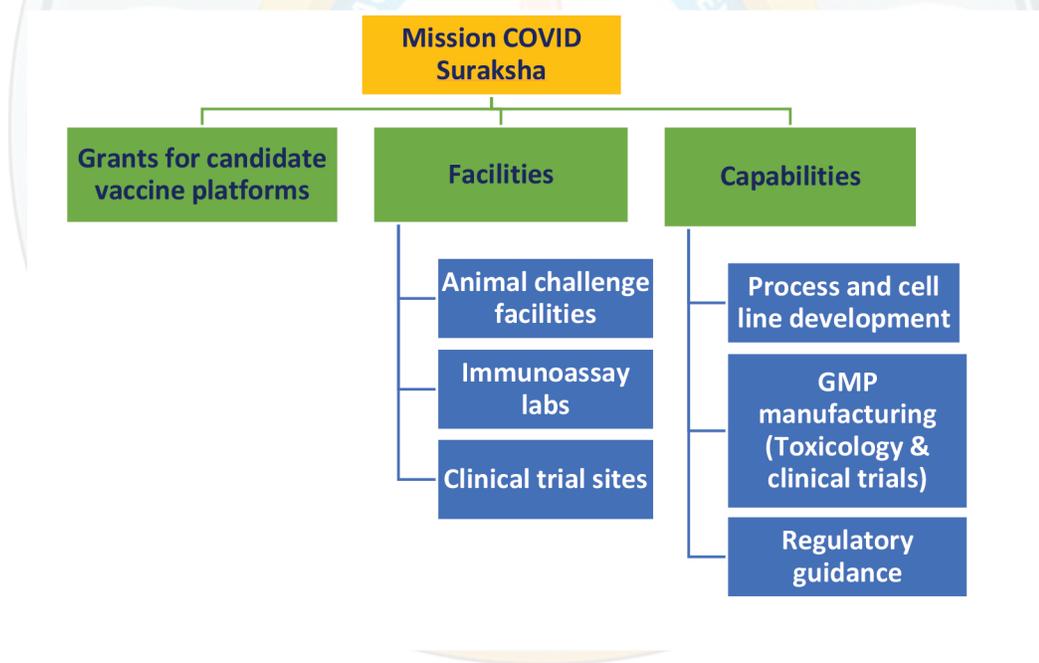


## Accelerating candidate vaccine development and strengthening the ecosystem

The Department of Biotechnology is also facilitating the strengthening of the vaccine development ecosystem, with a focus on fostering indigenous innovation in the country not just for COVID-19 vaccine development efforts but also for other on-going and future research and developmental activities for other vaccines. Major efforts include:

### a) **Mission COVID Suraksha**

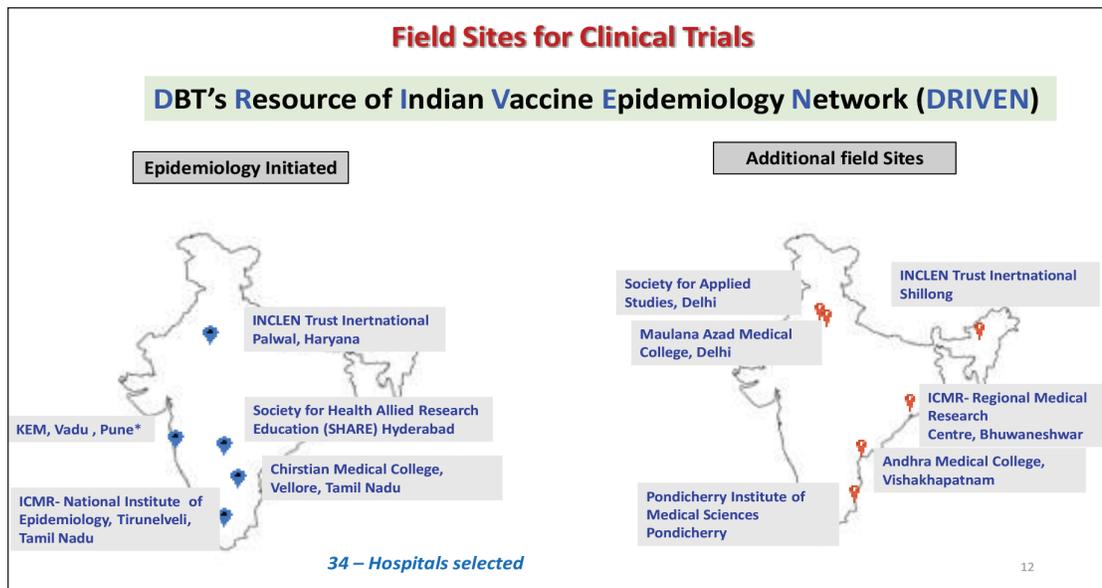
- o The Government of India (GOI) has launched 'Mission COVID Suraksha - the Indian COVID-19 Vaccine Development Mission', as part of the third stimulus package, for research and development of Indian COVID-19 vaccines.
- o The Mission will be led by the Department of Biotechnology (DBT) and will be implemented by BIRAC, at a total cost of Rs. 900 Crore for one year.
- o The goal of the Mission is to accelerate the development of at least 5-6 vaccine candidates and to ensure that some of these are brought closer to licensure and introduction in the market for consideration of regulatory authorities and for introduction in public health systems.
- o The Mission is envisioned to be a National Mission with a focus on bringing to the citizens of the country a safe, efficacious, affordable and accessible COVID-19 vaccine at the earliest with a focus on Atmanirbhar Bharat.
- o Three Requests for Expression of Interest for COVID-19 vaccine development and supporting ecosystem were issued by DBT-BIRAC. Following expert evaluation and review, nearly 18 projects are under consideration for support under the Mission.



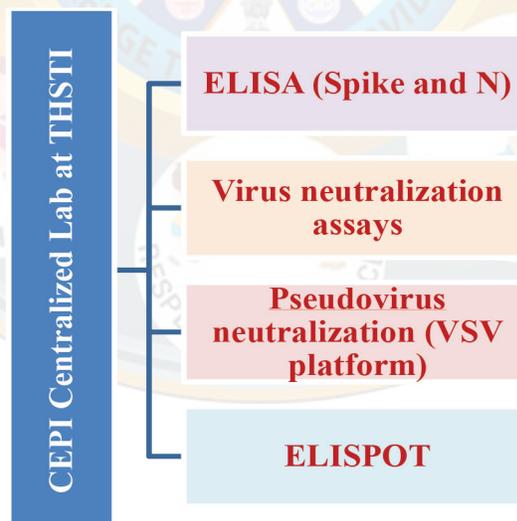
### b) **Clinical trial sites and immunossay laboratories:**

- o Under the DBT's Resource of Indian Vaccine Epidemiology Network (DRIVEN), field sites for facilitation of Phase III clinical trials of global and national vaccine candidates have been prepared.
- o Under the DRIVEN, 11 GCLP-compliant clinical trial sites have been established for facilitating quick clinical trials. Each site has access to a cohort of about 50000-100000 healthy volunteers, who can be tracked for prolonged periods of time. Thirty-four hospital sites are also facilitating the vaccine trials.

## Field Sites for Clinical Trials



- o Development of animal models and validated immune assays is a crucial component of vaccine development. Four DBT institutes – THSTI, Faridabad; ILS, Bhubaneswar; and inStem, Bengaluru, NII, New Delhi – are involved in generating animal models for SARS-CoV-2.
- o Additionally, the immunoassay laboratory of THSTI has been recognized by Coalition for Epidemic Preparedness Innovations (CEPI) as one of the six global networks of laboratories for centralized assessment of COVID-19 vaccines. Being part of the CEPI Global network will enable the laboratory to use harmonized protocols for measuring the immune response of multiple vaccine candidates under development and trial. This will allow comparison of multiple vaccine candidates and accelerate the selection of the most effective candidate.



## Partnerships for Advancing Clinical Trials (PACT)

- o The PACT (Partnerships for Accelerating Clinical Trials) programme has been launched for supporting COVID-19 vaccine development activities in partnering countries. The initiative is being implemented by Biotechnology Industry Research Assistance Council

- (BIRAC) and Clinical Development Services Agency (CDSA) under the aegis of the National Biopharma Mission and Ind-CEPI Mission of DBT.
- o The national partners include Ministry of External Affairs, Ministry of Health and Family Welfare, Indian Council of Medical Research (ICMR), Central Drugs Standard Control Organization (CDSCO), and the international partners include Coalition for Epidemic Preparedness Innovations (CEPI), World Health Organization (WHO) and National Institute of Health (NIH).
- o The activities being undertaken include (i) facilitation for Phase III clinical trials of Indian COVID-19 vaccines in neighboring and friendly countries and (ii) trainings for strengthening clinical trial research capacity in neighbouring countries.

### Facilitation for Phase III clinical trials of Indian COVID vaccines in neighbouring and friendly countries

- o India is strategically partnering with neighbouring and friendly countries for providing advisory support for planning and executing Phase III trials. This is in alignment with the 'Vaccine Maitree' mechanism proposed for making available safe and efficacious COVID-19 vaccines at affordable prices to the highest risk populations across partnering nations.
- o The Department of Biotechnology is working closely with the Ministry of External Affairs for facilitating Phase III clinical trials of COVAXIN in Bangladesh and Myanmar and also conducting online trainings to enhance clinical trial capacities.

### Trainings for strengthening clinical trial research capacity in neighbouring countries

- o DBT is conducting online training sessions for strengthening clinical research capacity in friendly countries to support researchers/investigator teams for enhancing their clinical trial capabilities and to conduct the trials in compliance with ICH-GCP guidelines.
- o Series I of this training programme was held during Sep-Dec 2020 and received very encouraging participation from neighbouring countries. A total of 771 candidates from Afghanistan, Bangladesh, Bhutan, Maldives, Mauritius, Nepal and Sri Lanka, participated across the 10 sessions focused on Good Clinical Practice (GCP), Good Clinical laboratory Practice (GCLP), large vaccine field trials, and ethics in clinical research.

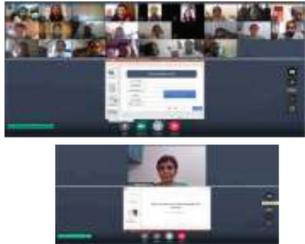
## Training Program to Strengthen the Clinical Trial Research Capacity in Neighboring Countries

Successfully completed 1st training series of 4 E-Courses; Orientation to the 2nd series held on 21 January, 2021  
Organised by DBT India and BIRAC, through their Ind-CEPI Mission along with MEA and Missions abroad



Glimpses from GCP Series

Good Clinical Practice: 4 Session E-Course	Ethical Considerations in Clinical Research: 2 Session E-Course
Good Clinical Laboratory Practice: 2 Session E-Course	Large Vaccine Field Trials: 2 Session E-Course



Glimpses from Ethical Considerations in Clinical Research Series

Participation from Afghanistan, Bhutan, Bangladesh, Maldives, Mauritius, Nepal, Sri Lanka

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- o The orientation for the second series entitled “Strengthening Clinical Trial Research Capacity in India’s Friendly Countries” was held on 21 January 2021. Representatives from Ethiopia, Kenya, Nigeria, Bahrain, Bhutan, Oman, Nepal, Vietnam and Myanmar have expressed interest in participation in the training series, set to commence from 5 February, 2021.
- o These efforts would enable strategic expansion of the scope of regional cooperation and enhance bilateral and multilateral ties with partnering nations.

## **DBT-BIRAC-supported indigenously developed DNA Vaccine Candidate by Zydus Cadila approved for Phase III clinical trials**

3rd January 2021, New Delhi

The nation’s first indigenously developed DNA vaccine candidate against COVID-19, ZyCoV-D, by Zydus Cadila has been approved by Drugs Controller General of India (DCGI) for conduct of the Phase III clinical trials. The candidate has been supported by the National Biopharma Mission (NBM) under the aegis of BIRAC and the Department of Biotechnology, Government of India.

Zydus Cadila completed Phase-I/II clinical trials of this DNA Vaccine candidate in India in more than 1,000 participants and interim data indicated that the vaccine is safe and immunogenic when three doses were administered intradermally. Based on the recommendations of the Subject Expert Committee, which reviewed the interim data, the DCGI has accorded permission for conducting Phase-III clinical trial in 26,000 Indian participants.

Dr Renu Swarup, Secretary, DBT and Chairperson, BIRAC expressed happiness and hoped that the candidate vaccine continues to show positive outcomes. Speaking on the occasion, she said, “The Department of Biotechnology, Government of India has partnered with Zydus Cadila to address the need for accelerated development of an indigenous vaccine for COVID-19. The partnership exemplifies that such research endeavours demonstrate the Government’s focus on creating an ecosystem that nurtures and encourages new product innovation with societal relevance”. She also mentioned, “The establishment of the Nation’s first DNA vaccine platform is an important milestone for Atmanirbhar Bharat and a big leap forward for Indian scientific research.”

### **Website link:**

<https://pib.gov.in/PressReleaselframePage.aspx?PRID=1685838#:~:text=The%20Nation's%20first%20indigenously%20developed,the%20Phase%20III%20clinical%20trials.>

## **Government launched Mission COVID Suraksha to accelerate Indian COVID-19 Vaccine Development**

29th November 2020, New Delhi

The Government of India (GOI) has announced the third stimulus package of Rs. 900 Crore for the **Mission COVID Suraksha - The Indian COVID-19 Vaccine Development Mission**. This grant will be provided to the Department of Biotechnology (DBT) for Research & Development of Indian COVID-19 vaccines.

The COVID-19 Vaccine development Mission with end-to-end focus from preclinical development through clinical development and manufacturing and regulatory facilitation for deployment would consolidate all available and funded resources towards an accelerated product development. This will help accelerate development of approximately 5-6 vaccine candidates and ensure that these are brought closer to licensure and introduction in market for consideration of regulatory authorities for introduction in public health systems, to combat further spread of COVID-19 infection.

The important objectives of the fund will be accelerating pre-clinical and clinical development; licensure of COVID-19 vaccine candidates that are currently in clinical stages or ready-to-enter clinical stage of development, establishing clinical trial sites, and strengthening the existing immunoassay laboratories, central laboratories and suitable facilities for animal studies, production facilities and other testing facilities to support COVID-19 vaccine development. The other important objective will be supporting development of common harmonized protocols, trainings, data management systems, regulatory submissions, internal and external quality management systems and accreditations. Capabilities for process development, cell line development and manufacturing of GMP batches for animal toxicology studies and clinical trials will also be supported under the Mission. A key element will be development of suitable Target Product Profile so that vaccines being introduced through the mission have preferred characteristics applicable for India.

Led by Department of Biotechnology and implemented by a dedicated Mission Implementation Unit at Biotechnology Industry Research Assistance Council (BIRAC), the existing activities under National Bio Pharma Mission (NBM) and Ind-CEPI Mission will provide complementary strengths to this Mission.

Phase I of the COVID Suraksha Mission has been allotted Rs. 900 Crore for a period of 12 months.

A total of 10 vaccine candidates have been supported by the DBT so far at both academia and industry, and as on date, 5 vaccine candidates are in human trials including the Russian Vaccine Sputnik-V with at least 3 more in advanced preclinical stages to enter human trials shortly.

**Website link:**

<https://pib.gov.in/PressReleaselframePage.aspx?PRID=1676998>

## **Government launched dedicated vaccine portal and national clinical registry of COVID-19**

28th September 2020, New Delhi

Dr Harsh Vardhan, Union Minister for Health & Family Welfare, Government of India launched the vaccine portal for COVID-19 and National Clinical Registry for COVID-19 by ICMR. Dr Balram Bhargava, Director General, ICMR and other dignitaries from ICMR were present at the inauguration ceremony.

Releasing 2 web portals, Dr Harsh Vardhan said “ICMR has always been in the forefront of health research in the country and is now leading the country in tackling the unprecedented pandemic through scientific rigour and innovation. To disseminate the vaccine-related information the exclusive portal will be helpful in creating awareness among the masses. I hope all query of common people on vaccine development process would be addressed through this portal and I am confident it will become most visited portal in times to come.”

Dr Harsh Vardhan also launched the National Clinical Registry for COVID-19 developed by ICMR. This registry will collect systematic data on clinical signs and symptoms, laboratory investigations, management protocols, clinical course of COVID-19 disease, disease spectrum and outcomes of patients. The data will serve as an invaluable tool for formulating appropriate patient management strategies, predicting disease severity, patient outcomes etc.

**Website link:**

[https://www.icmr.gov.in/pdf/press\\_release\\_files/ICMR\\_Press\\_Release\\_ICMR\\_launched\\_Vaccine\\_Portal\\_and\\_National\\_Clinical\\_Registry\\_for\\_COVID19.pdf](https://www.icmr.gov.in/pdf/press_release_files/ICMR_Press_Release_ICMR_launched_Vaccine_Portal_and_National_Clinical_Registry_for_COVID19.pdf)

## COVID-19 vaccination introduction training programmes

The COVID-19 vaccination programmes are going on throughout the country. But how are these being conducted? How is the manpower trained for the whole programme amidst the pandemic? How are the authorities ensuring that the programme is being thoroughly followed and implemented? These are some of the questions that one must be thinking; so, here is the behind-the-scenes story of the vaccination training programme. The training programmes have been conducted both at the State level and District level.

Training of the manpower involved in the programme has been conducted virtually using platforms like National Information Centre (NIC), ECHO, Integrated Government Online training (iGOT) portal on digital infrastructure for knowledge sharing (DIKSHA) platform of Ministry of Human Resource Development (MHRD), educational satellite (EDUSAT) (in use in Madhya Pradesh), or other available online training platforms. Developmental partners have supported the State and Districts in organizing trainings using virtual platforms.

At the State-level training programmes States conducted virtual trainings for COVID-19 vaccine introduction using available platforms provided by NIC or any other State-specific platforms. Also, virtual training platforms available with State-level immunization partners were used for these workshops. The ECHO-India platform has also been used by the agencies for the vaccination introduction training programme. For this the State has to contact the agencies by sending an email on a given address in advance mentioning details including name of the training, date and time as well as expected number of participants that will log in for the training.

At the District-level trainings for COVID-19 vaccine roll out have been conducted after the State-level training of trainers has been completed. At the District level the training programmes have been conducted using any platforms like NIC or other platforms like WebEx, Microsoft teams, Google meet etc. WHO-NPSP field units have been equipped with one or more of these platforms with a capacity to host a virtual meeting for up to 500 participants. The Districts also conducted face-to-face meetings in case of poor internet connectivity, taking all COVID-appropriate precautions that include small batch size, well-ventilated venue, hand hygiene, use of mask/face cover and physical distancing between the participants.

There were some self-learning modules that have been introduced like iGOT, DIKSHA and Rapid Immunization Skill Enhancement (RISE). The DIKSHA platform has been used for the capacity building of frontline workers on COVID-19. The platform has hosted training resources which may be accessed by health staff in case they were unable to access the training session or if they want to revisit the training resources. DIKSHA app on Android has also being made available for ease of access. RISE is a blended-learning knowledge and skill-building package to complement the standard classroom training, developed by JSI under Ministry of Health and Family Welfare (MoHFW).

### Website Link:

<https://vignaprasar.gov.in/isw/Here-is-how-covid-19-vaccination-introduction-training-programs-are-conducted.html>

## Cold chain management for COVID-19 vaccination

COVID-19 vaccination can be considered as a unique landmark in the history of vaccination campaigns in public health in terms of the scale of operations involved. It requires highly focused planning and implementation of various activities. There is particularly a need to ensure proper management of the cold chain and other logistics critical for the reach and quality of the campaign. Accordingly, the national operational guidelines prepared by the Government of India for the immunisation programme has drawn out a detailed plan of action to take care of this aspect.

There are standard operating procedures for the storage, movement and usage of the vaccine vials and other material at different levels.

At the immunization centres, where there is a higher risk for the vaccines to get warmed up beyond the required temperature range, special efforts are required to be taken to avoid exposing the vaccine carrier, vaccine vials or icepacks to direct sunlight. The vaccines and the diluents are also kept inside the vaccine carrier with the lid closed tightly until a beneficiary comes to the centre for vaccination, and at the end of every session, vaccine carriers with icepacks and unopened vaccine vials are sent back to the distributing cold chain point for safekeeping. Intact sealed vials that are returned are clearly marked and kept separately in the ice-lined refrigerator on the top layer so that these will be the first to be used on the following session day.

Besides, before vaccines are brought to the immunisation centres, at the last cold chain points, it is ensured that the vaccine carriers are clean and dry before being packed with ice packs and vaccine vials inside a zipper pouch to avoid any possibility of contamination. Whenever vaccines have to be moved in bulk, it is ensured that they are transported in a properly insulated manner.

Arrangements are also made to ensure that technicians tasked to maintain the cold chain follow a proper preventive maintenance plan to cover all cold chain points regularly. The cold chain technician should follow the recommended norms for response time (less than two days from intimation) and downtime of equipment (maximum of seven days in normal areas and 21 days in hilly areas).

Since the safety and security of each dose of the COVID-19 vaccine is of paramount importance, State Governments undertake adequate safety and security measures at location of vaccine storage, during transport and at immunisation sites. Stringent vigilance mechanisms are in place to protect against pilferage and theft. Further, at immunisation sites, all vaccination teams should have an extra vaccine carrier with ice packs to provide for any contingency.

Likewise, at cold chain points, any temperature excursion beyond 30 minutes is required to be responded to with alternate storage of vaccines in the short term and repair of the affected cold chain equipment as soon as possible on an emergency basis. At District vaccine stores, vaccine distributions are planned with small quantities to avoid any risk of temperature excursions that could arise if vaccines were to be transported in large quantities.

At State/regional vaccine stores, vaccine distribution plans ensure minimum time for vaccine delivery to District stores and vaccine vials, with earlier manufacturing dates prioritized for issue first. Alternate vaccine storage sites (including the private sector and non-health public sector) are also identified in advance of vaccine arrival including all contractual arrangements and site inspections. State-level monitors should supervise every vaccine arrival and distribution event to ensure the quality process in vaccine receipt and distribution.

**Website Link:**

<https://vigyanprasar.gov.in/isw/Cold-chain-management-for-covid-19-vaccination.html>

## **Elaborate mechanism to ensure Corona vaccine programme succeeds**

Considering that the highest level of political and administrative ownership, commitment, and support are needed to be sustained for the successful implementation of the COVID-19 vaccine,

the Central Government has established an elaborate governance mechanism covering all levels, from the national to State, District, and Block levels.

At the top is a “National Expert Group on Vaccine Administration for COVID-19” (NEGVAC) to fast-track policy decisions and timely implementations. It is constituted under the chairpersonship of Member (Health), NITI Aayog and Co-chairpersonship of Secretary (Ministry of Health and Family Welfare). The members include representatives from the Ministry of External Affairs, Department of Biotechnology, Department of Health Research, Department of Pharmaceuticals, Ministry of Electronics and Information Technology, Directorate General Health Services, AIIMS Delhi, National Technical Advisory Group on immunization (NTAGI), Ministry of Finance and five State Governments representing the various regions in the country.

It guides on all aspects of COVID-19 vaccination including equitable distribution of the vaccine, procurements, financing, delivery mechanisms, prioritization of population groups, and vaccine safety surveillance. Its agenda also covers regional cooperation, assisting neighbouring countries, and communication and media response.

At the State level, each one has a Steering Committee, a Task Force and a control room. The Steering Committees have Chief Secretary as the Chairperson and Principal Secretary, Health as Convener. The membership of the panel covers a wide spectrum of stakeholders including officials from various departments of the State Government that would be involved in the delivery of the vaccination in some way or the other such as Health, Women & Child Development (WCD), Rural Development & Panchayati Raj, Municipal Corporations, Revenue, Home department, Social Welfare and Sports & Youth Affairs; representatives of organisations such as National Cadet Corps (NCC), Nehru Yuva Kendra Sangathan (NYKS), National Service Scheme (NSS); and of central ministries/departments/agencies needed for COVID-19 vaccination purpose (Railways, Central Paramilitary forces, Defence establishments etc.).

The panels also have members from development partners such as World Health Organization (WHO), United Nations Children’s Fund (UNICEF), United Nations Development Programme (UNDP), Bill & Melinda Gates Foundation (BMGF), John Snow Inc (JSI), Clinton Health Access Initiative (CHAI), Infrastructure Professionals Enterprise Private Limited (IPE Global), and Rotary International, Lions Club International.

The panels are required to meet at least once in a month. Their mandate is to ensure active involvement of all concerned departments and stakeholders; track social media and other platforms for possible misinformation and rumours; ensure safe storage, transportation and delivery of vaccine doses; devise innovative strategies to improve community engagement; and ensure that all adverse events following immunisation (AEFIs) are investigated on a timely basis and causality assessment is expedited.

The State-level task forces, in turn, have Additional Chief Secretary/Commissioner/Principal Secretary, Health as the Chairperson and State Immunization Officer (SIO) as Member Secretary. The other members include Mission Director, National Health Mission, State-level implementing officers from the health and other key government departments; representatives of Central Government Ministries; and institutions which have healthcare workers and frontline workers who need to be vaccinated and also those who can contribute to vaccination process like ESIC hospitals, Railways Hospitals, and Defence Forces. The task forces are required to meet at least once every fortnight.

The mandate of the task forces includes tracking the Districts for adherence to timelines as per the guidelines approved by NEGVAC and communicated from the national level and regularly

evaluate with Districts and urban local bodies to review and resolve issues such as logistics, human resource availability and training.

**Website Link:**

<https://vigyanprasar.gov.in/isw/Elaborate-mechanism-to-ensure-corona-vaccine-programme-succeeds.html>

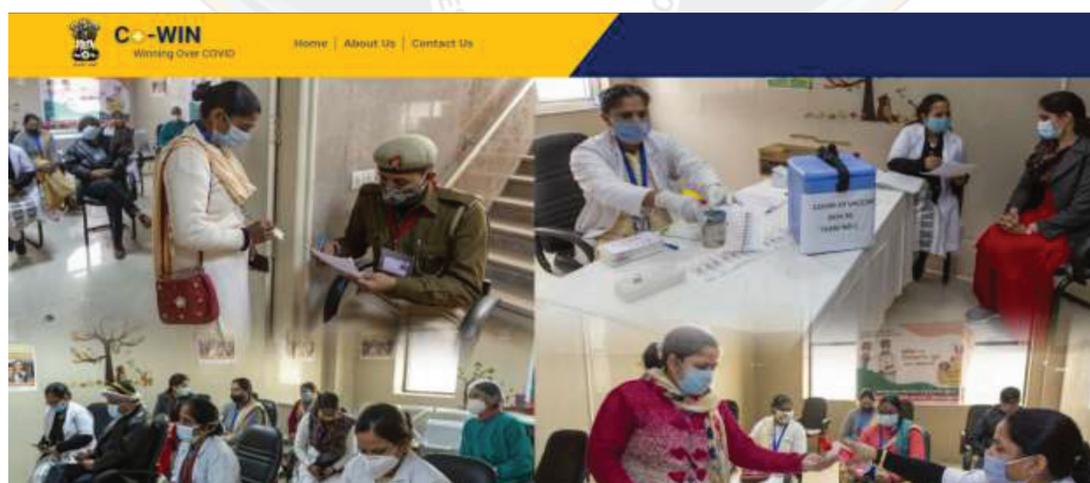
## Co-WIN for planning, implementation, monitoring, and evaluation of COVID-19 vaccination

As the largest COVID-19 vaccination drive begins, the vaccination monitoring and evaluation is going to be a huge task. To ensure smooth running of the vaccination programme, a dedicated web portal called CoWIN (COVID-19 Vaccine Intelligence Network) has been launched recently. Co-WIN serves as an extension of the existing electronic Vaccine Intelligence Network (eVIN) module for it to be a comprehensive cloud-based IT solution for planning, implementation, monitoring, and evaluation of COVID-19 vaccination in India.

The Co-WIN system is an end-to-end solution that has utilities for the entire public health system from national up to the vaccinator level. The system allows for the creation of users (admins, supervisors, vaccinators), registration of beneficiaries (bulk upload and individual registration), facilities/planning unit and session sites followed by planning and scheduling sessions and implementation of the vaccination process. As of now it has no self-registration option.

Co-WIN system on a real-time basis will track not only the beneficiaries but also the vaccines at national, State and District level. This will allow the system to monitor the utilization, wastage, coverage of COVID-19 vaccination at the National, State, District and Sub-District level. The Co-WIN system has components like the website [www.cowin.gov.in](http://www.cowin.gov.in) that will be used by the National-, State- and District-Level administrators. The key features of the website are creation of State- and District-level admins, creation of facility/planning unit databases, creation of vaccinator, and supervisor databases, manage material relevant to COVID-19 vaccination and its allocation, creation of session sites, bulk upload of beneficiary data for registration, self-registration by the general population, session management for linking session sites, vaccinators, supervisors, and beneficiaries, rights for viewing sessions and beneficiary allocated to these sessions for Block Admin and Facility, medical officer In charge, and monitoring and reporting.

The Co-WIN app would provide help in the registration of individual beneficiaries by facility/planning unit-level users. It would also help for authentication/verification of beneficiaries and recording the successful vaccination at time of conducting the session. The Co-WIN app would be available soon on Google Play Store or for Apple users.



The Union Minister of Science and Technology, Minister of Health and Family Welfare and Minister of Earth Sciences Dr Harsh Vardhan posted on twitter that Co-WIN app's self-registration module will be released soon and it is mandatory to register with the app for the vaccination process. He also added that the QR code-based vaccination certificate will only be generated for COVID-19 vaccine beneficiaries who are registered on the Co-WIN platform.

**Website Link:**

<https://vigyanprasar.gov.in/isw/Co-win-for-planning-implementation-monitoring-and-evaluation-of-covid-19-vaccination.html>

## Co-WIN app for COVID-19 vaccination

Co-WIN (Winning Over COVID-19) application has been developed as a comprehensive cloud-based IT solution for planning, implementation and monitoring of COVID-19 vaccination in India. The Co-WIN system is an end-to-end solution with utilities for the entire public health system from national level up to the vaccinator level. Co-WIN system on a real-time basis will track not only the beneficiaries but also the vaccines, at the National, State and District level.

**Website link:**

<https://www.cowin.gov.in/home>

## COVID-19 vaccination mock-drill across India

In the light of coronavirus vaccine roll-out, the central government executed a mock drill on vaccine administration on 8 January 2021. These drills are aimed to ensure efficient planning and management for vaccine delivery in each District of all States and Union Territories.

Union Ministry of Health & Family Welfare (MoHFW), as a simulation of actual execution, had planned another round of dry run or mock-drill in all 700+ Districts of all States/UTs, except Uttar Pradesh and Haryana, on 8 January 2021, to ensure efficient planning and management of world's biggest COVID-19 vaccination programme. Uttar Pradesh has already carried out the dry-run exercise on 5 January. The vaccination mock-drill exercise was carried out in the state of Haryana on 7 January.

Each District identified three types of session sites, similar to the previous dry run including a public health facility (District Hospital/Medical College), private health facility and rural or urban outreach sites.

Two COVID-19 vaccines named Covaxin and Covishield have been given emergency use authorisation by the Drugs Controller General of India (DCGI) recently. The planning of the vaccination drive including beneficiary registration, microplanning and vaccination at the planned session site will be tested under the leadership of the District Collector/District Magistrate. "The dry run will also familiarize the State, District, Block and Hospital level officers on all aspects of COVID-19 roll out. This activity will help administrators in strengthening the linkages between planning, implementation and reporting mechanisms, identification of any residual challenges before the actual implementation and to provide confidence to the programme managers at all levels to carry out a smooth implementation of the vaccination drive," says the document released by Ministry of Health and Family Welfare.

Around 1.7 lakh vaccinators and 3 lakh vaccination team members have been trained on the process to be followed at the vaccination sites which include beneficiary verification, vaccination, cold chain and logistics management, bio-medical waste management, AEFI management, and reporting on Co-WIN software. Detailed operational guidelines on all aspects of the COVID-19 vaccine roll-out, including session planning and management, session site layout and its

organization, AEFI management, IEC messages, infection prevention and control practices etc., have already been shared with the States/UTs and they have also been oriented on the same.

To facilitate the entire vaccination process, a software, 'Co-WIN', has been developed by the Health Ministry for real-time information on vaccine stocks, their storage temperature and individualized tracking of beneficiaries for COVID-19 vaccine. This software will assist the programme managers across all levels in conduct of the vaccination sessions. A dedicated 24x7 call centre has also been established for technical queries of Co-WIN users. The cold chain infrastructure (like walk-in-freezers, walk-in-coolers, ice-lined refrigerators, deep freezers) along with sufficient supplies of syringes and other logistics have been ensured to begin COVID-19 vaccination drive. MoHFW will set up a National Media Rapid Response Cell (NMRRC) to address the questions and queries raised by the media and journalists. "NMRRC will ensure preparedness through media monitoring and social listening and respond in real time and unfold media and public discourse, through extensive monitoring of print, electronic and digital media," says the document.

**Website Link:**

<https://vigyanprasar.gov.in/isw/Second-covid-vaccination-mock-drill-across-india-on-january-08.html>

## **Nasal COVID-19 vaccine could soon be a reality**

In a significant development, Bharat Biotech has sought Drug Controller General India's (DCGI) approval to conduct nasal COVID-19 vaccine trials in India. The company has developed a new single-dose nasal COVID-19 vaccine in partnership with Washington University in St Louis, USA. There are no intra-nasal COVID-19 vaccines under trial in India at the moment.

"Nasal vaccine may be the best choice for India because it will be a single dose, easy to administer and super-efficient. You put one drop 0.1 ml in one nostril and 0.1 ml in the other one and you are done," said Dr Krishna Ella, Chairman and Managing Director of Bharat Biotech.

The nasal vaccine is different from two intramuscular vaccines which recently got approval, as it is non-invasive, needle-free, doesn't require trained healthcare workers, eliminates needle-associated risks, suits children and adults and has scalable manufacturing. Recently, the two vaccines, namely Covaxin and Covishield, got approval for use in the country.

"We are all set to host the trials for the nasal Covaxin in the next few days. Enough scientific evidence is available that vaccines given through nasal route are more effective than injected ones" said Dr Chandrashekar Gillurkar, Director, Gillurkar Multispeciality Hospital, Nagpur.

"At the moment, four vaccines are undergoing phase 1 and 2 of nasal vaccine trials in the world. It can be a game changer but it all depends on whether it is safe and effective," said Lalit Kant, former head of epidemiology and infectious diseases at the Indian Council of Medical Research (ICMR).

Bharat Biotech has also been allowed to carry out trials on children above the age of 12 years. The company has completed its Phase 1 and Phase 2 human trials.

Presently, Bharat Biotech is working on two intranasal vaccines: one with US-based vaccine maker FluGen and scientists from the University of Wisconsin, Madison and the other one with the University of Washington School of Medicine.

**Website Link:**

<https://vigyanprasar.gov.in/isw/Nasal-covid-19-vaccine-could-soon-be-a-reality.html>

## Dr Harsh Vardhan unveils posters to address vaccine hesitancy and misinformation

India has begun one of the world's biggest COVID-19 vaccination programmes. While countries across the globe are asking India for access to vaccines, there are incidences of misinformation-driven vaccination hesitancy in the country. To address this, Dr Harsh Vardhan, Union Minister of Health and Family Welfare, launched Information, Education and Communication (IEC) posters prepared by the Health Ministry.

Dr Harsh Vardhan said "Let us put a STOP to these falsehoods". He appealed to people to seek the correct information from credible and authentic sources such as the Health Ministry, Press Information Bureau (PIB), Ministry of Information and Broadcasting, MyGov website etc." Dr Harsh Vardhan said that India is one of the few countries to halt the march of COVID-19 and simultaneously develop a vaccine for COVID-19. He said, "thanks to the leadership of Prime Minister Shri Narendra Modi who bestowed his personal attention to let the country get rid of the pandemic."

Talking about the whole vaccination drive he said, "All eminent doctors of well-known hospitals have taken the vaccine and praised the exercise for its desired end. Those who have taken the COVID-19 vaccine returned to their work without any side effects."

Ashwini Kumar Choubey, Minister of State for Health and Family Welfare, who was also present at the event said, "The Vaccination Drive is 'AntimPrahaar' against COVID-19. India has taken a revolutionary decision to provide the vaccine at the earliest." He also appealed to everyone to not follow the misleading campaigns of mistruth and help everyone by sharing the correct information.

Rajesh Bhushan, The Union Health Secretary; Vandana Gurnani, Additional Secretary and Managing Director, National Health Mission; Manohar Agnani, Additional Secretary (Health); Dr. Sunil Kumar, Directorate General of Health Services (DGHS), Ministry of Health and Family Welfare (MoHFW) and other senior officials were also present at the event.

Dr Balram Bhargava, Director General, Indian Council of Medical Research (ICMR); Dr Randeep Guleria, Director, All India Institute of Medical Sciences; Dr N N Mathur, Director, Lady Hardinge Medical College; Dr. S V Arya, Medical Superintendent, Safdarjung Hospital; Dr Rana A. K. Singh, Medical Superintendent, Ram Manohar Lohia Hospital; and representatives of development partners like Bill and Melinda Gates Foundation, United Nations Children's Fund (UNICEF), and World Health Organisation attended the event virtually.

### Website Link:

<https://vigyanprasar.gov.in/isw/Dr-harsh-varadhan-unveils-posters-to-address-vaccine-hesitancy-and-misinformation.html>

## Focus on management of adverse events in COVID-19 vaccination

The operation guidelines prepared by the Central Government for the COVID-19 vaccination programme, currently underway, provides a detailed roadmap to ensure a robust surveillance system to monitor adverse events post immunization and better understand the safety profile of the vaccines.

The recommended measures take into account the need to rapidly detect and promptly respond to adverse reactions since otherwise it can undermine confidence in the vaccine and immunization programme as a whole. Programme managers have been advised to be extra careful since the process involved vaccination of a large population within a short period.

It was emphasized that immunization errors that might lead to adverse events must be prevented at all costs through regular and intensive monitoring and supervision and strict adherence to proper vaccine/diluent handling procedures and injection practices. It was stressed that all deaths and hospitalizations should be reported and investigated immediately.

An adverse event following immunization is defined as any untoward medical occurrence which follows vaccination including those that do not necessarily have a causal relationship with the usage of the vaccine. It may be any unfavourable or unintended disease, symptom, sign or abnormal laboratory finding. The reported events can either be true adverse events as a result of the vaccine or immunization process or coincidental events that are not due to the vaccine or immunization process but are temporally associated with immunization.

The guideline particularly highlighted the possibilities of errors in handling of the vaccines. It urges that special attention be given to ensure that the vaccines/diluents are stored separately and that there should be screening for contraindications of the vaccine.

All fixed session sites should have emergency kits to handle adverse events, with the vaccinators properly trained to suspect signs and symptoms and take immediate remedial measures. In case of outreach session sites, they should be linked to an identified adverse event management centre to provide immediate treatment for serious cases. Adequate transportation should be available to transfer serious cases to the nearest identified adverse event management centre or health facility. The vaccinators at the session sites must be aware of all relevant contact numbers like ambulance services.

It was also urged that States and UTs should identify at least one adverse event management centre in each block. Further, it was specified that State and District authorities should proactively reach out to all healthcare service providers such as medical colleges, hospitals (public, autonomous and private) and individual practitioners and sensitize them to report any adverse event.

**Website Link:**

<https://vigyanprasar.gov.in/isw/Focus-on-management-of-adverse-events-in-covid-19-vaccination.html>

### **Inter-sectorial Convergence for COVID-19 vaccination**

As many as 19 Ministries and Departments of the Government of India are involved in the implementation of the national vaccination campaign that is currently underway to overcome the COVID-19 pandemic.

The lists of participants range from the Ministries of Women and Child Development, Rural Development, Panchayati Raj, Human Resource Development, AYUSH, Social Justice and Empowerment, Ministry of Tribal Affairs, Minority Affairs, Sports and Youth, Information and Broadcasting, Ministries of Housing and Urban Affairs, Defence, Home Affairs, Railways, Power, Food and Consumer Affairs, Labour & Employment, Information Technology, and Animal Husbandry.

The role of each Ministry/Department is well defined. For instance, The Ministry of Women and Child Development helps generate community awareness on COVID-19 vaccination through the staff of its Integrated Child Development Services (ICDS) programme; Ministry of Panchayati Raj supports in organizing vaccination sessions including vaccine site preparation and logistics; Ministry of Rural Development helps in vaccine delivery and monitoring through Block Development Officers and other village functionaries; Ministry of Urban Development ensures registration of healthcare workers and other front-line workers working in Municipal

Corporations, Municipalities and other local bodies; Ministry of Sports and Youth helps by getting NYKS/NSS (Nehru Yuva Kendra Sangathan/National Service Scheme) volunteers for crowd control at the vaccination sites; and Ministry of Food and Civil Supplies supports in providing cold storage spaces and transport systems for the vaccines.

The Ministry of Railways plays an important supporting communication through screening of audio/visual spots on trains and platforms; Ministry of Information Technology helps in village-level engagement of Common Service Centers for beneficiary registration, monitoring, printing of beneficiary certification and other services where connectivity and web-based methods are required; and Department of Power ensures uninterrupted power supply at vaccine storage point and vaccination site.

In addition, representatives of medical colleges, professional bodies such as Indian Medical Association (IMA) and Indian Academy of Paediatricians (IAP), developmental partners such as WHO, UNICEF, UNDP, and BMGF (Bill & Melinda Gates Foundation), and voluntary organizations such as NCC (National Cadet Core), NSS and NYKS, and non-government organizations such as Lions Club International, Rotary International, and Red Cross are also actively involved.

The development partners are involved extensively since their technical and monitoring support continues to be of significance in strengthening of health systems and programmes in India.

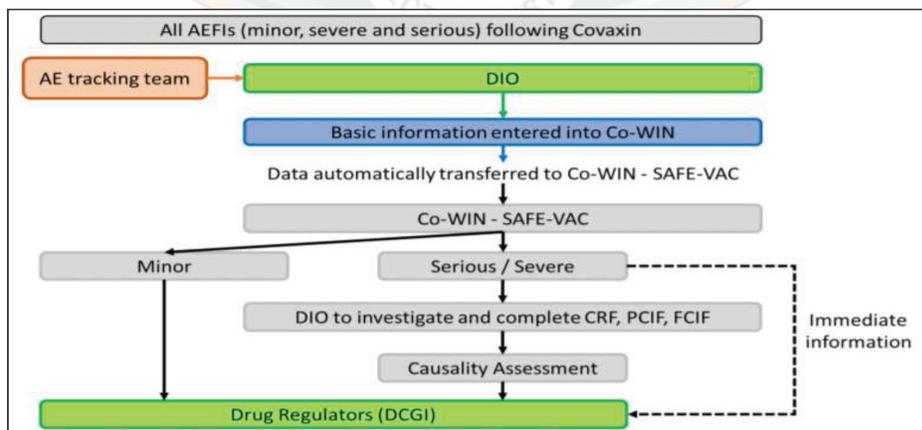
For instance, WHO India has been providing technical support to the Centre, States and Districts in planning, training and monitoring of COVID-19 vaccine introduction activities. It has, among other things, helped facilitate trainings in various States and Districts to build capacity of medical officers, health workers and mobilisers on operationalization of COVID-19 vaccination including on how to deal with adverse events following immunization; track implementation of COVID-19 vaccine rollout activities; undertake preparedness assessment at State and Districts and provide feedback to task forces to take action; and prepare plan for concurrent monitoring and need-based deployment of external monitors and rapid response team members.

**Website Link:**

<https://vigyanprasar.gov.in/isw/Inter-sectorial-convergence-for-covid-19-vaccination.html>

**ICMR issues a protocol developed for restricted use of COVAXIN™ under clinical trial mode**

Bharat Biotech International Limited (BBIL) in collaboration with ICMR has developed an inactivated whole virion COVID-19 vaccine, COVAXIN™. The COVAXIN™ has been evaluated



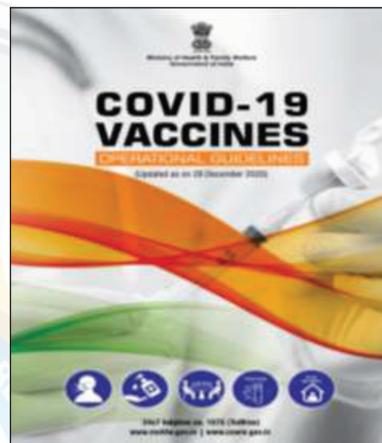
for its safety, reactogenicity and immunogenicity in phase 1 and 2 clinical trials and the trial reports were submitted to the Central Drugs Standard Control Organization (CDSCO) India. In this context, ICMR issued a protocol developed for the restricted use of COVAXIN™ which has been approved under emergency use authorization with permission. This permission is given for restricted use in an emergency situation in the public interest as an abundant precaution, in clinical trial mode, where COVAXIN™ vaccine will be administered to the vaccine recipients and they will be followed up for safety.

**Website Link:**

[https://www.icmr.gov.in/pdf/covid/techdoc/COVAXIN\\_Implementation\\_Plan\\_v4.pdf](https://www.icmr.gov.in/pdf/covid/techdoc/COVAXIN_Implementation_Plan_v4.pdf)

## COVID-19 vaccines operational guidelines issued by MoHFW

Ministry of Health, Family and Welfare (MoHFW) issued operational guidelines on COVID-19 vaccine. As per this guidelines, the COVID-19 vaccine will be offered first to healthcare workers, frontline workers and population above 50 years of age, followed by population below 50 years of age with associated comorbidities based on the evolving pandemic situation, and finally to the remaining population based on the disease epidemiology and vaccine availability. The priority group of above 50 years may be further subdivided into those above 60 years of age and those between 50 to 60 years of age for the phasing of roll out based on pandemic situation and vaccine availability.

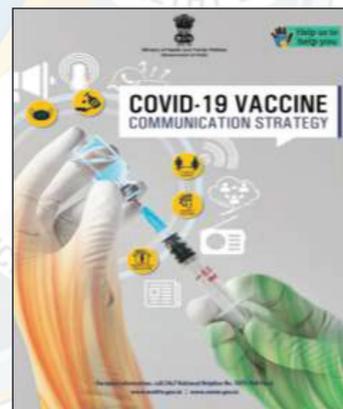


**Website Link:**

<https://www.mohfw.gov.in/pdf/COVID19VaccineOGI11Chapter16.pdf>

## MoHFW released COVID-19 Vaccine Communication Strategy

The Union Ministry of Health and Family Welfare (MoHFW) released COVID-19 Vaccine Communication Strategy that supports the COVID-19 vaccines rollout in India. The strategy will serve to guide national-, state- and district-level communication activities, so that the information on the COVID-19 vaccines and vaccination process reaches all people, across all states in the country. The strategy is for building trust among all people by employing transparency in communication and also managing any miss/disinformation and rumours around it. The objectives of the COVID-19 Vaccine Communication Strategy are to provide correct, consistent and timely information on the new COVID-19 vaccine(s) (availability, safety, and timelines) and vaccination processes.



**Website Link:**

<https://www.mohfw.gov.in/pdf/Covid19CommunicationStrategy2020.pdf>

## Vaccine outreach by India Science Channel

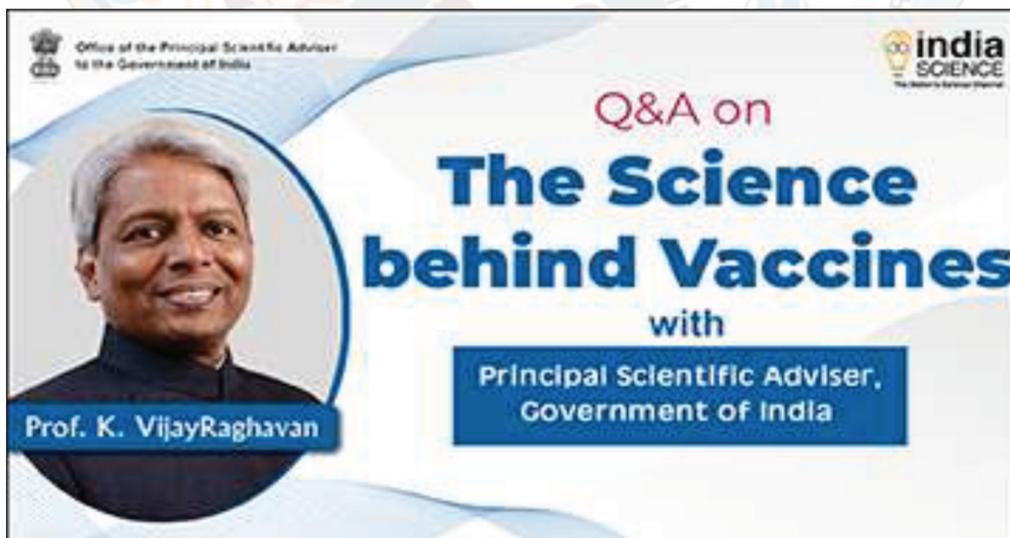
India Science is an Internet-based Over-The-Top (OTT) Science TV channel. It is an initiative of the Department of Science and Technology (DST), Government of India, implemented and managed by Vigyan Prasar (VP), an autonomous organisation of the Department of Science and Technology. This 24x7 video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

Indian perspectives, ethos and cultural milieu. The initiative is supported by the National Council of Science and Technology Communication (NCSTC), DST.

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

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

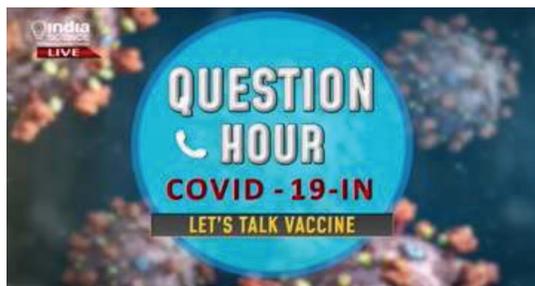
- ❖ Weekly COVID-19 video bulletin: Produced in both Hindi and English language on weekly basis from 7 July 2020, COVID-19 bulletin apprise the audience about the latest developments happening in the S&T scenario in India that are helping in managing and overcoming the challenges thrown up by the pandemic. Vigyan Prasar produced daily COVID-19 Bulletin from 11 April to 06 July 2020. Thereafter, a weekly bulletin is being produced which provides details about the most important S& T updates from the country related to COVID-19. From January 2021 onwards the COVID-19 Bulletin carried news about vaccination drive initiated by the Government of India.
- ❖ COVID Explained - Short films to explain the important research findings related to COVID-19 and COVID-19 vaccination in layman's language are produced on weekly basis. The topics chosen for COVID Explained cater to the curiosity of common man towards COVID-19.
- ❖ Facebook live sessions on interviews of various stakeholders on COVID-19 Vaccination programme.
- ❖ Facebook and India Science live sessions on interviews with experts on COVID-19 Vaccination.
- ❖ Live Phone in programme: A live phone in programme on COVID-19 vaccination is telecasted from India Science on every Monday and Tuesday. Experts from the field give answers to the questions related to COVID-19 vaccination received from the audience.





Following are the list of impactful programmes produced on COVID-19 vaccination:

- Types of Covid-19 Vaccines Explained!(E)
- The Journey of COVID Vaccine (H)
- All About COVID-19 vaccines | Vaccines are here! (H)
- All About COVID-19 vaccines | Vaccines are here! (E)
- COVID-19 VACCINE Fact File (E) with (Expert-Dr. Anil Gurtoo, Director - Lady Hardinge Medical College)
- COVID-19 VACCINE Fact File (E) with (Expert-Dr. Sameer Gulati, Associate Professor of Medicine VMMC and Safdarjung Hospital) 19/01/2021
- All About COVID-19 Vaccine | Who will be prioritized for COVID-19 vaccine? (E)
- QUESTION HOUR COVID-19 PHONE-IN LET'S TALK VACCINE
- COVID-19 VACCINE Fact File (E)
- All About COVID-19 Vaccine | Important Vaccines for India (H)
- All About COVID-19 Vaccine | Important Vaccines for India (E)
- All About COVID-19 Vaccine | How is India conducting COVID-19 vaccination drive? (H)
- Covid-19 Vaccine, Are People Ready?
- COVID-19 VACCINE Fact File (E) with 12/01/2021 (Expert-Dr. Virander Singh Chauhan, Eminent Scientist and ETI Founder)
- COVID-19 Question Hour (H) 19/01/2020 with (Expert-Dr. Swati Maheshwari, Internal Medicine Expert)
- COVID-19 Question Hour (E) 18/01/2020 (Expert-Dr. Anil Gurtoo, Director Lady Hardinge Medical College)
- COVID-19 Question Hour (E) 12/01/2020 (Expert-Dr. Anshumaan Kumar, Dharmshila Cancer Hospital)





- The Science Behind Vaccines with Prof. K. VijayRaghavan (H)
- The Science Behind Vaccines With Prof. K. VijayRaghavan (E)
- Protein based COVID-19 Vaccine (H)
- Covid-19 Vaccine New Year's Gift (H)
- Understanding The Science Behind Covid-19 Vaccine Clinical Trials - Life in Science with Pallava Bagla (E)
- Understanding The Science Behind Covid-19 Vaccine Clinical Trials - Life in Science with Pallava Bagla (H)
- India's Corona Vaccine Portfolio: Life in Science with Pallava Bagla (E)
- India's Corona Vaccine Portfolio: Life in Science with Pallava Bagla (H)
- Protein based COVID-19 Vaccine (E)
- Covid-19 Vaccine Approval and Dry Run (H)
- Covid-19 Vaccine Approval and Dry Run (E)
- Vaccine, Safety and Rules (H)
- All About COVID-19 Vaccine | Who will get COVID -19 Vaccine First? (H)
- Vaccine, Safety and Rules (E)
- How does a vaccine work? (E)
- How is a vaccine developed? (E)
- Journey of COVID-19 vaccine (H)
- COVID-19 Vaccines (H)
- COVID-19 Question Hour (E) 18/01/2020

Contact info: [kapil@vigyanprasar.gov.in](mailto:kapil@vigyanprasar.gov.in)

**Website link:**

<https://www.indiascience.in/>

**Awareness outreach on COVID-19 vaccine by ISTI Portal**

During the COVID-19 crisis, science communication has emerged as a powerful tool for managing public health. The India Science, Technology and Innovation Portal (ISTI) is a one-stop window for information about developments in India on science, technology and innovation which gives comprehensive information about the COVID-19 vaccination.



Science communication has been at the heart of the debate about coronavirus worldwide, helping to understand the virus and the disease and also behaviours that can minimise its impact. This section on COVID-19 vaccination in ISTI Portal is for healthcare workers, frontline workers, researchers, teachers, students, parents, and communicators. The section provides all the basic and latest updates related to COVID-19 vaccine, its types, testing and approval process, Indian contribution in vaccine development, list of licensed human vaccine manufacturing facilities in India, under-trial vaccines in India, guidelines, data points and so on.

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Home > Covid 19 Vaccine > Vaccine: Introduction

## Vaccine: Introduction

**Vaccine: Introduction**

**Types of Vaccine**

**Vaccine Testing and Approval Process**

**Indian contribution in Vaccine development**

**List of Licensed Human Vaccine Manufacturing Facilities in India**

**COVID-19 Vaccines under trials in India**

**Institutes / Labs involved in Vaccine Development**

**FAQ's**

**Guidelines**

**Data Points**

**Vaccine:** A vaccine is a biological agent that prevents us from an infectious disease-causing pathogen such as a virus, bacteria or parasite. It guides the body in defending itself against the pathogen attack by generating an immune response. Usually, it is administered in our body in liquid form, either by injection, by oral doses, or by intranasal routes.

**How vaccines work:** A disease-causing organism can cause two types of responses in our body. The first can be seen as symptoms such as fever, nausea, vomiting, diarrhoea, rash etc. which we experience initially. The second is the immune system's response to the infection. Over time the strength of immune system increases, which in turn reduces the number of infectious agents and slowly the symptoms disappear.

Vaccines are composed of either the entire disease-causing microorganism or some of its components in non-pathogenic form which imitate the second type of response without the consequences of the first. The following steps summarize how a preventive vaccine can protect an individual from infection or disease:

1. The vaccine introduces a small component or a non-harmful form of the pathogen into the body. This is called the foreign antigen or immunogen.
2. The body's immune system produces an immune response to the pathogen by generating antibodies, killer cells, or both.
3. A small group of "memory" B-cells and T-cells remain in the body and can quickly initiate a strong immune response, i.e., by producing antibodies, and helping the production of killer T-cells or antibodies, respectively. The next time the real pathogen enters the body, the immune system remembers it and mounts a much larger, quicker response than it would have if the individual had never received the vaccine.

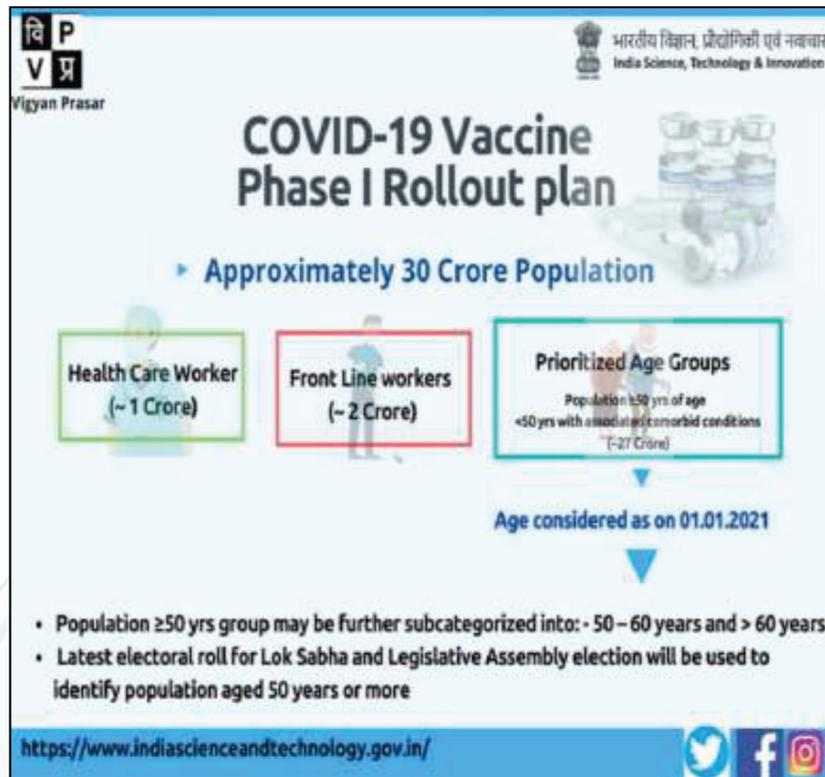
**HOW DO VACCINES WORK?**  
Vaccines reduce the risk of infection by working with the body's natural defenses to safely develop immunity to disease.

A weakened or killed form of the disease is injected into the body.

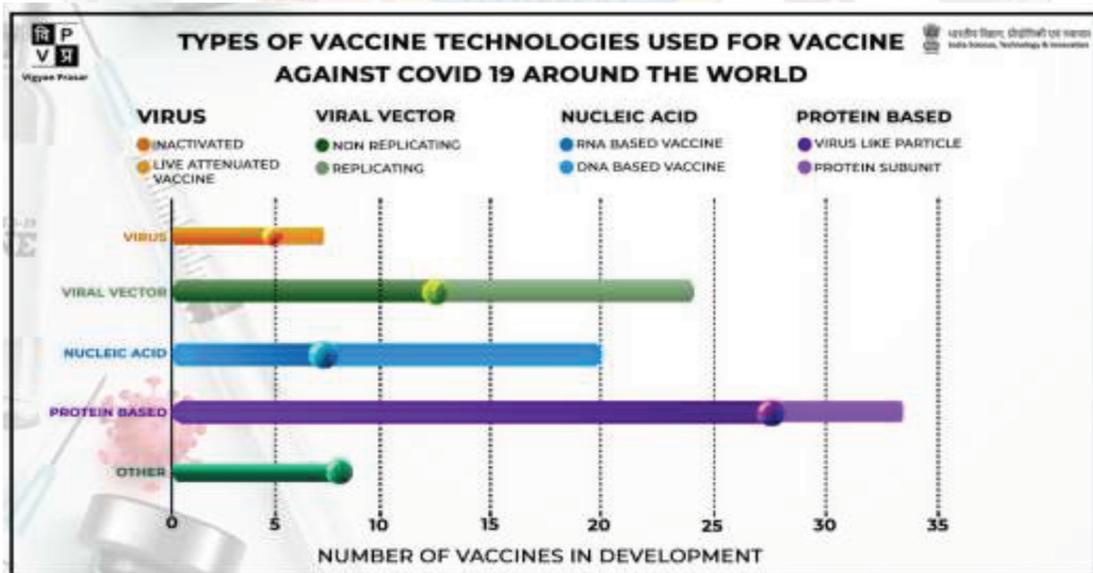
The body creates antibodies to fight the germs.

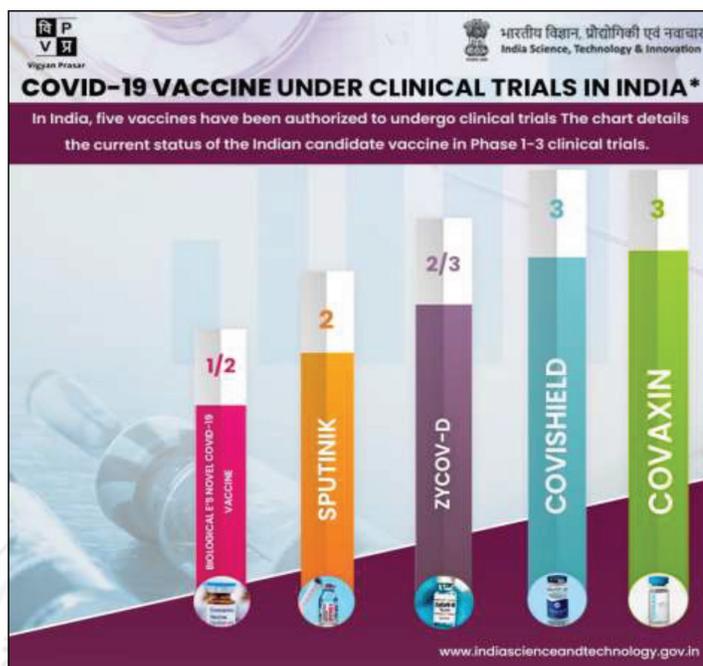
If the actual disease germs ever attack the body, the antibodies return to destroy them.

For the COVID-19 vaccination rollout, media and social media are playing a critical role in creating and influencing perceptions across the wider public. Digital media platforms, especially



social media channels, can reach and engage large audiences quickly. To maximize the reach of COVID-19 communications and ensure visibility and amplification, consistent, simple, and precise messaging with a consistent branding will be disseminated through the use of multiple social media channels. ISTI Portal has its own social media handle where information related to COVID-19 vaccine is posted every day.





**Connect with ISTI Portal at:**

Youtube: <https://www.youtube.com/channel/UCj7WfUczJdHCpHfu4F5hfw>

Facebook: <https://www.facebook.com/ISTIportal>

Twitter: <https://twitter.com/ISTIportal>

LinkedIn: <https://www.linkedin.com/company/istiportal>

Instagram: [https://www.instagram.com/isti\\_portal/](https://www.instagram.com/isti_portal/)

Contact info: [kdgm@vigyanprasar.gov.in](mailto:kdgm@vigyanprasar.gov.in)

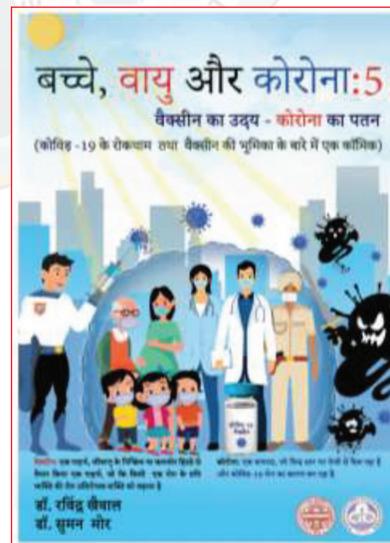
**Website Link:**

<https://www.indiascienceandtechnology.gov.in/covid-19-vaccine/vaccine-introduction>

**Virus vs. Vaayu – Rise of Vaccine, Fall of Corona – India sensitizing children with a series of comic stories on COVID-19**

Active coronavirus cases in India continue to decline even as the country flagged off the world's biggest vaccination drive. Another significant nail in the coffin of COVID-19 pandemic is the emergency approval of vaccines, COVISHIELD and COVAXIN, by the regulatory authority.

The pandemic had been a scientific nightmare for most of the people around the world. And while some of the adults could gather data from the common platforms like newspaper etc., for kids, it really became incomprehensible to understand the talks, advisories and other scientific information. To overcome the challenge, Postgraduate Institute of Medical Education and Research (PGIMER, Chandigarh) and Panjab University (PU) have created an educative comic series titled 'Kids, Vaayu & Corona' for children to make them aware about the various aspects of Coronavirus.



The comic is based on a dialogue between three kids and a super-hero of the series, Vaayu – a global citizen who works for better public health and environment. The latest edition of the comic series emphasises on how rise of vaccine will firmly result in fall of the active cases of the disease. The comic book aims to reduce the misinformation related to vaccine and increase its acceptability.

The e-Book is available in Hindi and English.

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**Website Link:**

<https://www.care4cleanair.com/awarnessmaterial>

## कोरोना से लड़ने के लिए आप तक ऐसे पहुँचेगी वैक्सीन!

कोविड-19 संक्रमण के लिए जिम्मेदार कोरोना वायरस के विरुद्ध भारत ने निर्णायक युद्ध के लिए कमर कस ली है। कोरोना वैक्सीन के उपयोग को मंजूरी मिलने के बाद पूरे देश में युद्ध स्तर पर इसके टीकाकरण की तैयारियां चल रही हैं। स्वास्थ्य मंत्रालय के अनुसार, 16 जनवरी से विश्व का यह सबसे बड़ा टीकाकरण कार्यक्रम शुरू हो रहा है। तीन जनवरी 2021 को ड्रग कंट्रोलर जनरल ऑफ इंडिया (डीसीजीआई) द्वारा दो टीकों (कोविशील्ड और कोवैक्सीन) के आपात उपयोग की मंजूरी मिलने के बाद अब चुनौती इस टीकाकरण को समुचित रूप से अंजाम देने की है। यही कारण है कि देश के विभिन्न राज्यों में कई दौर के ट्रायल और हर जरूरतमंद व्यक्ति तक वैक्सीन पहुँचाने की पुख्ता व्यवस्था सुनिश्चित करने के लिए सशक्त रणनीति तैयार की गई है।

### कोविशील्ड और कोवैक्सीन को मंजूरी

भारत में सीमित आपात उपयोग (रिस्ट्रिक्टेड इमरजेंसी यूज ऑथराइजेशन) के लिए दो कोरोना वैक्सीन – कोविशील्ड और कोवैक्सीन को अनुमति मिली है। कोविशील्ड को ऑक्सफोर्ड और एस्ट्रजेनका के संयुक्त प्रयास में पुणे स्थित कंपनी सीरम इंस्टिट्यूट ऑफ इंडिया द्वारा तैयार किया गया है। वहीं, कोवैक्सीन का निर्माण हैदराबाद की जैव प्रौद्योगिकी कंपनी भारत बायोटेक ने किया है। टीकाकरण के पहले चरण में 30 करोड़ लोगों को वैक्सीन दिए जाने की योजना है। स्वास्थ्य मंत्रालय द्वारा इस महत्वकांक्षी टीकाकरण कार्यक्रम की रूपरेखा पहले ही तैयार कर ली गई है। उत्तर प्रदेश, हरियाणा और अरुणाचल प्रदेश को छोड़कर बाकी सभी राज्य और केंद्र शासित प्रदेशों के 736 जिलों में वैक्सीन पर ड्राई रन किया गया। उत्तर प्रदेश, हरियाणा और अरुणाचल प्रदेश को छोड़कर बाकी सभी राज्य और केंद्र शासित प्रदेशों के 736 जिलों में वैक्सीन पर ड्राई रन किया गया।

### निर्धारित प्रोटोकॉल के मुताबिक टीकाकरण

निर्धारित प्रोटोकॉल के मुताबिक प्राथमिक रूप से हेल्थकेयर वर्कर यानी डॉक्टर, नर्स, पैरामेडिकल स्टाफ और स्वास्थ्य सेवाओं से जुड़े अन्य लोगों को वैक्सीन दी जाएगी, जिनकी संख्या करीब एक करोड़ बतायी जा रही है। इसके बाद करीब दो करोड़ फ्रंटलाइन वर्कर, जिसमें राज्य पुलिस, अर्ध सैनिक बल, सैन्य बल और सैनिटाइजेशन वर्कर शामिल हैं, को यह वैक्सीन दी जाएगी। हेल्थकेयर वर्कर और फ्रंटलाइन वर्कर को पंजीकरण नहीं कराना होगा, क्योंकि इनका डेटा सरकार के पास उपलब्ध है। पहले चरण में सबसे अधिक 27 करोड़ ऐसे लोग शामिल होंगे, जिनकी उम्र 50 साल से ज्यादा है, या फिर ऐसे लोग, जिन्हें पहले से ही कोई गंभीर बीमारी है। इस पूरे अभियान की तत्परता का अंदाजा इस बात से लगा सकते हैं कि टीकाकरण कार्यक्रम का बिगुल बजने से पहले दो बार पूरी प्रक्रिया का ड्राई रन यानी मॉक ड्रिल किया जा चुका है।

### उत्पादन इकाई से टीकाकरण केंद्र तक

टीकाकरण के लिए केंद्र सरकार ने राज्य सरकारों और केंद्र शासित प्रदेशों के साथ मिलकर विभिन्न टास्क फोर्स गठित किए हैं। हालांकि, टीकाकरण शुरू होगा तो कैसे कोरोना वैक्सीन, फैक्टरी से टीकाकरण केंद्र तक पहुँचेगी, यह जानना भी कम दिलचस्प नहीं है। वैक्सीन का निर्माण कंपनी की उत्पादन इकाई में

होता है, जहाँ से इसे भारत सरकार के गवर्नमेंट मेडिकल स्टोर डिपार्टमेंट द्वारा संचालित प्राइमरी वैक्सीन स्टोर (जीएमसीडी) में भेजा जाएगा। स्वास्थ्य सेवा महानिदेशालय, स्वास्थ्य और परिवार कल्याण मंत्रालय के मेडिकल स्टोर संगठन में मुंबई, कोलकाता, चेन्नई, हैदराबाद, गुवाहाटी, करनाल और नई दिल्ली स्थित सात मेडिकल स्टोर डिपो शामिल हैं। उत्पादनकर्ता कंपनी हवाई यातायात के माध्यम से वैक्सीन इन जीएमसीडी डिपो पर भेजती है, जहाँ से इसे राज्यों के वैक्सीन डिपो तक पहुँचाया जाता है।

भारत में इस समय कुल 37 राज्य वैक्सीन स्टोर हैं। रेफ्रिजरेटेड या इंसुलेटेड बैंक के जरिये वैक्सीन यहाँ तक पहुँचती है। इन भंडारण-केंद्रों से वैक्सीन को आगे पहुँचाने की जिम्मेदारी राज्य सरकारों और केंद्र शासित प्रदेशों की होती है। राज्यों के वैक्सीन डिपो से प्रदेश सरकार द्वारा जिला वैक्सीन स्टोर में कोरोना वैक्सीन को रेफ्रिजरेटेड या इंसुलेटेड वैक के जरिये भेजा जाएगा, जो तापमान नियंत्रित केंद्र होता है। चिह्नित किए गए वैक्सीन केंद्रों तक वैक्सीन को ताप नियंत्रित ट्रांसपोर्ट डिवाइस में भेजा जाएगा। इस तरह के वैक्सीन केंद्रों में जिला अस्पताल, प्राथमिक स्वास्थ्य केंद्र, या फिर उप-स्वास्थ्य केंद्र शामिल हो सकते हैं। हालांकि, टीकाकरण की तारीख और स्थान का निर्धारण जिला प्रशासन करेगा।

### Co-WIN ऐप रखेगा अपडेट

भारत में आम जनता को वैक्सीन लगवाने के लिए Co-WIN ऐप डाउनलोड करना होगा। हालांकि, ध्यान देने की बात यह भी है कि गूगल प्ले स्टोर पर Co-WIN से मिलते-जुलते नाम वाले कई अन्य ऐप पहले से बन गए हैं। केंद्रीय स्वास्थ्य मंत्रालय ने कहा है कि टीकाकरण अभियान शुरू होने से पहले Co-WIN ऐप लॉन्च किया जाएगा, जिसके बाद लोग इसे डाउनलोड कर सकेंगे। वैक्सीन लगवाने के लिए 12 भाषाओं में उपलब्ध इस ऐप पर पंजीकरण करना होगा। वैक्सीन की दो डोज लेने के बाद इस ऐप से सर्टिफिकेट भी मिलेगा। टीकाकरण के बाद किसी को परेशानी होती है तो साइड इफेक्ट मॉनिटरिंग की व्यवस्था भी इस ऐप में ही है। इस ऐप को डिजीलॉकर से भी जोड़ा जा रहा है, ताकि वैक्सीन लगने के बाद सर्टिफिकेट इसी ऐप में सुरक्षित रखा जा सके। 24 घंटे की हेल्पलाइन और Chatbot भी ऐप में उपलब्ध होगा।

### Website Link:

<https://vigyanprasar.gov.in/isw/This-is-how-the-vaccine-will-reach-you-to-fight-corona-hindi.html>

## कोरोना वायरस में जीनोमिक भिन्नता की निगरानी के लिए नई पहल

दुनिया के विभिन्न देशों में रूपांतरित कोरोना वायरस का संक्रमण एक नई चुनौती बनकर उभर रहा है। भारत में भी रूपांतरित या उत्परिवर्तित नोवेल कोरोना वायरस दस्तक दे चुका है। भारत में नोवेल कोरोना वायरस के रूपांतरण, उसके जीनोमिक तंत्र में परिवर्तन और उससे संबंधित खतरों की निगरानी एवं रोकथाम को सुनिश्चित करने के लिए भारत सरकार के जैव प्रौद्योगिकी विभाग (डीबीटी) की पहल पर भारतीय शोध संस्थानों का एक समूह गठित किया गया है। इंडियन सार्स-कोरोना वायरस-2 (SARS-CoV-2) जीनोमिक कॉन्सोर्टियम (INSACOG) नामक यह समूह देश की दस प्रमुख प्रयोगशालाओं को मिलाकर गठित किया गया है।

इस समूह में पश्चिम बंगाल के कल्याणी में स्थित डीबीटी-नेशनल इंस्टीट्यूट ऑफ बायोमेडिकल जीनोमिक्स (एनआईबीएमजी), डीबीटी-इंस्टीट्यूट ऑफ लाइफ साइंसेज (आईएलएस), भवुनेश्वर, भारतीय आयुर्विज्ञान अनुसंधान परिषद (आईसीएमआर) की पुणे स्थित प्रयोगशाला नेशनल वायरोलॉजी इंस्टीट्यूट (एनवीआई), डीबीटी-नेशनल सेंटर फॉर सेल साइंसेज (एनसीसीएस), पुणे, वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद (सीएसआईआर) से संबद्ध हैदराबाद स्थित प्रयोगशाला सेंटर फॉर सेलुलर एंड मॉलिक्यूलर बायोलॉजी (सीसीएमबी), हैदराबाद की एक अन्य प्रयोगशाला डीबीटी-सेंटर फॉर डीएनए फिंगरप्रिंटिंग एंड डायग्नोस्टिक्स (सीडीएफडी), बेंगलूरु स्थित डीबीटी से संबद्ध इंस्टीट्यूट ऑफ सेल साइंस एंड रिजेनरेटिव मेडिसिन (InSTEM) एवं नेशनल सेंटर फॉर बायोलॉजिकल साइंसेज (एनसीबीएस), नेशनल इंस्टीट्यूट ऑफ मेंटल हेल्थ एंड न्यूरो-साइंसेज (NIMHANS) एवं नई दिल्ली स्थित सीएसआईआर-इंस्टीट्यूट ऑफ जीनोमिक एंड इंटीग्रेटिव बायोलॉजी (आईजीआईबी) और राष्ट्रीय रोग नियंत्रण केंद्र (एनसीडीसी) शामिल हैं।

इस समूह को गठित करने का उद्देश्य मल्टी लैबोरेटरी नेटवर्क के माध्यम से कोरोना वायरस में जीनोमिक भिन्नता की नियमित तौर पर निगरानी करना है। देश की प्रमुख वैज्ञानिक प्रयोगशालाओं का यह समूह भविष्य में प्रभावी वैक्सीन विकसित करने में भी व्यापक भूमिका निभा सकता है। यह समूह देश में उत्परिवर्तित कोरोना वायरस की स्थिति का पता लगाएगा। यह समूह कोरोना वायरस के नये जीनोमिक रूपों और सार्वजनिक स्वास्थ्य पर उसके प्रभाव का समय रहते पता लगाने और रुग्णता, उच्च मृत्यु दर जैसी अप्रत्याशित घटनाओं में वायरस की भूमिका का आकलन करेगा।

भारत में नोवेल कोरोना वायरस के रूपांतरण, उसके जीनोमिक तंत्र में परिवर्तन और उससे संबंधित खतरों की निगरानी एवं रोकथाम को सुनिश्चित करने के लिए भारत सरकार के जैव प्रौद्योगिकी विभाग (डीबीटी) की पहल पर भारतीय शोध संस्थानों का एक समूह गठित किया गया है। इंडियन सार्स-कोरोना वायरस-2 (SARS-CoV-2) जीनोमिक कॉन्सोर्टियम (INSACOG) नामक यह समूह देश की दस प्रमुख प्रयोगशालाओं को मिलाकर गठित किया गया है।

डीबीटी सचिव डॉ रेणु स्वरूप स्वरूप ने कहा है कि "एक उच्च-स्तरीय अंतर-मंत्रालयी संचालन समिति, विशेषकर नीतिगत मामलों के लिए इस समूह का मार्गदर्शन और निगरानी करेगी। इसमें वैज्ञानिक और तकनीकी मार्गदर्शन के लिए एक वैज्ञानिक सलाहकार समूह होगा।" उन्होंने बताया कि डीबीटी इस समूह का समन्वयन स्वास्थ्य एवं परिवार कल्याण मंत्रालय, आईसीएमआर और सीएसआईआर के साथ मिलकर कर रहा है। यह समूह कैसे काम करेगा, इसकी व्यापक रणनीति तैयार कर ली गई है। यह समूह उत्परिवर्तित कोरोना वायरस की निगरानी के साथ-साथ उसके संक्रमण की रोकथाम के लिए जरूरी उपचार, निदान और वैक्सीन के विकास में भी मदद करेगा।

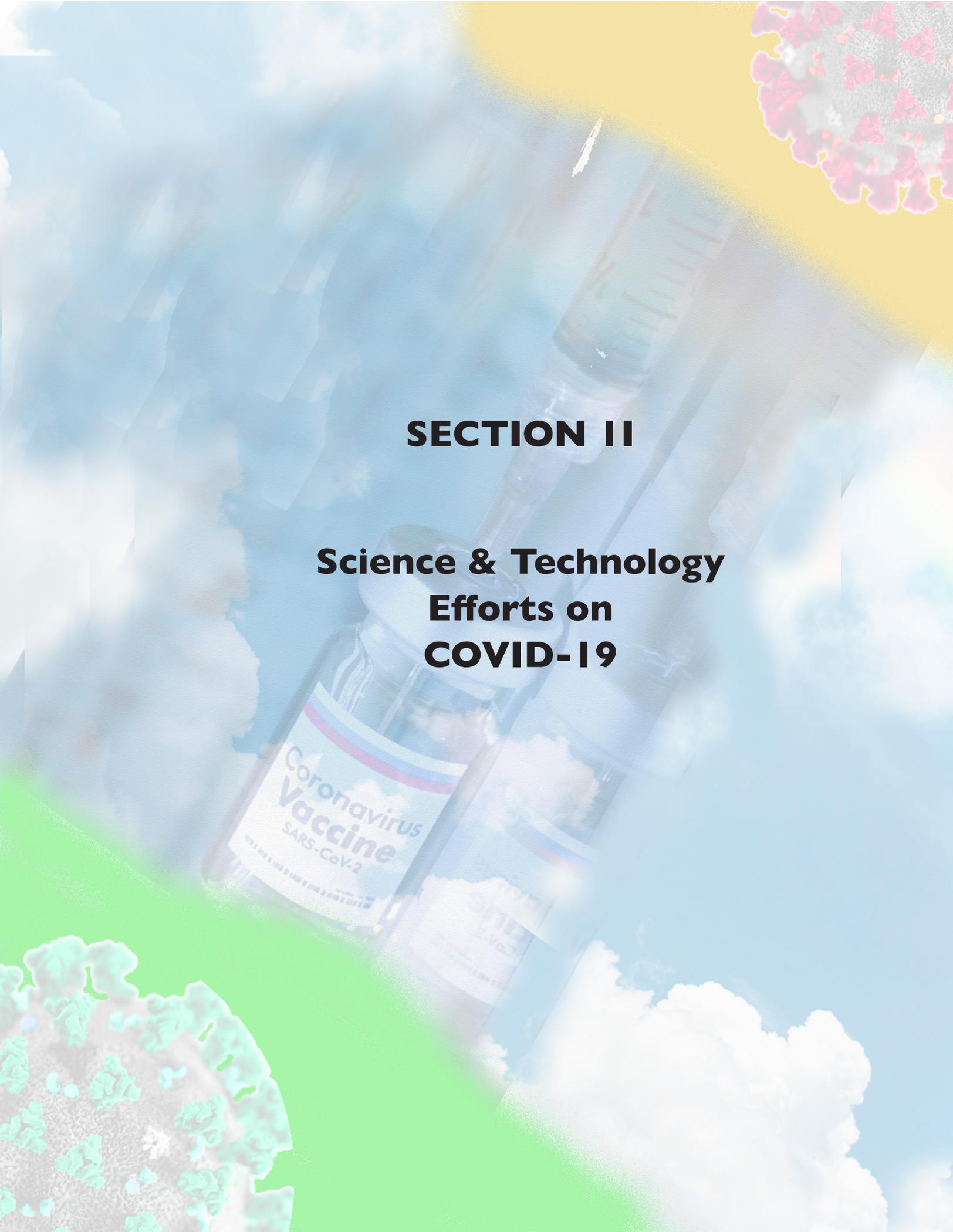
युनाइटेड किंगडम, दक्षिण अफ्रीका और दुनिया के कुछ अन्य हिस्सों में उत्परिवर्तित कोरोना वायरस के मामले सामने आने के बाद भारत सरकार ने इस वायरस की निगरानी, जीनोम सीक्वेंसिंग और उसके स्वरूप की विस्तृत जानकारी के लिए यह पहल की है। युनाइटेड किंगडम, विशेषकर लंदन में रूपांतरित कोरोना वायरस के स्पाइक क्षेत्र एवं दूसरे जीनोमिक क्षेत्रों में एक से अधिक रूपांतरण दर्ज किए गए हैं। इन रूपांतरणों के कारण वायरस के नये रूपों की संख्या तेजी से बढ़ रही है। डीबीटी के अनुसार, कोरोना वायरस का नया रूप अपने पूर्ववर्ती से अधिक संक्रामक है। विज्ञान एवं प्रौद्योगिकी मंत्रालय द्वारा जारी एक ताजा बयान में यह जानकारी दी गई है।

इस समूह की समन्वयक इकाई के रूप में डीबीटी-एनआईबीएमजी आंकड़ों की व्याख्या व विश्लेषण, आंकड़े जारी करने और मानक गतिविधियों एवं प्रक्रियाओं पर एनसीडीसी की एक नोडल इकाई के साथ मिलकर काम करेगी। एनसीडीसी सार्वजनिक स्वास्थ्य के महत्व के नये वायरस प्रकारों के सभी नमूनों का डेटाबेस रखेगी। इन आंकड़ों का महामारी विज्ञान के रूप में विश्लेषण किया जाएगा, उनकी व्याख्या की जाएगी और उन्हें जाँच, सम्पर्क में आए लोगों का पता लगाने और निपटने की कार्यनीतियों की योजना बनाने के लिए राज्यधजिलों के साथ साझा किया जाएगा। जीनोम सीक्वेंसिंग संबंधी सभी आंकड़ों को डीबीटी-एनआईबीएमजी और सीएसआईआर-आईजीआईबी में नेशनल डेटाबेस में व्यवस्थित रखा जाएगा।

**Website Link:**

<https://vigyanprasar.gov.in/isw/New-initiative-to-monitor-genomic-variation-in-corona-virus-hindi.html>

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## **SECTION II**

### **Science & Technology Efforts on COVID-19**

BY

## DEPARTMENT OF SCIENCE AND TECHNOLOGY (DST)

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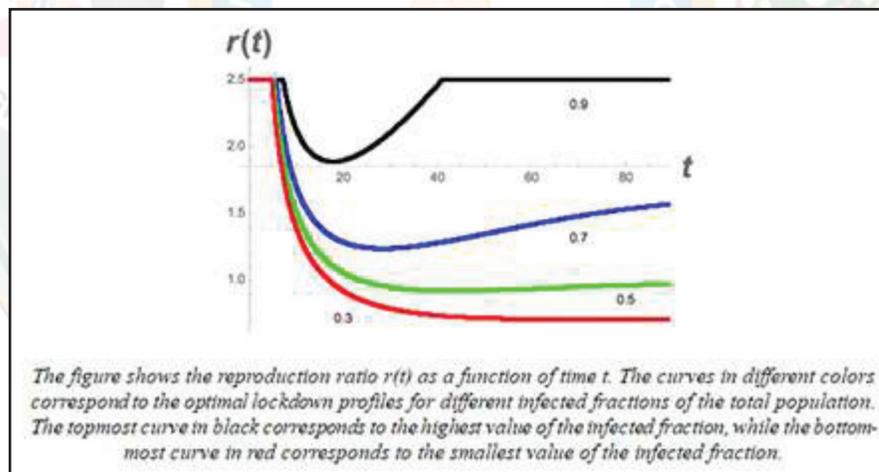
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### Mathematical model provides roadmap to steer between damage to life and economy in a pandemic like COVID-19

Scientific study has now revealed the effectiveness of a sharp lockdown followed by a gradual release in containing a pandemic situation. Not only that, scientists have also prescribed a roadmap of when to impose lockdown and by how much.

Containing a pandemic requires social distancing, while economic activity essential for the sustenance of the society requires social interaction. Trying to navigate a rational way to steer between these conflicting objectives, scientists from Raman Research Institute (RRI), an autonomous institute funded by the DST have formulated a rational strategy that would take the long-term point of view, nipping outbreaks in the bud.

<https://dst.gov.in/mathematical-model-provides-roadmap-steer-between-damage-life-economy-pandemic-covid-19>



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SCIENCE & TECHNOLOGY EFFORTS ON COVID-19  
BY  
**DEPARTMENT OF  
BIOTECHNOLOGY (DBT)**

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### **DNA Xperts: Faster COVID-19 diagnosis solutions**

The year 2020 was all about the global health pandemic of COVID-19 that caused widespread disruptions. The outbreak has taken the world by storm and the magnitude of the crisis has literally overwhelmed health systems. Several start-ups have come up with potential solutions to address the COVID-19 challenges. One such start-up is DNA Xperts. Supported by the DBT's Biotechnology Industry Research Assistance Council (BIRAC), New Delhi, it has come up with solutions that offer faster COVID-19 diagnosis.

The start-up has been funded under BIRAC Fast Track review for a rapid COVID-19 RT-PCR kit and a Viral Transport Medium (VTM) kit. The RT-PCR kit's in vitro amplification assay is designed for a highly sensitive, accurate and fast qualitative detection of viral RNA from clinical specimens.



Features of the kit:

- Fast-RNA to PCR results in 57 minutes;
- The kit has been developed based on CDC guidelines and validated by NIV/ICMR;
- It is compatible with various Real-Time PCR instruments available in the market and is highly scalable;
- Highly sensitive with a superior limit of detection;
- Highly specific: It has zero cross-reactivity with other respiratory viruses and has 100% homology with all published SARS-CoV-2 sequences;
- User friendly – It has got easy-to-use protocol.

The Viral Transport Media Kit, in turn, is designed for efficient sample collection and transport of clinical samples to the test site for molecular detection. It is a specially formulated liquid medium and can be used for the recovery of viral agents including Coronavirus, Herpes Simplex Type I, Herpes Simplex Type II, Cytomegalovirus (CMV), Influenzae A, Influenzae B, Respiratory Syncytial Virus (RSV), Echovirus, and Adenovirus. It is designed to maintain optimum viability and virulence of the viral sample. Sample collection swabs are of the best quality and tested to be leak proof during transportation.



Contact info: [mdpmubmgf@birac.nic.in](mailto:mdpmubmgf@birac.nic.in); [pnumbmgf6@birac.nic.in](mailto:pnumbmgf6@birac.nic.in); [nbm9@birac.nic.in](mailto:nbm9@birac.nic.in)

**Website link:**  
<https://www.birac.nic.in/>



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## SCIENCE & TECHNOLOGY EFFORTS ON COVID-19

BY

# COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH (CSIR)

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### **Novel coronavirus found in air samples: CCMB study**

Airborne transmission of the novel coronavirus is possible under certain conditions, cautions a study undertaken by the Centre for Cellular and Molecular Biology (CCMB). The research was conducted to determine the transmission pattern of the virus in various enclosures in hospitals to assess the risks posed to healthcare workers. Air samples were collected from hospitals in Hyderabad and Mohali for the study.

Initially, the novel coronavirus was considered to be spreading mainly by contact and droplets. Hence, hand washing, wearing masks, and social distancing were the key measures suggested to contain disease transmission. However, a steady increase in the number of COVID-19 cases opened up the possibility for airborne transmission, which is different from droplet transmission. Aerosol particles are smaller in size than droplets and hence remain suspended in the air for a longer period. This makes airborne transmission more infectious.

“Researchers are now able to find the virus in infectious aerosols measuring the size of less than 5  $\mu\text{m}$ . The smaller-sized aerosols could get formed due to evaporation of water from larger respiratory droplets. These smaller-sized aerosols can stay suspended in the air for longer durations and also travel longer distances. Thus the question arises whether the distance of 1 or 2 meters is safe or not. There is some emerging evidence which indicates the possibility of airborne transmission of SARS-CoV-2,” said CCMB in a release.

Currently, many countries have relaxed the restrictions on mobility and interactions making the recommended safety norms difficult to be implemented in public settings. In the light of the evidence obtained from the research, “The findings of our study objectively reassure people that advocated preventive measures would largely be successful in preventing the infection and urge the governments to continue promoting the same,” the authors said.

The team collected 64 air samples under different settings, from spaces that were occupied and unoccupied by COVID-positive patients. The virus was detected in air samples collected from COVID wards but not the non-COVID wards. Thus, the study indicates that the currently adopted strategy of separating the hospitals into COVID and non-COVID wards is effective and imperative. Further, the results of the study show that the long-term presence of COVID-positive patients leads to an increased aerosol burden in the air.

The study, yet to be peer-reviewed, finds that a short duration of exposure to COVID-positive patient may not put one at high risk. “Our results indicate that the chance of picking up SARS-CoV-2 in the air is directly related to several COVID-positive cases in the room, their symptomatic status, and the duration of exposure and that the demarcation of hospital areas

into COVID and non-COVID areas is a successful strategy to prevent cross infections”, said the study that was published in the preprint server Medrxiv recently.

CCMB has also issued an advisory to limit the COVID-19 spread. The advisory promotes wearing masks and maintaining social distancing of at least 3 feet. Also, it suggests conducting gatherings in well-ventilated open spaces, as the virus stays longer in closed rooms. Further, it has also made an emphasis on exercising caution in public toilets.

The advisory mentioned, “Flushing has the potential to generate aerosols which can stay longer in air and virus is known to be excreted in the stool. Masks should be always on while using these and if possible, the same toilet should be reused only after half an hour or more of the last usage. Pictorial instructions should be stuck in the toilets regarding cleaning them after utility. This should be followed by adequate hand hygiene.”

The authors of the study are Shivranjani C Moharir, T. Sharath Chandra, Arushi Goel, Bhuwaneshwar Thakur, Gurpreet Singh Bhalla, Dinesh Kumar, Digvijay Singh Naruka, Ashwani Kumar, Amit Tuli, Swathi Suravaram, Thrilok Chander Bingi, M Srinivas, Rajarao Mesipogu, Krishna Reddy, Sanjeev Khosla, Karthik Bharadwaj Tallapaka, and Rakesh Mishra.

**Website Link:**

<https://vigyanprasar.gov.in/isw/Novel-coronavirus-found-in-air-samples-ccmb-study.html>

### **Fresh evidence and advice on airborne COVID-19 spread**

A new study by laboratories in Hyderabad and Mohali has found fresh evidence that the risk of airborne transmission of the novel coronavirus is quite low if sufficient physical distance is maintained and prolonged interaction with an infected person is avoided.

The transmission of SARS-CoV-2 was initially thought to be taking place mainly through contact and droplets coming out during speech, coughs or sneezes. But several studies later reported transmission among people who were suitably distanced but had shared enclosed spaces, like a closed room or vehicle. That suggested that the virus possibly travels in air to far greater distances than the two to three feet that was originally considered the zone of risk.

Scientists at two laboratories of the CSIR, the Centre for Cellular and Molecular Biology in Hyderabad and Institute of Microbial Technology in Chandigarh have studied the extent of transmission through air. The study, conducted in hospitals in these two cities, found that the risk of exposure in closed rooms through airborne transmission was higher if there were more infected people present, but that in normal circumstances the virus was not found more than four feet from the infected person. The study has said that demarcating COVID and non-COVID areas in hospitals was a good strategy, and that masks were still very effective.

“Not that we did not know these things, but we have been able to generate more data which validate it from a scientific perspective,” said Shekhar C. Mande, Director General of CSIR.

The scientists collected 64 air samples from different locations in six hospitals in these cities, and another 17 from closed rooms occupied by infected people who were without masks and asked to talk on the phone or with one another. Four samples taken from COVID areas of hospitals and one from the closed room were found to contain the virus.

“The virus could not be detected in any of the non-COVID areas, providing objective evidence that the strategy of separating hospital premises into COVID and non-COVID care areas is effective,” said the study, which is currently on a preprint server.

“The positivity rate was found to be higher when the number of COVID patients was higher in the room. A point to be highlighted from the hospital experiments was that in three-fourth of the samples which were positive, the sampler was at least 10 feet away from the nearest patient. This may be an indicator that long-term presence of COVID-positive patients in an enclosed space may contribute to a significant increase in aerosol burden in the air,” the study said.

The study also found that in “neutral” conditions, with no particular air flow direction, the virus did not travel much in the air.

“Virus could not be picked up at a distance of even 4 feet when COVID-positive individuals spent a short time (20 minutes) in the room. This indicates that short duration of exposure to a COVID-positive individual may not put one at a significantly increased risk. The samples collected at 8 feet and 12 feet subsequently were also negative,” it said.

**Website Link:**

<https://covid19csir.urdip.res.in/>

<https://indianexpress.com/article/explained/from-csir-labs-fresh-evidence-and-advice-on-airborne-covid-spread-7134297/>

## **COVID prediction model shows virus is washing through India population: CSIR DG**

The mathematical supermodel being used to forecast the dynamics of the COVID-19 pandemic in India has been making the correct predictions, said Shekhar C. Mande, Director General, CSIR. The model has predicted that nearly 90 crore people may have already been exposed to the SARS-CoV-2 virus. He also lauded the efforts of the team involved in generating the model.

A committee set up by the Department of Science and Technology (DST) was tasked with arriving at a ‘Covid-19 India National Supermodel’ earlier this year. It included M. Vidyasagar of IIT Hyderabad, Gagandeep Kang of CMC Vellore, Biman Bagchi of the Indian Institute of Science in Bengaluru, Arup Bose and Sankar Paul of the Indian Statistical Institute, Kolkata, and Lt Gen. Madhuri Kanitkar from the Ministry of Defence.

“I would believe that whatever predictions they’re making might be right. That means the virus is washing through our population,” Mande said.

He added that serosurvey results from a study conducted by scientists at the Tata Institute of Fundamental Research (TIFR) also confirmed that more than 50 per cent of the people residing in Dharavi — Asia’s largest slum — had COVID-19 antibodies. However, fatalities in the area have remained much lower than what was expected.

He also pointed out how many had assumed that an outbreak in Dharavi would be “a catastrophe”. “But thanks to whatever powers be, that did not happen. We should really be relieved that the kind of catastrophe that was expected did not happen in Dharavi.”

**Website Link:**

<https://covid19csir.urdip.res.in/>

<https://theprint.in/theprint-otc/covid-prediction-model-shows-virus-is-washing-through-india-population-csirs-shekhar-mande/580035/>

## **स्वदेशी ‘स्वस्थवायु’ वेंटिलेटर को नियामक मंजूरी**

कोविड-19 संक्रमण उभरने के साथ ही पिछले वर्ष इस महामारी से निपटने के प्रयास भी जोर-शोर से शुरू हो गए थे। वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद (सीएसआईआर) के ऐसे ही प्रयासों के अंतर्गत

सीएसआईआर-नेशनल एयरोस्पेस लैबोरेटरी (एनएएल), बंगलूरु एवं सीएसआईआर-जीनोमिकी और समवेत जीवविज्ञान संस्थान (आईजीआईबी), नई दिल्ली के वैज्ञानिकों ने 'स्वस्थवायु' नामक वेंटिलेटर विकसित किया है। इस वेंटिलेटर को अब नियामक मंजूरी मिल गई है। विज्ञान और प्रौद्योगिकी मंत्रालय द्वारा हाल में जारी एक वक्तव्य में यह जानकारी दी गई है।

स्वस्थवायु वेंटिलेटर, बाय-लेवल मोड (BiPAP), कॉन्टिन्यूअस पॉजिटिव एयर-वे मोड (CPAP), स्पॉन्टैनिअस मोड्स और नॉन वेंटिलेटेड मास्क से जुड़े 3डी प्रिंटेड हेपा-टी फिल्टर एडॉप्टर जैसी खूबियों से लैस है। इस उपकरण में ऑक्सीजन कंसन्ट्रेटर को बाहर से भी जोड़ा जा सकता है। यह उपकरण महामारी के बाद भी विभिन्न बीमारियों के इलाज में उपयोगी हो सकता है, जिनमें ऑक्सट्रिकटव स्लीप एपनिया और अन्य स्लीप एपनिया जैसी अनिद्रा से जुड़ी बीमारियां शामिल हैं।

वेंटिलेटर की कार्यप्रणाली का मूल्यांकन स्वास्थ्य सेवाएं, स्वास्थ्य एवं परिवार कल्याण मंत्रालय के महानिदेशक द्वारा गठित विशेषज्ञ समिति द्वारा किया गया है। विशेषज्ञ समिति इस वेंटिलेटर के मूल्यांकन के बाद इस निष्कर्ष पर पहुँची है कि 'स्वस्थवायु' का उपयोग कोविड-19 के ऐसे रोगियों पर किया जा सकता है, जिन्हें 35% तक पूरक ऑक्सीजन की आवश्यकता होती है। इसे नेशनल एक्स्टेंशन बोर्ड फॉर टेस्टिंग एंड क्लि. ब्रेशन लैबोरेटरीज (एनएबीएल) के इलेक्ट्रिकल सुरक्षा, कार्यप्रणाली, मूल्यांकन और जैव-अनुकूलता से जुड़े कड़े परीक्षणों में प्रभावी पाया गया है। 'स्वस्थवायु' का चिकित्सीय परीक्षण 50 मरीजों पर कमांड हॉस्पिटल, बंगलूरु और मैसूर मेडिकल कॉलेज एंड रिसर्च इंस्टीट्यूट में किया गया है, जिसमें इसे प्रभावी पाया गया है।

इसे विकसित करने वाले शोधकर्ताओं का कहना है कि यह वेंटिलेटर कोविड-19 समेत अन्य श्वसन संबंधी रोगों के उपचार में मददगार हो सकता है। इसका उपयोग आईसीयू में बिना चीरफाड़ वाली चिकित्सा परिस्थितियों में भी किया जा सकता है। 'स्वस्थवायु' वेंटिलेटर को एनएएल के वैज्ञानिकों ने बंगलूरु के मणिपाल हॉस्पिटल्स के विशेषज्ञ डॉ सत्यनारायण और सीएसआईआर-इंस्टीट्यूट ऑफ जीनोमिक्स एंड इंटीग्रेटिव बायोलॉजी (आईजीआईबी) के निदेशक डॉ अनुराग अग्रवाल के साथ मिलकर विकसित किया है। इस उपकरण का परीक्षण कृत्रिम फेफड़े के मॉडल पर किया गया है।

'स्वस्थवायु' वेंटिलेटर के व्यावसायिक उत्पादन के लिए सीएसआईआर-एनएएल ने सूक्ष्म, लघु एवं मध्यम (एमएसएमई) दर्जे की छह कंपनियों से करार किया है। इनमें से एक कंपनी ने अपनी उत्पादन इकाई स्थापित कर दी है, जो हर सप्ताह लगभग 300 उपकरणों का उत्पादन कर रही सीएसआईआर-एनएएल को को हाल में दिल्ली सरकार से 1200 'स्वस्थवायु' वेंटिलेटर की आपूर्ति करने का ऑर्डर मिला है। दिल्ली के विभिन्न अस्पतालों में इन वेंटिलेटर्स का उपयोग किया जाना है।

कोविड-19 के शुरुआती दौर में ही वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद (सीएसआईआर) ने इस महामारी से निपटने के लिए पाँच सूत्रीय एजेंडा पर काम करना शुरू कर दिया था। इसमें संक्रमण के खतरे और उसकी प्रकृति को समझने के लिए आणविक स्तर पर निगरानी, किफायती जाँच किट निर्माण, दवाओं का विकास, अस्पतालों व निजी सुरक्षा उपकरणों का विकास और चिकित्सकीय उपकरणों की आपूर्ति शामिल है। इस पहल के अंतर्गत देश में वेंटिलेटर की कमी दूर करने के लिए भी एक मुहिम शुरू की गई थी, जिसके अंतर्गत 'स्वस्थवायु' का निर्माण किया गया है।

**Website Link:**

<https://vigyanprasar.gov.in/isw/Regulatory-approval-for-indigenous-healthy-air-ventilator-hindi.html>

## कोरोना के आयुर्वेदिक उपचार पर शोध के लिए नयी साझेदारी

कोरोना संक्रमण से उपजी महामारी कोविड-19 से निपटने के लिए जहां देश में वैक्सीन का ट्रायल द्रुत गति से चल रहा है, वहीं अन्य उपायों से भी इस बीमारी को मात देने के उपाय निरंतर खोजे जा रहे हैं। इस दिशा में एक नयी पहल के अंतर्गत वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद (सीएसआईआर) से संबद्ध

हैदराबाद स्थित प्रयोगशाला सेंटर फॉर सेल्युलर एंड मॉलिक्यूलर बायोलॉजी (सीसीएमबी) और आर्य वैद्यशाला (एवीएस), कोट्टकल के बीच एक नयी साझेदारी की घोषणा की गई है। दोनों संस्थान मिलकर कोरोना के खिलाफ लड़ाई में आयुर्वेदिक नुस्खों की प्रभावोत्पादकता का परीक्षण करेंगे।

केरल के कोट्टकल स्थित आर्य वैद्यशाला (एवीएस) आयुर्वेदिक औषधियों के मामले में एक विश्वसनीय नाम है, जो विगत 118 वर्षों से आयुर्वेदिक औषधियों के उत्पादन और वितरण के क्षेत्र में सक्रिय है। एवीएस 500 से अधिक आयुर्वेदिक दवाओं का उत्पादन करता है। वहीं, सीसीएमबी देश का अग्रणी जैव विज्ञान पर केंद्रित शोध संस्थान है, जो अपनी प्रयोगशालाओं में कोरोना से जुड़े विभिन्न प्रयोगों-परीक्षणों में निरंतर जुटा हुआ है।

इस साझेदारी में एवीएस मानक आयुर्वेदिक नुस्खे (फॉर्मूलेशन) उपलब्ध कराएगा। वहीं, सीसीएमबी उस दवा का प्रयोगशाला में विकसित कोरोना वायरस रूपों के खिलाफ परीक्षण कर उसकी वायरस-प्रतिरोधी (एंटी-वायरल) क्षमताओं की पड़ताल करेगा। इस पहल पर सीसीएमबी के निदेशक राकेश मिश्रा ने कहा है कि "यदि अपेक्षित परिणाम प्राप्त होते हैं, तो यह परियोजना भारत में दवा उद्योग के लिए एक महत्वपूर्ण पड़ाव सिद्ध होगी। भारत के पास प्राचीन ज्ञान का अपार भंडार है, परंतु उन प्राचीन ग्रंथों के आधार पर उनकी परख के लिए नियामक दायरे में उपयुक्त प्रक्रियाओं का अभाव है। ऐसे में कोरोना वायरस के खिलाफ मौजूदा लड़ाई में विभिन्न उपचार पद्धतियों का व्यापक परीक्षण अनिवार्य हो गया है। सीसीएमबी में, हमने प्रयोगशाला में विकसित कोरोना वायरस के खिलाफ विकसित की जा रही दवाओं एवं उपकरणों के परीक्षण की व्यवस्था की है, और इसमें आयुर्वेदिक दवाओं के प्रभाव को भी परखा जा सकता है।"

एवीएस के वरिष्ठ वैज्ञानिक डॉ. सीटी सुलेमान ने कहा है कि "सीसीएमबी के साथ हमने इसी उद्देश्य से हाथ मिलाया है कि आयुर्वेद के प्राचीन शास्त्रीय ज्ञान को आधुनिक विज्ञान की मान्यता मिल सके। हमें उम्मीद है कि यह अध्ययन वर्तमान परिस्थितियों में उपयुक्त उपचार तलाशने में सहायक होगा। इस दिशा में सकारात्मक संकेत भी मिले हैं।"

**Website Link:**

<https://vigyanprasar.gov.in/isw/New-partnership-for-research-on-ayurvedic-treatment-of-corona-hindi.html>

## कोरोना के नये संस्करण के प्रसार का पता लगाने के लिए जरूरी जीनोम निगरानी

कोरोना वायरस के नये संस्करण के प्रसार का आकलन करने के लिए इस वायरस की व्यापक जीनोम निगरानी शुरू करना बहुत महत्वपूर्ण है। हमें इस वायरस के अन्य संस्करणों पर भी नजर रखनी चाहिए, जो स्वतंत्र रूप से उभर सकते हैं, क्योंकि भारत में इस वायरस से संक्रमित दूसरी सबसे बड़ी आबादी का पता चला है। वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद (सीएसआईआर) की हैदराबाद स्थित प्रयोगशाला सेंटर फॉर सेलुलर एंड मॉलिक्यूलर बायोलॉजी (सीसीएमबी) के निदेशक डॉ राकेश मिश्रा ने यह बात कही है।

सीसीएमबी द्वारा हाल में जारी किए एक बयान में डॉ राकेश मिश्रा यह भी कहा है कि "रूपांतरित कोरोना वायरस के संक्रमण से बचाव के लिए पहले से उपयोग हो रहे उपाय पर्याप्त हैं। दूसरों की मौजूदगी में मास्क का उपयोग, भीड़भाड़ वाले स्थानों पर न जाना और शारीरिक दूरी बनाए रखना, कोरोना वायरस और इसके रूपांतरित संस्करण से बचाव के तरीकों में शामिल है।"

सीसीएमबी के वैज्ञानिकों का कहना है कि सिविलर एक्यूट रेस्पिरेटरी सिंड्रोम कोरोना वायरस-2 (SARS-CoV-2) के नये संस्करण बी.1.1.7 को कोरोना वायरस के दूसरे रूपों से 71 प्रतिशत अधिक संक्रामक माना जा रहा है। पिछले साल सितंबर महीने में युनाइटेड किंगडम में पहली बार सामने आये कोरोना के नये संस्करण को वहाँ इस वायरस के 60 प्रतिशत संक्रमण मामलों के लिए जिम्मेदार ठहराया जा रहा है। वहाँ रूपांतरित कोरोना वायरस की गंभीर चुनौती को देखते हुए भारत समेत कई देशों ने युनाइटेड किंगडम से हवाई यातायात पर अस्थायी रूप से रोक लगा दी है। सीसीएमबी द्वारा जारी किए गए वक्तव्य में कहा गया

है कि युनाइटेड किंगडम से भारत हवाई सफर करने वाले 33,000 यात्रियों का पता लगाकर और उनका परीक्षण करके, भारत ने देश में इस नये संस्करण की उपस्थिति की पुष्टि की है।

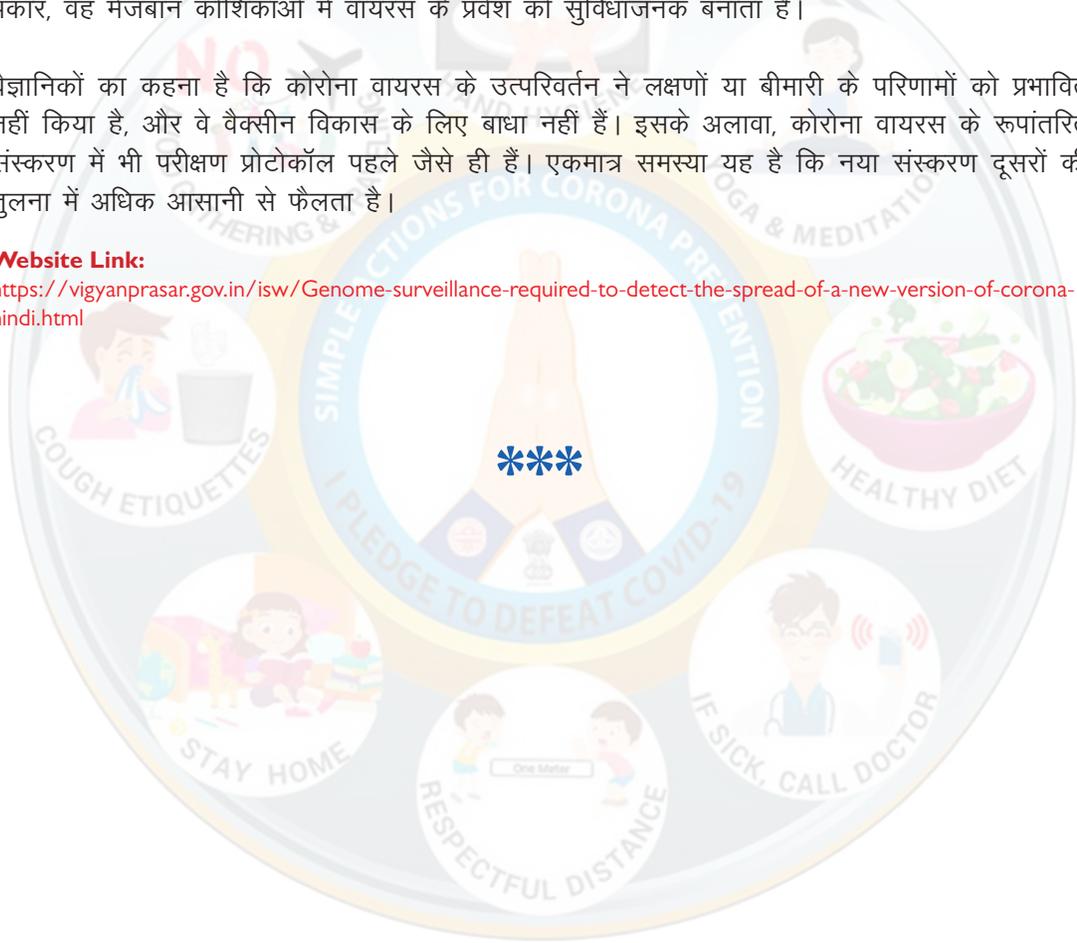
सीसीएमबी भारत के उन दस शोध संस्थानों में शामिल है, जो देश में रूपांतरित कोरोना वायरस के संक्रमण का पता लगाने में जुटे हैं। सीसीएमबी में कोरोना वायरस जीनोम अनुक्रमण का नेतृत्व कर रही वैज्ञानिक डॉ दिव्या तेज सौपाती ने कहा है कि "हमें वायरल जीनोम अनुक्रमण के प्रयासों में तेजी लाने और भारत में कोरोना वायरस के नये संस्करण की उपस्थिति की जाँच करने की आवश्यकता है। हम इसके लिए पारंपरिक अनुक्रमण (सीक्वेंसिंग) पद्धति के साथ-साथ नयी पीढ़ी के आधुनिक अनुक्रमण उपकरणों का उपयोग कर रहे हैं।"

कोरोना वायरस के नये संस्करण की आनुवंशिक सामग्री में 17 उत्परिवर्तनों या रूपांतरणों (Mutation) का पता चला है। इनमें से आठ उत्परिवर्तन कोरोना वायरस की बाहरी सतह को व्यक्त करने वाले स्पाइक प्रोटीन को प्रभावित करते हैं, और मेजबान कोशिकाओं में एसीई रिसेप्टर्स से बंध जाते हैं। इनमें से एक उत्परिवर्तन के बारे में माना जा रहा है कि वह वायरस और रिसेप्टर्स के बीच बंधन को बढ़ाने में प्रभावी है, और इस प्रकार, वह मेजबान कोशिकाओं में वायरस के प्रवेश को सुविधाजनक बनाता है।

वैज्ञानिकों का कहना है कि कोरोना वायरस के उत्परिवर्तन ने लक्षणों या बीमारी के परिणामों को प्रभावित नहीं किया है, और वे वैक्सीन विकास के लिए बाधा नहीं हैं। इसके अलावा, कोरोना वायरस के रूपांतरित संस्करण में भी परीक्षण प्रोटोकॉल पहले जैसे ही हैं। एकमात्र समस्या यह है कि नया संस्करण दूसरों की तुलना में अधिक आसानी से फैलता है।

**Website Link:**

<https://vigyanprasar.gov.in/isw/Genome-surveillance-required-to-detect-the-spread-of-a-new-version-of-corona-hindi.html>



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## SCIENCE & TECHNOLOGY EFFORTS ON COVID-19

BY

# INDIAN COUNCIL OF MEDICAL RESEARCH (ICMR)

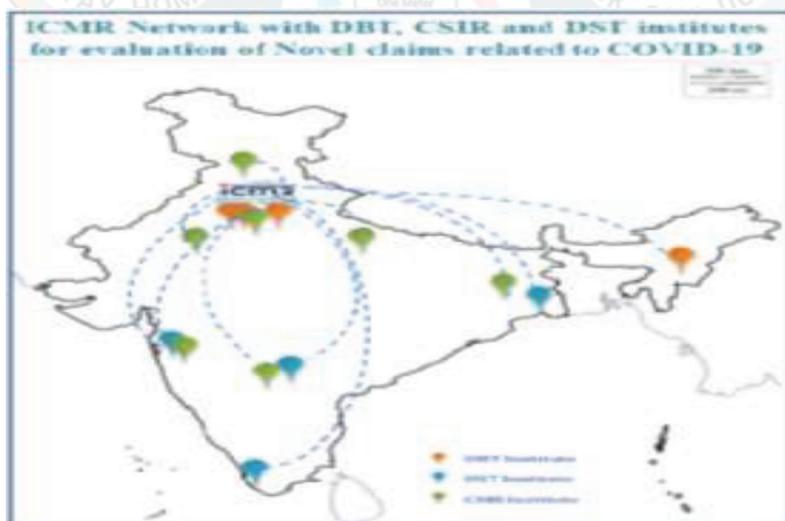
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### Web portal – iNoveCOP – developed for novel claims by ICMR

ICMR has received several novel claims like drug molecules, AYUSH formulations, disinfectants, devices, tools and technologies, to facilitate evaluation and validation for COVID-19. In order to address these novel claims, ICMR has collaborated with other Science Departments like Department of Biotechnology (DBT), Council of Scientific and Industrial Research (CSIR), Department of Science and Technology (DST) and other agencies. In this context, ICMR developed iNoveCOP, a web-based portal to help applicants fill their claims related to COVID-19. Applicants may submit their claim through this portal for guidance and/or evaluation of their innovation from the independent agencies.

Following is the list of collaborating institutions:

1. ARI - Agharkar Research Institute, Pune;
2. ARCI - International Advanced Research Centre for Powder Metallurgy and New Materials, Hyderabad;
3. CCMB - Centre for Cellular and Molecular Biology, Hyderabad;
4. CEERI - Central Electronics Engineering Research Institute, Pilani;
5. CMERI - Central Mechanical Engineering Research Institute, Durgapur;
6. IACS - Indian Association for the Cultivation of Science, Kolkata;
7. IBSD - Institute of Bioresources and Sustainable Development, Manipur;
8. ICGEB - International Centre For Genetic Engineering and Biotechnology, New Delhi;
9. IGIB - Institute of Genomics and Integrative Biology, New Delhi;
10. IMTech - Institute of Microbial Technology, Chandigarh;
11. NBRI - National Botanical Research Institute, Lucknow;
12. NCL - National Chemical Laboratory, Pune;



13. NIV - National Institute of Virology, Pune;
14. RCB - Regional Centre for Biotechnology, Faridabad;
15. SCTIMST - Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram; and
16. THST I- Translational Health Science and Technology Institute, Faridabad.

**Website Link:**

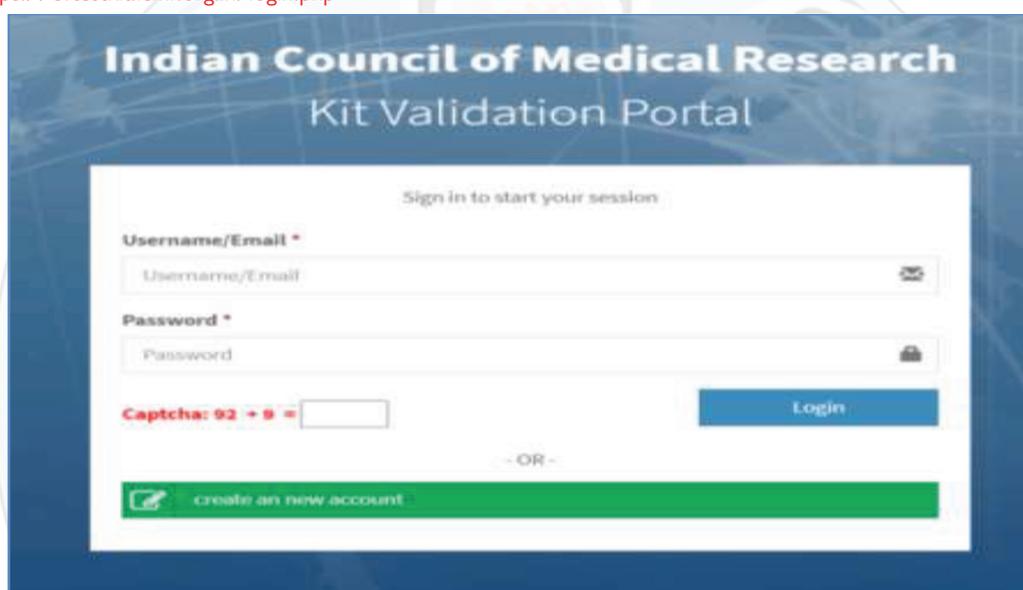
<https://inovecop.icmr.org.in/about/>

### ICMR develops a web portal dedicated for kit validation

An online portal has been developed by the ICMR to address all the requests for validation of kits for RT-PCR, RNA Extraction, Viral Transport Medium (VTM), Rapid Antibody Test, ELISA, and so on.

**Website Link:**

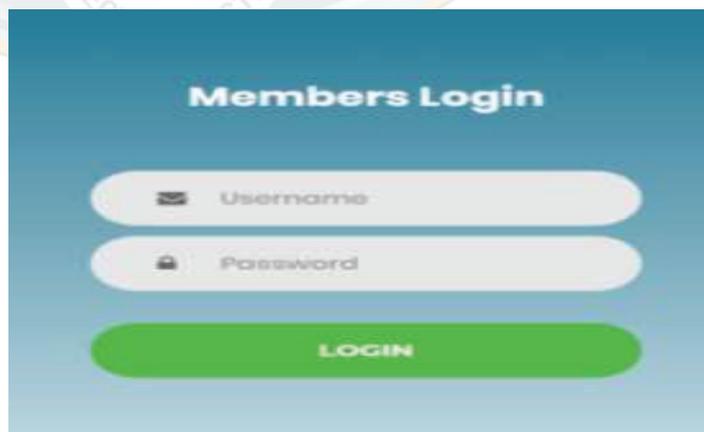
<https://cvtestkit.icmr.org.in/login.php>



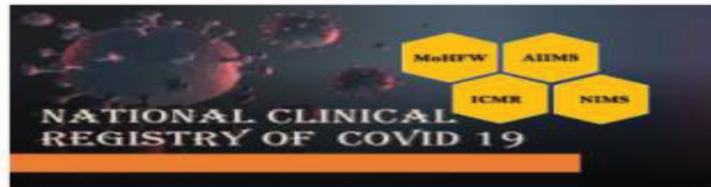
The screenshot shows the login page for the Indian Council of Medical Research Kit Validation Portal. The page has a blue header with the text "Indian Council of Medical Research Kit Validation Portal". Below the header, there is a white box with the text "Sign in to start your session". The login form includes fields for "Username/Email \*", "Password \*", and a "Captcha: 92 + 9 =" with an input box. There is a blue "Login" button and a green "create an new account" button. The background of the page features a faint image of a soap dispenser.

### National Clinical Registry of COVID-19 launched by ICMR

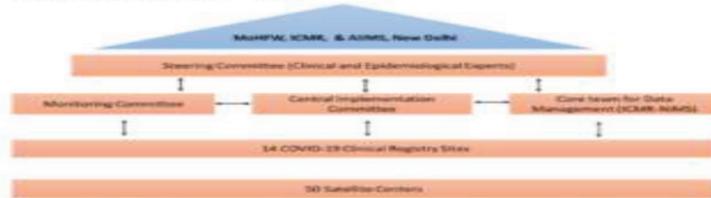
National Clinical COVID-19 Registry has been launched to collect data regarding clinical and laboratory features, treatments, and outcomes of hospitalized COVID-19 patients in India. Additionally, it also studies the frequency, clinical and laboratory features, treatments, and outcomes of COVID-19-related multisystem inflammatory disorder in children and adolescents by analysing the national COVID-19 registry. The registry follows a hub-and-spoke model with primary data being collected in the electronic data capture form by satellite centres (dedicated COVID-19 hospitals) which are being trained, mentored and supervised by medical institutes of national repute chosen region-wise. In the first phase, 50 satellite centres



The screenshot shows the "Members Login" page. It has a blue header with the text "Members Login". Below the header, there are three input fields: "Username" with an envelope icon, "Password" with a lock icon, and a green "LOGIN" button.



## The governance structure of the National Clinical Registry of COVID-19



and 14 registry sites have been included. The Central Implementation Committees have been constituted to provide supportive supervision. A steering committee of experts is in place to provide overarching guidance. Data management including the development of the electronic data capture form is being done by ICMR-National Institute of Medical Statistics (NIMS).

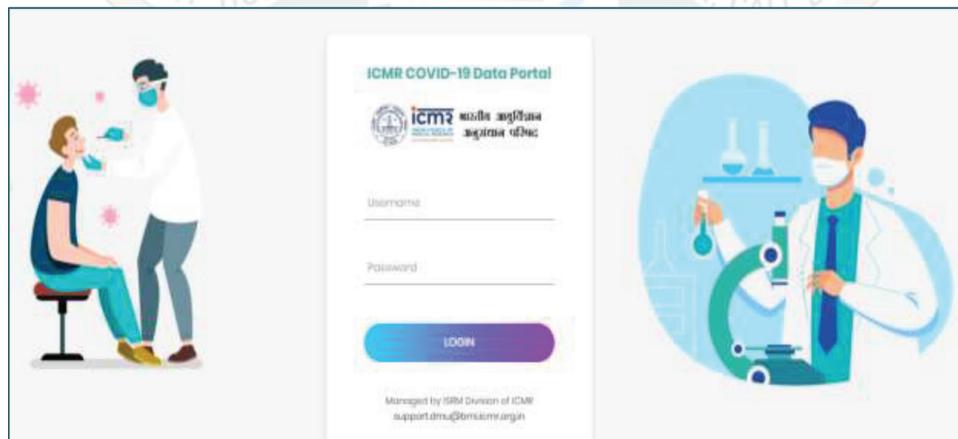
**Website Link:**

<http://icmrcovidregistry.nic.in/>

### ICMR launches COVID-19 Data Portal

The COVID-19 Data Portal brings together and continuously updates the relevant COVID-19 datasets and tools. An unprecedented number of scientific efforts are taking place worldwide to combat the coronavirus epidemic. One of the biggest challenges in this fast-moving situation is sharing data and findings in a coordinated way to understand the disease and develop treatments and vaccines.

European Bioinformatics Institute (EMBL-EBI) and partners operate the COVID-19 Data Portal to address this challenge, which brings together relevant datasets submitted to EMBL-EBI and other major centres for biomedical data. The aim of the Data Portal is to facilitate data sharing and analysis and to accelerate coronavirus research.



The COVID-19 Data Portal enables researchers to upload, access, and analyse COVID-19-related reference data and specialist datasets. The COVID-19 Data Portal is the primary entry point into a wider project's functions, the European COVID-19 Data Platform.

Contact Info: support.dmu@bmi.icmr.gov.in

**Website link:**

<https://cvstatus.icmr.gov.in/>

## ICMR invites Expression of Interest for Validation of Rapid Antigen Detection Assays for COVID-19

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

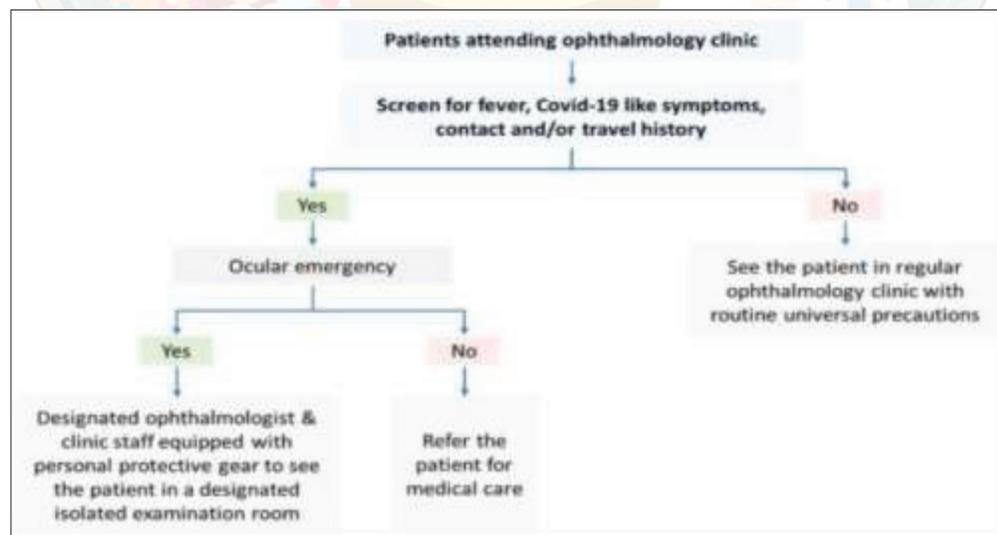
Contact Info: guptanivedita.hq@icmr.gov.in

**Website Link:**

[https://www.icmr.gov.in/pdf/tender/Revised\\_EOI\\_for\\_Ag\\_kit\\_validation\\_29122020.pdf](https://www.icmr.gov.in/pdf/tender/Revised_EOI_for_Ag_kit_validation_29122020.pdf)

## MoHFW releases guidelines on Safe Ophthalmology Practices in COVID-19 Scenario

Ministry of Health, Family and Welfare (MoHFW) has released guidelines on Safe Ophthalmology Practices in COVID-19 Scenario. This document outlines the preventive and response measures to be observed to minimize and avoid the spread of COVID-19 in eye care facilities. These guidelines are aimed to minimize the spread of COVID-19 infection among Ophthalmologist, Ophthalmic assistants/technicians, nurses, support staff, patients and their attendants. Eye care facilities in containment zones shall remain closed. Only those outside containment zones will be allowed to open up.



**Website Link:**

<https://www.mohfw.gov.in/pdf/GuidelinesonSafeOphthalmologyPracticesinCovid19Scenario.pdf>

## SOP for regulated resumption of limited flights originating from United Kingdom in wake of new variant of SARS-CoV-2

A Standard Operating Procedure (SOP) for Epidemiological Surveillance and Response in the context of new variant of SARS-CoV-2 virus detected in United Kingdom was issued on 22nd December 2020. This SOP details out the activities to be undertaken at the point of entry and in the community for all international passengers who have travelled from or transited through the UK from 25th November to 23rd December 2020. Ministry Health of Family & Welfare in consultation with Ministry of Civil Aviation has reviewed the situation with regard to resumption of international flight services to/from UK and it has been decided to allow limited flight connectivity to/from UK with effect from 8th January, 2021. The resumption of flight services is to be done in a calibrated manner by initially allowing flight movement to/from UK to five international airports, i.e., Delhi, Mumbai, Bengaluru, Hyderabad and Chennai only. This SOP shall be valid till 30th January 2021 or further orders whichever is earlier.

**Website Link:**

<https://www.mohfw.gov.in/pdf/inthecontextofregulatedresumptionoflimitedflightsoriginatingfromUnitedKingdomUKtoIndiafrom8thJanuary2021.pdf>



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## SCIENCE & TECHNOLOGY EFFORTS ON COVID-19

BY

# SCIENTIFIC AND ACADEMIC INSTITUTIONS

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### Antiviral nasal filter developed by IIT Kanpur

Mr Ravi Pandey from SIIC at Indian Institute of Technology Kanpur (IITK) has developed an antiviral nasal filter. The need for this filter arises considering the COVID-19 situation, where the main channel of transmission occurs by the transfer of droplets to a healthy person through air. Since 90% of the breathing occurs through nasal cavity only, hence nasal passage is the main source of contamination.

The existing masks comprise different straps to hold on to the face of the user and are uncomfortable to wear during different activities of the day. The present invention minimizes the leakage of air that occurs from sides while wearing a N95 mask, without maintaining positive pressure inside the filter.



**Website Link:**

<https://www.iitk.ac.in/new/innovations-on-covid-19#>

### IIT Bhubaneswar confirms the effectiveness of social distancing norms, use of face-mask

The ongoing outbreak of SARS-CoV-2 is a matter of serious concern globally. For India, with over 1.3 billion population, controlling this virus's spreading has been a major challenge. It has been emphasized on multiple occasions the need to continue 'Social Vaccine' such as mask and Social Distancing to combat the spread of COVID-19.

In this context, a study was conducted at IIT Bhubaneswar on the efficacy of various nonstandard and standard face masks under the act of sneezing. The study has been conducted by Dr Venugopal Arumuru, Assistant Professor, School of Mechanical Science (SMS) and his team. The study highlights that the protective measures like face mask and face shield effectively reduce the leakage and reach of the sneeze within 1 to 3 ft. However, they do not completely stop the leakage of smaller droplets. Hence, social distancing is equally important.



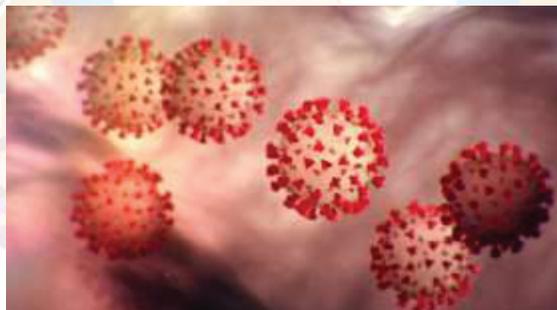
The study recommends using the elbow or hand to prevent droplets leakage even after wearing a mask during coughing and sneezing. The study confirmed that without protective measures like a face mask, the smaller droplets expelled during a sneeze can travel up to 25 ft in 22s in a stagnant environment.

**Website Link:**

<https://www.iitbbs.ac.in/news.php?id=1227>

### **IIT Madras finds holding breath may increase risk of getting COVID-19 infection**

Researchers at the Indian Institute of Technology Madras (IITM) have found that holding breath may increase the risk of contracting COVID-19 infection. According to the researchers, the process of virus-laden droplets being transported into deep lung increases with decreasing breathing frequency. The research team modelled the breathing frequency in a laboratory and found that low breathing frequency increases the time of residence of the virus and therefore it increases chances of deposition and consequently the infection. Also, the multi-scale lung structure has a significant effect on a person's susceptibility to COVID-19.



**Website Link:**

<https://www.iitm.ac.in/happenings/press-releases-and-coverages/iit-madras-researchers-find-holding-breath-may-increase-0>



# SCIENCE OUTREACH & POPULARISATION EFFORTS

Since the outbreak of COVID-19 pandemic, the Ministry has supported numerous research projects and technology interventions through its various Departments, Autonomous Organisations, Professional Bodies, Statutory Bodies, and Laboratories. In this science outreach and popularisation efforts, a number of knowledge and information products have been generated and released.

## Efforts from Ministries, Departments & Scientific Organisations

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

India's coronavirus cases have crossed 1.07-crore mark and as on 29 January 2021, 08:00 AM, stands at 1,07,20,048 cases out of which 1,03,94,352 have recovered. The recovery rate stands at 97% while the case fatality rate stands at 1.44%, the lowest in the world. The number of people vaccinated till 28 January 2021 stands at 29,28,053.



#### Website Link:

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

### Press Information Bureau releases daily bulletin on COVID-19

Press Information Bureau (PIB), Government of India releases a daily bulletin on COVID-19. The bulletin contains press releases concerning COVID-19, issued in last 24 hours, inputs from PIB field offices and fact checks undertaken by PIB. The last release is dated 27th January 2021.



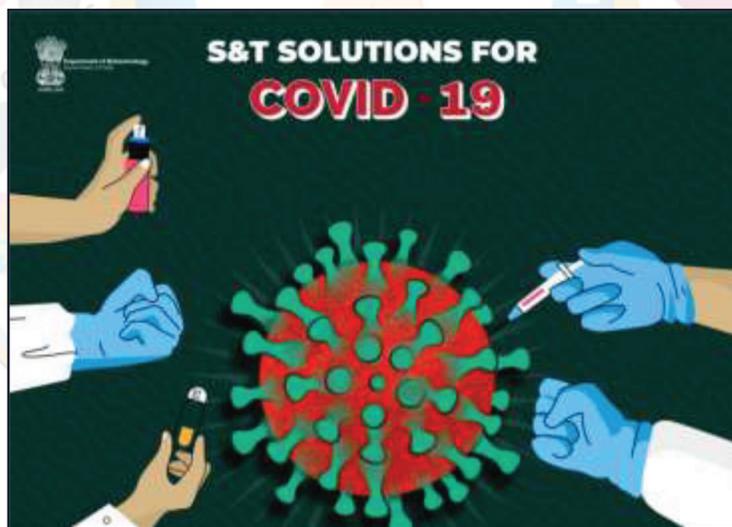
- India's daily Recoveries outnumbering daily New Cases for last 20 Days
- India continues to be among countries with lowest new cases and new deaths per million population in the last 7 days
- As on 27<sup>th</sup> January 2021, till 8 AM, more than 20lakh (20,29,480) beneficiaries have received the vaccination
- Dr. Harsh Vardhan unveils IEC Campaign to address Vaccine Hesitancy and Misinformation
- In spite of Covid challenges, Indian Railways now running 65% of Mail Express Trains as compared to pre-Covid time

**Website Link:**

<https://pib.gov.in/PressReleasePage.aspx?PRID=1692701>

**Department of Biotechnology released e-Book on S & T solutions for COVID-19**

Department of Biotechnology (DBT) released an e-Book on S & T solutions for COVID-19 that showcases the initiatives undertaken by the Department for the mitigation of COVID-19 Pandemic. From the development of indigenous vaccines, novel point-of-care diagnostics and therapeutic formulations based on traditional knowledge, to establishment of research resources and offering services, the Department is focused on creating an ecosystem to foster Atmanirbhar Bharat for innovative product development, with societal relevance. The e-Book showcases the indigenous COVID-19 interventions developed by DBT-supported initiatives.



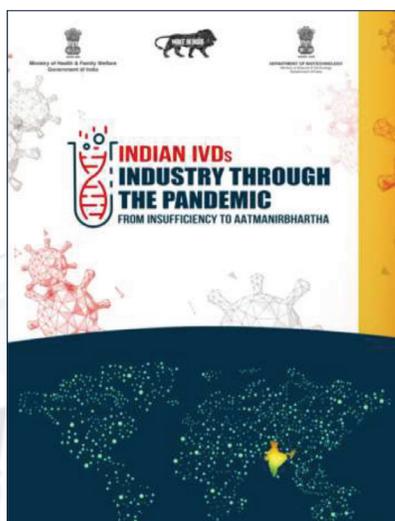
**Website link:**

<https://thsti.res.in/writereaddata/Ebook%20on%20DBTs%20S&T%20Solutions%20on%20COVID-19.pdf>

**DBT released compendium on collective efforts for COVID-19 diagnostics**

Department of Biotechnology (DBT) released a compendium on collective efforts for COVID-19 diagnostics on how India scaled up its laboratory testing capacity for COVID-19 and made commercial COVID-19 diagnostic kits in India.

DBT and BIRAC, in collaboration with NBM, initiated the COVID-19 Research Consortium to facilitate the holistic development of the diagnostic ecosystem of the country. Their N-BRIC initiative targeted towards the long pending demand of the country of domestic manufacturing diagnostics components/reagents for making India self-reliant.



**Website link:**

<http://dbtindia.gov.in/sites/default/files/uploadfiles/Indian%20IVDs%20Industry%20Through%20the%20Pandemic%20E-Brochure-23rd%20Dec%202020.pdf>

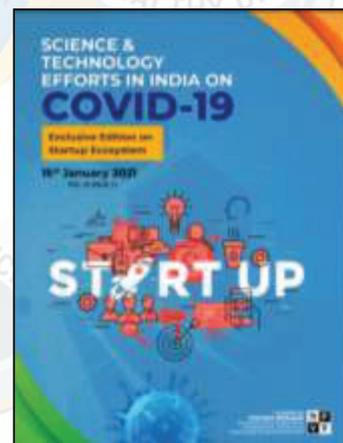
### Fortnightly Publication of e-Newsletter on COVID-19

For the benefit of its stakeholders and target audience, Vigyan Prasar is bringing out a fortnightly e-Newsletter on the most relevant initiatives and efforts taken by Government of India through its various Science Ministries, Departments, and Funding Organisations. These organisations are continuously striving for combating the outbreak of COVID-19. These research-driven and technology-based interventions have been initiated to combat the outburst of the pandemic.

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

In January 2020, a special edition has been published containing the compilation of all the initiatives taken up by start-ups.

Contact Info: [kdgm@vigyanprasar.gov.in](mailto:kdgm@vigyanprasar.gov.in)



**Website link:**

<https://vigyanprasar.gov.in/covid19-newsletters/>

<http://www.indiascienceandtechnology.gov.in/covid-19-the-pandemic/newsletter-archive>





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