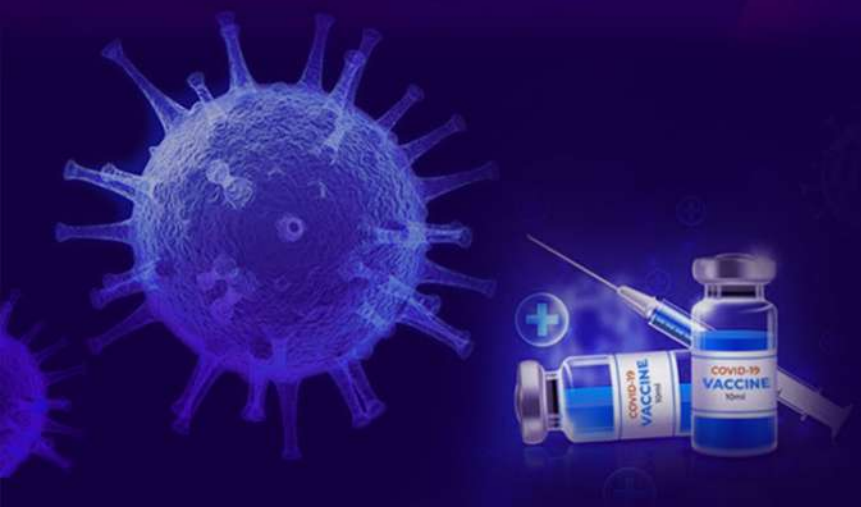
# SCIENCE & TECHNOLOGY EFFORTS IN INDIA ON COVID-19

**UPDATED FORTNIGHTLY**

**31st December 2020**

# 2021




Compiled by
**VIGYAN PRASAR**
An Autonomous Organisation
of Department of Science &
Technology, Government of India

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

जय विज्ञान
जय अनुसंधान

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**


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 COVID19.

(Dr. Harsh Vardhan)


कार्यालय: 348, ए-स्कंध, निर्माण भवन, नई दिल्ली-110011 • **Office:** 348, A-Wing, Nirman Bhawan, New Delhi - 110011
**Tele:** (O) : +91-11-23061661, 23063513 • **Telefax:** 23062358 • **E-mail:** hfwminister@gov.in
निवास: 8, तीस जनवरी मार्ग, नई दिल्ली-110011 • **Residence:** 8, Tees January Marg, New Delhi - 110011
**Tele:** (R) : +91-11-23794649 • **Telefax:** 23794640

# PREFACE

Welcome to the newsletter, Science & Technology efforts in India on COVID-19, highlighting scientific, technological, and innovative efforts and supports to mitigate and minimise the pandemic's transmission and its after-effects. The COVID-19 pandemic 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.

In these critical times, access to authentic information is of paramount importance. Since the early days with the science communication perspective, Vigyan Prasar has been covering the pandemic, ensuring that science and safety are the primary focus. For the benefit of the stakeholders and target audience, Vigyan Prasar has been preparing and publishing a compilation of the most relevant initiatives, efforts, and wartime protocols, published by the Government of India through its various Science Ministries, Departments, and Funding organisations, in the shape of daily, weekly, and now fortnightly e-Newsletter. These research-driven and technology-based interventions have been initiated on war footing to fight out the pandemic's outburst.

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 of enhanced capabilities and the novel necessities. 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. The coronavirus has also revealed something profound about the way societies should treat knowledge. Something good might come from the misery of the pandemic year. It should include a new social contract fit for the 21st century.

As the New Year 2021 approaches us with hopes anew, Vigyan Prasar wishes all its readers and their near and dear ones a wonderful year ahead.

Vigyan Prasar
New Delhi

31 Dec 2020

# INDEX

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/

SCIENCE & TECHNOLOGY EFFORTS ON COVID-19

BY

# OFFICE OF THE PRINCIPAL SCIENTIFIC ADVISER (PSA)

## The Office of PSA releases a document on agenda of reprioritizing Health R&D in the context of COVID-19

COVID 19 pandemic is unprecedented in human history. It has resulted in colossal loss of life and has brought to the forefront the need of a robust healthcare system across all countries in the world.

Economic Advisory Council to the Prime Minister had prepared a report on R&D Expenditure Ecosystem in consultation with the Office of Principal Scientific Adviser to the Government of India. It inter-alia recommended boosting of R&D investment in India to 2% of GDP by 2022. It has also highlighted the need to devote adequate resources to medical research for not only prevention of such unprecedented outbreaks but also its treatment.

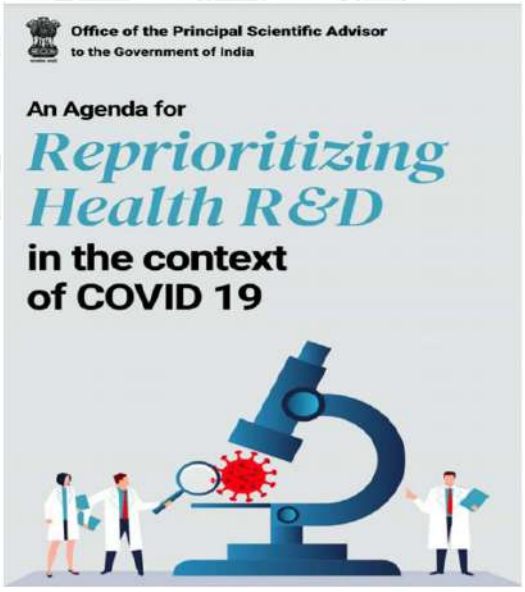
The Objective of this agenda is to:

- Examine the role and relevance of R&D in the context of COVID-19
- Discuss the share of Health R&D in the context of global health spend
- Discuss the share of Health R&D in the context of India's public expenditure on R&D and overall R&D expenditure
- Estimate Health GERD as a percentage of GDP in India and abroad
- Prepare a roadmap for boosting Health R&D for meeting COVID-19 challenge

### Health R&D and its Share in Total R&D Expenditure

Public-private partnerships and other innovative mechanisms for research are concentrating on neglected diseases in order to stimulate the development of vaccines, drugs and diagnostics where market forces alone are insufficient.

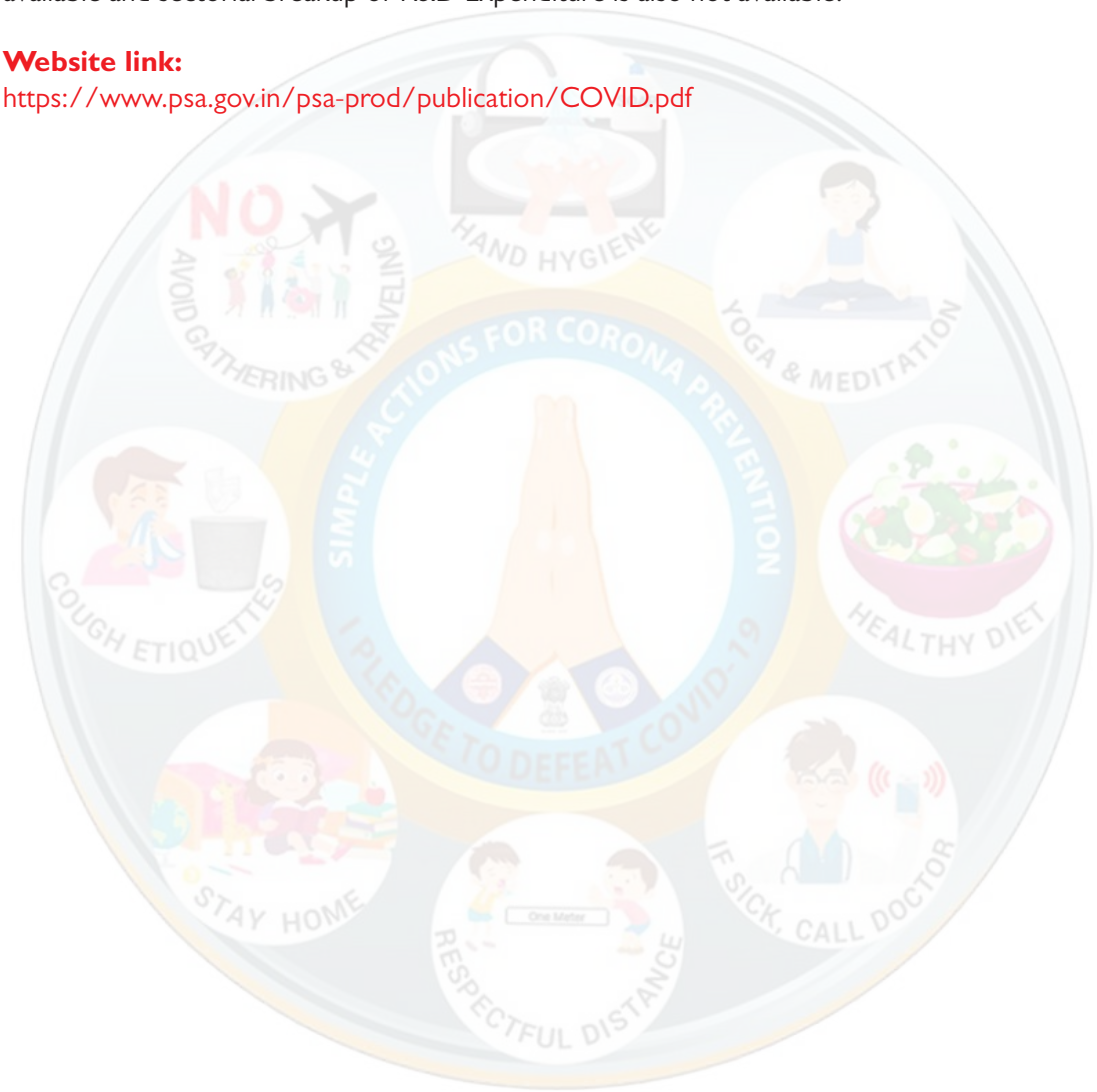
The broad components of this public Spending are not readily available but going by OECD data, the various components of public spending on health are Medical products and appliances, Outpatient Services, Hospital Services, Public health Services and Health R&D.



Gross Expenditure on R&D (GERD) is mainly driven by the Government sector comprising of Central Government 45.4%, State Governments 6.4%, Higher Education 6.8% and Public Sector Industry 4.6% with Private Sector Industry contributing 36.8% during 2017-18.

Health R&D share in overall R&D Spend in India is only 4% in 2017-18. This aspect needs to be examined in the context of COVID- 19, which has ravaged the health care system across the world and has led to a mad rush for discovery of vaccine by all medical researchers. This requires higher level of R&D spending not only on basic research but also on building R&D infrastructure. Other key findings of this document are Data on health GERD is not readily available and sectorial breakup of R&D Expenditure is also not available.

**Website link:**
https://www.psa.gov.in/psa-prod/publication/COVID.pdf



BY

# DEPARTMENT OF BIOTECHNOLOGY (DBT)

## Talk on 'Evidence-based implementation of COVID-19 public health measures'

The DBT- Institute for Stem Cell Science & Regenerative Medicine (DBT-inStem), Bengaluru is one of the founding partners of COVID-Gyan, a pan-institutional website that has been proactive in COVID-19 outreach efforts.

This month's WebGyan session titled 'Evidence-based implementation of COVID-19 public health measures' featured Prof. Giridhara R Babu, who heads the Lifecourse Epidemiology at Public Health Foundation of India (PHFI).


Prof. Babu highlighted evidence-based implementation policies based on his association with BBMP Taskforce on COVID-19 Public Health Response, the Karnataka Technical Analysis Committee for COVID-19, and ICMR ESWG on surveillance and research.

Emphasizing on surveillance, he stated that the collating of data at a state/national level and using that data to implement strategies at a local level to mitigate the spread of infectious disease is crucial in managing disease spread. The talk also covered the Karnataka State-wide Seroprevalence study. This session was live streamed on BLiSC YouTube Channel.

Contact Info: tripathya@instem.res.in

**Website link:**
https://instem.res.in/

## NASI & IBSD organize webinar on Jagrukta Abhiyan for COVID-19 pandemic

A webinar on Jagrukta Abhiyan for COVID-19 pandemic with special reference to bioresources was jointly organized by DBT-Institute of Bioresources and Sustainable Development (IBSD), Imphal and National Academy of Sciences, India (NASI), Prayagraj on December 10, 2020. The webinar was part of NASI's nationwide awareness campaign 'Jagrukta Abhiyan for COVID appropriate behaviour'. It was organized for the first time in northeast India. The initiative was supervised and chaired by former Secretary of Department of Biotechnology (DBT), Govt. of India, Prof. (Mrs) Manju Sharma.

The event was organized to spread awareness among the masses and highlight the preventive measures such as social distancing, self-hygiene and use of face masks. Prof. Pulok K. Mukherjee, Director, IBSD delivered the welcome address. The Inaugural address of the virtual event was given by Dr. Renu Swarup, Secretary, DBT, New Delhi. Dr. V.M. Katoch, NASI-ICMR Chair on Public Health Research at RUHS, Jaipur gave a keynote address on "Socio behavioral transformation in the COVID-19 pandemic situation".

Eminent personalities from various institutes and universities were present and also delivered talks on their topic of expertise. Prof. Akhilesh Tyagi, JC Bose National Fellow, Department of Plant Molecular Biology, University of Delhi spoke on "Approaching Bioeconomy through Agri-biotechnology"; Prof. Pulok K. Mukherjee, Director, IBSD delivered a presentation on "Reimagine Ethnopharmacology in COVID 19 pandemic"; Dr. Sanjeev Sinha, Professor of Medicine, AIIMS, New Delhi delivered a talk on the "Management of COVID-19".

Prof. Ch. Debeshwar Singh, Head, Respiratory Medicine, Jawaharlal Nehru Institute of Medical Sciences (JNIMS) Hospital, Imphal spoke on "Management of COVID-19"; Dr. Ajay Parida, Director, Institute of Life Sciences (ILS), Bhubaneshwar delivered a talk on "Testing, diagnostics for COVID-19 pandemic"; Prof. S.R. Joshi, Dept of Biotechnology & Bioinformatics, NEHU, Shillong delivered on the topic "COVID-NER perspectives". The webinar ended with a concluding remark by Prof. Paramjit Khurana, Dept of Plant Molecular Biology, Delhi University. Prof. Pulok K. Mukherjee Director, IBSD was the organizing secretary; Dr. Nanaocha Sharma and Dr. S. Indira as joint coordinator of IBSD while Archana Pant as NASI coordinator. The webinar was attended by around 200 participants including students, scientists and research scholars.

Contact Info: director.ibsd@nic.in

**Website link:**
https://ibsd.gov.in/ibsd/home/index.php

## Mutation in coronavirus not likely to affect vaccine development: CSIR DG

Amid concerns about a new coronavirus variant found in the United Kingdom (UK), CSIR Director-General, Dr Shekhar C. Mande said that the mutation in the coronavirus will not affect vaccine development as vaccine invokes the overall immunity of the body.

He said people should be cautious as scientists in the UK have said that the new strain is more transmissible. "The reported mutation in coronavirus should not impact vaccine development in any way because vaccine invokes the overall immunity of the body," Dr Mande told ANI.

"COVID-19 vaccine is likely to fight off any mutation because the mutations are only minor mutations which take place at one or two or at the most ten locations but the vaccine or the antibodies that are generated are against the entire viral genome. So, in principle, the vaccine will be as effective even with the mutated virus stream," he added.

Dr Mande sounded a note of caution by saying that the mutation in the virus is more transmissible as has been reported by the scientists of the UK.

"What has happened is that people in the UK have observed certain mutations in the viral genome sequence. The UK scientists have gone on record to say that this mutation is more transmissible. They have made the claim that person-to-person transmission is more in this mutated virus. The scientific world has not seen this claim but it has been reported in the media so we will have to believe the claim," he said.

"However, whether this particular mutated virus is deadlier or not in terms of the outcome of the disease is not known as of now. So there is no need to worry as far as the final outcome of the disease is concerned. What we should worry about is that it is more transmissible as said by the scientists of the UK," he added.

Dr Mande said that the mutation may cause slight variation in RT-PCR tests but it may not have much effect on antibodies test if the antibodies are polyclonal.

"In terms of RT-PCR antigen tests, it recognises a specific element of the viral genome or ribonucleic acid (RNA). If there is a mutation in the small sequence then RT-PCR results may slightly vary. Similarly, for the antigen tests, there may be some effect in the case of monoclonal antibodies but if the antibodies are polyclonal then they may not have much effect on the antibodies test," he said.

Health Ministry has said that a new variant of SARS-CoV-2 virus has been reported by United Kingdom (UK) to the World Health Organization (WHO).

It said this variant is estimated by the European Center for Disease Control (ECDC) to be more transmissible and affecting the younger population.

"This variant is defined by a set of 17 changes or mutations. One of the most significant is an N501Y mutation in the spike protein that the virus uses to bind to the human ACE2 receptor. Changes in this part of the spike protein may result in the virus becoming more infectious and spreading more easily between people," the ministry said.

**Website Link:**
https://www.csir.res.in/slider/mutation-coronavirus-not-likely-affect-vaccine-development-csir-dg

## COVID-19 vaccine will be equally effective against new mutant of coronavirus: CSIR DG

The coronavirus vaccines will be equally effective against the new mutant of the virus and there is no reason to panic, said CSIR Director General, Dr Shekhar C. Mande.

He said the transmissibility of the new strain N501Y is a "bit higher" but this does not mean it is more lethal and more people are going to die due to it. "It is likely that there will be differences between certain aspects like antibodies but it doesn't necessarily mean that vaccines will be ineffective. Vaccines will be equally effective despite the mutation. So there is no reason to panic," Dr Mande told PTI.

Indian institutions have sequenced over 4,000 genomes of the coronavirus and submitted to the Global Initiative on Sharing All Influenza Data (GISAID). The CSIR's Institute of Genomics and Integrative Biology (IGIB), Delhi and Centre for Cellular and Molecular Biology (CCMB), Hyderabad have alone done sequencing of over 2,200 genome sequences of coronavirus in India.

Dr Mande said, "We have not found this (particular mutation) in Indian isolates yet." He said scientists in India and all over the world are watching this variant closely. The mutation has been independently observed in the UK, Brazil and South Africa.

"Scientists are looking at the mutations very closely. It is too early to draw any conclusions," Dr Mande said. He said the new variant can be diagnosed with the RT-PCR but it needs to be assessed if it can be equally effective for the Rapid Antigen tests. "But there is nothing to suggest it (RAT) does not work right now," he said. He also said that there might be differences in the monoclonal (lab-made) antibodies which recognise the particular region in a virus which is not otherwise mutated.

"But in the mutated virus that monoclonal antibody may not effectively work against this changed variant," he added.

**Website link:**
https://www.deccanherald.com/national/covid-19-vaccine-will-be-equally-effective-against-new-mutant-of-coronavirus-csir-dg-929962.html

## New Coronavirus Strain: Genome sequencing takes 24 hours to detect mutant variant, says CSIR Chief

At a time when the new coronavirus strain has caused panic in the UK and other parts of the world, including India, DG, CSIR, Dr Shekhar C. Mande said that it takes minimum 24 hours to detect the new mutant variant.

He stated that the genome sequencing tests being used in the hunt for the mutant strain of the coronavirus takes up to 24 hours and added that the COVID-19 vaccines being tested and developed should be effective against it.

Taking preventive action against the virus, six labs across India have been set up to conduct the genome sequencing tests to find out the presence of the new mutant strain of the coronavirus. The samples of passengers who tested COVID positive after arriving from the UK are being sent to these labs. Notably, two of these labs – Institute of Genomics in Delhi and Centre for Cellular and Molecular Biology in Hyderabad come under the CSIR.

Dr Mande also stated that the vaccines are made in such a way that it targets the virus in a much bigger way and from many sides so they will still generate an immune response.

Replying to a query on whether India should carry out genome sequencing at a much larger scale, Dr Mande said that sequence-based surveillance has to be better in India.

Talking about the new coronavirus strain in UK, he stated that some of the mutations found in this strain have also been observed in other geographies like South Africa and Brazil and these mutations happen spontaneously.

**Website Link:**

https://www.india.com/news/india/new-coronavirus-strain-genome-sequencing-takes-24-hours-to-detect-mutant-variant-says-csir-chief-4288223/

## COVID making itself antibody resistant? India already has 19 variants of coronavirus

Like elsewhere, coronavirus is quietly changing in India, making itself resistant to antibodies. As of now, 19 such variants are already present in the country, researchers associated with multiple government institutions have established.

Scientists attached with the CSIR - Institute of Genomics and Integrative Biology in Delhi, the Academy of Scientific and Innovative Research and Kurnool Medical College, Kurnool, Andhra Pradesh, analysed over 2,40,000 SARS-COV-2 genome sequences from 133 countries and identified 86 with escape mutants or variants with genetic changes that make them resistant to antibodies.

Nineteen of these 86 variants were found in India. An escape mutation is one that allows SARS-COV-2 to evade antibodies specific to the spike protein the virus uses to enter human cells.
All vaccines are designed to generate antibodies against the spike protein to try to block the virus' entry into cells.

The findings come at a time when the government has decided to accelerate genome sequencing to track changes in the pathogen after a variant of SARS-CoV-2 in the UK had significant structural and behavioural changes, making it 70% more infectious that the original COVID strain.

"There is no need to be alarmed but definitely a need to be cautious," Vinod Scaria, a scientist with CSIR-IGIB and joint first author of the paper told the media.

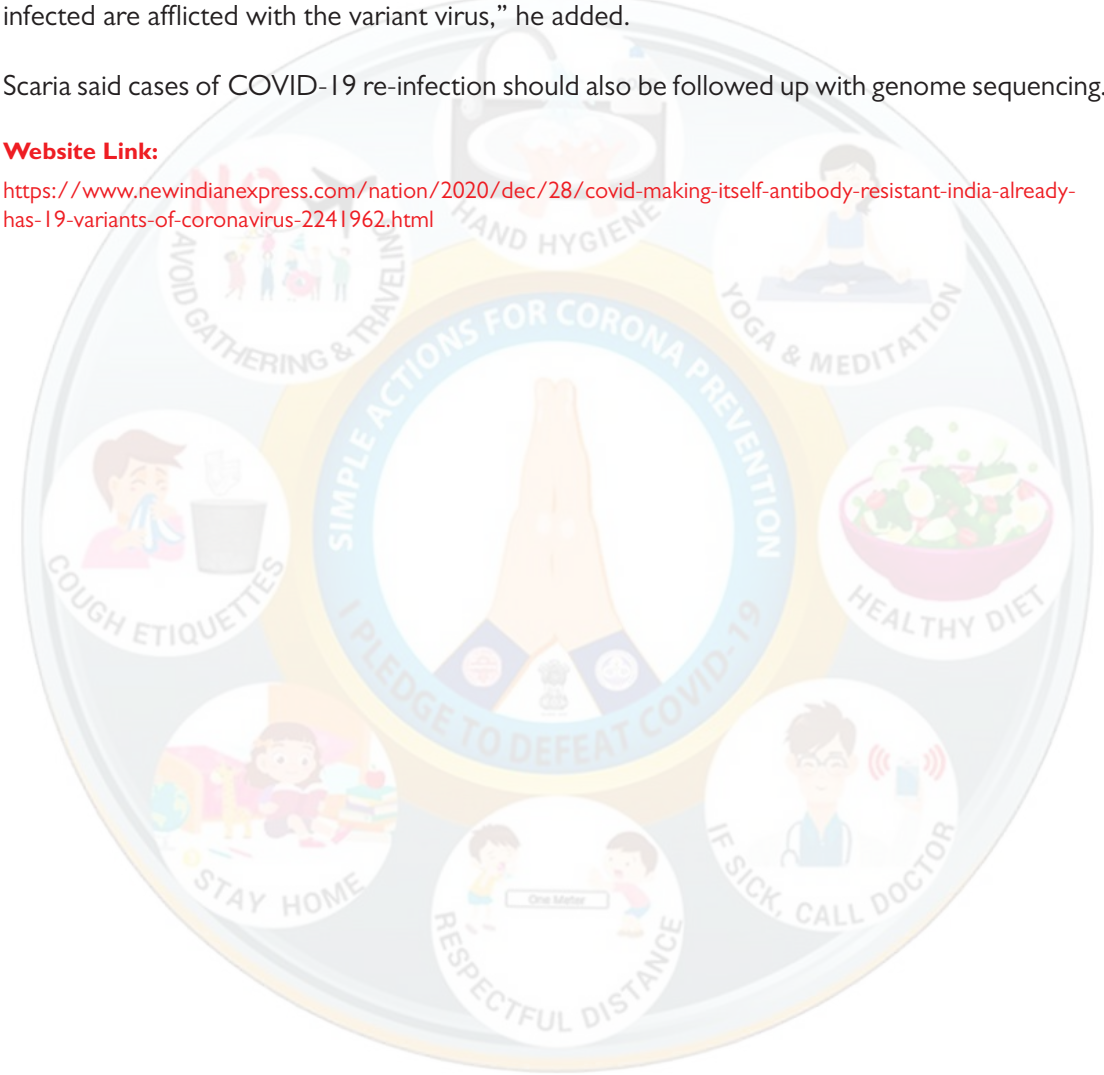
"The variations in the virus do not mean that the vaccine will not work against it but is likely to lower its efficacy," he said.

"During the trials of the vaccine, too, it needs to be analysed whether those who are getting infected are afflicted with the variant virus," he added.

Scaria said cases of COVID-19 re-infection should also be followed up with genome sequencing.

**Website Link:**

https://www.newindianexpress.com/nation/2020/dec/28/covid-making-itself-antibody-resistant-india-already-has-19-variants-of-coronavirus-2241962.html



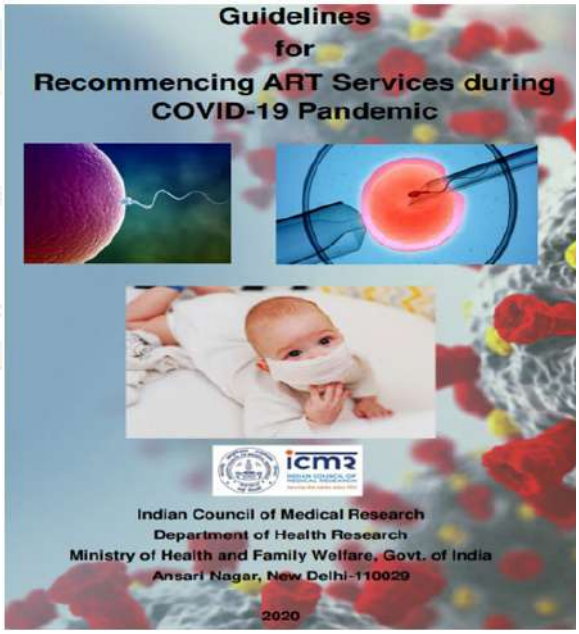
BY

# INDIAN COUNCIL OF MEDICAL RESEARCH (ICMR) AND MINISTRY OF HEALTH & FAMILY WELFARE (MoHFW)

## ICMR issues guidelines for recommencing Assisted Reproductive Technology (ART) services during COVID-19 Pandemic

As we all are battling the COVID-19 pandemic together, our return to normal daily activities will also need our healthcare system to restart the Assisted Reproductive Technology (ART) services. There are many repercussions regarding recommencing the ART procedure during COVID-19 pandemic as it's still unclear what impact COVID-19 has on a pregnant woman or her fetus. Patients might worry about the risks of getting infected with COVID-19 and whether it's safe to embark on pregnancy through ART services right now. The impact of COVID-19 is still not clear and these ART procedures tax the patients financially and emotionally, it is therefore necessary for all the ART clinics to undertake ART procedures in a way that must ensure high-quality patient care and make strategies that will minimize individual exposure risk. At present, a total of 1866 ART clinics and banks have been identified under the National Registry of ART clinics and banks in India. This calls for strict vigilance of ART services in the country and it is imperative that meticulous steps are taken to promote safe practices so that the risks related to SARS-CoV-2/COVID-19 are minimized, both for the patients and the ART clinic staff.

To overcome this situation, ICMR has released guidelines for recommencing ART services during COVID-19 Pandemic. These guidelines has been prepared with the intent of guiding all the ART clinics across the country to resume their services in a stepwise manner keeping in mind the risks of Covid19 infection to be balanced against the benefits of the patients who need infertility treatment. However, these recommendations must be followed in keeping with the local and national guidelines at the prevailing time and these are subject to change in the face of ever evolving scientific and economic situations.




**Website Link:**
https://www.icmr.gov.in/pdf/covid/techdoc/Guidelines_ART_during_COVID19_revised.pdf

## 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; drneetu.vijay@icmr.gov.in

**Website Link:**
https://www.icmr.gov.in/pdf/tender/Revised_EOI_for_Ag_kit_validation_02122020.pdf

## Ministry of Health releases SOP for surveillance and response for new SARS Cov-2 variant

A new variant of SARS-CoV 2 virus [Variant Under Investigation (VUI)-20212/01] has been reported by the Government of United Kingdom (UK) to World Health Organization (WHO). This variant is estimated by European Center for Disease Control (ECDC) to be more transmissible and affecting younger population. This variant is defined by a set of 17 changes or mutations. One of the most significant is an N501Y mutation in the spike protein that the virus uses to bind to the human ACE2 receptor. Changes in this part of the spike protein may result in the virus becoming more infectious and spreading more easily between people. In this context, Ministry of Health & Family Welfare (MoHFW) published SOP for surveillance and response for the new SARS Cov-2 variant. This Standard Operating Procedure (SOP) describes 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 UK during last four weeks (from 25th November to 23rd December 2020). Any reference to testing in this SOP implies RT-PCR testing only.

**Website Link:**
https://www.mohfw.gov.in/pdf/SOPforSurveillanceandresponseforthenewSARSCov2variant.pdf

## Ministry of Health and Family Welfare launches a new initiative, Indian SARS-CoV -2 Genomics Consortium (INSACOG), to monitor its genomic variants

Ministry of Health and Family Welfare (MoHFW) launched a new initiative, Indian SARS-CoV -2 Genomics Consortium (INSACOG), to monitor the genomic variations in the SARS-CoV-2 on a regular basis through a multi-laboratory network. This vital research consortium will also assist in developing potential vaccines in the future. In the present scenario, the effective genome surveillance is established with the following objectives:

1. To ascertain the current status of new variant of SARS-CoV-2 (SARS-CoV-2 VUI 202012/01) in the country
2. To establish a sentinel surveillance for early detection of genomic variants with public health implication
3. To determine the genomic variants in the unusual events/trends (super-spreader events, high mortality/morbidity trend areas etc.)

**Website Link:**
https://www.mohfw.gov.in/pdf/IndianSARSCoV2PDFGenomicsConsortiumGuidanceDocument.pdf

BY

# MINISTRY OF ELECTRONICS AND INFORMATION TECHNOLOGY (MeitY)

## Government launches grand challenge for developing COVID vaccine intelligence network

As the world moves closer to COVID-19 vaccine availability, governments and healthcare organizations will require developing flexible technology solutions/platforms across the entire gamut of vaccine inventory management, administration, appointment scheduling, notifications, outcome monitoring, and other necessary support for a frictionless distribution of billions of doses of vaccines around the country.

The Electronic Vaccine Intelligence Network (eVIN) system, which provides real-time information on vaccine stocks and storage temperatures across all cold chain points in the country, is being enhanced to address the needs for distribution and tracking of COVID-19 vaccine.

The CoWIN system will be a subset of COVID India Portal which provides end to end management of COVID19. Short note and technology stack of CoWIN system. Now governments and healthcare organizations also need to think beyond this and devise cost effective mechanisms using emerging technologies including AI and ML to manage COVID19, to check for better monitoring of vaccinated patients and public in general.

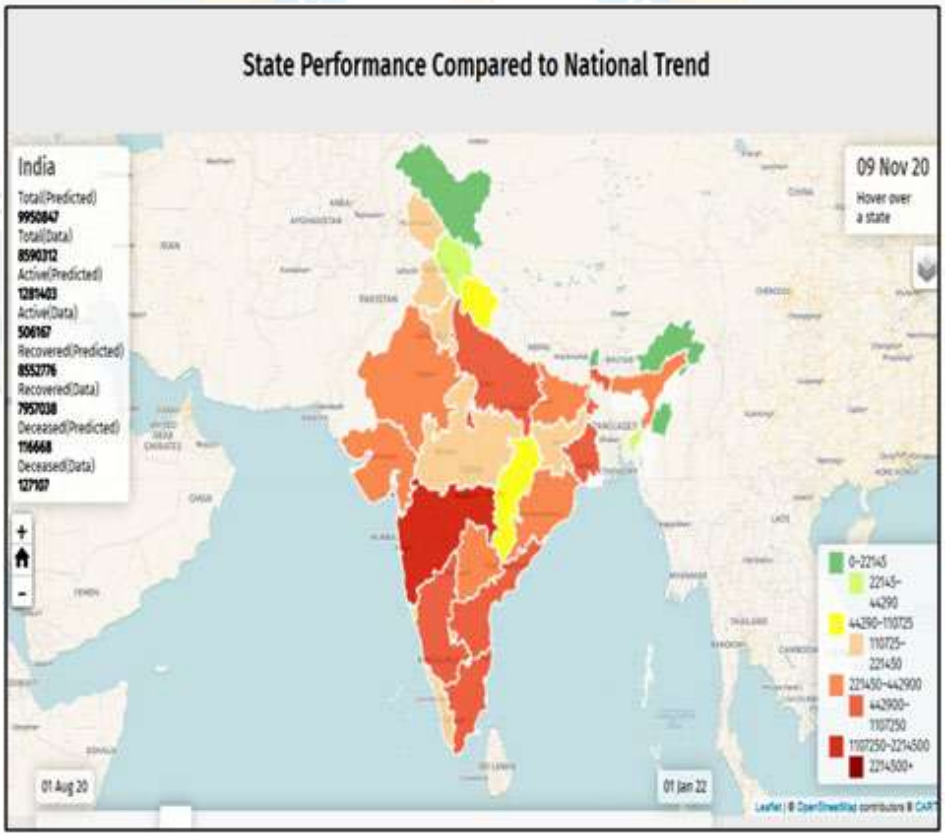
To harness the talent and innovative ideas of new startups / new technology specialists, Grand Challenge is organised in phase wise manner. On this line of thought, Phase-I of this challenge envisages to strengthen the CoWIN Network. This initiative may be further extended to Phase-II to find solutions with respect to different aspects of COVID 19 in the future.


Last date to apply: 15 January 2021

**Website Link:**
https://app.thebizplanner.com/public/application/inc/5fc1e1535a3c7671a744dba0

## IISc develops multidimensional PDE-based model of Covid-19 infections

The team consisting of Prof. Sashikumaar Ganesan and Prof. Deepak Subramani of CDS at Indian Institute of Science (IISc), Bengaluru has developed a model which is considered a paradigm shift in mathematical modelling of infectious diseases. It provides prediction of all India and state-wise confirmed, recovered, active and deceased COVID-19 cases based on the multi-dimensional PDE model. The prevalence estimates from serosurveys have been included in this model. The results of the model are based on various scenarios analysis. Moreover, the forecast range of all predicted scenarios can be viewed by enabling the uncertainty region in the time series plots. The region may be interpreted as the "Confidence Interval" for the forecast numbers.




Contact Info:
sashi@iisc.ac.in, deepakns@iisc.ac.in

**Website Link:**
https://cmg.cds.iisc.ac.in/covid/#home

## IISc develops an optimal design of serosurvey for disease burden estimation in a population

Indian Institute of Public Health, Bengaluru, in association with IISc Bengaluru has found a methodology by which an epidemiologist may arrive at an optimal design for a survey whose goal is to estimate the disease burden in a population. For serosurveys with a given budget of C rupees, a specified set of tests with costs, sensitivities, and specificities, it shows the existence of optimal designs in four different contexts, including the well-known c-optimal design. Obtained results are applicable to a wide range of epidemiological surveys under the assumptions that the estimate's Fisher-information matrix satisfies a uniform positive definite criterion.

Contact Info: epigiridhar@gmail.com, rajeshs@iisc.ac.in

**Website Link:**
https://covid19.iisc.ac.in/covid-19-optimal-design-of-serosurvey-for-disease-burden-estimation/

## IIT Mandi develops disruptive solutions to fight COVID-19

Indian Institute of Technology (IIT) Mandi has done numerous research work and innovations to combat COVID-19. These include research on comparing disordered proteins in COVID-19, research on tracking the spread of COVID-19 in India via social networks, high-efficiency face masks from waste 'PET bottles', Wi-Fi-operated smart ventilator, UV-C disinfection box, etc.


**Website Link:**
http://www.iitmandi.ac.in/Newspaper_reports/index.php

## IISc conducts study on the Mumbai Suburban Railway to isolate asymptomatic spreaders

The impact of unique initiative called "Cohorting" on Mumbai Suburban Railways has been studied to reduce disease transmission. Cohorting is a concept of forming groups of travellers that always travel together, and it is to be used as an additional policy to reduce disease transmission on locals without severe restrictions. Agent-based models are being used to simulate the impact of cohorts. It provides a natural way to represent cohorts along with the representation of the cohort members with the larger social network. This paper also describes a novel multi-scale agent-based model to study the impact of cohorting strategies on COVID-19 dynamics in Mumbai. The results show that cohorts can provide significant benefit in terms of reduced transmission without significantly impacting ridership and/or economic and social activity. This is a pre-print study which has not been peer-reviewed yet.

Contact Info: rajeshs@iisc.ac.in

**Website Link:**
https://covid19.iisc.ac.in/cohorting-to-isolate-asymptomatic-spreaders-an-agent-based-simulation-study-on-the-mumbai-suburban-railway/

https://arxiv.org/abs/2012.12839

# 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

### NITI Aayog releases Vision 2035 for Public Health Surveillance in India

India has made substantial progress in the prevention, control, and elimination of major communicable diseases. Smallpox was eradicated worldwide and Polio has been eliminated in India. India has substantially reduced the incidence of HIV infections by more than half in the last two decades. Recent outbreaks including the COVID-19 and Nipah virus have been effectively contained or controlled.


The National Institute for Transforming India (NITI Aayog) functions as a think tank and resource centre or knowledge hub, fosters cooperative federalism, designs policy and program framework and guides monitoring and evaluation of National Programs in India. The COVID-19 pandemic has provided an opportunity to revisit (re)emerging diseases due to increased interaction between human-animal-environment. Early identification of this interface is essential to break the chain of transmission and to create a resilient surveillance system. NITI Aayog releases a vision document on Public Health Surveillance in India by 2035. The vision document is a white paper that articulates the vision and describes building blocks. It envisions integration, enhanced citizen-centric and community-based surveillance, strengthened laboratory capacity, expanded referral networks, and a unified Surveillance Information Platform that will provide data for decision making and action.

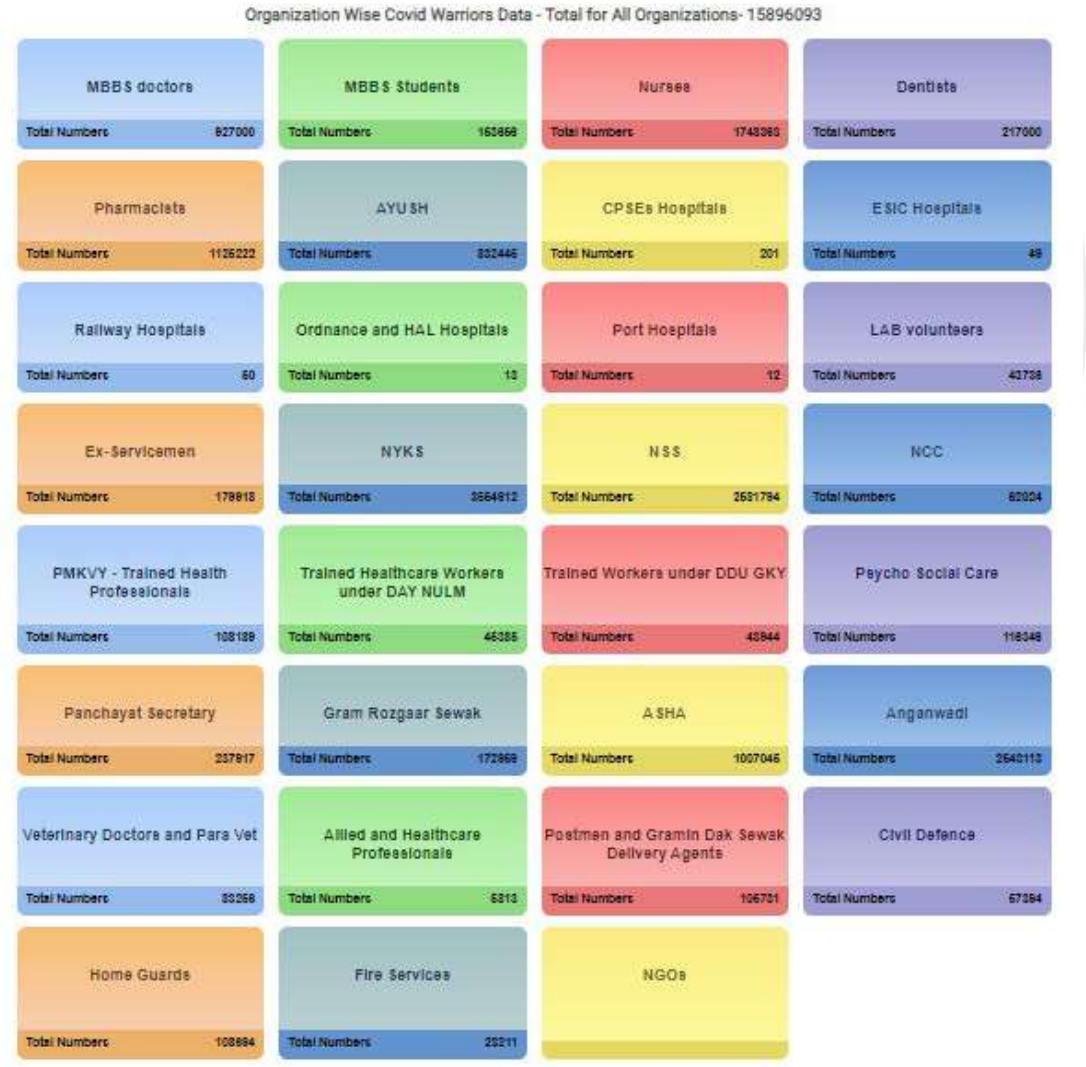
**Website Link:**
https://niti.gov.in/sites/default/files/2020-12/PHS_13_dec_web.pdf

## Online Database of COVID Warriors

COVID Warrior refers to public healthcare providers including community health workers, who may have to be in direct contact and care of COVID-19 patients and who may be at risk of being impacted by this. Private hospital staff and retired/volunteer/local urban bodies/contractual/ daily wage/ad-hoc/outsourced staff requisitioned by States/Central hospitals/autonomous hospitals of Central/States/UTs, AIIMS and INIs/Hospitals of Central Ministries drafted for COVID-19 related responsibilities are also included.

Every day, the selfless warriors are giving it their all in health-care settings while cutting themselves off from their families and loved ones. The sacrifice that they are making for the safety and welfare of humanity is priceless and deserves lifelong gratitude on our end. Moreover, the world needs to work towards advancement in medical research and technology. Nothing will be a greater tribute to the health-care workers than this.

Here is the snapshot of institution-wise COVID warriors:




**Website link:**

https://covidwarriors.gov.in/default.aspx

## Government of India presents regular COVID-19 India factsheet

India's coronavirus cases have crossed 1 crore mark and as on 29th December 2020, 08:00 AM, stands at 1,02,24,303 cases out of which 98,07,569 have recovered. The recovery rate stands at 95.9% while the case fatality rate stands at 1.45%, the lowest in the world.


**Website link:**
https://covidwarriors.gov.in/default.aspx

# Efforts from Vigyan Prasar

## 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 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 of the information products produced by India Science.

1. Weekly COVID-19 video bulletin: Produced in both Hindi and English language weekly basis from 7 July 2020, COVID-19 bulletin apprises the audience about the latest development happening in S&T in India that are helping in managing and overcoming the challenges thrown up by the pandemic. Vigyan Prasar produced daily COVID Bulletin from 11th April to 06 July 2020. Thereafter, a weekly bulletin is being produced which provides the most important S&T updates for the country related to COVID-19 front.
2. COVID-19 Explained - Short films to explain important research finding related to COVID-19 in layman's lingo produced weekly basis. The subjects chosen for this short film caters to the curiosity of common man related to COVID-19.
3. Facebook live sessions on interviews of various stakeholders and media with DST Secretary.
4. Facebook and India Science live sessions on interviews of various resources person on COVID-19.

Contact info: kapil@vigyanprasar.gov.in

**Website Link:**
https://www.indiascience.in/

## India Science, Technology and Innovation (ISTI) Web Portal

The India Science, Technology and Innovation Portal (ISTI) is a one-stop window for information about developments in India on science, technology and innovation. The portal focuses on bringing all stakeholders and Indian STI activities on a single online platform; helping efficient utilisation of resources; highlighting functioning of scientific organisations, laboratories and institutions; aggregating information on science funding, fellowship and award opportunities spanning from school to faculty level; pooling together conferences, seminars and events; and projecting science in India with its major achievements. The ISTI web portal has been developed by Vigyan Prasar, an autonomous organisation of the Department of Science and Technology (DST).


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

The web portal provides all information related to COVID-19, its presentation of symptoms, transmission modes and mechanisms, and various models of protection of individuals, healthcare professionals and prevention from spreading to the community. The reasons, usefulness, and impact of social distancing have been communicated in an easy-to-understand manner. Around 2400 stories related to S&T efforts towards mitigating the COVID-19 pandemic have been captured on the portal.

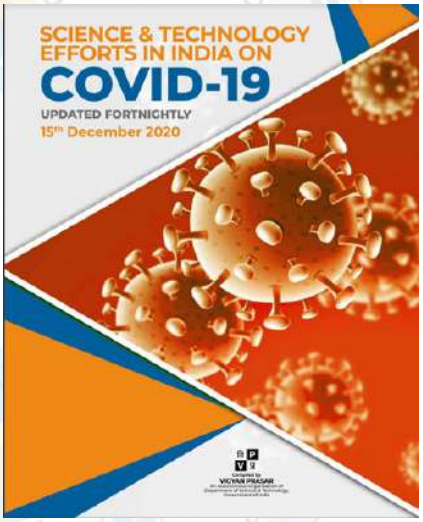
The Research and Development efforts made at Ministry level and various funding organisations are enumerated here on as-and-when-available basis. The innumerable infographics have been provided here are sourced from various organisations for efficient delivery of the information and targeting the common people as the largest stakeholder. The frequently asked questions and myth busters are also answered here.

Contact Info: kdgm@vigyanprasar.gov.in

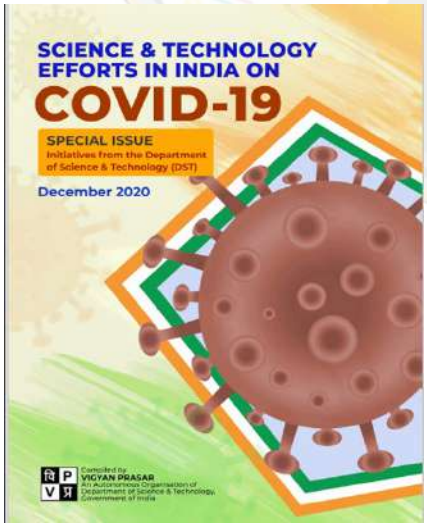
**Website link:**
http://indiascienceandtechnology.gov.in/covid-19-the-pandemic

## 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 December 2020, a special edition has been published containing the compilation of all the initiatives taken up and facilitated by Department of Science & Technology (DST), Government of India.

Contact Info: kdgm@vigyanprasar.gov.in

**Website link:**
https://vigyanprasar.gov.in/covid19-newsletters/

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

# CORONAVIRUS VACCINE: INDIAN SAGA SO FAR

Almost from last year, the world has been facing an unprecedented public health crisis in the form of COVID-19 pandemic. India has adopted a proactive and graded response for fighting COVID which includes imposing a timely lockdown, gearing up the health system, boosting the production of necessary medical supplies, and catalysing large-scale behavioural change, at the same time, by making citizens conscious about personal hygiene (hand and respiratory) and public hygiene, for protecting and improving the health of the community.

India has made substantial progress in the prevention, control, and elimination of major infectious diseases. Smallpox was eradicated worldwide, and Polio has been eliminated in India. India has substantially reduced the incidence of HIV infections by more than half in the last two decades. The COVID19 pandemic has further challenged the country. India rapidly ramped up its diagnostic capabilities and aligned its digital technology expertise that ensured there was a comprehensive tracking of the pandemic. As well, relevant information was widely shared with the public. India rapidly instituted both case-based (Trace, Test, Treat) and population-based measures (wear masks, wash hands, maintain distance, avoid crowding and closed spaces) for COVID19 prevention, management, containment, and control. COVID-19 is an excellent example of the country's rapid response to a public health emergency of international concern, and its capacity to accelerate laboratory capacity and digitise, analyse and use the information for action.

The COVID-19 pandemic 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 of enhanced capabilities and the novel necessities. 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. The coronavirus has also revealed something profound about the way societies should treat knowledge.

Currently, the world is in the midst of a COVID-19 pandemic. All the agencies and institutions are working together on the response – tracking the pandemic, advising on critical interventions, distributing vital medical supplies to those in need – for which, they are racing to develop and deploy safe and effective vaccines. Vaccines save millions of lives every year. Vaccines work by training and preparing the body's natural defences – the immune system – to recognise and fight out the microorganisms they target. If the body is exposed to those disease-causing germs later, the body is immediately ready to destroy them, preventing illness.

Worldwide, there are currently more than 50 COVID-19 vaccine candidates in clinical trials, and around 150 vaccine candidates in preclinical trials. The Government of India has announced a dedicated stimulus package of INR 900 Crore for the Mission COVID Suraksha – The Indian COVID-19 Vaccine Development Mission. This grant has been 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, aims to consolidate all available and funded resources towards accelerated product development, which, in turn, worked as an enabler for accelerating the development of approx. 5-6 vaccine candidates and ensuring that these are brought closer to licensure (with DGCI and CDSCO), and introduction in the market for consideration of regulatory authorities for introduction in public health systems, to combat further spread of COVID infection.

India is actively considering three vaccine candidates - BioNTech/Pfizer's coronavirus vaccine; one being developed by the SII in partnership with AstraZeneca and Oxford University, and the last one is the indigenous inactivated vaccine based on the SARS-CoV 2 virus in collaboration with the Indian Council of Medical Research (ICMR) and the National Institute of Virology (NIV), Pune by Hyderabad-based Bharat Biotech.

Following are the Institutions that have been granted test license permission to manufacture COVID-19 vaccine for preclinical testing, examination and analysis to the following manufacturers in India.

1. Serum Institute of India Pvt Ltd, Pune
2. Dr Reddy's Lab, Hyderabad
3. Cadila Healthcare Ltd (Zydus Cadilla), Ahmedabad
4. Bharat Biotech International Ltd, Hyderabad
5. Biological E Ltd, Hyderabad
6. Genova Biopharmaceuticals, Pune
7. Reliance Life Sciences Pvt Ltd, Mumbai
8. Aurbindo Pharma Limited, Hyderabad
9. Gennova Biopharmaceuticals Limited, Pune

National Expert Group on Vaccine Administration for COVID 19 was constituted on 7th August 2020, under the chairmanship of member (Health) from NITI Aayog and Secretary, Ministry of Health and Family Welfare (MoHFW) as Co-chair to guide the roll-out plan of COVID-19 vaccine. This committee is planning to prioritise population groups, procurement and inventory management, vaccine selection, vaccine delivery and tracking mechanism. The Indian government has started the preparatory activities to roll out the colossal vaccination drive through Co-WIN, the Digital Platform. Based on the electoral experience and universal immunisation programme, the multi-level coordinating mechanism will be used in collaboration with states/UTs at the level of states, districts, and blocks.

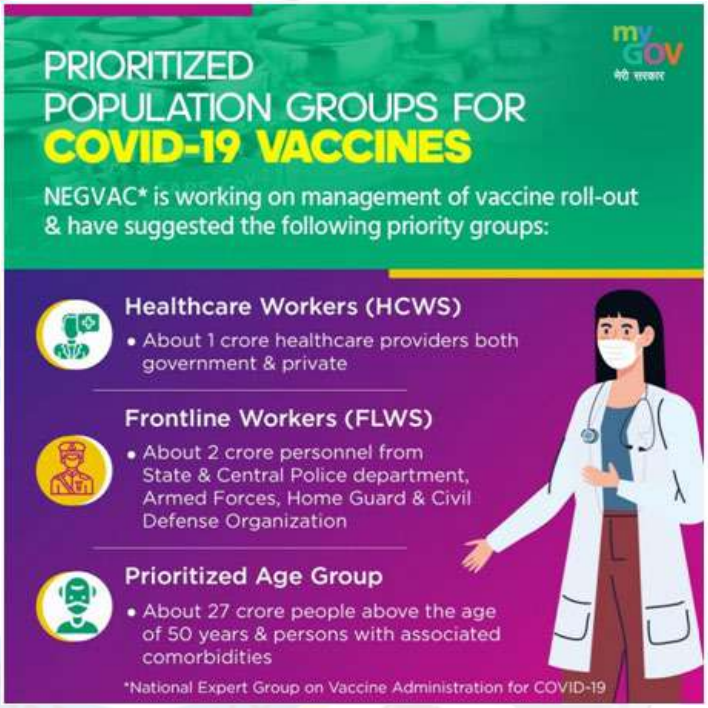
As per the strategy, prepared by MoHFW, 60 crore doses will be administered to the 30 crore Indians in the first phase. It would include one crore healthcare workers (HCWs), two crore frontline workers including the personnel from state and the central police department, armed forces, home guard, and civil defence organisation, including disaster management volunteers and municipal workers (excluding HCWs), and twenty-seven crore people above the age of 50 years. After this, vaccines will be given to those below 50 years of age suffering from a chronic critical illness. Data collection, uploading on Co-WIN software, monitoring, and verifying process are in progress. The concern authorities planned and executed state steering committee meetings and state task force meetings from state to block level.

**Here are the details of official press releases related to vaccine development and roll-out plan, in last one week:**

## Government gears up for roll-out of COVID-19 vaccine

25th December 2020, New Delhi

The Central Government is gearing up for the roll-out of COVID19 vaccine across the country. As the vaccine administrators will play an essential role in the vaccination process, trainers and those who shall administer the vaccine have been taken up across various States.




To strengthen the capacity of our human resource for COVID-19 vaccine introduction and roll-out, detailed training modules have been developed for different categories of vaccine handlers and administrators including medical officers, vaccinators, alternate vaccinators, cold chain handlers, supervisors, data managers, ASHA coordinators and all others involved in the implementation process at different levels. The training includes all operational aspects of activities like the organisation of vaccination sessions, use of Co-WIN IT platform to manage the entire vaccination process, deployment of HR Cold chain preparedness, management of adverse events, communications and inter-sectoral coordination, biomedical waste management, infection prevention protocols etc.

A total of 2,360 participants were trained during national level Training of trainers, comprised of state immunisation officers, cold chain officers, IEC officials, development partners etc. The State level training had been completed in all States/UTs with more than 7000 district level trainees, except Lakshadweep, which will soon conduct it (29th December). Cascading down, 681 districts (49,604 trainees) have completed Medical Officers' training on operational guidelines. Vaccination team training was completed in 1399 out of 17831 blocks/ planning units. It is ongoing in the other blocks.

To facilitate redressal queries on COVID-19 vaccination and Co-WIN portal related queries, national 1075 and state 104 Helpline capacity have also been strengthened to address questions beyond their routine support.

To prep up for the administration of COVID-19 vaccine and assess the planned activities' readiness, a dry run has been scheduled in four states to start with, viz. Andhra Pradesh, Assam, Gujarat, Punjab considering the geographical locations. Each state will plan it in two districts

and preferably in different (five) session type settings, e.g. district hospital, CHC/PHC, urban site, private health facility, rural outreach, etc. This will exercise enable end-to-end mobilisation and testing of COVID-19 vaccination process (except the vaccine) and check the usage of Co-WIN in the field environment, the linkages between planning, implementation and reporting mechanisms and identify challenges and guideway forward before actual implementation including improvements that may be required in the envisaged process. This will also provide hands-on experience to programme managers at various levels. This two-day activity is planned on 28th & 29th December 2020. It will include activities from the necessary data entries in Co-WIN to vaccine receipt & allocation to the deployment of team members, mock drill of session sites with test beneficiaries to reporting and evening meeting. This will also include testing for cold storage and transportation arrangements for COVID19 vaccine and crowd management at the session sites with proper physical distancing.

An essential focus of the dry run will be managing any possible adverse events following immunisation (AEFI). Also, adherence and management of infection control practices at the session site to prevent disease transmission. The mock drill will include concurrent monitoring and review at the block and district levels, and preparation of feedback shared with the State and Union Health Ministry.

Detailed checklist has been prepared by the Union Health Ministry and shared with the four States to guide them in the dry run. The National Expert Group on Vaccine Administration of COVID-19 (NEGVAC) has recommended three prioritised population groups including Healthcare Workers (HCWs) (about one crore), Frontline Workers (FLWs) (about two crores), and Prioritised Age Group (approximately 27 crore). As vaccines are temperature sensitive and need to be stored in specific temperature, the present cold chain system consisting of 85,634 equipment for vaccine storage at about 28,947 cold chain points across the country will be used for the cold chain administration. The current cold chain can store the additional COVID-19 vaccine required for the first 3 Crore prioritised population, i.e. Health Care Workers and Front Line Workers.

## National Task Force Discusses testing, treatment and surveillance strategies for COVID-19 in view of the new virus strain from the UK

26th December 2020, New Delhi

ICMR convened a meeting of the National Task Force (NTF) on COVID-19 under co-chairpersonship of Prof. Vinod Paul, Member NITI Aayog and Prof. Balram Bhargava, Secretary, Deptt. of Health Research & Director General ICMR. The meeting was also attended by Prof. Randeep Guleria, Director, AIIMS; Director General Health Services (DGHS); Drug Controller General of India (DCGI); Director, National Center for Disease Control (NCDC); other representatives from Ministry of Health and ICMR as well as independent subject experts.

The main objective of the NTF was to discuss evidence-based modifications in testing, treatment and surveillance strategies for SARS-CoV-2 in view of the recent reports of emergence of a new variant strain of the virus from the UK. The variant strain has 14 non-synonymous (amino acid altering) mutations, six synonymous (non-amino-acid altering), and three deletions. Eight mutations are present in the Spike (S) gene which carries the binding site (Receptor Binding Domain) of the ACE2 receptors, which are the point of entry of the virus into the human

respiratory cells.

NTF deliberated in detail on the current National Treatment Protocol, testing strategy and surveillance of SARS-CoV-2 vis-à-vis the UK variant strain. It was emphasised that since the UK variant strain is implicated in causing increased transmissibility of the virus, it is critical to identify individuals infected with this strain and adequately contain them to prevent its transmission in India.

NTF concluded that there is no need to change the existing Treatment Protocol in view of mutations emerging in the strain. Further, since ICMR has always advocated using two or more gene assays for testing SARS-CoV-2, it is unlikely to miss infected cases using the current testing strategy.

NTF recommended that it is critical to conduct enhanced genomic surveillance for SARS-CoV-2, especially in incoming passengers from the UK, in addition to the existing surveillance strategies. It will also be critical to conduct genome sequencing in samples where there is a dropout of the S gene in lab diagnosis, proven re-infection cases, etc. Routine genomic surveillance of SARS-CoV-2 from representative samples all across the samples needs to be a continuous and well-planned activity.

NCDC informed that India's Government had taken cognisance of the reports of a mutant variant of SARS-CoV-2 reported from the UK and other countries' response to these reports. The situation is being monitored proactively. A strategy has been put under place to detect & contain the mutant variant.

## Central Government gears up for roll-out of COVID19 vaccine

25th December 2020, New Delhi

The Central Government is gearing up for the roll-out of COVID19 vaccine across the country. As the vaccine administrators will play an essential role in the vaccination process, trainers and those who shall administer the vaccine have been taken up across various States.

To strengthen the capacity of our human resource for COVID-19 vaccine introduction and roll-out, detailed training modules have been developed for different categories of vaccine handlers and administrators including medical officers, vaccinators, alternate vaccinators, cold chain handlers, supervisors, data managers, ASHA coordinators and all others involved in the implementation process at different levels. The training includes all operational aspects of activity like the organisation of vaccination sessions, use of Co-WIN IT platform to manage the entire vaccination process, deployment of HR Cold chain preparedness, management of adverse events, communications and intersectoral coordination, biomedical waste management, infection prevention protocols etc.

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## Vaccines which are in the pipeline will work against the new variants of SARS-CoV-2

29th December 2020, New Delhi

This week's significant development, Indian SARS-CoV-2 Genomics Consortium (INSACOG), was formed with 10 Government laboratories to ascertain the new variant of SARS-CoV-2 (SARS-CoV-2 VUI 202012/01) in the country. Its function is to establish sentinel surveillance for early detection of genomic variants with public health implications and determine the genomic variants in the unusual events/trends. This apart, the number of active cases is less than 2.7 lakhs after six months and declining further. While cumulative positivity rate is 6.02% now, the

positivity rate during the last week was 2.25%. In another landmark achievement, daily new cases are less than 17,000 after six months now. Daily deaths are also less than 300 after six months. Union Health Secretary Shri Rajesh Bhushan has stated this in a media briefing on action taken, preparedness and updates on COVID-19, held at National Media Centre in New Delhi


today.

The Health Secretary further informed that analysis shows that 52% of the COVID-19 cases are in the 18-44 years age group, and 63 per cent of all COVID-19 patients are males. Also, 55 per cent of deaths have occurred in the 60 years and above age group, and 70 per cent of deaths have occurred to males in the country. He further stated that India is still figures amongst the lowest in cases per million population, 7,408 and active cases per million people, 194. He informed, 110 new cases and two deaths per million have been reported in the last seven days. The Health Secretary also said that five states/UTs accounting for 60 per cent of total active cases in the country are Maharashtra, Kerala, West Bengal, Uttar Pradesh and Chhattisgarh

The Principal Scientific Adviser, Prof K VijayRaghavan, assured that vaccines in the pipeline in India and worldwide would work against the new variants of SARS-CoV-2. In this context, he explained that there is no evidence that current vaccines will fail to protect against COVID-19 variants reported from the UK or South Africa. He said, "The changes in the variants are not sufficient to make the vaccines ineffective. Most of the vaccines target the spike protein, in which there are changes in the variants. But vaccines stimulate our immune system to produce a wide range of protective antibodies".

Prof Raghavan further explained, "Changes have been observed in the 'S' proteins on the surface of the new variants of coronavirus. The viruses undergo changes from time-to-time. Most of these changes do not affect the virus or even the spread of infection. But, sometimes changes are such that its intensity of transmission and other properties change. Such a concern has been raised at the UK and South Africa presently. This new strain of SARS-Cov-2 shows 17 changes in the spike protein, out of which eight are in which codes for the spike protein. One such change increases affinity for ACE2 receptor, used for entry in human cells. Thus its power of transmission has increased. Another change promotes entry into susceptible cells. These changes are causing concerns. Field data has also shown the UK variant to be more transmissible. This is spreading very rapidly and taking over the frequency of all other variants. It is also reflected in the enormous positivity in the UK. There is no evidence so far that it increases the severity of the disease. But, because it increases transmission, it will affect the number of

affected people and, therefore, severely diseased people.

Consequently, we must take extraordinary precautions to prevent this kind of variants from dominating a population". Speaking about India's measures to control the transmission of this new variant in India, Dr Raghavan said, INSACOG consortium will do testing and sequencing of samples from not only international travellers but also from across the country and from those being admitted to hospitals. In a word of caution, Dr Raghavan advised that there should not be any complacency in our behaviour, despite a decline in positivity and death rate. "A vaccine will be available soon, and it will surely be an exit visa for the virus, but the process of rolling out the vaccine will take time. Till then follow all public health measures scrupulously", he added.

Speaking about the new variant and mutation in viruses, DG-ICMR Prof (Dr) Balram Bhargava said that we mustn't put too much immune pressure on the virus by which it will tend to mutate more. He advised judicious use of therapies for which benefits have been established and stopping use of all those therapies for which services have not been proven. In the context of the efficacy of vaccines on the new strain, he said," Much of the #vaccines that are the front-runners are targeting the 'S' protein and also the mRNA. We find that they will continue to be effective from the available data. We have to be careful about any immunity break-through that may happen during #vaccination". DG-ICMR also said, "Much of the vaccines that are the front-runners are targeting the 'S' protein and also the mRNA. We find that they will continue to be effective from the available data".

Cautioning about the new variant, Dr VK Paul, Member (Health), NITI Aayog, stated, "This new variant of SARS-CoV-2 strain may have its run. We have to be very careful. When a new virus enters, it is easy to suppress it initially as the transmission chain remains small then. Thus, we have to stick to the path of carefulness" Speaking about the work of the newly formed INSACOG, he stated, there are 10 Identified Regional Genome Sequencing Laboratories (RGSL) for genome sequencing in assigned regions. States have been tagged to these RSGLs for genome sequencing in assigned regions. INSACOG has also brought out SOPs for collection of samples and workflow, he added. NCDC, New Delhi, is the Nodal Unit that will maintain a database of all new variants' samples.

Dr Paul stated that ICMR has decided to study the symptoms and clinical co-relation of those detected with the new variant of SARS-CoV-2. "Till now, it seems that it does not cause much seriousness, but transmits faster", he informed. But, if transmission happens at a significant scale, it will cause damage, added Dr Paul. Hence, from the perspective of public health response, testing, tracking, and tracing will continue in the same manner at an incredible speed. A cluster is found where a containment zone will be formed, house-to-house search and isolation of positive cases will be done, added Dr Paul.

In reply to a media query about the efficacy of vaccine on the new variant, the Principal Scientific Adviser, Prof Raghavan stated that the UK variant or South Africa variant does not compromise the polyclonal antibody response all current vaccines are based. They target multiple parts of the protein, most of which is not affected by these strains. Hence, there is no reason to believe that the vaccines will not be effective, he said.

In reply to another media query about prioritisation of population groups for vaccination, Dr Paul replied, a committee has been constituted with experts coming from various specialities (like cancer, heart, kidney, lungs, etc.) who will decide upon the process of identifying and prioritising patients with co-morbidities for vaccination. The committee's report is expected soon, he added.

## Indian SARS-CoV-2 Genomics Consortium (INSACOG) Labs release initial results of Genome sequencing of the mutant variant of SARS-CoV-2

29th December 2020, New Delhi

Government of India took cognisance of the reports of the mutant variant of SARS- CoV-2 virus reported from the UK and placed a pro-active and preventive strategy to detect and contain the mutant variant.

This strategy includes, but is not limited to, the following steps:-

1. Temporary suspension of all flights coming from the UK with effect from the midnight of 23rd December 2020, till 31st December 2020.
2. Mandatory testing of all UK returnee air passengers through RT-PCR test: The samples of all UK returnees found positive in RT-PCR test to be genome sequenced by a consortium of 10 govt. labs, i.e. INSACOG.
3. The National Task Force (NTF) Meeting on COVID-19 on 26th December 2020 considers and recommends Testing, Treatment, Surveillance and Containment Strategy.
4. Standard Operating Protocol for States/UTs to tackle the mutant variant of SARS-CoV-2 issued on 22nd December 2020.

The entire issue was examined at length by NTF on 26th December 2020. The NTF concluded that there is no need to change either the existing National Treatment Protocol or existing Testing Protocols in view of the mutant variant. NTF also recommended that it is critical to conduct enhanced genomic surveillance in addition to the existing surveillance strategy.

From 25th November to 23rd December 2020 midnight, about 33,000 passengers disembarked at various Indian airports from the UK. All these passengers are being tracked and subjected by States/UTs to RT-PCR tests. So far, only 114 have been found positive. These positive samples have been sent to 10 INSACOG labs (NIBMG Kolkata, ILS Bhubaneswar, NIV Pune, CCS Pune, CCMB Hyderabad, CDFD Hyderabad, InSTEM Bengaluru, NIMHANS Bengaluru, IGIB Delhi, NCDC Delhi) for genome sequencing.

A total of 6 samples of 6 UK returnee persons are positive with the new UK variant genome. 3 in NIMHANS-Bengaluru, 2 in CCMB-Hyderabad and 1 in NIV-Pune. All these persons have been kept in single room isolation in designated Health Care facilities by respective State Governments.

Their close contacts have also been put under quarantine. Comprehensive contact tracing has been initiated for co-travellers, family contacts and others. Genome sequencing on other specimens is going on.

Under careful watch and regular advice, the situation is being provided to the States for enhanced surveillance, containment, testing & dispatch of samples to INSACOG labs.
It is important to note that the new UK Variant's presence has already been reported by Denmark, Netherlands, Australia, Italy, Sweden, France, Spain, Switzerland, Germany, Canada, Japan, Lebanon, and Singapore.

## 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 MyintHtwe 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 GAVIBoard 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 NgoziOkonjo-Iweala presently serves as Chair of the GAVI Alliance Board.

## Dry run for COVID-19 vaccination successfully conducted in four states

29th December 2020, New Delhi

Union Ministry of Health & Family Welfare (MoHFW) completed a two-day dry run for activities entailed in COVID-19 vaccination in four states Assam, Andhra Pradesh, Punjab and Gujarat on 28th & 29th December 2020.

Backed with the experience of rolling out Universal Immunization Programme (UIP) and conducting nationwide multiple wide-range injectable vaccination campaigns such as measles-rubella (MR) and Adult Japanese Encephalitis (JE) campaign, required steps are being undertaken to vaccinate priority population groups such as Health care workers, Frontline workers and people above 50 years for Covid-19.

The dry run exercise is aimed at end-to-end testing of COVID-19 vaccination process and will include planning & preparations as per the Operational Guidelines; creation of facilities & users on Co-WIN application, session site creation & mapping of sites, Health Care Workers (HCW) data upload, receipt of vaccines and vaccine allocation by the district, session planning, deployment of vaccination team, logistics mobilisation at session site, mock drill of conducting vaccination and reporting and review meetings at the block, districts and state level. The objective of dry the run is to undertake and confirm the field implementation of the IT platform Co-WIN and guide the way forward before actual implementation.

District Collector with district and block task force engagement was made responsible for conducting the dry run. It was expected to provide insights on any gaps or bottlenecks during the actual conduct of vaccination.

The two-day end-to-end dry run was undertaken in Krishna district in Andhra Pradesh, Rajkot and Gandhinagar in Gujarat, Ludhiana and Shaheed Bhagat Singh Nagar (Nawanshahr) in Punjab and Sonitpur and Nalbari districts in Assam.

Specific teams were formed for various tasks by the district administration. Activities like uploading dummy beneficiary data, session site creation, vaccine allocation, communication vaccination details to vaccinators& beneficiaries, and beneficiary mobilisation were carried out. Field feedback on the first day of the dry run was also reviewed on 29th December 2020 through Video conferencing with State & District Programme officers by Joint Secretary (Public Health). All states expressed satisfaction in terms of the operational approach and use of the IT platform to ensure transparency and effective monitoring of vaccination processes expected to cover many people. Additional suggestions on IT platform were also noted for further enhancement of Co-WIN platform.

Detailed insights and feedback will help enrich the operational guidelines and IT platform and strengthen the COVID-19 vaccination roll-out plan.


**Vigyan Prasar**
A-50, Institutional Area, Sector-62
NOIDA 201 309 (Uttar Pradesh), India
Phones: 0120-240 4430-35
Fax: 91-120-240 4437
E-mail: info@vigyanprasar.gov.in
Website: http://www.vigyanprasar.gov.in