

Issue No.-

14

January –  
April, 2021



# NEWSLETTER



WITH MASKS & CORRECT  
SAFETY MEASURES ON,  
EARTH WILL FIGHT  
BETTER TO COMBAT  
COVID-19

DEPARTMENT OF CENTRAL RESEARCH & INNOVATION  
2<sup>ND</sup> FLOOR, DEPARTMENT OF PHARMACY BUILDING,  
SUMANDEEP VIDYAPEETH DEEMED TO BE UNIVERSITY (SVDU)  
PIPARIA, DISTRICT VADODARA – 391760 GUJARAT

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## ***Newsletter Release by Research Advisor***



It has become an utmost matter of responsibility, fourteenth issue of this Newsletter based on COVID-19 Outbreak. While our all COVID-19 warriors have been working continuously day and night to fight against COVID-19 pandemic, this disease is also taking a toll on economies, education, communication and changing the lives forever.

This newsletter is an attempt to give a glimpse of COVID-19 current research status, vaccine updates, treatment & planning strategies. We hope that it will provide useful updates, which may further be utilized for conducting research on upcoming problems and issues arising due to the new pandemic.

- **Dr. Usha Shah**  
**Research Advisor, SVDU**

## ***From the Desk of Research Director***

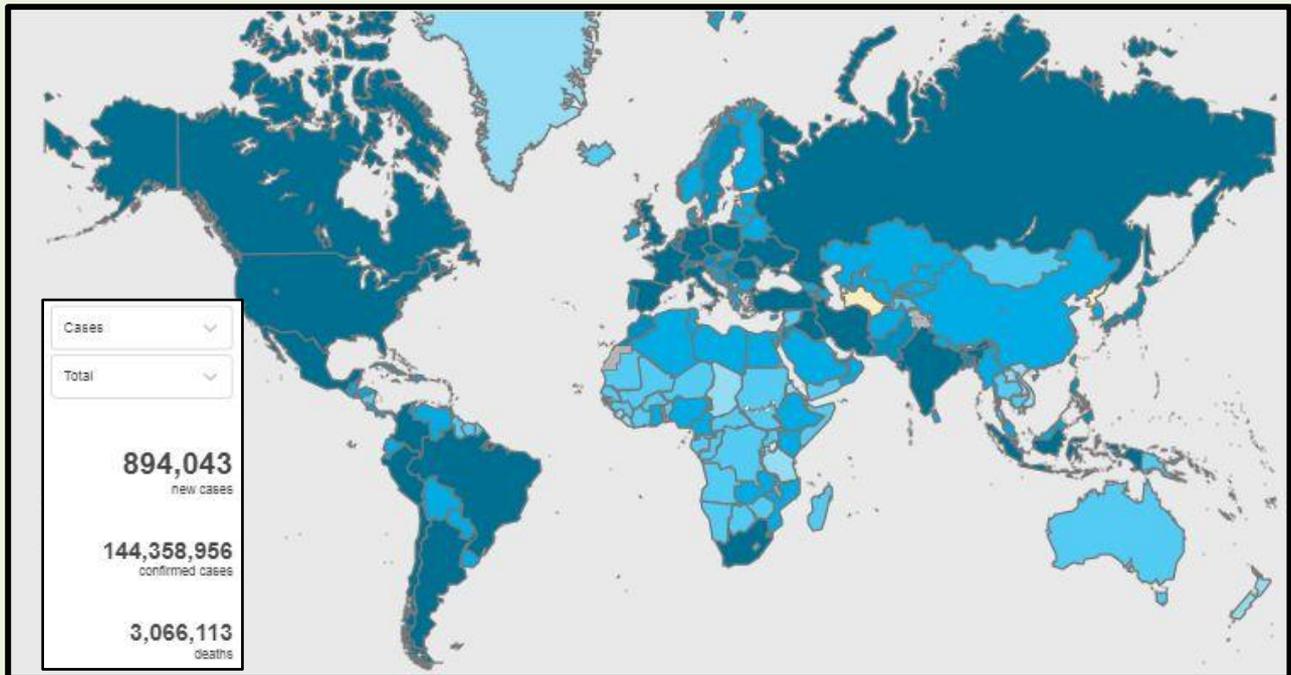


COVID-19 pandemic still continues to spread amongst humans and unfortunately, has become the one of the most challenging & biggest healthcare issues to tackle for mankind.

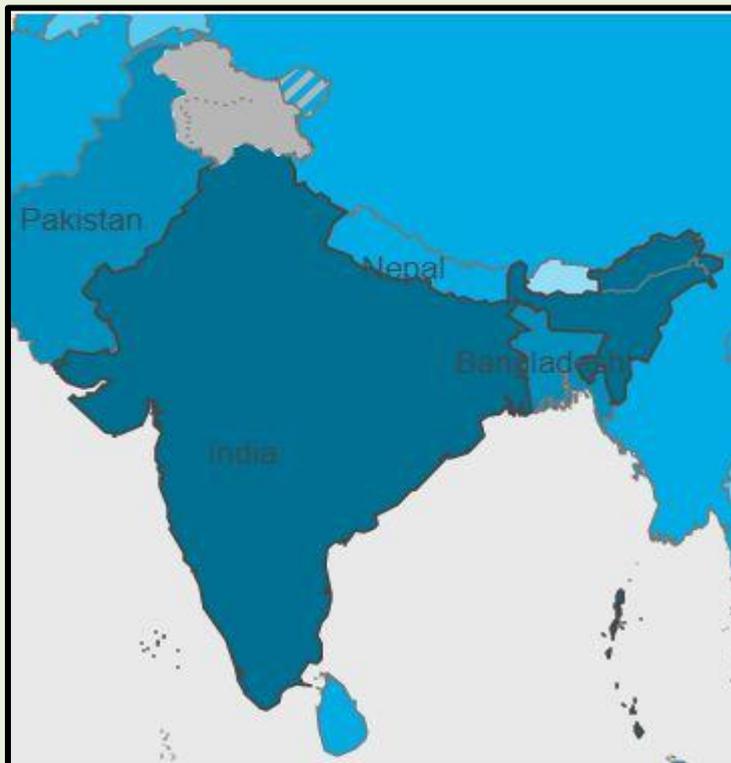
It is praiseworthy, to acknowledge on one hand, the successful launch of indigenous vaccines by Government, various clinical vaccine trials and new treatment strategies being adopted to manage COVID-19, one of them being Plasma Therapy provided in Dhiraj Hospital.

While, on the other hand, it is a matter of great concern due to the existing second wave of infection, more SARS-CoV2 variants and superfluous daily COVID-19 cases at Hospitals. This newsletter is an attempt to make all of us aware about the above events, vaccines under trials, therapeutics, clinical practices suggestions & interview session of Dr. Arti Shah, HOD, Respiratory Medicine, Dhiraj Hospital, SVDU for management of COVID-19. Further, I request the readers for their kind suggestions or scientific contributions in our fight against COVID-19.

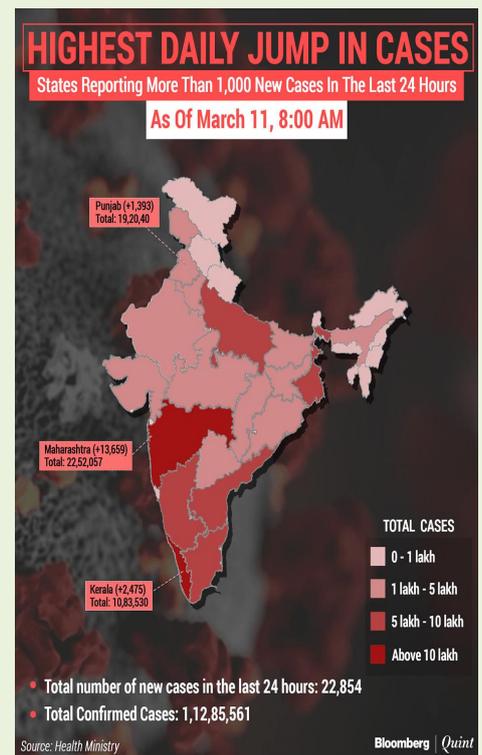
- **Dr. Avinash K. Seth**  
**Director Research**



Globally, as of 5:14pm CEST, 23 April 2021, there have been **144,358,956 confirmed cases** of COVID-19, including **3,066,113 deaths**, reported to WHO.



In India, as of 5:14pm CEST, 23 April 2021, from 3 January 2020 there have been **16,236,695 confirmed cases** of COVID-19 including **186,920 deaths**, reported to WHO.



**3 States** account for **77%** of total active cases in the country till 11 **March, 2021**

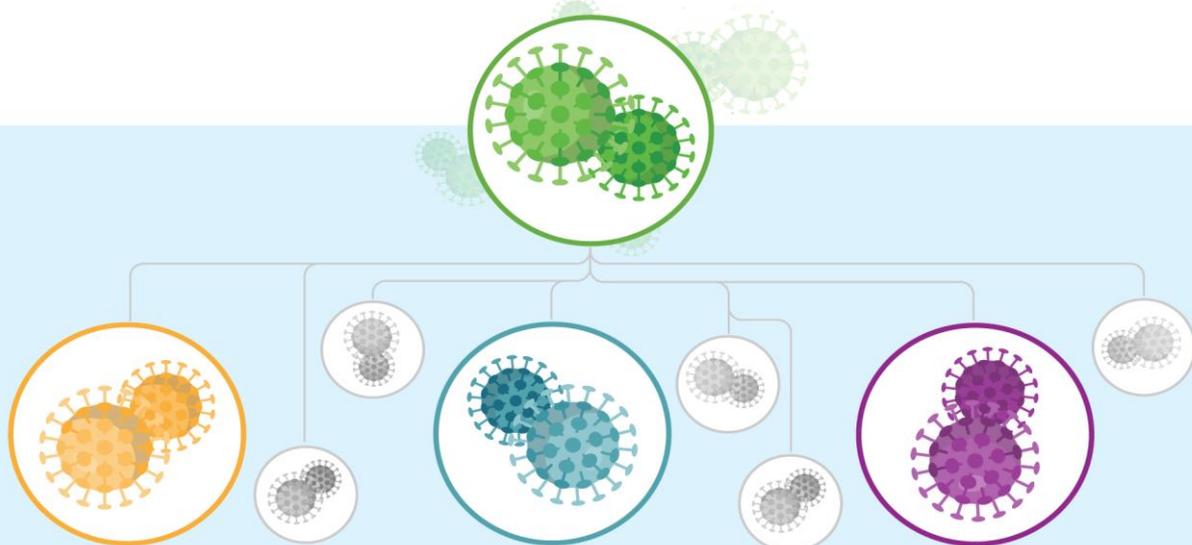
## The Mystery of New Coronavirus Variants—Can Vaccines Kill Them?

As humanity unites once again to examine, understand and tackle the new-found coronavirus variants, Science Sherlock investigates what they are, and if the vaccines are capable of dealing with them.



### Mutation of SARS-CoV-2: current variants of concern

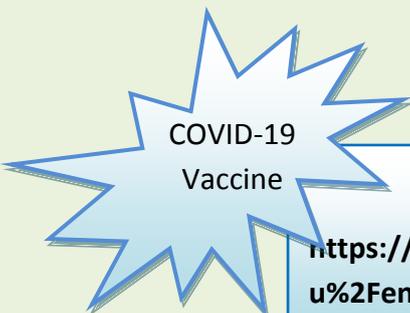
Mutations of SARS-CoV-2 that cause COVID-19 have been observed globally. Viruses, in particular RNA viruses such as coronaviruses, constantly evolve through mutations, and while most will not have a significant impact, some mutations may provide the virus with a selective advantage such as increased transmissibility. Such mutations are cause for concern and need to be monitored closely.



**Name:** VOC 202012/01  
**First detected:** Sept 2020  
**Country of first detection:** United Kingdom  
**First detected in EU/EEA:** 9 Nov 2020  
**EU/EEA countries with cases detected by 19 Jan 2021:** 23  
**Concern:** increased transmissibility

**Name:** 501Y.V2  
**First detected:** Oct 2020  
**Country of first detection:** South Africa  
**First detected in EU/EEA:** 28 Dec 2020  
**EU/EEA countries with cases detected by 19 Jan 2021:** 10  
**Concern:** increased transmissibility and possible reduction of vaccine effectiveness

**Name:** P.1  
**First detected:** Jan 2021  
**Country of first detection:** Brazil and Japan  
**First detected in EU/EEA:** not yet detected in the EU/EEA  
**EU/EEA countries with cases detected by 19 Jan 2021:** 0  
**Concern:** increased transmissibility and possible reduction of vaccine effectiveness

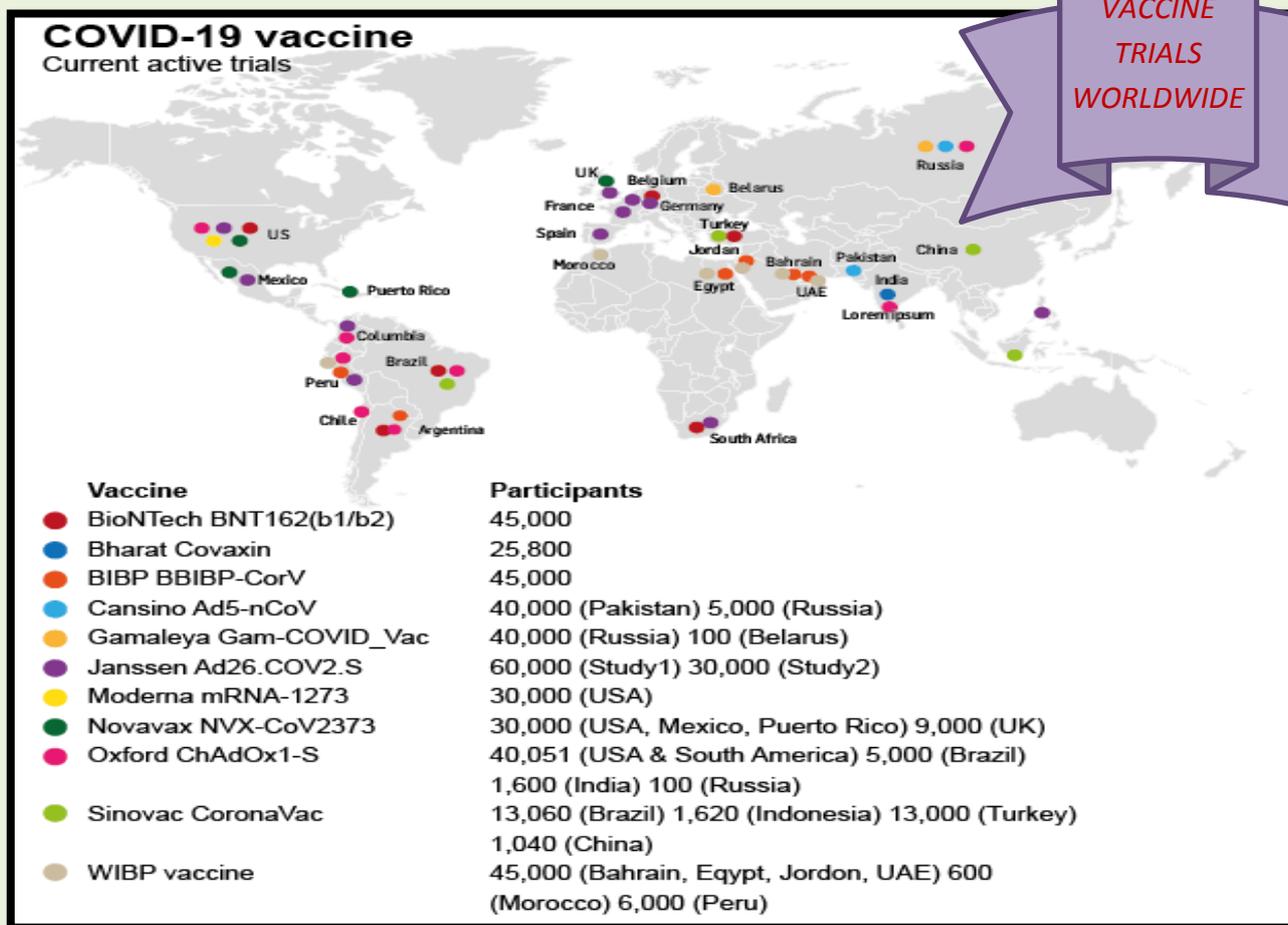


### CORONA VIRUS VARIANTS

<https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.ecdc.europa.eu%2Fen%2Fpublications-data%2F covid-19-infographic-mutations-current->

On Dec. 11, 2020, the FDA granted an emergency use authorization (EUA) in the U.S. for the **Pfizer-BioNTech** COVID-19 vaccine for people 16 years of age and older. Within a week, that agency also granted a EUA to a vaccine developed by **Moderna**. **Johnson & Johnson's** vaccine was given approval in late February, 2021.

The British government approved and began to give the Pfizer vaccine on Dec. 8, 2020. Vaccines developed in China and Russia are now also being given in several other countries. These vaccines were developed at an unprecedented speed, with testing in humans starting in March 2020.



**Government sponsored sites:**

- COVID-19 Prevention Network (CoVPN)
- Clinicaltrials.gov

# Hope in a vial

Covid-19 vaccines, to January 6th 2021

Approved by: ● Stringent regulators ● Other regulators

Producer	Name	Type	Price per dose, \$*	Doses delivered in 2020 and promised for 2021*	Approved in
● AstraZeneca-Oxford Uni.	AZD1222†	Viral vector	1.50-4	3.0bn in total	Britain, India and 3 others
Novavax	NVX-CoV2373	Protein subunit	16	2.1bn	-
● Pfizer-BioNTech	tozinameran	mRNA	19.50	1.4bn	Britain, EU, US and 21 others
● Sinopharm	BBIBP-CorV	Inactivated	<77	1.3bn	Bahrain, China, Egypt, UAE
● Gamaleya Centre	Sputnik V	Viral vector	<10	1.0bn	Argentina, Belarus, Russia
Johnson & Johnson	JNJ-78436735	Viral vector	10	1.0bn	-
● Sinovac Biotech	CoronaVac	Inactivated	14	900m	China
● Moderna	mRNA-1273	mRNA	32-37	770m	Canada, EU, Israel, US
● Bharat Biotech-ICMR	Covaxin	Inactivated	1	720m	India
CureVac	CVnCoV	mRNA	12.30	300m	-

Sources: Regulatory Affairs Professionals Society; The Economist Intelligence Unit; Morgan Stanley; press reports; government websites; company websites

\*Estimate †Covishield in India

The Economist

**Government sponsored sites:**

- COVID-19 Prevention Network (CoVPN)
- Clinicaltrials.gov

**mRNA-1273 Moderna** \$\$\$



**Vaccine** → Immune Response

Encapsulated mRNA encoding for the Spike protein is protected in a lipid bubble. Once absorbed, the Spike protein results in an immune response.

**Efficacy:** 100% (vs severe cases)  
94% (vs symptomatic cases)

**Dosing:** 0.5mL - 2 doses - 28 days apart

**Storage:** -20°C - 6 months  
+2-8°C - 30 days

**BNT162b2 / Comirnaty BioNTech/Pfizer** \$\$\$



**Vaccine** → Immune Response

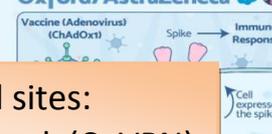
Encapsulated mRNA encoding for the Spike protein is protected in a lipid bubble. Once absorbed, the Spike protein results in an immune response.

**Efficacy:** 100% (vs severe cases)  
95% (vs symptomatic cases)

**Dosing:** 0.3mL - 2 doses - 21 days apart

**Storage:** -70°C - 6 months (-20°C - 2 weeks)  
+2-8°C - 5 days

**AZD1222 / Vaxzevria (Covishield - India) Oxford/AstraZeneca** \$



**Vaccine (Adenovirus) (ChAdOx1)** → Immune Response

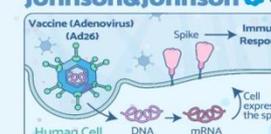
Cell expresses the spike protein is injected cell leads to an immune response.

**Efficacy:** 100% (vs severe cases)  
82% (vs symptomatic cases)  
10% (vs B.1.351 "SA" variant\*)

**Dosing:** 2 doses - \*12 weeks apart

**Storage:** +2-8°C - 6 months

**JNJ-78436735 / Ad26.COV2.S Johnson&Johnson** \$



**Vaccine (Adenovirus) (Ad26)** → Immune Response

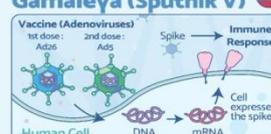
Cell expresses the spike protein is injected cell leads to an immune response.

**Efficacy:** 92% (vs +severe cases)  
74% (vs +moderate cases)

**Dosing:** 1 dose

**Storage:** +2-8°C - 3 months  
-20°C - 2 years

**Sputnik V / Gam-Covid-Vac Gamaleya (Sputnik V)** \$



**Vaccine (Adenoviruses) 1st dose: Ad26 2nd dose: Ad5** → Immune Response

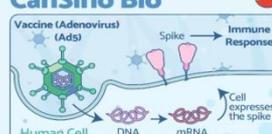
Cell expresses the spike protein is injected cell leads to an immune response.

**Efficacy:** 100% (vs severe cases)  
92% (vs confirmed cases)

**Dosing:** 0.5mL - 2 doses - 21 days apart

**Storage:** +2-8°C - 6 months  
-20°C - 2 years

**Convidecia / Ad5-nCoV CanSino Bio** \$



**Vaccine (Adenovirus) (Ad5)** → Immune Response

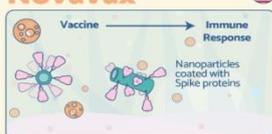
Cell expresses the spike protein is injected cell leads to an immune response.

**Efficacy:** 90% (vs severe cases)  
65% (vs symptomatic cases)

**Dosing:** 1 dose

**Storage:** +2-8°C

**NVX-CoV2373 Novavax** \$



**Vaccine** → Immune Response

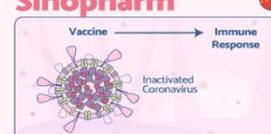
Nanoparticles are coated with synthetic spike proteins. An additional element called adjuvant is added which allows to boost the immune reaction.

**Efficacy:** 100% (vs severe cases)  
89% (vs symptomatic cases)  
60% (B.1.351 "SA" variant\*)

**Dosing:** 2 doses - 21 days apart

**Storage:** +2-8°C - 6 months  
-20°C for 2 years

**BBIBP-CorV Sinopharm** \$\$\$



**Vaccine** → Immune Response

Inactivated Coronavirus

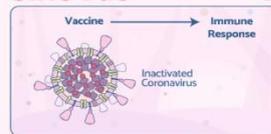
**Inactivated Virus Vaccine**  
SARS-CoV2 is chemically inactivated (with a chemical called beta-propiolactone) so it cannot replicate but all the proteins remain intact.

**Efficacy:** 79% (overall efficacy)

**Dosing:** 2 doses - 21 days apart

**Storage:** +2-8°C

**CoronaVac SinoVac** \$\$\$



**Vaccine** → Immune Response

Inactivated Coronavirus

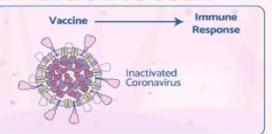
**Inactivated Virus Vaccine**  
SARS-CoV2 is chemically inactivated (with a chemical called beta-propiolactone) so it cannot replicate but all the proteins remain intact.

**Efficacy:** 100% (vs severe cases)  
83% (vs symptomatic cases)

**Dosing:** 2 doses - 14 days apart

**Storage:** +2-8°C

**BBV152 / Covaxin Bharat Biotech** ?



**Vaccine** → Immune Response

Inactivated Coronavirus

**Inactivated Virus Vaccine**  
SARS-CoV2 is chemically inactivated (with a chemical called beta-propiolactone) so it cannot replicate but all the proteins remain intact.

**Efficacy:** 81% (vs symptomatic cases)

**Dosing:** 2 doses - 28 days apart

**Storage:** +2-8°C

Approved for Use by WHO lowest price offered in the US

Vaccine name **Manufacturer**

vaccine → Immune Response

**Quick Mechanism Summary**

**Vaccine class**

**Quick description**  
Outline color indicates the availability of the data:  
- published (peer-reviewed)  
- not published (not reviewed by independent scientists)

Broken down by severity identified by each trial:  
- severe cases  
- symptomatic fever, cough etc. often confirmed by PCR test

**Efficacy:** --% (vs severe cases)  
--% (vs symptomatic cases)  
90% efficacy

**Dosing:** # of doses and how far apart

**Storage:** conditions for storage of the vaccine

**COVAXIN<sup>®</sup>**, India's

indigenous **COVID-19**

**vaccine** by Bharat Biotech is developed in collaboration with the Indian Council of Medical Research (ICMR) - National Institute of Virology (NIV). The vaccine is developed using **Whole-Virion Inactivated Vero Cell** derived platform technology.

**COVAXIN<sup>®</sup> effective against UK variant strain:**

Analysis from the National Institute of Virology indicates that vaccine-induced antibodies can neutralize the UK variant strains and other heterologous strains.

### **COVAXIN<sup>®</sup> - India's First Indigenous COVID-19 Vaccine**

As of **19 April 2021**, a total of **130,027,370 vaccine doses** have been administered

**COVID-19 VACCINE Mythbusters**

**MYTH**  
Indian vaccine is less effective as compared to other countries

**FACT**  
Indian vaccine had undergone multiple tests and trials. It is accurate and effective to fight Covid 19

**ICMR**  
INDIAN COUNCIL OF MEDICAL RESEARCH  
Serving the nation since 1911

Dated 4<sup>th</sup> July, 2020

**Press Release**

ICMR process to develop vaccine to fight Covid 19 pandemic as per globally accepted norms of fast tracking  
Safety and interest of people of India the topmost priority

### Effective shot

Covaxin demonstrated an interim clinical efficacy of 80.6%. The analysis is based on 43 COVID-19 cases, of which seven were observed in the vaccinated group and 36 in the placebo group. The efficacy of select vaccines

Company	Efficacy	Total cases; in placebo group; in vaccinated group
Bharat Biotech	80.6%	43 ; 36 ; 7
Pfizer-BioNTech	95%	170 ; 162 ; 8
Moderna	94.5%	95 ; 90 ; 5
Oxford-AstraZeneca	82.4%*	131 ; NA ; NA
Gamaleya (Sputnik V)	91.6%	78 ; 62 ; 16

\* WHEN TWO DOSES WERE GIVEN OVER 12 WEEKS APART | NA: NOT AVAILABLE

**ATMANIRABHAR BHARAT**

READY FOR VACCINATION "INDIA"

कोरोना के विरुद्ध युद्ध के लिये हम तैयार हैं

अब हमें मिला एक और सुरक्षा कवचा  
आएं, कोविड-19 टीकाकरण अभियान के साथ जुड़ें।

Credit: <https://www.bharatbiotech.com/covaxin>

## Interview of Dr. Arti Shah regarding COVID-19: Treatment, Strategies & Management

### 1.) How do you categorise patients in different stages of COVID-19?

- ❖ The patients are categorised as Mild who are Asymptomatic/Patients with mild symptoms RR94% in room air; Moderate having Symptoms with mild to moderate Pneumonia with no signs of severe disease RR: 24-30/m (or) SPO2: 90%-94% at Room Air, and Severe ones with Severe Pneumonia with RR > 30/min (or) SPO2 < 90% at Room Air less than 94% with oxygen, ARDS, Septic Shock.

### 2.) What is the short-term and long-term prognosis for the disease / condition?

- ❖ Short-term outcomes include Lymphopenia, Reduced peripheral T cells & Increased plasma pro-inflammatory cytokines; Venous thromboembolism; Pneumonia, Residual dyspnea; Gastrointestinal outcomes, such as Diarrhoea, Nausea, Vomiting & Abdominal pain and anxiety, Insomnia, Impaired attention, Depression, etc.

### 3.) What are the co-morbidities associated with Covid-19 and what is the impact of this co-morbidities on COVID-19 patient?

- ❖ Hypertension which was reported in about 80% of cases in hospitals, Hyperlipidemia, Chronic Kidney Diseases, Diabetes, Ischemic Heart Disease, Arthritis, Alzheimer's Disease. Depression, Heart Failure, COPD, Atrial Fibrillation, Schizophrenia, Cancer, Stroke, Asthma, Osteoporosis, etc. Most of these are immuno-compromised co-morbidities, which may lead to severity of COVID-19 infection.

### 4.) What are the most common myths about COVID-19 that physicians should dispel for patients?

- ❖ Noticing the upsurge also, the fact is that this virus has been detected in all areas, including areas with hot and humid weather. Having a bath with hot water will not kill the virus! The body temperature is maintained at 37° C, virus inside body is not being affected by hot water bath that you have. Getting the pneumonia vaccine may or may not protect you against the virus! It is still a research question. Spraying alcohol or disinfectant over your body will only prevent the virus to enter the body through nose

or mouth. Regularly rinsing the nose with saline has only helped in few cases to contain common cold, but has no evidence over here in COVID-19.

#### **5.) What are the post Covid-19 complications?**

- ❖ Some people with mild versions of the disease continue to experience symptoms after their initial recovery. These are fatigue, Shortness of breath, Cough, Joint pain, Chest pain. Muscle pain or headache, loss of smell or taste, Memory, rash or hair loss may persist for some time.

#### **6.) What are your views regarding the new strains?**

- ❖ Viruses constantly change through mutation and multiple variants of the virus. A UK variant double mutant type B.1.1.7 was identified in Mumbai, in South Africa, another variant B.1.351 and in Brazil emerged P.1 independently. Recently, an indigenous triple-mutant B.1.618 has recently been discovered in Bengal, after the B.1.617 in Mumbai during the second wave of COVID-19. So far, studies say that antibodies produced by immunization with currently approved vaccines recognize these variants. It's just around the corner.

#### **7.) What are the challenges ahead to tackle this pandemic?**

- ❖ Many complications of Covid-19 are existing and long term side effects of medications as well as the disease are not known. There is a stigma associated with being a COVID-19 positive and getting tested for COVID-19. It is important to bring awareness to treated COVID-19 patients about possibility of post COVID-19 complications and hence, importance of early screening.
- ❖ Vaccine for COVID-19 is best hope to tackle this situation. Doubts and superstitions in minds of people about COVID-19 vaccine should be removed. Safe practices must be followed even after getting vaccinated. The situation is like never before but we have to adapt to survive. And this adaptation will be our new normal in post COVID-19 world.

#### **8.) What are your views regarding vaccination against COVID-19 COVAXIN and COVISHIELD?**

- ❖ Many vaccines have been in use now. The first mass vaccination started in December 2020. In total, seven vaccines trials started worldwide. On 3rd

January, 2021, Indigenous vaccine 'Covaxin' developed by Bharat Biotech and 'Covishield' by AstraZeneca and Oxford University were approved in India.

- ❖ The biggest advantage is their availability to all as locally produced making them also cost-effective. So, people should be made aware that vaccination is necessary to break the spread and to protect themselves, the society and the community.

#### **9.) What are your opinions & suggestions to persons getting vaccinated for further protection and to prevent community spread?**

- ❖ The vaccination programme has been rightly stratified according to the risk groups. Those exposed or at high risk to be exposed to the virus need to be protected against it. So the policy of considering them for getting vaccinated at the earliest is a right decision. Getting vaccinated can also protect others in your immediate vicinity, and if you are safe from infection and disease, you are less likely to infect anyone.

#### **10.) If I have already had COVID-19 and recovered, do I still need to get vaccinated with a COVID-19 vaccine?**

- ❖ Yes. Due to the severe health risks associated with COVID-19 and the fact that re-infection with COVID-19 is possible, vaccine should be offered regardless of whether you already had COVID-19 infection or not.

# ACHIEVEMENTS

## EXTRAMURAL PROJECTS SUBMITTED BY FACULTIES

Sr.No	Name of the Project Endowment/ Chairs / Clinical Trial/	Name of the Principal Investigator/C o Investigator	Name of the Funding agency	Department of Principal Investigator/ Co Investigator	Year of Award	Funds provided (INR in Lakhs)
1	Evaluation of PVA and USG Gels used as mounting media compared to traditional modified Kaiserling-III solution in Pathology Museum, A Mixed Method Study	Dr. Swapan Goswami	ICMR	pathology	2020-21	36000
2	Reproductive and Child health issues among tribal women who are living in urban area of Gujarat. Observational Mixed Method Communiy Based Study	Dr Niraj Pandit	ICMR	Community Medicine	2020-21	1590750
3	Community behavior and its determinants in relation to Malaria prevention and control in Gujarat	Dr Niraj Pandit	ICMR	Community Medicine	2020-21	3174600
4	Epidemiological Study Of Gestational Diabetes Mellitus (Gdm) And Associated Risk Factors In Tribal Population Of ChhotaUdepur District, Gujarat	Dr. Nirav Nimavat	ICMR	Community Medicine	2020-21	2300000
5	Evaluation of Therapeutic Potential of Pirfenidone by Protein and Gene Expression Profiling in Oral Submucous Fibrosis induced by Tobacco and Arecanut Formulations: A Randomized Controlled Trial	Dr. Chandramani More	ICMR	OMR	2020-21	2703600
6	Effect of pysical activity, yoga and meditation in improving immunity and fighting against viral infections - A systematic Re3view	Dr.Nalina Gupta	DST	College of Physiotherapy	2020-21	749672

***Operation keeps the lights on, strategy provides a light at the end of the tunnel, but project management is the train engine that move the organization forward***  
**- Joy Gumz**

# AWARDS

Sr.No	Faculty Name	Designation	Dept.	Institute	category
1	Dr.Arti Shah	HoD& Professor	Respiratory Medicine	SBKS MI & RC	Faculty
2	Dr.Rohit Dhanraj Chordiya	3 <sup>rd</sup> Year Resident	General Medicine	SBKS MI & RC	PG
3	Harsh Sanjaykumar Dave	MBBS	N/A	SBKS MI & RC	UG
4	Dr. Chandramani More	Professor & Head	Oral Medicine and Radiology	KMSDCH	Faculty
5	Dr. Nalina Gupta	Associate Professor	Neuro Physiotherapy	College of Physiotherapy	Faculty
6	Dr.Ashim Kumar Sen	Professor	Pharmaceutical Analysis	Department of Pharmacy	Faculty
7	Mr. Suresh V	Professor	Mental Health Nursing	Sumandeep Nursing College	Faculty

***For your suggestions mail us to:***

director.research@sumandeepvidyapeethdu.edu.in ,  
researchcell@sumandeepvidyapeethdu.edu.in

## **COVID-19 WARRIORS IN-CHARGE OF SUMANDEEP VIDYAPEETH**



Team of Doctors and Administrative Staff managing COVID-19 treatment in Sumandeep Vidyapeeth, Vadodara. From left to Right: Dr. Arti Shah, Dr. Vivek, Dr. Amit, Dr. Lavlesh Kumar, Dr. Lakhan Kataria, Dr. B. R. Solanki, Dr. Yash Rana, Dr. Sheetal Chhaya and Ms. Khusbhu.

### **ACKNOWLEDGEMENTS**

#### **OUR SPECIAL THANKS TO**

***Dr. Arti Shah (HOD, Respiratory Medicine), all staff of Respiratory Medicine and all COVID-19 SVDU warriors***  
For giving the valuable time for imparting knowledge & awareness regarding COVID-19 treatment & Prevention strategies

&

***All Staff of Department of Central Research & Innovation***

***Dr. Priyanka Sharma (Sr. Research Scientist)***

***Dr. Akansha Budakoti (JRF & Sr. Lecturer)***

***Mrs. Hemali Shukla (Sr. Clerk)***

For compiling, formatting, editing and preparing this newsletter.