



Double Helical

January - 2021

VOL VI, Issue-VI, Rs. 100

Also available on

www.doublehelical.com
www.doublehelical.in



Dr Harvinder Popli



Dr. Binila Chacko



Dr. Mahipal Singh Sachdev



Dr Alexander Thomas



Dr Lallu Joseph



Dr Vinay Aggarwal



ENCOURAGING GREEN-POWER TODAY
ENERGISING INDIA'S TOMORROW



FROM MEGA WATTS TO GIGA WATTS

Envisioning a Greener Tomorrow with Renewable Energy

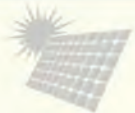
ENERGY FOR EVER



Gol's target of 5x increase in renewable energy capacity to 175,000 MW by 2022



4th largest wind installations in the world



One of the largest solar programs in the world with planned capacity of 100 GW by 2022

CO₂

All IREDA funded projects are helping in avoiding CO₂ emissions

Loan Sanctions (Rs. Crores) (2013 - 2018)



Funded more than 2400 renewable energy projects



Indian Renewable Energy Development Agency Ltd.
(A Govt. of India Enterprise)

A Mini Ratna PSU under Ministry of New and Renewable Energy

Corporate Office : 3rd Floor, August Kranti Bhawan, Bhikaiji Cama Place, New Delhi 110 066, Tel: +91 11 26717400 - 26717412

Registered Office: India Habitat Centre, East Court, Core-4A, 1st Floor, Lodhi Road, New Delhi 110003, Tel: +91 11 24682206 - 24682219

Advisory Board

Dr. A K Agarwal,
Professor of Excellence, Ex-President, Delhi
Medical Council and Medical
Advisor, Apollo Hospital, New Delhi

Dr Vinay Aggarwal,
Ex President, Indian
Medical Association, New Delhi

Dr Vijay Agarwal,
President, CAHO

Dr. Girdhar J. Gyani,
Director General, Association for
Healthcare Providers

Dr. Suneela Garg,
Director Professor,
Department of Community Medicine,
Maulana Azad Medical College
New Delhi

Dr. J C Passey,
Medical Director,
LNJP Hospital, New Delhi

Dr. H P Singh,
Sr. Child Specialist

Editor & Publisher
Amresh K Tiwary

Coordinating Editor
Shalini Shahu

Coordinating Editor
Sarvesh Tiwari

Roving Editor
Dr. Manisha Yadav

Editorial Team
Abhigyan, Abhinav,
Dr. Manisha Yadav

Advertisements & Marketing
Abhinav Kumar, Vikas
Email: sales@doublehelical.com

Designer
Aparna Thomas

All material printed in this publication is the sole property of Double Helical Pvt. Ltd. All printed matter contained in the magazine is based on the information by those featured in it. The views, ideas, comments and opinions expressed are solely of those featured and the Editor and Publisher do not necessarily subscribe to the same.

Double Helical is owned, printed and published monthly. It is printed at Polykam offset, Naraina Industrial Area Phase 1, New Delhi-110028, and published from G-1, Antriksh Green, Kaushambi, Ghaziabad-201 010. Tel: 0120-4165606 / 9953604965.

Contact us :
contact@doublehelical.com
doublehelicaldesign@gmail.com,
editorial@doublehelical.com
Website: www.doublehelical.com,
www.doublehelical.in

Contents

20

COVER STORY

GEARING UP FOR DISTRIBUTION OF COVID-19 VACCINE



06



Aware about miscarriage



Ophthalmologists are on the edge



Realize your own abilities

26



Vital step towards inventing vaccines

32



A wise step to manage Covid patents

44

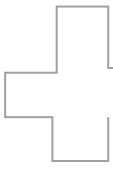


Covid-19 vaccine and India's strategy

f Facebook: https://www.facebook.com/Double-Helical-1783106448421622/?modal=admin_todo_tour

t Twitter: [@HelicalDouble](https://twitter.com/HelicalDouble)

y Youtube: https://www.youtube.com/channel/UCmbMtYUwuppYzDHD_OrcMfg/featured?view_as=subscriber



Corona Vaccine: A safeguard to save lives

Dear Readers,

Wishing you very happy New Year! Ever since its inception, Double Helical, a leading national health magazine, provides a platform to recognize innovation, people, products and services that are helping to transform the healthcare sector in the country and ushering in affordable, high quality and inclusive healthcare for masses.

In order to overcome the corona crisis, scientists from the whole world, including India, are working day and night to make Corona vaccine and the drugs of Covid-19. India has already been providing not only medicines but other essential supplies not only in the neighbourhood but globally. It has also organized training sessions for experts from the neighbouring countries including Nepal, Bangladesh, Myanmar, and the Maldives on vaccine-related issues. As Prime Minister Narendra Modi had already announced, "India's vaccine production and delivery capacity would be used for the advantage of all humanity in fighting this crisis." Zweli Mkhize, Health Minister, South Africa also announced that the imported vaccines would be used to vaccinate frontline healthcare workers. In his address, he also mentioned that the Serum Institute of India had given permission to mention India as the negotiations are going on.

According to WHO (World Health Organization), there are more than 50 vaccines in clinical trials and 164 candidate vaccines in preclinical evaluations. Apart from tracking the pandemic, publishing rolling updates, advising on critical interventions, distributing medical supplies to those in need. Currently, 05 vaccines are in different clinical trials of development. India's Bharat Biotech International Limited, Serum Institute of India (SII), Zydus Cadila, Panacea Biotec, Indian Immunologicals, Mynvax, and Biological E are among the domestic pharma firms which have already joined the global efforts to find a preventive measure against the Covid-19. The three vaccine candidates are indigenous, and the other two vaccine candidates have been in-licensed to India.

COVAXIN, 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 indigenous, inactivated vaccine is developed and manufactured in Bharat Biotech's BSL-3 (Bio-Safety Level 3) high containment facility. After successful completion of the interim analysis from the Phase 1 & 2 clinical trials of COVAXIN, Bharat Biotech received DCGI approval for Phase 3 clinical trials in 26,000 participants in over 25 centres across India.

Keeping this in mind a dry run for Covid-19 vaccination is being conducted by all state and union territory administrations to test the

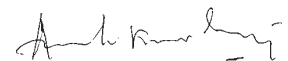
linkages between planning and implementation and to identify the challenges. Around 96,000 vaccinators have been trained for this purpose. A total of 2,360 participants have been trained in the National Training of Trainers and over 57,000 participants trained in district-level training in 719 districts. States are augmenting the state helpline 104 (which shall be used in addition to 1075) for any vaccine/software-related query.

Split from the Wuhan province of China, Covid-19 virus infection spread across the globe and caused a great outcry in the country and the whole world. Millions of people including well known celebrities in the country and abroad have been infected from this new Corona virus and untimely deaths have occurred across the world too. Due to Covid-19 the whole world came to a standstill and the epidemic affected all kinds of activities related to life, like- worldwide economy, employment, trade, industries, education, entertainment, social, religious, cultural, sports etc. Almost all these areas have been affected in the worst manner.

India, which is one of the world's largest populated country after China is combating this terrible disaster of the century, has put an unmatched example before the world by introducing tremendous political will through collective efforts led by our Prime Minister, while many of the world experts were presuming that India would be the most affected country in the world by Covid-19. As a result of India's strategy against Corona, these presumptions of those experts have been proved wrong.

India was the only country in the world to have organized a meeting of the Experts' Committee on Corona in its country before the World Health Organization announced Corona as a global emergency epidemic, taking all the proactive precautionary measures to contain corona infection. In Corona era today we have been forced to adopt a new type of lifestyle, work conduct and behavior as well as a new culture of rituals. The current issue of Double Helical is replete with more such interesting and thought-provoking stuff to savour, reflect and ponder. So, happy reading!

Thanks and regards



Amresh K Tiwary,
Editor-in-Chief

राष्ट्रीय विचारधाराओं का एकमात्र समाचार पत्र

राष्ट्रीय पहल

हिन्दी दैनिक

RNI-UPHIN-2006/18176

Postal Regd. No. UP/GBD-199/2014-16

ISSN 2395-3829



सुबह की चाय
के साथ

राष्ट्रीय
हिन्दी दैनिक

Contact us 9310244444, 9891044444



AWARE ABOUT MISCARRIAGE



Miscarriages can happen for a variety of medical reasons, many of which are not within a person's control. The symptoms of a miscarriage vary, depending on stage of pregnancy.....

BY SHALINI SAHU



If you experience symptoms like heavy spotting, vaginal bleeding, discharge of tissue or fluid from your vagina, severe abdominal pain or cramping and mild to severe during pregnancy then you must be aware about your pregnancy otherwise you might lose your pregnancy.

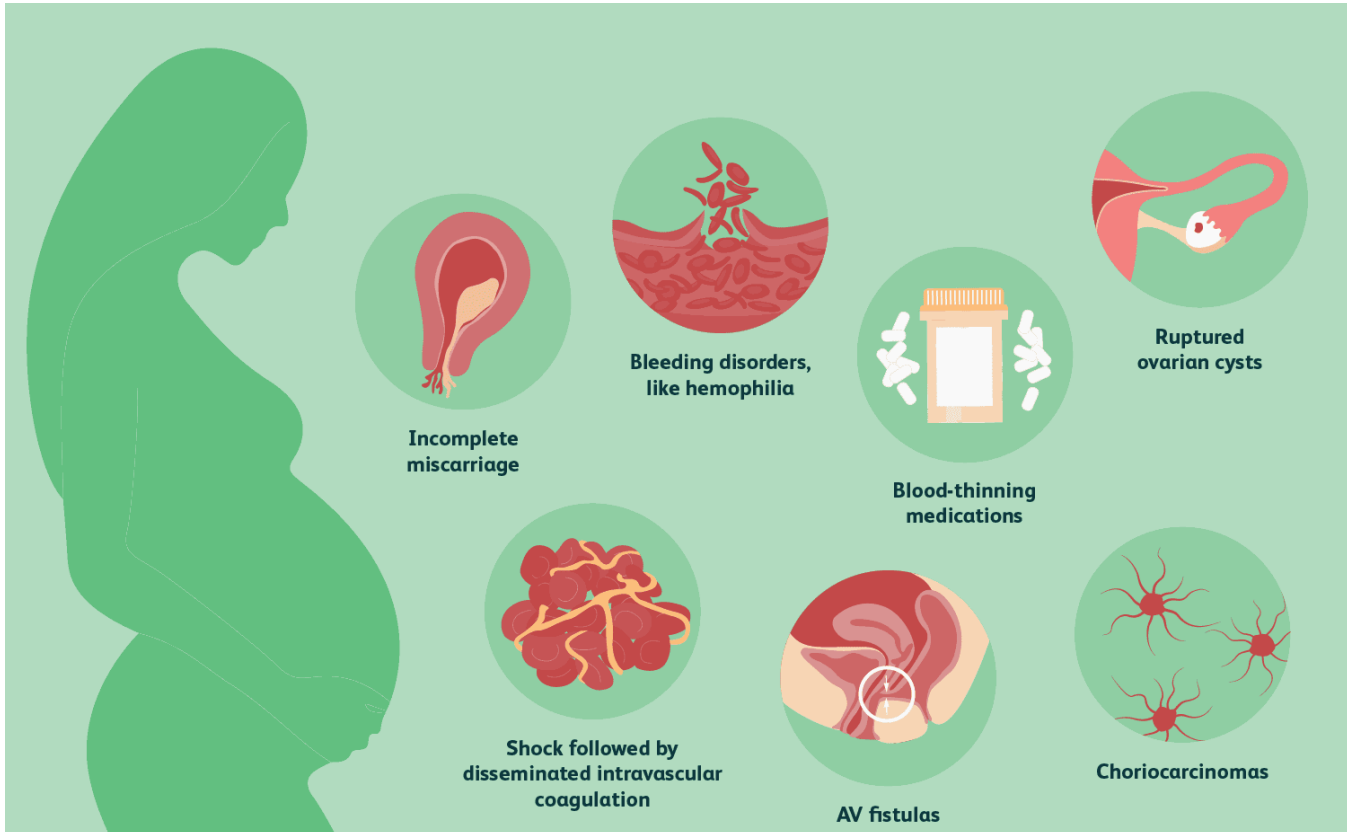
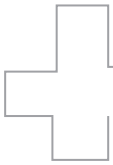
In some cases, it happens so quickly that one cannot even know whether she is pregnant before miscarry. In common parlance miscarry also known as spontaneous abortion typically happens during the first trimester, or first three months, of the pregnancy. Miscarriage is a relatively common experience but it should not be treated as easier. We must take a step towards emotional healing the risk and what medical care might be needed. A miscarriage does not mean that you will not go on to have a baby. According to a report more than 80 percent of women who have had a miscarriage will go on to carry a baby to full term. Approximately only 1 percent of women have three or more miscarriages.

The length of a miscarriage differs for every woman, and it depends on different factors, including how far along you are in the pregnancy, whether you were carrying multiples and how long it takes your body to expel the fetal tissue and placenta

A woman early in her pregnancy may have a miscarriage and only experience bleeding and cramping for a few hours. But another woman may have miscarriage bleeding for up to a week. The bleeding can be heavy with clots, but it slowly tapers off over days before stopping, usually within two weeks.

According to World Health Organization, 2.6 million babies are stillborn and an estimated 85 percent of miscarriages happen before the 12th week of pregnancy every year. Data from Health Management Information System (HMIS) showed that rural areas, due to lack of specialized doctors and health care infrastructure, recorded a higher rate of miscarriages with 69.8 per cent of total miscarriages in state. Urban regions in Maharashtra recorded 18,920 miscarriages.

In women between the age of 20 to 25, around 15%-16% pregnancies end in miscarriage, and amongst the 30 to 35 age group, miscarriage rate increases by 18 to 22%. However, at the age of 40, approximately 38%



incidences of miscarriages are reported annually, while at 45 plus the chances of miscarriage in pregnancy increases by 70 percent.

Most miscarriages occur because the fetus is not developing normally. About fifty percent of miscarriages are associated with extra or missing chromosomes. Most often, chromosome problems result from errors that occur by chance as the embryo divides. Various underlying health conditions and lifestyle habits may also interfere with the development of a fetus. Exercise and sexual intercourse do not cause miscarriages. Working will not affect the fetus either, unless you are exposed to harmful chemicals or radiation.

About 10 to 20 percent of known pregnancies end in miscarriage. But the actual number is likely higher because many miscarriages occur so early in pregnancy that a woman does not realize she is pregnant. Chromosomal abnormalities might lead to Blighted



Dr. Sowjanya Aggarwal

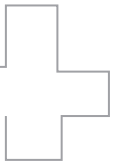
ovum which occurs when no embryo forms: Intrauterine fetal demise - in this situation, an embryo forms but stops developing and dies before any symptoms of highpregnancy loss occur.

With a molar pregnancy, both sets of chromosomes come from the father. A molar pregnancy is associated with abnormal growth of the placenta; there is usually no fetal development. A partial

molar pregnancy occurs when the mother's chromosomes remain, but the father provides two sets of chromosomes. A partial molar pregnancy is usually associated with abnormalities of the placenta, and an abnormal fetus.

Molar and partial molar pregnancies are not viable pregnancies. Molar and partial molar pregnancies can sometimes be associated with cancerous changes of the placenta. In a few cases like uncontrolled diabetes, hormonal problems, infections, uterus or cervix problems and thyroid disease a mother's health condition might lead to miscarriage. Examples include:

According to **Dr. Sowjanya Aggarwal, Fellowship in Reproductive Medicine, Obstetrics and Gynecology, Max Superspeciality Hospital, Vaishali (Ghaziabad)**, there are various factors increase the risk of miscarriage, including age, previous miscarriages, chronic conditions, uterine or cervical problems,



smoking, alcohol and illicit drugs and weight. Women older than age 35 have a higher risk of miscarriage than do younger women. At age 35, you have about a 20 percent risk. At age 40, the risk is about 40 percent. And at age 45, it's about 80 percent.

Dr. Sowjanya Aggarwal, said, "Women who have had two or more consecutive miscarriages are at higher risk of miscarriage. Women who have a chronic condition, such as uncontrolled diabetes, have a higher risk of miscarriage. Certain uterine abnormalities or weak cervical tissues (incompetent cervix) might increase the risk of miscarriage. Women who smoke during pregnancy have a greater risk of miscarriage than do nonsmokers. Heavy alcohol use and illicit drug use also increase the risk of miscarriage. Being underweight or being overweight has been linked with an increased risk of miscarriage."

COMPLICATIONS

abdominal tenderness and foul-smelling vaginal discharge.

PREVENTION

A pregnancy loss can occur even if you do eliminate risk factors like smoking and drinking. Sometimes, there is nothing you can do to prevent a miscarriage. After a miscarriage, you can expect a menstrual cycle within about four to six weeks. After this point, you can conceive again. There is need of focus on taking good care of yourself and your baby by adopting regular prenatal care. You must avoid known miscarriage risk factors like smoking, drinking alcohol and illicit drug use. take a daily multivitamin. And lastly must limit your caffeine intake. A study reveals that drinking more than two caffeinated beverages a day appeared to be associated with a higher risk of miscarriage.

Dr Kiran Rama Goyal, Consultant, Obstetrician and Gyecology, Shri Balaji Action Medical Institute, New

loss .The physical and emotional suffering on death of your unborn leads to great sufferings. As we focus on mental health of mother, this part is still less cared of .We need to be more empathetic towards such parents and families. This will build a much needed confidence in lady as the best therapy is tender loving care."


MISCARRIAGE WITH TWINS

Twins typically happen when two eggs are fertilized instead of one. They can also happen when one fertilized egg splits into two separate embryos.

Naturally, there are additional considerations when a woman is pregnant with twins. Having multiple babies in the womb can affect growth and development. Women who are pregnant with twins or other multiples may be more likely to have complications such as preterm birth, preeclampsia, or miscarriage.

Additionally, a type of miscarriage called vanishing twin syndrome can affect some who are pregnant with twins. Vanishing twin syndrome occurs when only one fetus can be detected in a woman who was previously determined to be pregnant with twins. In many cases, the vanished twin is reabsorbed into the placenta. Sometimes this happens so early in the pregnancy that you didn't even know you were pregnant with twins.

GETTING PREGNANT AGAIN

Following a miscarriage, it is a good idea to wait until you are both physically and emotionally ready before trying to conceive again. A miscarriage is typically only a one-time occurrence. However, if you have had two or more consecutive miscarriages, your doctor will recommend testing to detect what may have caused your previous miscarriages. These may include blood tests to detect hormone imbalances, chromosome tests, using blood or tissue samples, pelvic and uterine exams and ultrasounds. 

Some women who miscarry develop a uterine infection, also called a septic miscarriage. Signs and symptoms of this infection include fever, chills, lower

Delhi, Said "Miscarriage has since then replaced to signify the natural loss of pregnancy. The dawn of hope of a child which turns into darkness of despair on

Quick Facts: Missed Miscarriages



A miscarriage diagnosed without bleeding



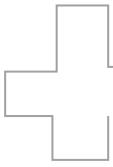
Body has not yet recognized loss of pregnancy

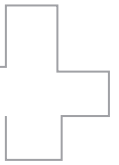


Bleeding from a miscarriage can take a few days or weeks to begin



Ultrasounds taken at this time will detect miscarriage



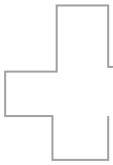


OPHTHALMOLOGISTS ARE ON THE EDGE

The COVID-19 pandemic has led to an unprecedented health care crisis and crippled normal life, as we know it. India, with a population of 1.3 billion, leads the list of countries where movement of people had been restricted, as a precautionary measure. COVID-19, which stands for coronavirus disease 2019, was suggested by World Health Organization (WHO).....

BY DR. MAHIPAL SINGH SACHDEV

Amongst other symptoms, ocular symptoms have been noted in the form of ocular congestion, foreign body sensation, conjunctivitis and keratoconjunctivitis, even though the frequency was less. Ophthalmologists are on the edge due to close face to face interaction with patients during slit lamp biomicroscopy and direct ophthalmoscopic examinations. Hence, a strict measure for ophthalmologists, healthcare workers and patients was extremely necessary. The ministry of Health & Family welfare laid out Guidelines on Safe Ophthalmology Practices in the Covid-19 Scenario. These guidelines are aimed to minimize the spread of a Covid-19 infection among Ophthalmologists, Ophthalmic assistants,



technicians, nurses, support staff, patients and their attendants. The basic preventive measures include simple public health measures that are to be followed to reduce the risk of COVID-19. These measures need to be observed by all (patients, staff and visitors) in these places at all times.

- I. Physical distancing of at least 6 feet to be followed as far as feasible.
- II. Use of face covers/masks to be made mandatory.
- III. Practice frequent hand washing with soap (for at least 40-60 seconds) even when hands are not visibly dirty. Use of alcohol-based hand sanitizers (for at least 20 seconds) can be made wherever feasible.
- IV. Respiratory etiquettes to be strictly followed. This involves strict practice of covering one's mouth and nose while

coughing/sneezing with a tissue/handkerchief/flexed elbow and disposing off used tissues properly.

- V. Self-monitoring of health by all and reporting any illness at the earliest to state and district helpline.

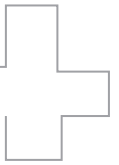
The All India Ophthalmological Society (AIOS) also laid out a set of guidelines towards the same effect, detailing all necessary steps.²

THEY INCLUDE THE FOLLOWING:

- COVID-19 Declaration/ Screening form for all patients and attendants, mandatory at the entry of the hospital.
- The AIOS guidelines also encompass all directives laid out by MOHFW.
- All Ophthalmology facilities to carry out routine clinical activities including OPD, IPD and diagnostic procedures, irrespective of being located in

green, orange or red zones except for those eye care facilities that are located in designated containment areas.

- All due precautions for preventing spread of infection to be taken as detailed later in this document.
- Ensure minimum patients at any given time in the premises and maintain physical distancing norms of 1 to 2 meters between the patients. To achieve this, the working timings/days of the Centres should be increased to space out the appointments as per the workload.
- Teleconsultation practices to be utilized as may be required.
- Patient education messages to be disseminated preferably through digital means- displays in waiting areas and through Social media accounts.
- All public marketing activities, and camps/ outreach activities shall remain suspended till



local govt allows resumption.

- Eye Banking: Hospital Cornea Recovery Program may be continued in Non-COVID deceased donors, for the need of corneas for corneal transplantation. No eyeball retrieval from homes.

DURING WORK

Upon reaching the hospital:

- wash your hands and/or use hand sanitizer,
- get yourself screened at the screening desk for fever,
- change into the set of clothes brought along,
- sanitize phone, ID cards, spectacles, vehicle keys, etc,
- keep the doors of your rooms open to avoid touching the doorknobs and handles,

- wash your hands again before starting work, and
- Wear PPE as may be applicable.
- Practice physical distancing.
- Greet your colleagues and patients with Namaste. Avoid handshake.
- Avoid touching your face and politely remind others too.
- Observe hand hygiene protocols.

PPE to be used: The PPE to be used by hospital staff has been enlisted in detail, including details on their reuse and disposal.

AFTER WORK

- Remove PPE. Disinfect (protective glasses and face shields) or dispose as may be applicable according to the

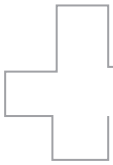
BMW Management Rules. Masks and caps in YELLOW and gloves in RED.

- Change back into the home clothes and place the work clothes in the washable bag brought along.
- Sanitize phone, ID cards, spectacles, etc.
- Leave what you can at the workplace. Whatever items are needed daily at the workplace and not needed at home should be left at the workplace.
- Wash your hands.
- Ring-up phone when you are about to reach home. Someone at home should keep the front door open so that you do not have to touch any objects like call bell, doorknobs.
- Again sanitize phone, ID cards, spectacles, shoes, etc on reaching home.
- Take bath (including head bath) immediately after arriving home.
- Wash your work clothes along with the bag and change into clean clothes.
- Practice wellness activity every day.

PROTOCOL FOR OUTPATIENT SERVICES

- Wear PPE as indicated: surgical mask, goggles/ face shield and gloves.
- Observe hand hygiene.
- Slit-lamp should have the barriers/ breath shields.
- Equipment disinfection protocols to be followed. Ensure proper disinfection frequently, where patient is coming in contact.
- Speak as less as possible.
- Ensure safe use of consumables.
- Ensure proper management of Biomedical Waste as per





the BMW Management Rules.


outside the OT .

PROTOCOL FOR SURGERY /IPD PROCEDURES

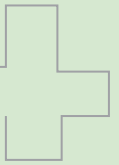
- Scheduling of surgery/ IPD procedures can be done while maintaining the OT air-conditioning, disinfection and culture protocols.
- All persons going to OT to wear PPE as recommended.
- Reduce the number of staff going to OT to have less crowding and also economical use of PPE. The suggested bare minimum OT team is one surgeon, one assistant to the surgeon (only if necessary), one anaesthetist, one circulation staff (nurse or OT tech as may be required) and one housekeeping staff.
- Choose the quickest possible surgical procedure. Quick and safe surgery is warranted.
- A gap of at least 20 minutes is to be maintained between two procedures in the same OT for GA cases.
- Surface disinfection of OT table, equipment, trolleys, etc to be carried out between two procedures.
- Ensure safe use of consumables.
- Ensure proper management of Biomedical Waste as per the BMW Management Rules.
- Aerosol generating procedures such as intubation and extubation should be done by anaesthetist with recommended PPE use and the surgeon should be

TELEMEDICINE& HOMECARE IN OPHTHALMOLOGY

The pandemic brings with it, a silver lining, in the form of tele-ophthalmology, making eye-care services available to a larger part of the population. Encouraging Tele-counselling and teleconsultation, not only lessens the patient load in hospitals, but also makes eye-care services available to patients not being able to visit an ophthalmologist. Detailed guidelines have been set by the AIOS, on the healthy practice of tele-ophthalmology.

With good imaging techniques, a majority of eye conditions can be managed with tele-ophthalmology, deferring a hospital visit. Advancements in technology now allows most eye examination techniques to be carried out at home, with the help of portable machines. Basic eye examination including (but not limited to) vision testing, refraction, colour vision, dry eye tests, detailed eye examination with portable slit lamp, glaucoma tests and fundus examination can now be carried out at home by ophthalmologists and optometrists. These advancements help segregate cases that require hospital visits from cases that may be managed from home. 

(The author is Padamshri Awardee, President, All India Ophthalmological Society, Chairman & Medical Director, Centre For Sight, New Delhi)



RESILIENCE DURING COVID-19

For information to the readers, emerging pandemics are characterized by several universal uncertainties including the risk of infectivity, the rate of disease transmission and communicability, disease incubation period, availability of effective medical care, time required to develop a vaccine and more.....

BY MEGHA SHARMA

The Covid-19 pandemic that originated in China is far from over. It was first reported in late 2019 and within a few months, it spread across 200 countries killing over millions of people worldwide.

Studies over the past year have reinforced the view that the COVID-19 pandemic and the lockdowns that were instated, negatively impacted the psychological well-being and enhanced distress amongst the general population. Symptoms like increased levels of anxiety, depression and sleep deprivation became commonplace. In order to combat the upswing of such cases, it is important to have a solid road map for mental resilience.

The concept of resilience has been fast gaining valuable application ever since the COVID-19 pandemic started hitting the headlines in late 2019. After ease in the lockdown measures, resilience is now understood as an involving and dynamic multi-level process. The response to a disaster by communities and larger systems can make a difference for the people's well being.

For building resilience during COVID-19 pandemic, developing a strong immune system, and adapting to new socio-economic scenarios like having limited number of people during functions such as marriage and avoiding alcoholic intake that weakens one's immunity system are needed. Adding citrus fruits and other Vitamin C rich food items in one's diet will give a boost to the immunity. Regular exercise should also be included in one's routine and changes should be made to adopt a healthy lifestyle.

ABOUT AUTHOR

The author is health activist, innovator, entrepreneur and founder, Panacea BioEdge Pvt Ltd


Never giving up and continuously finding solutions to problems is the key mantra for Megha Sharma. A Medical professional from UK and USA by parent's choice and a mental healthcare activist, innovator and entrepreneur by



her own choice, she works with a mission to transform mental healthcare practices and provide support to people experiencing mental health problems.

With technology-led solutions at the core of her problem-solving approach, she has been relentlessly enabling mental healthcare facilities to operate more effectively and efficiently. She believes in combining business strategy and technology to create empathetic solutions that tackle an individual's mental health issues with great precision.

Working with many healthcare institutions, schools and corporates, to provide an AI-powered digital assistant embedded in a modern care delivery platform designed to address mental health care delivery challenges and create a more streamlined experience for patients.

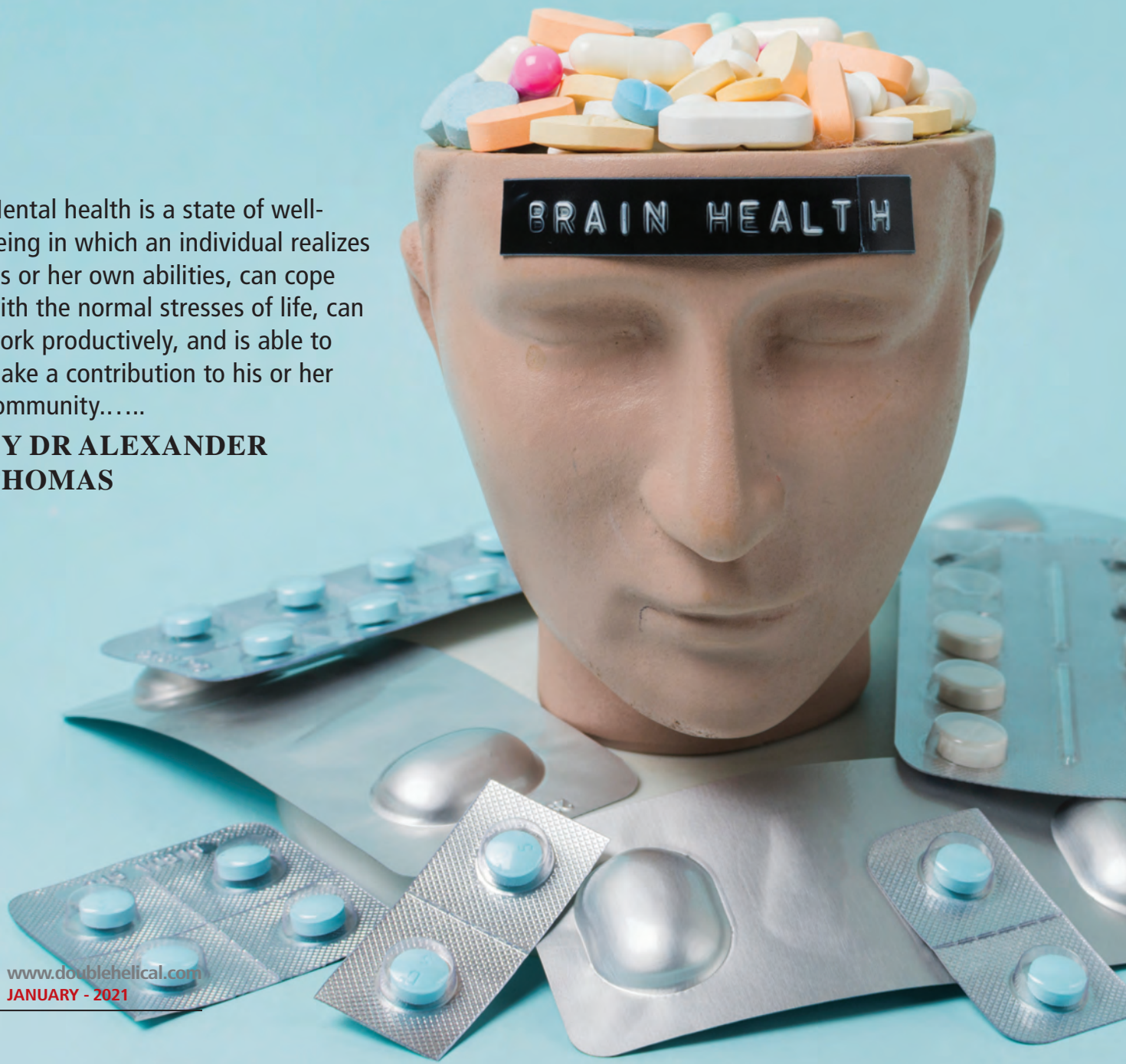
A fashion & fitness enthusiast, an avid reader, she also enjoys cooking, traveling and playing with her pet dog in her free time. 



REALIZE YOUR OWN ABILITIES

Mental health is a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively, and is able to make a contribution to his or her community.....

**BY DR ALEXANDER
THOMAS**





The WHO stress that mental health is “*more than just the absence of mental disorders or disabilities.*”

Peak mental health is about not only avoiding active conditions but also looking after ongoing wellness and happiness.

THE FOLLOWING ARE SOME OF THE RISK FACTORS:-

1. Continuous social and economic pressure

- **Modifiable factors for mental health disorders include:** Socioeconomic conditions, such whether work is available in the local area, Occupation, A person’s level of social involvement, Education, Housing quality
- **Non-modifiable factors include** gender, age and ethnicity

2. Biological factors

Genetic family history can increase the likelihood of mental health conditions, as certain genes and gene variants put a person at higher risk.

However, many other factors contribute to the development of these disorders.

Having a gene with links to a mental health disorder, such as depression or schizophrenia, does not guarantee that a condition will develop. Likewise, people without related genes or a family history of mental illness can still have mental health issues.

Mental health conditions such as stress, depression, and anxiety may develop due to underlying, life-changing physical health problems, such as



cancer, diabetes, and chronic pain.

COMMON MENTAL HEALTH DISORDERS

The most common types of mental illness are as follows:

- Anxiety disorders
- Mood disorders
- Schizophrenia disorders

A. ANXIETY DISORDERS

People with these conditions have severe fear or anxiety, which relates to certain objects or situations. Most people with an anxiety disorder will try to avoid exposure to whatever triggers their anxiety.

PANIC DISORDERS

People with a panic disorder experience regular panic attacks, which involve sudden, overwhelming terror or a sense of imminent





disaster and death.

PHOBIAS

Phobias are deeply personal, and doctors do not know every type. There could be thousands of phobias, and what might seem unusual to one person may be a severe problem that dominates daily life for another.

OBSESSIVE-COMPULSIVE DISORDER (OCD)

People with OCD have obsessions and compulsions. In other words, they experience constant, stressful thoughts and a powerful urge to perform repetitive acts, such as hand washing.

POST-TRAUMATIC STRESS DISORDER (PTSD)

PTSD can occur after a person

experiences or witnesses a deeply stressful or traumatic event.

B. MOOD DISORDERS

People may also refer to mood disorders as affective disorders or depressive disorders.

People with these conditions have significant changes in mood, generally involving either mania, which is a period of high energy and elation, or depression. Examples of mood disorders include:

- **MAJOR DEPRESSION:** An individual with major depression experiences a constant low mood and loses interest in activities and events that they previously enjoyed. They can feel prolonged periods of sadness or extreme sadness.
- **BIPOLAR DISORDER:** A person with bipolar disorder experiences unusual changes in their mood, energy levels, levels of activity, and ability to continue with daily life. Periods of high mood are known as manic phases, while depressive phases bring on low mood. Read more about the different types of bipolar here.
- **SEASONAL AFFECTIVE DISORDER (SAD):** Reduced daylight



triggers during the fall, winter, and early spring months trigger this type of major depression. It is most common in countries far from the equator. Learn more about SAD here.

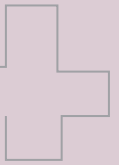
C. SCHIZOPHRENIA DISORDERS

Mental health authorities are still trying to determine whether schizophrenia is a single disorder or a group of related illnesses. It is a highly complex condition.

Signs of schizophrenia typically develop between the ages of 16 and 30 years, according to the NIMH. The individual will have thoughts that appear fragmented, and they may also find it hard to process information.

Schizophrenia has negative and positive symptoms. Positive symptoms include delusions, thought disorders, and hallucinations.





Negative symptoms include withdrawal, lack of motivation, and a flat or inappropriate mood.

TREATMENTS

1. Psychotherapy, or talking therapies

This type of treatment takes a psychological approach to treating mental illness. Cognitive behavioural therapy, exposure therapy, and dialectical behaviour therapy are examples.

Psychiatrists, psychologists, psychotherapists, and some primary care physicians carry out this type of treatment.

It can help people understand the root of their mental illness and start to work on more healthful thought patterns that support everyday living and reduce the risk of isolation and

self-harm.

2. Medication

Some people take prescribed medications, such as antidepressants, antipsychotics, and anxiolytic drugs.


Although these cannot cure mental disorders, some medications can improve symptoms and help a person resume social interaction and a normal routine while they work on their mental health.

Some of these medications work by boosting the body's absorption of feel-good chemicals, such as serotonin, from the brain. Other drugs either boost the overall levels of these chemicals or prevent their degradation or destruction.

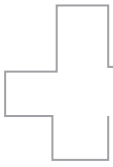
3. Self-help

A person coping with mental health difficulties will usually need to make

changes to their lifestyle to facilitate wellness.

Such changes might include reducing alcohol intake, sleeping more, and eating a balanced, nutritious diet. People may need to take time away from work or resolve issues with personal relationships that may be causing damage to their mental health. People with conditions such as an anxiety or depressive disorder may benefit from relaxation techniques, which include deep breathing, meditation, and mindfulness. It is also noted that having a support network, whether via self-help groups or close friends and family can also be essential to recovery from mental illness. 

(The author is National President, Association of Healthcare Providers India)

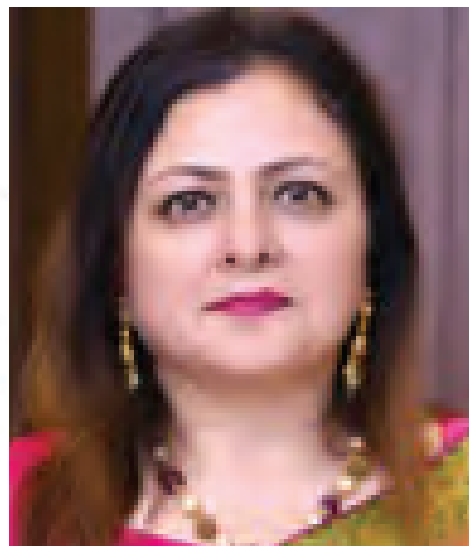


GEARING UP FOR DISTRIBUTION OF COVID-19 VACCINE

Desperate times call for desperate measures. Covid-19 is arguably the most challenging period worldwide and for India in the recent history.....

**BY DR HARVINDER POPLI/
MEENU GROVER SHARMA**



**Dr Harvinder Popli****Meenu Grover Sharma**

Right from generating awareness to mask-up, wash hands and maintain social distancing, to managing steep fall of economy and its gradual revival, to gearing up the healthcare system for test-trace-rehabilitate to an unimaginable extent, to increasing the capacity of testing laboratories and to becoming self-reliant in manufacturing PPE kits for healthcare workers, the struggle has been nothing less than monumental.

The speed, at which the

biopharmaceutical industry, well-supported by the regulatory agencies around the world, has been able to successfully develop highly effective and safe vaccines for this deadly disease, is nothing short of a miracle. As a bonus we have not just one but 2-3 option already available and several more in the pipeline which hopefully will be ready for commercialization soon.

Globally there are 203 vaccine candidates in development of which over 85 are in clinical development already. Recently, Pfizer/ BioNtech

and Moderna got emergency use authorization in the US and the roll out of public vaccination has already started. Other vaccines such as Sputnik-V and few Chinese candidates such as those from Sinopharm, Sinovac and Cansino have been in limited/early use in Russia and China respectively. In India, about 8 candidates are in development in collaboration with Indian companies of which one Covishield (Serum Institute of India) has also applied for emergency use approval. Additionally, Pfizer has also applied for emergency

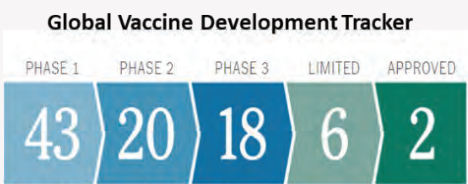


use approval in India.

The benefit of having multiple options available is not just in having a choice, but also the fact that for fulfilling the demand of global populations, manufacturing at multiple sites with multiple processes would be advantageous where just one facility would have been quite inadequate. Ensuring that the right people get the right vaccine at the right time is a formidable challenge given the population size, disparity in access to modern healthcare and the costs involved in procuring, distribution and administration of the vaccine, especially because the immunization programs have traditionally been planned for infants/ children and never targeted vaccinating adults at such a massive extent and the required pace.

Identification of at-risk populations for Prioritization

Planning for efficient distribution of vaccine and identification of vulnerable populations is quite a challenge in a country like India where we do not have a well-developed health information system. While it is obvious that healthcare workers and frontline workers would get priority in getting vaccinated, followed by at-risk age-groups and those with comorbid conditions, robust data to transparently implement this sequence is lacking in

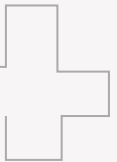


Updated: December 15, 2020

Indian Landscape of Vaccine Development

S. No.	Product	Indian Manufacturer	Collaborator	Current stage
1	Covishield (Chimpanzee Adenovirus)	Serum Institute of India, Pune	Astra Zeneca	Phase II/III
2	Covaxin (Inactivated Virus)	Bharat Biotech International Ltd, Hyderabad	Indian Council of Medical Research, India	Phase III
3	ZyCoV-D (DNA vaccine)	Cadila Healthcare Ltd, Ahmedabad (Zydus Cadila)	Dept of Biotechnology, India	Phase II
4	Sputnik V (Human Adenovirus vaccine)	Dr. Reddy's lab., Hyderabad	Gamaleya National Center, Russia	Phase-II over, Phase-III to start next week.
5	NVX-CoV2373 (Protein Sub-unit)	Serum Institute of India, Pune	Novavax	Ph III under consideration in India
6	Recombinant Protein Antigen based vaccine	Biological E Ltd, Hyderabad	MIT, USA	Pre-clinical animal studies concluded. Phase I plus II human clinical trials started.
7	HGCO 19 (mRNA based vaccine)	Genova, Pune	HDT, USA	Pre clinical animal studies over. Clinical trials (Phase I and II) to start.
8	Inactivated rabies vector platform	Bharat Biotech International Ltd, Hyderabad	Thomas Jefferson University, USA	Pre-clinical (Advanced)

Source: MoHWF, GOI

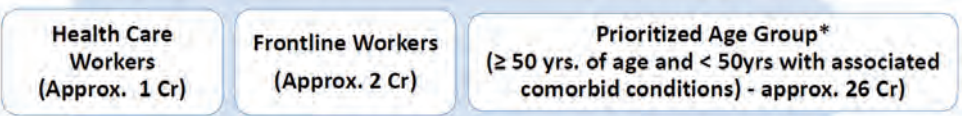


overall success of the population vaccination program against COVID19. MoHFW has announced the aim to vaccinate 30 crore most vulnerable people by August 2021, which will be the phase 1 of mass adult vaccination program, the first of its kind.

UPTAKE, FOLLOW-UP AND MONITORING TO ENSURE COMPREHENSIVE VACCINATION

The unique requirement of two doses for most vaccine candidates, 14-21 days apart, poses another challenge of execution. Ensuring that the identified populations show up or healthcare workers reach them on the day of the second dose is another layer of unique challenge that will require micro-planning and impeccable implementation.

PHASE 1 – Approximately 30 Crore population



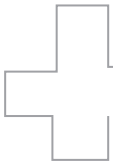
- ≥ 50 years group may be further sub-categorized into > 60 years and between 50-60 years
- Modalities for data collection of < 50yrs with associated comorbid conditions being finalized

*Age considered as on 1 January 2021

Goal is to protect people, minimize societal and economic impact by reducing COVID-19 mortality

Healthcare workers will need to track who received which vaccine and when, to ensure people are protected. Additionally, with social media abuzz with half-baked information on efficacy, novelty of mechanism and most importantly, safety anecdotes, there is also an increasing concern

about confidence of general public in these vaccines ‘developed so rapidly’ with implicit doubts on these being really safe and effective – which might impact uptake. Documentation of vaccination, tracking and investigation of any safety events will be essential components of



India's cold chain vaccine distribution network is operated through four government medical store depots (GMSDs) in Karnal, Mumbai, Chennai and Kolkata, which procure vaccines from manufacturers. 53 state vaccine stores get their supplies either from these GMSDs or directly from manufacturers. The state vaccine stores then distribute the vaccines to regional, district and sub-district level cold chain points via insulated vans. India currently has about 28,000 cold chain points, 76,000 cold chain equipment, 55,000 cold chain handlers and 2.5 million health workers as part of its vaccine logistic network, used for universal immunization program catering to immunization of children.

monitoring to boost confidence and improve voluntary uptake.

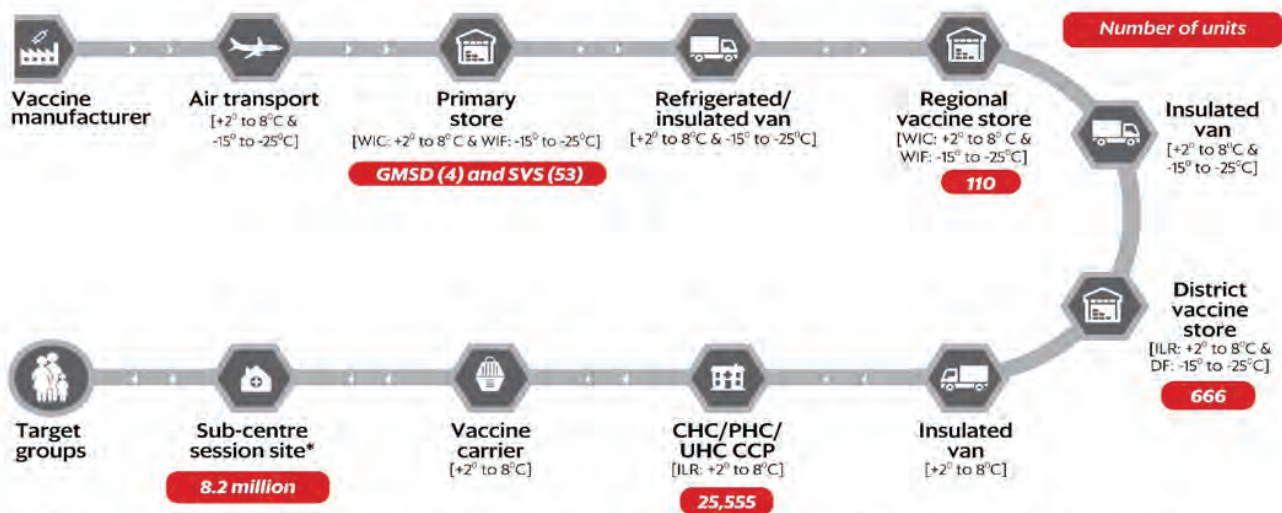
STORAGE CONDITIONS & LOGISTIC CHALLENGES

Pfizer's vaccine needs to be storage at -70 degree Celsius, a condition not commonly available in the existent

pharma/vaccine supply chains and a daunting task to maintain this condition throughout the supply chain to the actual point of vaccination. Other candidates such as Moderna vaccine require less challenging conditions but still cold-chain requirement is likely to be a given for most candidates.

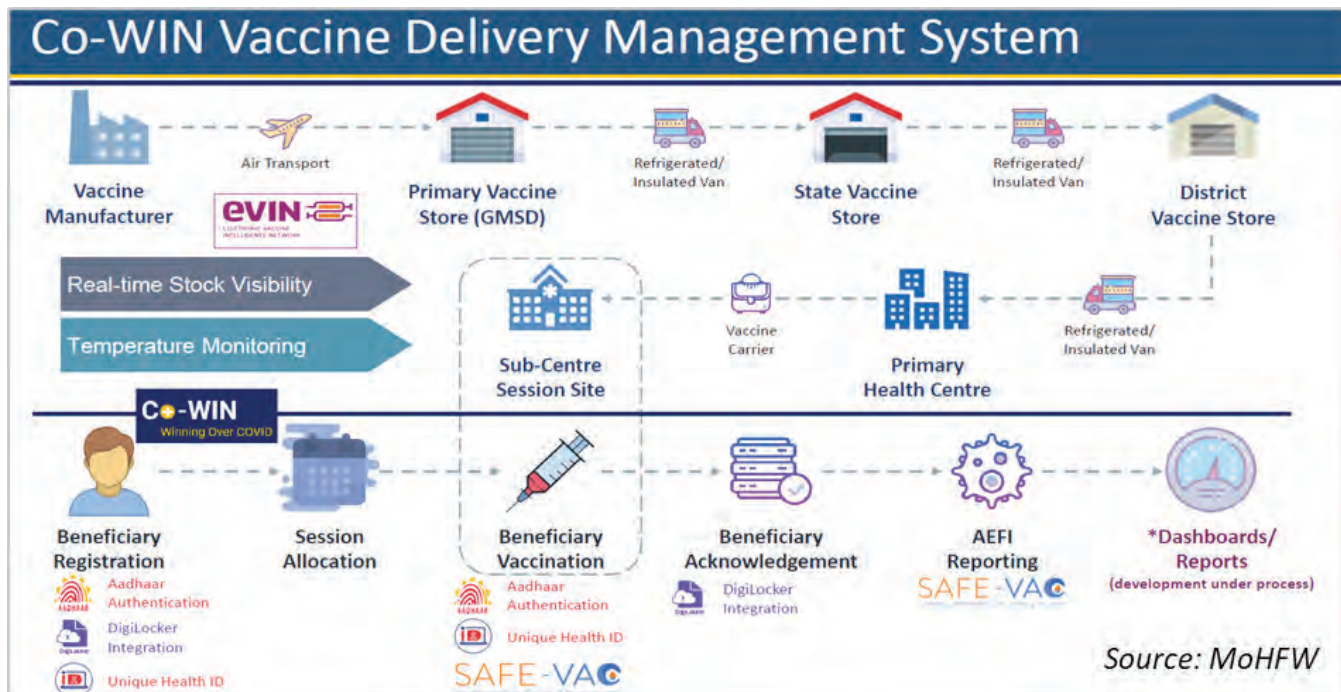
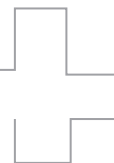
India's vaccine management has improved in recent years thanks to a real-time supply chain management system known as Vaccine Intelligence Network (eVIN). But still the infrastructure is greatly inadequate and will require massive scaling up of the capacities at a breakneck speed

Vaccine Distribution Network in India: Cold-chain Infrastructure



GMSD = Government medical store depot; SVS = State vaccine store; WIC = Walk-in cooler; WIF = Walk-in freezer; CHC = Community health centre; PHC = Primary health centre; UHC = Urban health centre; CCP = Cold chain point; ILR = Ice lined refrigerator; DF = Deep freezer; *in some of the states, selected sub-centres also function as CCP

Source: 'National EVM Assessment 2018' by NCCVMRC-NIHFV & UNICEF; 'Comprehensive Multi-Year Plan 2018-22: Universal Immunization Programme' by MoHFW; Livemint



to achieve the unprecedented goal of achieving vaccination of the entire population, without faltering on its key goal of regular immunization of newborns.

THEFT, DIVERSION AND BLACK-MARKETING RISK

At least initially, when the supplies will be limited and demand much higher, there is a risk of diversion of stocks to black-markets and profiteering at the expense of vulnerable populations. Despite strict requirements put in place for drugs such as remdesivir, sporadic instances of black-marketing at exorbitant prices were noticed in the initial periods of limited supply. Stronger safeguards need to be put in place to avoid such practices as also prevent spurious vaccines entering the supply chain. Robust oversight mechanisms need to be put in place before vaccination roll out and technology-based approaches need to be adopted.

OPERATIONAL PLANNING IN INDIA: ELECTION MODEL TO BE

FOLLOWED FOR VACCINE ROLL-OUT

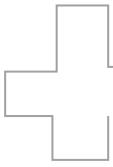
National Expert Group on Vaccine Administration for COVID19 (NEGVAC) was constituted on August 7, 2020 to provide guidance on prioritization of population, selection of vaccine, procurement and inventory management and vaccine delivery and tracking mechanisms. NEGVAC has recommended that roll out of vaccination should be carried out on the lines of the execution of elections in the country. A digital platform for COVID19 vaccine delivery (CoWIN) will be used for vaccine distribution and management through electronic beneficiary registration. The system will be integrated with Aadhar/UHID for authentication, Digilocker for document verification and Safevac system for AEFI reporting. There will be an easy to use mobile app for recording vaccination data.

Session allocation to the beneficiaries will be done through the CoWIN platform. A five-member team at the registration site will authenticate/check documents, check

registration status and vaccinate the registered beneficiary. The arrangement will be same as that seen at the polling booth during elections. SMS notification of particular dose with next date and time for subsequent dose will be communicated to the beneficiary along with a digital certificate with a QR code.

While the challenge is mammoth and our existing resources grossly inadequate, there is hope that with lessons learned during the last one year of capacity building and the use of digital technology, India will rise to the occasion and successfully vaccinate most vulnerable population by August 2021 and entire population by the end of next year. Significant manufacturing strength in vaccines will aid India achieve not just universal access for its own population but extend to other nations of the world as well. 

(The authors are from Delhi Pharmaceutical Science and Research University (DPSRU), New Delhi

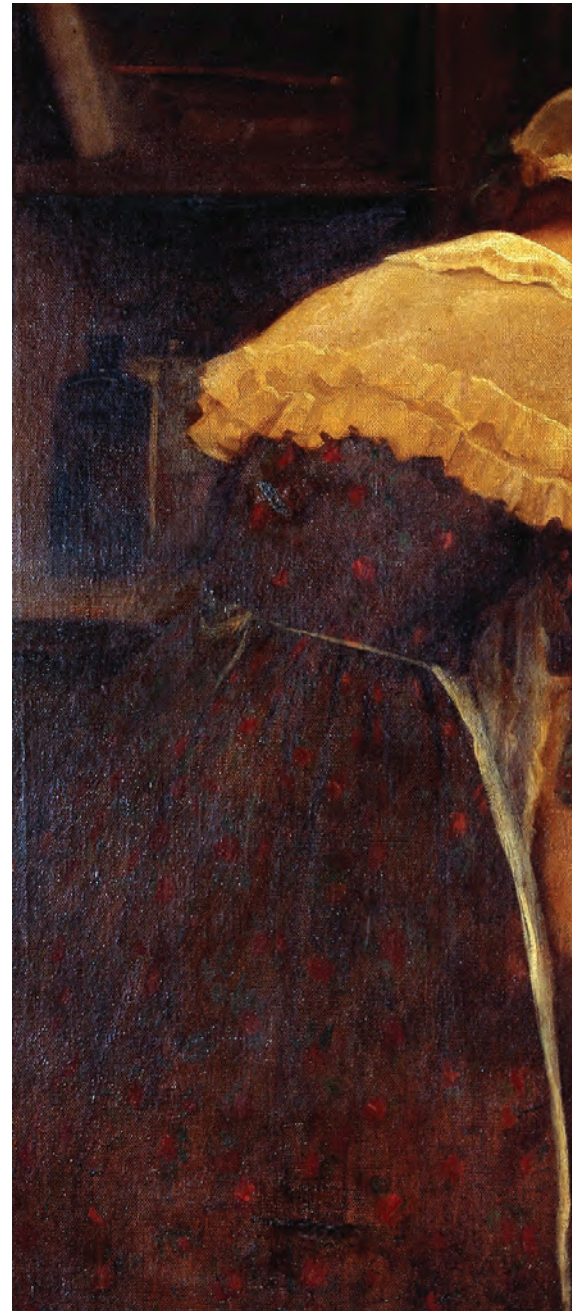


VITAL STEP TOWARDS INVENTING VACCINES



For the development of any vaccine, including avaccine for Covid-19, there are several stages involved with inputs from scientists at all levels. The basic step begins at the laboratory level in which the nature of infection needs to be studied in detail at the cellular and molecular level.....

BY DR. BHOOMIKA M. PATEL



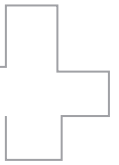
In 1796, Sir Edward Jenner developed the first vaccine against Small pox in the world. In India, the first vaccine for small pox was given in Mumbai in 1802. Until 1850, vaccines used to be imported from Great Britain. In 1896, there was an outbreak of cholera in India and Dr.Haffkinecame to India

and conducted clinical trials of the vaccine in India. In 1897, the plague vaccine was developed as the first vaccine in India by Dr. Haffkine at the Haffkine Institute. Subsequently, several institutions and manufacturing units got established later. Before Covid-19, India has been the largest exporter of vaccines. In 2019-20,

about USD 710 million worth of vaccines were exported. Today it has made history by launching two indigenous vaccines at a time for Covid-19.

STEPS IN A VACCINE DEVELOPMENT

For the development of any vaccine,



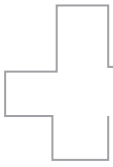
“Two Vaccines launched by India, in addition to approval for the Third Phase Clinical Trial of Third Vaccine”

including a vaccine for Covid-19, there are several stages involved with inputs from scientists at all levels. The basic step begins at the laboratory level in which the nature of infection needs to be studied in detail at the cellular and molecular level. With respect to Covid-19, much was studied about its structure, genome/sequence of its

genome, along with the mode of entry in humans and its transmission. For any infection, the body will always generate an immune response. Hence, the next step is understanding the immune response to Covid-19 and how the human body reacts to the virus. Based on the understanding, an approach is decided as to how to

develop a vaccine. Thereafter, some basic studies are carried out in cell lines to establish whether the decided approach is “working” or not and this provides an initial clue about the vaccine.

Once a candidate vaccine is developed, it undergoes a series of processes for ensuring that it is



working properly and is safe. The initial studies are carried out in relevant laboratory animals like rats, mice, guinea pigs, hamsters, cats, dogs and/or monkeys. In these animals, the investigations are done to find out whether the vaccine is generating the desired immune response. Additionally, safety pharmacology and toxicity studies are carried out to determine whether the developed product is not producing major undesirable effects and adverse reactions. Once these are ensured, the vaccine enters into clinical trials which again has different phases. Phase I is an early stage study carried out in less number of subjects, basically to rule out major safety problems. Phase II is the next stage involving a greater number of subjects to establish consistency of the results of phase I studies. This phase ensures the expected immune response and also determines if any adverse effects are

there. The final stage before approval is phase III which is conducted in a large population involving thousands of subjects and once the vaccines clear this phase, it is given approvals by the relevant regulatory agency to be available to the public at large.

TYPES OF VACCINES FOR COVID-19

Various types of vaccines are under development/developed for Covid-19 which are dealt with in the upcoming section.

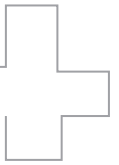
INACTIVATED AND LIVE-ATTENUATED VACCINES

Inactivated virus vaccines are the vaccines prepared from viruses which are converted into a non-infectious form using physical or chemical method. Influenza vaccine is one such example of an inactivated virus vaccine. Such vaccines are stable and can be easily produced which is their major advantage. The major

disadvantage is that unimportant antigens may result in the skewing of the immunogenic response. Sinovac, Wuhan Institute of Biological Products/Sinopharm and Beijing Institute of Biological Products/Sinopharm, Institute of Medical Biology, Chinese Academy of Medical Sciences, Research Institute for Biological Safety Problems are few developers whose inactivated virus vaccines have entered into the advanced phases of clinical trials. Live-attenuated vaccines are the vaccines made up of live viruses but which are weakened (hence “attenuated”). Smallpox and poliomyelitis are examples of such successful vaccines. The major challenge of such vaccines is that the attenuated viruses may again regain some virulence making them dangerous.

NUCLEIC ACID VACCINES

DNA and mRNA vaccines are



examples of nucleic acid vaccines. Upon administration, there is the transcription of the mRNA/DNA into relevant viral proteins; S protein being the most common candidate in coronavirus. The advantage of mRNA vaccines is rapid development and low manufacturing cost. However, the delivery and localization are major challenges of mRNA vaccines. The recently approved Pfizer-BioNTech COVID-19 Vaccine developed by Pfizer Inc. and Moderna COVID-19 Vaccine

developed by ModernaTX, Inc. are examples of mRNA Vaccines.

The DNA vaccines augment the cellular and humoral immune response of the body. The major advantage is that they are stable, can be prepared easily and that to in huge quantities. DNA plasmid vaccines prepared by International Vaccine Institute/Inovio Pharmaceuticals, DNA plasmid vaccine with adjuvant prepared by Osaka University/ AnGes/ Takara and DNA Vaccine (GX-19) prepared

by Genexine Consortium are some such vaccines under clinical trials.

VECTOR VACCINES

Vector vaccines are the ones that are prepared from the carrier virus so that they are able to carry and deliver a specific gene of the virus. The major advantage of these vaccines is that such vaccines can ably induce an immune response; however induction of prior immunity against the vector is the major challenge. Various developers of vector vaccines are CanSino Biological Inc./Beijing Institute of Biotechnology, University of Oxford/AstraZeneca, Gamaleya Research Institute, Janssen Pharmaceutical Companies, etc.

SUBUNIT VACCINES AND VIRUS-LIKE PARTICLES VACCINES

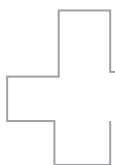
There are certain viral proteins that induce an immune response when administered into the host and injection of this type of vaccine (based on proteins) are called subunit vaccines. Such vaccines have the major limitation that they produce an unbalance immune response with restricted efficacy.

INDIGENOUS VACCINES FROM INDIA

As a vibrant step towards “Atmanirbhar Bharat”, currently there are two vaccines that have received approval from the Drugs Controller General of India (DCGI) for the Restricted Emergency Approval of Covid-19. These are vaccines of M/s Serum Institute of India named “Covishield” and M/s Bharat Biotech named “Covaxin”. Additionally, approvals for Phase III clinical trial of ZyCov-D by M/s Cadila Healthcare Ltd. is granted.

COVISHIELD

Covishield is an adenovirus vector-based vaccine that is prepared using



recombinant technology. This vaccine encodes for the spike S glycoprotein of the coronavirus. This vaccine is prepared by the Serum Institute of India in association with AstraZeneca/Oxford University. The phase trials of Covishield involved more than 22,000 subjects pan India at 17 centers. At the global level, this was studied in four demographically different countries. The overall efficacy of this vaccine is found to be nearly 70% which is scalable upto 90% when given as a part of a full dosage regimen. The DCGI reviewed the interim safety data and immunogenicity data and after a thorough review, it was found to be analogous to the data from global clinical studies. Covishield is to be given in two dosage regimen two weeks apart. It doesnot need any special cold chain for transport and as it is stable at a temperature of 2 to 8°C.

COVAXIN

The indigenous vaccine from Bharat Biotech “Covaxin” is a type of inactivated vaccine prepared from the whole virion in association with the

Indian Council of Medical Research and National Institute of Virology. Covaxin has been granted approval in “clinical trial mode” which means that the subjects who receive this vaccine will be tracked down as if they are registered in a clinical trial. Similar to Covishield, Covaxin is also to be given in two dosage regimens on day 0 and day 28. Again, it does not need a special cold chain for transport and as it is stable at a temperature of 2 to 8°C. Covaxin is also speculated to be useful for the variant strain of coronavirus

ZYCOV-D

Novel Corona Virus-2019-nCov-Vaccine named ZyCov-D developed by the Indian company Cadila Healthcare Limited is a DNA plasmid vaccine. It has been granted approval for phase III clinical trial by the DCGI. The results from Phase I/II clinical trials were suggestive that the vaccine is safe and efficacious and is well tolerated. The company will now be initiating Phase III clinical trial in around 30,000 volunteers. Again, the storage condition of ZyCov-D is at a

temperature of 2 to 8°C making it apt for India conditions.

WAY FORWARD

At the beginning of the year 2020, the world was in large distress due to Covid-19 emerging as one of the fast spreading, deadly pandemic disease. Scientists, all over the world were struggling and trying to find out a solution to fight against an unseen enemy. However, by the end of the year 2020, we have come far ahead scientifically. Several vaccines were approved in various countries. At the beginning of the year 2021, the approval of two indigenous vaccines from India and approval of phase III clinical trial for the third vaccine has brought in high hopes and positivity in people. Indeed, we have shown that India has a stand in the global context with respect to healthcare and Indians are really doing well for making the dream of “Atmanirbhar Bharat” true! 

(The author is Assistant Professor, Institute of Pharmacy, Nirma University, Ahmedabad)

Your Guide to **Healthy Living**



Subscribe to Double Helical Magazine Now

Subscription Offer

Duration (year)	Issue	Newsstand Price INR	Subscription Price INR	Savings Price INR
1	12	1200	1020	180
2	24	2400	1920	480
3	36	3600	2520	1080

Please fill this form in Capital Letters

First Name..... Last Name.....

Designation/Profession.....

Mailing Address.....

City..... Postal Code.....

State..... Country.....

Telephone..... Fax.....

Email..... Website.....

I/We would like to subscribe for 1 2 3 Year

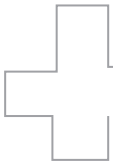
I am enclosing a cheque/DD No. Drawn on (Specify Bank)

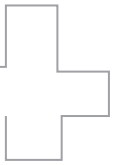
Dated.....In favour of Double Helical Pvt. Ltd. payable at
Ghaziabad For Rsonly

Advertisements & Marketing
Abhinav Kumar
Email: sales@doublehelical.com

All material printed in this publication is the sole property of Double Helical. All printed matter contained in the magazine is based on the information of those featured in it. The views, ideas, comments and opinions expressed are solely of those featured and the Editor and Publisher do not necessarily sub-scribe to the same.

Double Helical is owned, printed and Published monthly. It is printed at Polykam offset, Naraina Industrial Area Phase 1, New Delhi-110028, and published from G-1, Antriksh Green, Kaushambi, Ghaziabad-201 010. Tel: 0120-4219575, 9953604965.
Contact us contact@doublehelical.com
Email: editor@doublehelical.com, doublehelicaldesign@gmail.com
Website: www.doublehelical.com, www.doublehelical.in





A WISE STEP TO MANAGE COVID PATIENTS

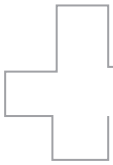
Started in 1900 by Dr. Ida Sophia Scudder, Christian Medical College (CMC), Vellore was as a single bed dispensary. Now 120 years later, it is a 3000 bed tertiary care university affiliating teaching hospital that offers the spectrum of medical services for patients from across the globe.....

BY DR. LALLU JOSEPH,/ DR. BINILA CHACKO



Today the CMC is the largest institution accredited by NABH for excellence in patient safety and quality standards. CMC has always responded to the healthcare needs in India, whether it was the response to

the 'mother and child' in 1900s or providing niche services such as renal and bone marrow transplantation or dealing with infectious diseases or starting training programs. When the pandemic was declared, CMC responded by creating capacity for



COVID, establishing processes and policies to ensure smooth function and created training modules to ensure a scientific approach to COVID. It started by allocating 150 beds for COVID in March 2020 and the capacity was rapidly enhanced to meet the demand for COVID care.

During the peak of pandemic, CMC had 924 beds including 96 ICU beds, dedicated for COVID patients, which makes it one of the largest private hospitals that provided COVID care, that supported 4 districts around Vellore and so far over 10000 COVID patients have been treated in CMC Vellore.

We asked the Director of CMC Vellore about the contributions of CMC during COVID and he said- CMC is not restricted by boundaries. Its contributions go beyond the state to the nation and the globe. Dr. J. V. Peter, the Director of CMC Vellore stated that CMC's contribution to dealing with the pandemic can be considered into three major areas - the local community and state, national and global.

1. Contributions to the local community and state:

The institution has been actively engaged with the district administration in managing the crisis. We received approval for COVID testing in early phase of the pandemic along with the first list of approved institutions by ICMR. CMC managed the first patient in Vellore District. As the numbers increased, in order to support the district administration, CMC opened many wards and ICUs. The beds are classified into L1, L2 and L3 where L1 are for mild and asymptomatic, L2 for more sick patients requiring oxygen but not intensive care, and L3 for very sick patients requiring intensive care.

Even before the announcement of the pandemic by the World Health Organization (WHO), the Hospital Infection Control Committee (HICC) started preparing protocols for



Dr. J. V. Peter

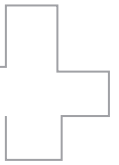
receiving patients. Staff Training Department and Nursing Service initiated training of all staff in the form of simple videos. Our protocols were widely distributed, shared by the healthcare fraternity and appreciated by various agencies that included the Andhra Pradesh Government. Representatives from CMC are also part of the expert group of the Tamil Nadu State. They have given their inputs and recommendations for COVID management and control in Tamil Nadu.

2. National Level Contribution:

CMC's contribution at the National Level has been substantial. Dr. Priya Abraham, Clinical Virologist of CMC Vellore is in a key role at "National Institute of Virology (NIV)", Pune on special leave from CMC Vellore. Dr.

Gangandeeep Kang has contributed immensely in "Translational health sciences and technology" and has been part of various committees. Dr. Jayaprakash Muliyl, former Principal of CMC Vellore and Epidemiologist, Dr. Jacob John, former head of Virology, Dr. O.C. Abraham, ID Specialist, Dr. Jeyaseelan, former head of Biostatistics and others have contributed to policies and expert inputs at the national level.

CMC is involved in training healthcare workers of other government and mission hospitals on COVID management. The institution trained over 5000 doctors and nurses using an online platform with support from "TATA Trust". CMC's Distance Education Unit in partnership with the Azim Premji Foundation trained 10,000 grass root levels workers (like ASHA workers) and the program was



developed in English, Hindi, Tamil and Kannada.

3. Contributions to the Global Community

Our Alumnus Dr. Ankit Bharat, conducted the first lung transplant on a COVID patient in USA. Significant research is being conducted by our Alumni Dr. Priya Sampath, ID specialist in Mayo Clinic, USA and Dr. Vincent Raj Kumar, Haematologist. Many other CMC alumnus are involved in COVID work across the globe. CMC faculty are also involved in 50 research projects in the management of COVID.

EMERGENCY PREPAREDNESS IS A TEAM SPORT:

“Realising the effect of the deadly virus, the institution initiated its response by late January 2020. We

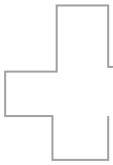
visualised challenges upfront and worked proactively with interventions as the pandemic started in China. The first preparedness policy document for the institution was released on January 23rd, 2020. The institution actually prepared itself to receive the suspect/patients in Feb 2020”, said **Dr. Priscilla Rupali, Professor IDTRC & Deputy Chair, HICC**

Several teams were set up to get organised and battle the situation. CMC believes in getting the teams together and the collective synergy.

The administrative team met every morning to discuss on the progress of the preparedness. The individual subcommittees met to ensure all arrangements pertaining to their scope were organized. The institution was ready with triaging criteria for patients coming with symptoms, Isolation

rooms/ wards, adequate PPEs, quarantine facilities for staff coming, updated cleaning and disinfection protocols. The cleaning frequency was increased even in the non-clinical offices to protect every one accessing the institution. The changes in protocol were conveyed to the staff through mails, intranet and training sessions to give them the confidence to handle the situation. Heads of the various departments were made responsible to ensure that the protocols were implemented.

The hospital started admitting patients who potentially fell into the criteria of suspects in early March. The first patient suspected for COVID was admitted on 25th March 2020 and he turned to be COVID positive. Initially only one ward was allotted to admit suspect patients. As the numbers



started going up, many wards were converted to suspect and positive wards. Entire floor of the Main Building was converted to COVID floor and access was restricted.

COVID Command Centre:

“The increase in patient load was very challenging for the institution, as it needed to make sure all the necessary resources were available to deliver the service. The institution realised the importance of having a centralised structure for COVID operations and the COVID Command Centre (CCC) was setup. The command centre is exclusive for COVID management and has the patient help line, HR desk, admission and bed management desk, finance desk, contact-tracing desk and counselling desk. Management of the day-to-day operations became easier having the COVID Command Centre. Staff from various specialities who volunteered to help the institution were posted in COVID command centre and were given specific roles” said Dr. Joy Mammen, Associate Director (Medical)

The primary focus of the institution during this pandemic was always “patient care” and “workplace safety for staff”. The institution ventured into various strategies to ensure no compromise on these two aspects.

How are we managing COVID patients?

Screening:

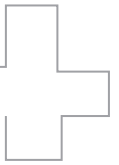
Patients/ patient relatives are screened at various points of the hospital before entering into the building for consultation/ test/ admission. Screening was initially done using a checklist in which patients were screened for basic symptoms like temperature, cough, cold etc and also checked whether they came from containment zone. Based on the screening, the patients are triaged and seen to ensure no cross contamination among patients and healthcare workers. If the patient required testing for COVID, they are sent to fever clinic.

Checklists are not there anymore but thermal screening continues at all the

entrances. Patients with fever are sent to fever clinic for COVID testing. Any patient with symptoms directly approach fever clinic for testing.

Sample collection:

Patients are seen by the doctors in the fever clinic. Not all patients visiting fever clinic require testing. The doctors evaluate the patient and order for COVID test. Before swabbing (sample collection), the forms are filled as regulated by the government including the ICMR form. The swab test is given by the patient on the same day in fever clinic. The swab is sent to Virology lab of the institution and results are communicated to the patients within 8 hours through the COVID Command Centre that calls them in their registered mobile number. CMC Vellore was designated as the COVID testing centre during the initial stage of the pandemic in India and the testing started from 24th March 2020. Now a rapid gene expert RT PCR is available, and results are ready in 2 hours.



Admission:

As soon as the test result is informed by the teams to the patient, the admission desk contacts the patient and verbally checks their status. Patients are informed about the cost of treatment by the finance desk and given the advice for payment through online modes. If the patients are not sick, they are taken as Level 1 and the beds are allotted to them. Then the patients are requested to report to the admission desk near Emergency Department. If the patient is sick, they are asked to go to Emergency Department for assessment and admission into Level 2 (wards where the patients needed close monitoring) or Level 3 (ICUs) wards as per patient requirement. For L1 patients, the COVID Command Centre communicates with the patient regarding the admission time and

reporting. L2 and L3 patients are admitted to the COVID wards directly from the Emergency Department of the institution.

Level 1 patients report to the admission desk. The patients are sent to the respective wards for admission. The staff in the admission desk accompany them to the ward to ensure they follow the right route for transfer/movement of COVID patients.

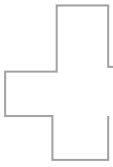
Patient movement:

Patient movement from other part of the hospital to the COVID floor happens through a dedicated route and lifts, to prevent cross contamination between COVID patients and others (normal patients and staff). The route was identified by a yellow rope on the wall that takes them to the COVID floor.

Comforting patients and their relatives:

Patients after admission are completely taken care by the hospital as the relatives are not allowed to stay with the patients. The patients are visited by the Social Workers, and Counsellors to make them feel comfortable and counselled during the stay. Food and snacks are provided by the institutional Dietary Department. The patient as well as the relatives are informed about the patient's condition everyday by the treating team. Any queries/ clarification for the patient relatives are answered through the 24 hr helpline, which is in the COVID command centre. As the patients get discharged, the patients are accompanied by the staff till they reach their vehicle.



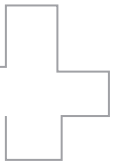


How are we ensuring safety of our staff?

CMC Vellore has been very carefully framing strategies to ensure that all healthcare workers are taken care of. The fear among the staff during the initial stage of pandemic was very challenging for the institution. Reassurance with adequate PPE supply and training helped in allaying the fear. About 1644 staff, including 683 doctors and 966 nurses were posted on COVID duty apart from technicians, therapist and hospital attendants adding to 1900 staff during the peak of Pandemic in August.

COVID duty schedules were prepared for doctors, nurses, technicians, ward attenders etc. in order to ensure adequate manpower to battle this pandemic. Schedules were prepared in advance and sent to the healthcare workers. Though many healthcare





workers volunteered in the initial stage, the institution strategically posted senior doctors from various specialities on COVID duty, to make the juniors feel confident of handling COVID patients. This was a positive sign for the healthcare worker's willingness to work during this COVID period.

Training of staff:

The institution conducted various training programmes for the staff on protocols to be followed to overcome COVID. The training programmes were conducted by the Staff Training Department of the institution and Nursing Service (for Nurses). They prepared several training materials in consultation with the infection control team, and trained staff on the new/modified protocols. They also prepared simplified training material that included videos that helped everyone

understand the protocols. During the training programme, the staff were encouraged to clarify queries and express their grievances related to their safety at work. These were addressed during the session. This helped in developing confidence among the healthcare workers in COVID areas. Lectures on different crucial aspects pertaining to COVID for medical professionals across the country were conducted as COVID Public Lecture Series (COVID PULSE)-this lecture series received good feedback from various health professionals.

N95 mask for staff during the high demand period:

As the pandemic started, the demand for masks went up drastically throughout the country. The supply of surgical mask itself was a problem. What was sold for 90 paise before pandemic was sold for Rs.18/- and

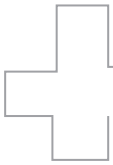
there was a huge shortage. However this was anticipated and hence adequate preparations were made to ensure adequate quantity of surgical masks as well as N95 masks were available. The departments were asked to use surgical masks rationally to avoid wastage.

The institution worked strategically to ensure availability of N95 mask for all staff. The institution developed a policy on re-use of N95 mask to handle the crisis. Patient care staff working in non-COVID areas were issued 6 masks for 36 days with one cycle of plasma sterilisation in-between. New masks were issued to all staff working in COVID areas. As the supply stabilized, the sterilisation of N95 mask was discontinued. The mask and supply committee headed by Dr. Vikram Mathews, Associate Director (Admin) looked at the supplies, suppliers and ensured good supply chain throughout the pandemic.

Facilitations for staff in COVID ward:

Facilities for staff working in the COVID wards was initiated to take care of the staff and boost up their confidence. Facilitations include Shower facilities after duty, Scrub counter, N95 counters, Snacks in the work areas itself etc. Adequate purchase of Scrub suits, N95 masks, PPEs etc were ensured in a short period of time. Change rooms, temporary shower areas and lockers to keep the staff belongings were arranged. Staff present for duty in their casual wear change to scrub suits, collect N95 mask and then move to their respective wards.

They don in the donning area in the ward and start their duty. On completion of the duty, they doff their PPE in the ward. Instructions on donning and doffing were displayed in these areas and instruction videos were made available on the intranet. After doffing, they move to the facilitation counter where they drop their used N95 and collect soap, shampoo, towel to take



shower and leave. While they leave, they are given surgical mask to wear.

Quarantine facility:

In the initial phase of the lockdown, staff were given leave to minimize the numbers in the hospital and only 1/3 of the staff, especially those needed for patient care were made to work in rotation. Specialised quarantine facilities for staff were arranged by institution for those who do not have facility for home isolation. Food for the quarantined staff was provided through quarantine and housing committees.

Other interventions:

Transportation facility for staff during lockdown, hand wash stations at multiple points, sanitizers at nominal price for staff, and also food for staff in COVID areas were given. Staff duties were rescheduled to 6 hours in COVID areas. Psychological support and counselling for the staff were also given.

Role of Support services:

The general services team were sincerely committed to take the challenge head on. Week after week new facilities had to be opened up to deal with the demand. The staff took up to do the work by themselves since the external work force was not available. Shops were opened up to get the materials needed. Everything happened like a Disaster Management Operation. Taking personal Risk for the sake of others was the highlight of achievement, said Er. David Chandran, General Superintendent.

Engineering services:

As the numbers increased, the institution opened up few more wards in the Main building and the work in Kannigapuram campus was rushed up to open wards to accommodate more patients including patients from adjacent districts. The institution's engineers worked tirelessly to set up temporary showers (34 in number), change rooms, negative pressure in

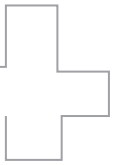
theatres, converting wards to ICUs to accommodate level 2 and 3 patients etc. They were also part of many innovations. Uninterrupted supply of medical gases and daily monitoring of water was ensured by this team.

Usage of Medical gas was monitored critically so as to ensure adequate stock of oxygen as it is a very important entity to manage COVID patients. The oxygen consumption during this period went up to 4772 m³ / day from 3233 m³ / day during the pre-COVID period. A complete study on Oxygen requirement was conducted and back up oxygen concentrator was installed. Phenomenal amount of work of high technical nature was done by the engineering teams

Ambulance services:

22 Ambulances, in house as well as outsourced, were used to transfer COVID patients. It included shifting of patients from

- Home to hospital
- Between Campuses



institution was very careful to ensure that they did not mix up with regular waste, linen and CSSD.

All biomedical waste management generated in the COVID wards marked with COVID sticker on its collection cover are stored separately in the temporary storage area. The movement of the ward trolley was through the designated route and lift. On an average 2.2 tonnes of waste was collected from COVID areas during the peak.

Laundry Services:

The number of scrubs required to be washed in the institution laundry department went up tremendously as we started using scrub suits in the COVID areas. The scrubs are disinfected and then sent to laundry for washing. The scrubs are washed everyday so as to ensure the availability of the same,

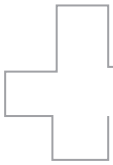


- Hospital to home

Cleaning of Ambulances after every trip and PPE for the Drivers were insisted upon and monitored, as many outsourced Ambulance services were inducted as the numbers went up. On an average about 35 trips per day for patient transfer were executed through the ambulances.

Biomedical Waste Management

The protocol for biomedical waste management, linen management, CSSD management for wards in COVID floors were setup and implemented immediately. The



in the scrub issue counter for the staff. On an average 1250 scrub (shirt and pants), and 1200 towels were sent to laundry for washing and ironing that added to the existing load.

Dietary services:

Dietary services of the institution worked tirelessly to serve COVID patients, especially for those patients who need to be on therapeutic diet, as outside food is strictly avoided to prevent visitors' entry. On an average 750 COVID patients were served food through the dietary services of the institution in a day during the peak. External food services were arranged for L1 patients to get more variety of food since loss of taste and smell is also one of the symptoms for COVID patients. The diet trolleys that serve food to patients admitted in COVID wards were moved in a designated route and lift.

How do we ensure quality and safety?

Ensuring that quality care is delivered to our patients during the pandemic is

paramount and it is hence important to monitor these interventions. All interventions are being monitored through various audits conducted by various teams- Infection Control Team, Clinical Team, Nursing Team, Quality and Safety Teams, said Dr. Binila Chacko, Professor, MICU and Deputy Director (Quality).

Patient feedback

The COVID patient feedback was taken by phone calls to patients during their admission as well as after discharge. Of the 895 patients surveyed, more than 95% of the patients were satisfied with the services provided by the institution.

Staff feedback:

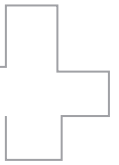
Staff working in COVID areas were surveyed for their feedback very regularly. Of the 320 staff who responded to the staff feedback survey, 85% of the staff were extremely satisfied and felt that the institution had taken care of them very well.

Fire Management Protocol:

The fire management committee, Quality Management Cell and Safety Cell prepared protocol for managing fire emergency in COVID wards. This included identifying alternate care sites for these patients if they had to be evacuated. The staffs in the COVID wards and the support services were trained on the protocol. The fire team of the institution rehearsed the protocol several times, during this short period to get oriented to it. Mock fire drills were conducted in some of the COVID wards to assess the effectiveness of the preparedness. The lacunae identified during the mock drill were addressed immediately. In order to prevent any fire, preventive maintenance of equipment are being carried out regularly in all COVID areas.

Neighbourhood watch:

Apart from this, there was also a dedicated team of healthcare workers, predominantly doctors, who have volunteered themselves as the safety champions for the institution. Surprise inspections were conducted and actions taken promptly on any non adherence



“You will not only be curing diseases, but will also be battling with epidemics, plagues and pestilences and preventing them... You must learn to be cool, collected and quiet; to have presence of mind; rapid thought and action in the most trying circumstances. You must learn to have wise judgement in moments of great peril... Practice and experience will train you to have firmness and courage.

Do not always look for gratitude, for sometimes when you are most deserving, you will get the least...

There will be care, anxieties, failures which are very common to a professional life...

These are the valleys into which you descent, but stand up, bravely, be true and keep on climbing...”

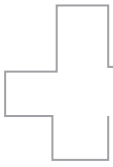
to safety protocols like social distancing, mask usage etc.

This year 2020, we celebrate our founder Dr. Ida Sophia Scudder’s 150th birth anniversary and 120 years of CMC Vellore. Ida Scudder’s example of

dedicated service to mankind continues to motivate the institution to the present day. Her talk to the very first batch of 14 medical students, all of whom were women during the Graduation Day in 1922 holds good for medical professionals particularly

during the pandemic. 

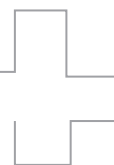
(The authors are Quality Manager & Associate General Superintendent and Professor, MICU & Deputy Director (Quality), CMC Vellore.)



COVID-19 VACCINE AND INDIA'S STRATEGY

In a historic turning point, the Food and Drug Administration (FDA) cleared Pfizer's Covid 19 vaccine for emergency use and becomes the sixth country after Britain, Bahrain, Canada, Saudi Arabia, and Mexico. This decision not only has shown a ray of hope to the American citizens but for millions of highly vulnerable people around the world.....

BY JYOTI SHARMA/ SANJEEV KUMAR VARSHNEY



According to WHO (World Health Organisation), there are more than 50 vaccines in clinical trials and 164 candidate vaccines in preclinical evaluations. Apart from tracking the pandemic, publishing rolling updates, advising on critical interventions, distributing medical supplies to those in need. WHO is racing to find an affordable vaccine for every nation. WHO has launched the 'Access to Covid-19 Tools (ACT) Accelerator' to accelerate the development, production, and equal access to diagnostics tools, therapeutics, and vaccines with close collaboration with scientists, business, and global health organizations [the Bill & Melinda Gates Foundation, Coalition for Epidemic Preparedness Innovation (CEPI), the Foundation for Innovative New Diagnostics (FIND), Global Alliance for Vaccines and Immunization (GAVI)-the Vaccine Alliance, the Global Fund, Unitaid, Wellcome Trust, and the World Bank].

COVAX, one of four pillars of the ACT Accelerator will ensure the equal distribution of vaccine to the entire world. The first round of 2 million safe and effective vaccine doses will be



Jyoti Sharma

available to high risk and vulnerable people, as well as frontline workers by the end of 2021. At present, 78 higher-income countries and economies have now confirmed their interest in participating in the COVAX Facility, with more possibly to follow where 9 vaccines are already in the development phase and the other 9 are under evaluation.



Sanjeev Kumar Varshney

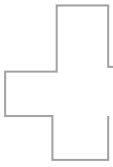
Mission COVID Suraksha

In India, the Vaccine Task Force was constituted on April 14, 2020, co-chaired by Principal Scientific Advisor to Govt. of India and Member (Health), NITI Aayog, representatives from the relevant Ministries of Government of India and technical experts for guiding focused research on Corona vaccines and other science and technology issues.

'Mission COVID Suraksha- the Indian COVID-19 Vaccine Development Mission', has been launched by the Government of India, 'to accelerate the development of at least 5-6 COVID 19 vaccine candidates and ensure that some of these are brought closer to licensure and introduction in public health systems to combat further spread of Covid infection', stated by the Department of Biotechnology (DBT).

The Mission was announced as part of the third stimulus package with a provision of Rs. 900 crores to DBT. It aims to provide support from the developmental stage to manufacturing. DBT has already supported the development of approximate ten vaccine candidates in collaboration with

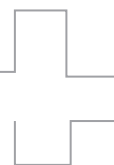




Types of Vaccines: on India's roadmap

<i>Product</i>	<i>Indian Manufacture</i>	<i>Collaborator</i>	<i>Mode of Mechanism</i>	<i>Current Status</i>
<i>Covishield</i>	<i>Serum Institute of India, Pune</i>	<i>Oxford/AstraZeneca</i>	<i>Viral Vector (Non replicating) (Chimpanzee Adenovirus)</i>	<i>Phase II/III</i>
<i>Sputnik-V</i>	<i>Dr. Reddy's lab., Hyderabad</i>	<i>Gamaleya National Centre, Russia</i>	<i>Viral Vector (Non replicating)</i>	<i>Adaptive phase II / III</i>
<i>Covaxin</i>	<i>Bharat Biotech International Ltd, Hyderabad</i>	<i>Indian Council of Medical Research, India</i>	<i>Inactivated Virus</i>	<i>Phase III Applied for EUA</i>
<i>BioNTech / Pfizer</i>	<i>NA</i>	<i>BioNTech / Pfizer</i>	<i>m-RNA</i>	<i>Phase III</i>
<i>ZyCoV-D</i>	<i>Cadila Healthcare Ltd, Ahmedabad (Zydus Cadila)</i>	<i>Department of Biotechnology, India</i>	<i>DNA Vaccine</i>	<i>Phase II</i>

<i>No name till yet</i>	<i>Biological E Ltd, Hyderabad</i>	<i>MIT, USA</i>	<i>Recombinant Protein Antigen based vaccine</i>	<i>Phase II</i>
--------------------------------	------------------------------------	-----------------	--	-----------------



academia and industries. This fund is used to support the up-gradation of the existing immunoassay laboratories, and the development of the Good Manufacturing Practices for animal toxicology studies and clinical trials. Eleven Good Clinical Laboratory Practice (GCLP) compliant clinical trial sites in a PAN-India manner are being prepared for the quick initiation of population-based clinical trials for COVID-19 vaccines. The immunoassay laboratory of the Translational Health Science and Technology Institute (THSTI) has become one of the six global networks of laboratories for centralized assessment of COVID-19 Vaccines, recognized by the Coalition for Epidemic Preparedness Innovations (CEPI).

Currently, 05 vaccines are in different clinical trials of development. India's Bharat Biotech International Limited, Serum Institute of India (SII), Zydus Cadila, Panacea Biotec, Indian Immunologicals, Mynvax, and Biological E are among the domestic pharma firms which have already joined the

global efforts to find a preventive measure against the COVID-19. The three vaccine candidates are indigenous, and the other two vaccine candidates have been in-licensed to India. On one hand, SII is partnering with AstraZeneca and Oxford University and US-based biotech firm Codagenix; on another side the Bharat Biotech is developing 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.

Apart from these, nearly 03 vaccine candidates are in the advanced pre-clinical stage of development, and many are in the early stages of development.

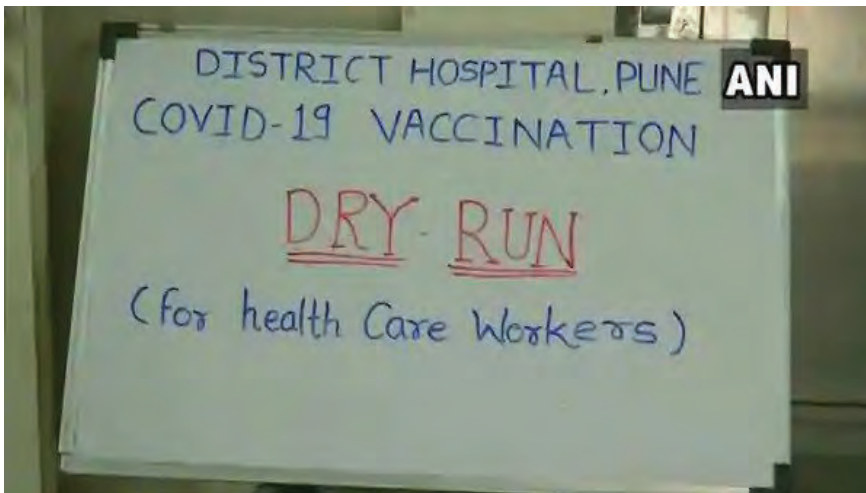
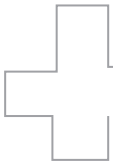
ROLL OUT PLAN

National Expert Group on Vaccine Administration for COVID 19 was constituted on August 7, 2020, under the chairmanship of member (Health) NITI Aayog and Secretary, Health and Family Welfare (H&FW) as Co-chair to

guide roll-out plan of COVID-19 vaccine. This committee is planning for the prioritization of population groups, procurement and inventory management, vaccine selection, and vaccine delivery and tracking mechanism. The representatives from the relevant ministries of Government of India, five State governments viz. Assam, Madhya Pradesh, Maharashtra, Tamil Nadu, and Uttar Pradesh and technical experts are also a part of this committee.

The Indian government has started the preparatory activities to roll out a huge vaccination drive through Co-WIN: Digital Platform. Based on the electoral experience and universal immunization 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 shared by the H&FW, 60 crore doses will be administered to the 30 crore Indians in the first phase. It will include one (01) crore healthcare workers (HCWs), about



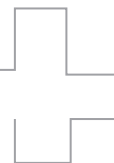
two (02) crores frontline workers including personnel from state and the central police department, armed forces, home guard, and civil defence organization including disaster management volunteers and municipal workers (excluding HCWs), and about twenty-seven (27) crore people above the age of 50 years. After this, vaccines will be given to those below 50 years of age who are suffering from a chronic critical illness. Data collection, uploading on Co-WIN software, monitoring, and verifying process is already going on. The concern authorities planned and executed to

have state steering committee meetings and state task force meetings from state to block level.

A draft SOP issued by the H&FW to all states and union territories stated that 100 people should be vaccinated per day at a site in a timespan of no more than 13-14 per hour. 200 people can be vaccinated if sufficient resources are available at that site. The schools, community halls, or tents with drinking water and toilet facility can be used as a vaccination site. Only 1.54 lakh vaccinators (ANMs) out of a total available around 2.39 lakh ANMs across the country will be used for the COVID

Vaccination. It may have minimal impact on routine Universal Immunization Programme (UIP). Additional procurement for syringes, needles, other logistics is also on track.

Another challenge is to maintain the cold chain of the vaccine. Vaccines are temperature sensitive and required an optimum facility to store them. At present, there is 85,634 equipment for the storage of vaccines at about 28,947 cold chain points across the country. The current cold chain capacity may store an additional quantity of Covid-19 vaccine required for the first 3 Crore i.e., Health Care Workers and Front-Line Workers. The ministry is in consultation with States/UT to explore the additional requirement like walk-in coolers, freezers, deep freezers, ice-lined refrigerators, etc.



TRAINING PROGRAMME FOR THE VACCINE ADMINISTRATION

The WHO in close collaboration with UNICEF Gavi, and partners has prepared the Vaccine Readiness Assessment Tool (VIRAT) tool to provide the adaptable guidance, procedures, training, and advocacy materials for the COVID-19 vaccination. As per the standard guidelines, all health workers need to have adequate knowledge and skills to ensure safety during the Covid-19 vaccine administration. The VIRAT may be used by the Ministry of Health of the respective countries to prepare the roadmap for the COVID-19 vaccination program and identifying the gap areas. The free online courses are available on the WHO website for health workers. In India, 2,360 training sessions including


7,000 medical officers, vaccinators, alternate vaccinators, cold chain handlers, supervisors, data managers, and coordinators of accredited social health activists (ASHA) have been trained so far.

DRY RUN FOR THE COVID VACCINATION

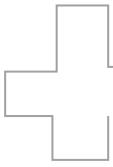
The COVID-19 vaccines are waiting to receive the emergency use authorization in India. The government has already announced the dry run for vaccine administration in Andhra Pradesh, Assam, Gujarat, and Punjab to identify the gap areas in the preparatory process. This exercise will not only check the end-to-end mobilization but will also test the usage of 'Co-WIN'.

CONCLUSION

The vaccines developed by Bharat Biotech, Serum Institute, and Pfizer are under process to get emergency-use approval by the Drug Controller General of India (DCGI). Other candidates are also in the pipeline at different stages. These vaccines have been developed in a short period as compared to the regular vaccine's development process. Vaccine development moves through the established pipelines from pre-clinical studies, phase 1, phase 2, phase 3 to the phase 4 trials. These steps are required for rigorous safety and efficacy testing of the vaccine.

The mutation in the existing strain has become a matter of concern throughout the world. However, as per the statement issued by the Director of the All India Institute of Medical Sciences (AIIMS) and member of the national task force Delhi AIIMS director and member of the on COVID management that ***'the mutations have not led to any change in symptoms and treatment strategy. According to current data, the vaccines in the trial phase (which are up for emergency authorization) should also be effective against the new (UK) strain. There have been many mutations during the last 10 months, and it is quite common'***, the available vaccine is safe and effective in most cases. However, there is a need to address the doubts of the common men against the vaccine quality, efficacy & safety and subsequently prepare people to accept some adverse effects as happen with all vaccines. A transparent, effective, and sustained communication is required for a successful roll-out plan of the COVID-19 vaccine in India. 

(The authors are Senior Scientist/ Head & Advisor, International Cooperation Division (ICD), Department of Science and Technology, Ministry of Science and Technology, Govt. of India)



A ROBUST IMMUNITY TO PREVENT OCCURRENCE OF COVID-19

For whole of the year 2020, the world has been caught up in the unabated Covid-19 pandemic. The figure of people having suffered from this infection in our country has crossed the one crore mark with nearly one and a half lakh deaths as a result, out of the worldwide figures of more than eight and a half crore infections and eighteen lakh confirmed fatalities.....

BY DR(PROF) R K TULI

India as a nation had a far less per capita incidence as well as mortality, with much higher recovery rate than the developed nations equipped with far superior medical facilities. This has been attributed by some experts to better innate immunity among Indians due to spiritual heritage of our ancient civilization.

At the same time this pandemic has revealed inherent limitations of exclusive dependence worldwide on modern or the 'allopathic' system of medicine due to its inability in containing this virulent infection, like most other diseases. During this period different pharmaceutical manufacturers have tried to promote their drugs to make quick profits at the expense of ethical practices.

The final hope of containing this



pandemic has come to rally around prevention through persistent use of face masks, safe distancing, personal hygiene and finally developing human 'IMMUNITY' through a vaccine of which various candidates are trying to compete to prevent further spread of



infection among the masses.

But, none of these vaccines appear to be ideal or even optimum. The manufacture of vaccines in such huge numbers and the process of vaccination would itself be a huge financial and administrative challenge as it requires covering more than sixty percent of global population to be administered with at least two successive doses at the advised gap of 4 weeks within next few months.

No one, at this stage, knows long term implications of this exclusive reliance on Vaccine. In spite of official rebuttals, there are controversies and



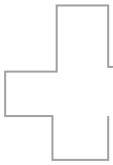
doubts, as well as questions about the nature and long term consequences of these vaccines. It's not deniable that, due the serious situation of the pandemic, unprecedented short cuts have been allowed in their development within a short period of few months.

With the dawn of new year, on the 3rd of January 2021, the government of India has given clearance to two vaccines, the Oxford-Astra Zeneca 'Covishield' manufactured by Serum Institute of India and the indigenously produced candidate by ICMR-Bharat Biotech 'Covaxin'. The point that needs to be highlighted is that these vaccines,

at this stage, have been given clearance for EMERGENCY LIMITED use.

There is a significant number of scientists and people opposing vaccines on social media with more than 30 million anti-vaccine groups, according to a leading newspaper, on Facebook alone! There is a point in it as no edible grain, vegetable or fruit which has undergone genetic interference (viz., the G.M. foods) as most of these vaccines except purely indigenous 'Covaxin' are designed, cannot be termed strictly 'organic' or harmlessly promotive for human health in the long term.

We may recall the huge success of 'Green Revolution' in the face of emergency due to draught of food grains in the country during the 1960s. Its long term consequences have been in a large population developing 'gluten sensitivity & leaky gut' due to traditionally staple diet of wheat. Besides, it's being attributed to increasing incidence of obesity, diabetes and consequent diseases. The successful use of technology in ushering 'White Revolution' involved enhanced dependence on chemicals and hormones leading to recent increase in incidence of Lactose Intolerance and



Osteoporosis.

However, what has universally crystallised is the opinion to follow the age-old proverb “Prevention is better than any Cure” and development of IMMUNITY of masses is the exclusive reliable answer to contain this pandemic.

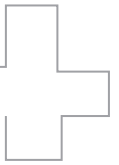
But, what surprises in our land of ‘Atharveda’ with our popular Prime Minister having initiated to get Yoga recognised all over the world and his commitment to ‘Atmanirbhar Bharat’ with ‘Focus on Local’ and an independent ministry dedicated to promotion of indigenous AYUSH systems of health that, while the whole world has gone all out to develop a vaccine with the purpose of developing immunity of the people, we as a nation have missed the opportunity to develop scientific evidence through multicentric research projects to authenticate the

role of Yoga, Naturopathy, Ayurveda and Acupuncture with its roots as ‘bhedan kriya’ in our country, in enhancing natural drug-free immunity for all almost at nil cost.

It’s well known that immunity of an individual is directly proportional to one’s quality of health, which in turn is most importantly based on yogic life-style, ayurvedic nutrition, adequate sleep and regular fitness activities. It’s universally recognised that practice of Yoga & Ayurveda as a life-style leads to promotion of health and resultant



prevention from all diseases. Not only it helps its sincere practitioner to develop a comprehensive armour against all communicable infections, that would include Covid-19; at the same time lead to significantly reduce incidence of all other life-style diseases which are also growing as an unbridled



menace and epidemic all over the world with mortality rate more than twenty times that of current pandemic.


Let's not forget that the cause of death in majority of people during the pandemic has not been the virus directly, but due to co-morbidities like uncontrolled Diabetes, hypertension-heart disease, poor lungs health, or immune suppression due to poor health or caused by medication for various ailments like cancer and autoimmune disorders. Therefore, we need to give

even more attention to controlling atmospheric pollution and non-communicable diseases which according to official figures were attributed to 14 lakh and 58 lakh deaths, respectively in one year 2018.

I'll strongly beseege our Hon'ble Minster of AYUSH to bat for promotion and development of the traditional drug-free ayurvedic practice of 'bhedan kriya' which reached the far east along with the spread of Buddhism and patronised by Chinese royalty to be presented to the modern world as the Chinese system of Acupuncture. It has gained lot of credibility with W.H.O. giving it recognition way back in year 1982, and many developed nations

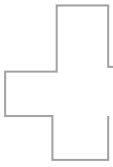
licensing its practice. I'd endorse from my over 50 years of medical practice that it's extremely efficacious at all the three levels of health, in all ages, and at all stages of every sickness. I call the practice of acupuncture as "Therapeutic Yoga" as it, just like the practice of yoga works by restoring the 'milieu interior' of the individual and boosting immunity. I converted to its practice as it enabled to manage medical emergencies and incurable conditions far more efficiently. It being a drug-free modality is highly predictable, reproducible as well as sustainable in its benefits, qualifying it to be a scientific phenomenon. Optimum integration of drug-free modalities of yoga, ayurvedic panchakarma, balanced nutrition and acupuncture complements drug based allopathic medicine to treat the human being as a whole and all the ailments of an individual concurrently to call it Holistic Medicine.

Its practice shall be invaluable, and far beyond the scope of conventional medicine, in first enhancing positive health, robust immunity to prevent occurrence of Covid-19 amongst all infections, and further help in efficient cure of Post-Covid Syndrome leaving a trail of morbidity and mortality, in saving and restoring many many lives.

An honest strong political will with commitment at planning as well as professional level for "HEALTH FOR ALL" can be easily reached by an all inclusive strategy comprising Holistic model of Health for an 'Ayushman Bharat' within existing infrastructure and financial resources by adopting the Hon'ble Modi Ji's 'Skill India' programme for all workers in letter and spirit. 

(The author is Founder: Society for Holistic Advancement of Medicine "SOHAM" and Former Senior Consultant & HOD Holistic Medicine, Indraprastha Apollo Hospitals, New Delhi)





DECIMATION OF MODERN MEDICINE



“East is East, and West is West, and never the twain shall meet.” Indian Healthcare authorities appear to be hell bent on proving this wrong. India is the birthplace of Ayurveda. Unani system also has flourished here when the Persians brought it. Homeopathy was also started in India.....

BY DR VINAY AGGARWAL

In late 1800s Modern Medicine (Allopathy) was introduced in India by Britishers in big way. Medical colleges were established in Calcutta, Madras and Bombay. Modern medicine rapidly gained acceptance and by the time of Independence it had become the frontrunner amongst all Medical systems.

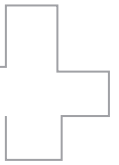
Independent India adopted the 3 tier approach of Health delivery, viz. Primary, Secondary and Tertiary care. All of this involved Modern Medicine (Allopathy) system with the other systems remaining out of the loop. Despite very low budgetary allocations for health sector the results have been spectacular. India’s “Average life expectancy”

has gone up from 35.21 years in 1950 to 69.73 years in 2020.

Private sector has played a big role in past about 40 years in delivering quality health in India. We are respected throughout the world for our Clinical acumen and world class services, which we provide at a fraction of the cost compared to the western nations. Medical tourism is a big foreign currency earner in India.

However the present Healthcare regulators appear to destroy all of this. The process of decimation of Modern Medicine started with the introduction of National Medical Commission (NMC) to replace Medical Council of India (MCI). The ruse was corruption in MCI. It was only an excuse. Is there any other





department in the country where it has been replaced because of “corruption”? The real reason was the strict control of MCI on Medical education and practice.

The politicians (many of who own Medical or allied colleges) had tried to introduce Bachelor of Rural Medicine course to circumvent the stringent norms required to impart MBBS degrees. MCI stood its ground and the BRMS course was scrapped despite Central government backing. NMC is a body full of government or government backed representatives. This body has been created to be a “Yes Man” to the policies rather than being a watchdog which independently elected Doctor’s body called MCI was.

Next step was the announcement of new Education policy by the government. This policy made it clear that government wants to do away with different systems of medical practice

by 2030. Its “inclusive system” would lead to “Khichdi” Doctors being produced, who won’t know which system to follow and when. This is the future of medical practice which awaits India.

In order to test waters about acceptability of Mixopathy the government has now brought out a gazette notification allowing Ayurveda Graduates to perform surgeries. They would also be allowed to write their degrees as “MS (General Surgery)” so that there is no difference between them and Modern Medicine surgeons in public’s eyes.

The gazette notification allowing Ayurveda Graduates to perform surgeries and the write MS (General Surgery) as their degree would corrode the confidence of the public in the surgical fields. Surgery has been one of the 8 branches of Ayurveda and so there can be no objection to Ayurvedic

graduates practicing Ayurvedic surgery. The problem arises when these Ayurvedic vaidis would be performing “Allopathic surgeries” for example a Cesarean section delivery. There is no mention of Cesarean delivery in any Ayurvedic text, nor has any Ayurvedic Shalyachikitsak ever developed and published a technique of performing it.

Modern Medicine has developed anaesthesia which ensures painless surgery, but Ayurveda has no such system. So they would have to use Modern Medicine anaesthesia. How would the drugs used in anaesthesia react with Ayurvedic drugs? There is no research on it. Similarly, Ayurveda has no concept of Bacteria or Fungi causing infections. How would they control the post surgery infections? If they use Modern antibiotics then do they have the knowledge about them? And again, there is no research on how these antibiotics would interact with Ayurvedic drugs.

There can be no objection to Ayurvedic practitioners performing the surgeries described in their texts, using their anaesthetic mechanisms and their drugs to heal the wounds.

Indian Medical Association (IMA), which is the apex body representing all Modern Medicine Doctors, has condemned this in a strongly worded press release titled, “Poaching Modern Medicine is not the answer.” IMA has asked government to take back this notification and work for development of Ayurveda instead.

MP Jairam Ramesh, who is a member of Standing committee of Health of the Parliament, has also tweeted that “Allopathy is Allopathy, Ayurveda is Ayurveda.”, making it clear that the two are totally different. He has also stated that the government tried to mix both last year also, but the Parliament nixed it. Then why is the government still going ahead with it?

“Everybody Cannot Be Allowed To Treat”, this is what Supreme Court said on AYUSH Practitioners Prescribing



COVID Medicines. If Ayurvedic practitioners cannot even prescribe medicines (from government's approved list) then how can they be allowed to perform surgeries about which they have no knowledge?


Pune High Court's judgment in September, 2020 has convicted two Ayurvedic practitioners, for performing Cesarean section by 10 years imprisonment. The deliberations of the court are very important with respect to the government's recent notification:- "Both doctors have degrees in Ayurvedic Medicine. While Shimpi has a BAMS degree, Deshpande has a BAMS degree with a MS in Ayurveda Shalyatantra. While charging the duo for culpable homicide, the prosecution also argued that the two doctors did not have the requisite education and training to perform these procedures."

If the deceased patient would have

known that the Gynecologist is actually BAMS and not MBBS, probably she would have taken better decision. There can be no objection to their degree being called "Sanatakuttar Shalyachikitsa Vaid". Why are we demeaning our tradition by using "Doctor" instead of "Vaid"? Are we trying to suggest that "Doctor" is more respectable than "Vaid"?

With so many problems, why is the government allowing this "Mixopathy" (mixing of different pathies of medical treatment)? The reason appears to be commercial. There are Private Ayurvedic colleges which have few students if any. The Ayurvedic Medicine practice has gone out of fashion. Patients don't prefer it. Most of the Ayurvedic and other Ayush practitioners use "Allopathic" medicines to treat their patients despite it being banned (and they having little knowledge of it).

Instead of increasing the number of Medical colleges, increasing Post graduate seats in existing medical colleges, spending much more on government sector healthcare delivery, the government is resorting to such shortcuts. Its like allowing Taxi drivers to fly aeroplanes, just because there is a shortage of pilots.

Hopefully general public would understand the perils of such "One nation, one medical system" and reject "Mixopathy". The government should listen to the demand of Modern Medicine Doctors and repeal the recent notifications, otherwise the consequences for future of Indian Healthcare would be grim. 

(The author is Past National President, Indian Medical Association and recipient of Dr BC Roy National Award)



AN OLD AGE PROBLEM

Symptoms of BPH also can be caused by other conditions, including prostate or bladder cancer, kidney stones, and overactive bladder. Overactive bladder causes a strong, frequent, uncomfortable need to urinate immediately...

BY DR ABHINAV VEERWAL

As man gets older his prostate gets larger and this condition is known as Benign Prostatic Hyperplasia (BPH). 50% men at age 50 have enlarged prostate & 80% at age of 80. Prostate is chestnut shaped gland and is part of male reproductive system. BPH isn't a cancer, but it can cause health problem such as:

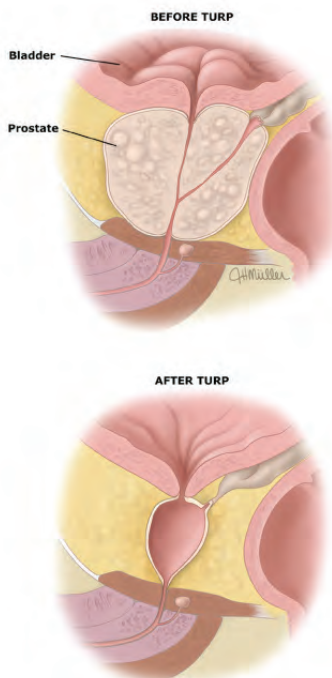
COMMON SYMPTOMS OF PROSTATE DISORDERS:

- Increased frequency of urination especially at night, which reduces quality of sleep, Sudden or urgent need to urinate
- Painful or difficult urination
- Slow flow of urine and difficulty in stopping Terminal dribbling or leaking
- Incomplete emptying of the bladder If you get any of the symptoms you should contact your Urologist.

These symptoms tend to appear over time and may gradually worsen over the years. However, some men have an enlarged prostate that causes few or no symptoms, while other men have symptoms of BPH that later improve or stay the same. Some men are not bothered by their symptoms, while others are bothered a great deal. In a small percentage of men, untreated BPH can cause urinary retention,



meaning that the man is unable to empty the bladder. The risks of urinary retention increases with age and as symptoms worsen.



PREVENTION

Since it's a ageing phenomenon which is till date irreversible. But it may be delayed by adopting certain life style modifications such as

- Eat healthy
- Reduce Stress
- Regular physical activity
- Quit Smoke

HOW TO ASSESS YOUR PROSTATE HEALTH:

- Begin regular prostate exams at age 50 (or sooner if you are experiencing symptoms or have high-risk factors)
- Know your urology numbers

-AUASS is the American Urological Association Symptom Score demonstrates symptom severity of BPH

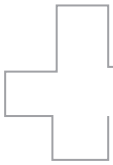
-PROSTATE SPECIFIC ANTIGEN (PSA) indicates issues with the prostate including cancer; its screening in appropriately selected patients helps detect cancer of prostate at early stages.

EVALUATION

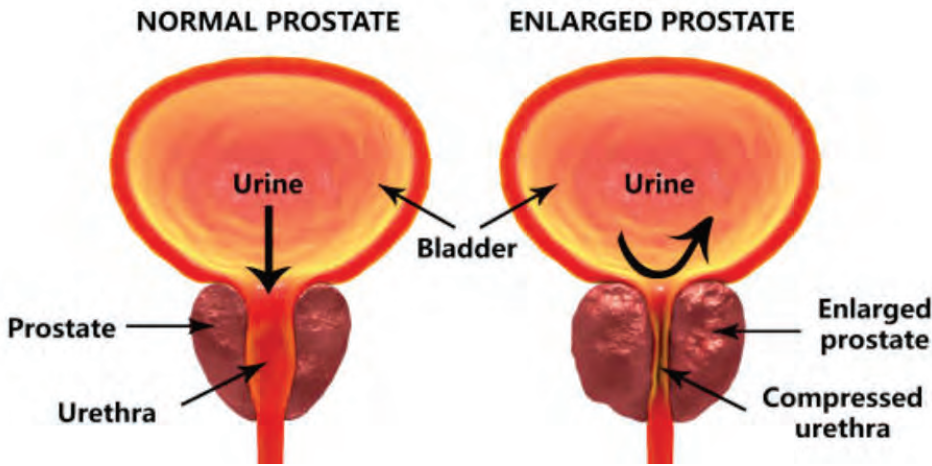
In addition to above two, Digital Rectal Examination, Urinalysis, Uroflowmetry, Rectal Ultra sound, Post void Residual Volume may be needed, tests which are readily available at Urology clinics

POTENTIAL MEDICAL CONSEQUENCES OF BPH:

- Urinary retention



BENIGN PROSTATIC HYPERPLASIA



- Urinary tract infections
- Bladder stones
- Blood in the urine
- Incontinence
- Decreased kidney function

BPH TREATMENT:

Treatments for BPH can help to reduce urinary symptoms. Treatment options include medicines and surgery. Men with mild BPH might not need treatment. In this case, most experts recommend a “wait and watch” approach. This means that you will watch your symptoms over time. In some cases, BPH symptoms improve without treatment. However, men with moderate to severe symptoms usually require treatment

LIFESTYLE CHANGES — Behavioral modifications and therapies may be helpful, particularly as an adjunct to medication. Lifestyle changes include avoiding fluids prior to bedtime or before going out as well as reducing consumption of mild diuretics such as caffeine and alcohol. Pelvic floor muscle training, including the use of biofeedback, may be particularly helpful for patients with urgency symptoms.

All men with BPH should avoid medicines that can worsen symptoms or cause urinary retention. These include certain antihistamines (such as diphenhydramine [Benadryl]) and decongestants (eg, pseudoephedrine [found in some cold medicines]).

Lifestyle changes are recommended if you are bothered by having to go to the bathroom frequently. This includes:

- Stop drinking fluids a few hours before bedtime or going out.
- Avoid or drink less fluids that can make you go more often, like caffeine and alcohol.
- Double void. This means that after you empty your bladder, you wait a moment and try to go again. Do not strain or push to empty

MEDICATIONS : The types of medicine used to treat BPH include alpha blockers, phosphodiesterase inhibitors, and alpha-reductase inhibitors. Men who also have erectile dysfunction may consider a phosphodiesterase inhibitor over the other options. Most men with BPH who start taking a medicine will need to take it forever to relieve symptoms unless they have some type of prostate surgery.

COMBINATION TREATMENT — A combination of an alpha blocker and an alpha-reductase inhibitor might be recommended for certain men. This may benefit men:

- With severe symptoms
- With a large prostate
- Who do not improve with the highest dose of an alpha blocker

TRANSURETHRAL PROCEDURES

— If medicines do not relieve your symptoms of BPH, a treatment to remove or destroy some of the prostate tissue around the urethra may be recommended. Most procedures are performed through the urethra using a special scope. Each treatment has advantages and disadvantages, and the best treatment depends upon the size and location of the excess prostate tissue, your surgeon’s expertise, and your preferences. Your doctor can help you choose the best course of treatment.

SURGERY IS MORE EFFECTIVE IN PROPERLY SELECTED PATIENTS AND LONG TRACK RECORD OF SUCCESS AFTER TREATMENT:

Go home shortly after treatment
Urinary catheter may be required for a day
Can resume to normal activities within 24-48 hrs
Symptoms improvement generally seen within 8 to 10 weeks of treatment

CONCLUSION:

General population today should be well aware of the sign & symptoms of BPH. Detecting the symptoms early can prevent many unwanted complications. Both medical and surgical managements of BPH are effective and results of TURP, which is now the gold standard, are excellent in properly selected cases.

(The author is Urologist with interest in lower tract diseases practising in Noida)

THE JOURNEY OF FUTURISTIC LIVING IS SET TO TAKE-OFF!

**GAURS
RUNWAY
SUITES**
Commercial Studio Apartments

COMMERCIAL STUDIOS

ONLY ₹ **15.49 LACS***
ONWARDS



RETAIL SHOPS

ONLY ₹ **18.49 LACS***
ONWARDS



GAURS RUNWAY SUITES RERA REGN. NO: UPRERAPRJ351477

*Terms & conditions apply

- | | | | | | | | | | |
|---------------|-----|------------|---------|----------------|--------------|-----------------|-----------------|----------------------|---------------------|
| INFINITY POOL | GYM | PARTY HALL | LIBRARY | TERRACE GARDEN | SUPER MARKET | FASHION OUTLETS | FOOD & BEVERAGE | MOBILE & ELECTRONICS | FUN & ENTERTAINMENT |
|---------------|-----|------------|---------|----------------|--------------|-----------------|-----------------|----------------------|---------------------|

Situated at Yamuna Expressway in the 101 hectares (250 acres) integrated township Gaur Yamuna City, Gaur Runway Suites is crafted for modern urban living. It is a novel concept that incorporates Residential, Commercial and Retail aspects under one umbrella so that you minimise your time expenditure and maximise your living experience. These Commercial Studio Apartments will be very close to the new Noida International Airport coming up at Jewar. The upcoming airport has significantly changed the property market dynamics of the region making it one of the most coveted business destinations of India.

GAURS GROUP | **9555 80 2222**

LOAN AVAILABLE FROM:



CONSTRUCTION FINANCE PARTNER



CORPORATE OFFICE: Gaur Biz Park, Plot No. 1, Abhay Khand II, Indrapuram, Ghaziabad (U.P.) 201014 India

www.gaursonindia.com



24+ YEARS OF UNFLINCHING COMMITMENT | 45+ SUCCESSFULLY DELIVERED PROJECTS
25000+ POSSESSIONS GIVEN (2014-19) | 40000+ SUCCESSFULLY DELIVERED UNITS

#EXPECTGOLD!



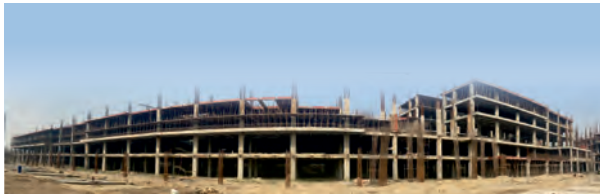
ALLOW YOUR INVESTMENT TO GIVE YOU REGULAR INCOME



INVESTMENT STARTS AT ₹14 LAKH
BANK ASSURANCE FROM NATIONALIZED BANK

Book your unlockable office space today.

Earn 12% Assured Income. Plus 8% Income for 9 years post possession.



CONSTRUCTED OVER 92903.04 SQUARE METERS* IN 9 MONTHS



FASTEST CONSTRUCTION IN DELHI-NCR. ACTUAL SITE PICTURES.

THE LOCATION

- **Greater Noida West**
(15 minutes from Akshardham Temple)
- Strategically positioned
(An expected population of around 10 lakh within the vicinity)

THE DEVELOPMENT

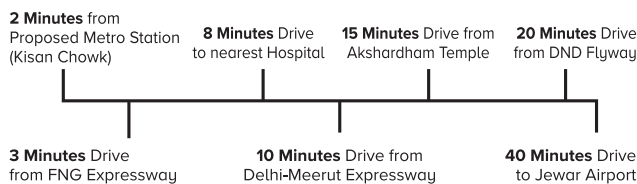
- **Environmentally Sustainable Project:**
IGBC Certified Gold Rated Project, Green Environment, Designated Charging Stations for Electric Vehicles, Solar Energy backup, Zero Liquid Waste Discharge System & more.
- **World Class Central Business District:**
Unlockable Office Space, Corporate Suites, Commercial Office Space, Large Convention and Business Centre, Double Height Ceiling Shops, High Street Retail, Hotels & Living Spaces with a parking capacity of over 5000 cars in the Campus.

(RERA Regn. No. : UPRERAPRJ6747)

Call : 9060702070

Email : sales@thegolden-i.com | Website: www.thegolden-i.com

THE CONNECTIVITY



LIMITED UNITS LIMITED PERIOD OFFER



Disclaimer: Images in the advertisement used are artistic impressions to give the conceptual sense & not a legal offering. It can be changed at the discretion of the developer and is not a legal commitment on design or specifications. *T&C Apply.