An initiative of INNOVATIO CURIS

# InnoHEALTH

India's First Magazine of Healthcare Innovations

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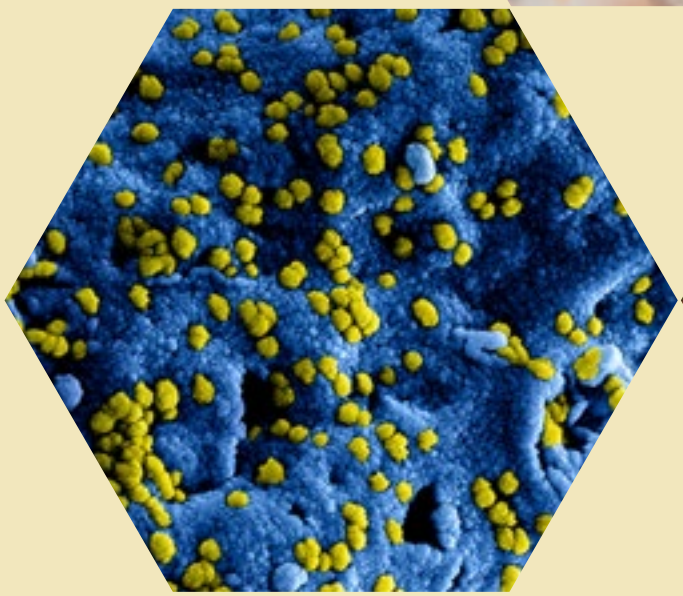

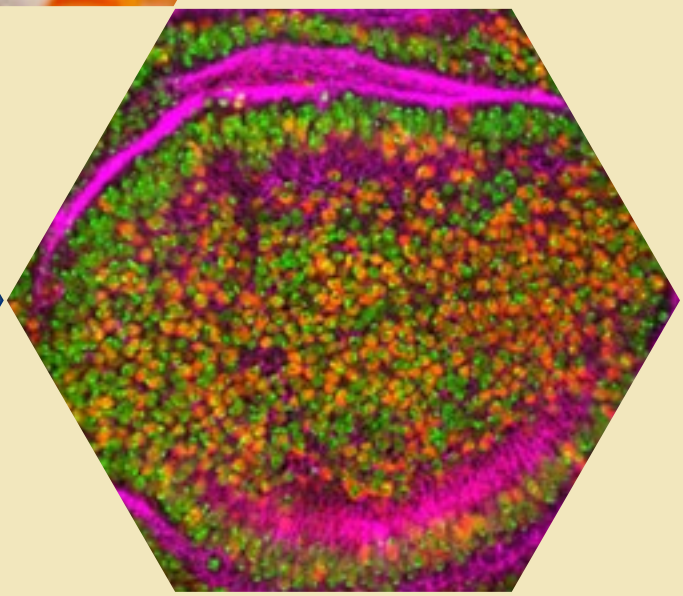

**Innovation ecosystem: An effort that has direct or indirect impact on more than million lives across the country**

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# Readers Feedback

## A Brief Review on InnoHEALTH

**Most liked article of the last Issue....**


InnoHEALTH

PERSONA

A concoction of hardwork with humility leads us to an inspiring journey of young innovator

Calmify Mental Healthcare App which will surely help people to cope with stress in a healthy way.


InnoHEALTH

The application has a SOS Alert screen which comes with a special feature to call the police and other emergency women helplines instantly by clicking on the button.

## Most read articles

**Effects of Mobile Phones on Children's Health**
innohealthmagazine.com/2019/well-being/effects-mobile-phones

**Top Telemedicine companies in India**
innohealthmagazine.com/2020/innovation/top-telemedicine-companies-in-india

**Advantages & Disadvantages Real Time Health Monitoring Devices**
innohealthmagazine.com/2018/research/real-time-health-monitoring-devices

**India's top Artificial Intelligence Organizations in Healthcare**
innohealthmagazine.com/2020/innovation/top-artificial-intelligence-

**Difference Between Pranayama and Breathing**
innohealthmagazine.com/2018/theme/pranayama-breathing-difference

**Ayurveda - Mother of all Healings**
innohealthmagazine.com/2017/well-being/mother-of-all-healings/

## Feedback and Testimonials

*A very innovative way of making people aware of the advances and facts about medicine. Even a common Man can understand the concepts in magazine easily. Keep going. Well organized contents, attractive pictures and precise information about a lots of important topics.*

**Dr. Shubha H. V**
Assistant Professor at Sapthagiri Medical College
India

*Dear Team, I am very much thankful and grateful that I got my article published in your esteemed E-health magazine. Special thanks to the chief editor and the team who is behind "InnoHEALTH". Such a great platform where everyone can showcase and express their thoughts in the healthcare through your magazine.*

**Tamanna Sachdeva**
Project officer at Dakshayani and Amaravati Health and Education
India

*Very well laid out magazine and are article are so current and reader friendly.*

**Ramesh Kumar Nanjundaiya**
Global Ambassador - INDIA at Silicon Valley Forum (SVF)
USA

*I would like to express my gratitude to the chief editor and editorial team of "InnoHealth" for the excellent coverage in the magazine published. The positive exposure you gave me on the International Nursing day.*

**Neha Lal**
Sr General Manager - OPs & HR at GCS Medical College Hospital & Research Centre
India

*Your magazine is an extremely useful resource in the field of healthcare innovation. Keep up the good work!*

**Dr. Kanchan Mukherjee**
Professor - Centre for Health Policy, Planing and Management
Tata Institute of Social Sciences (TISS)
Mumbai, India

*Very good Webinar, both from intent and presentation point of view.*

**Dr. Sanjib Dutta**
Kolkata, India

EXECUTIVE OPINION

# Health for All

**Dr. V K Singh**

Editor-in-Chief & MD,
InnovatioCuris

vk@icfhe.in

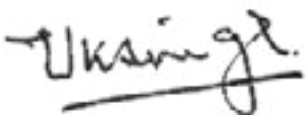
We are signatory like many countries of "Health for All by 2000 "but we never achieved it, we also signed an initiative of WHO called Sustainable Development Goals (SDGs), which was also not being achieved as required. There have been many committee reports like Bhore Committee (1943), Mudaliar committee and many others but what have we learnt or achieved by these reports? We had launched many missions like National Rural Health Mission (NRHM), Urban Health Mission and National Health Mission but we never achieved our goal of Universal health coverage. We kept on shifting our health systems like old wine in a new bottle with no accountability and rampant corruption which also revealed in handling the present pandemic. The present COVID 19 has revealed all the weaknesses of our health systems, the ill planned health system caused a lot of cost in terms of human loss and financials. We need to take care of the bottom of the pyramid- two third of people in India live in poverty: 68.8% of the Indian population lives on less than $2 a day, over 30% even have less than $1.25 per day considered extremely poor. How does this segment of the population take care of basic necessities of life forget about healthcare with such a meager amount? It is incumbent on the government that public hospitals provide qualitative healthcare as good as private hospitals. Hospitals need to be audited, accredited and follow evidence-based medicine and not allowed to do unnecessary diagnostic tests and treatment to inflate bills. Everyone knows about challenges in the public health system but there isn't any attention paid by successive govts. for the last 75 years to improve the situation. The present government is doing something but it is too little and too late. We need to build up healthcare infrastructure at breakneck speed since it deals with human life, death and most importantly the health of the nation to secure a population bereft of diseases. We have enough expertise and repository of wisdom to make our health system versatile and best in the region we can create with the intervention of political forces.

> *"We need to build up healthcare infrastructure at breakneck speed since it deals with human life, death and most importantly the health of the nation to secure a population bereft of diseases."*

Health care is a troubled industry all over the world as Sir Nigel Crisp states, " The challenges for both rich and poor countries are similar; how to shift focus from cure to prevention; how to integrate various technologies and care pathways; how to maximise the gains from science and technology; how to fund health systems that can provide equitable access to healthcare for whole population"

> *"In India, there are millions of people with poor or no health services at all. In the past, these people succumbed to their fate or insurgencies."*

In India, there are millions of people with poor or no health services at all. In the past, these people succumbed to their fate or insurgencies. Now mass media or mobile phones provide alternate solutions. Entrepreneurs and NGOs suggest what can be done with what is available. Even the government has realized that the traditional path through full blown medical schools and highly educated doctors at super specialty hospitals will not solve India's health problem any time soon. There is a need to strengthen primary health care, public participation and awareness is required. COVID 19 has taught us many lessons to improve healthcare systems, telehealth and teleconsultations have found its roots which was not happening for many years. It has happened due to compulsions to adopt telemedicine by healthcare providers and patients. We need to analyse the best practices in India and abroad by a group of experts with inputs from healthcare providers and receivers to produce workable documents in a time bound manner for implementation, however there is a need to monitor vigorously any health care delivery system to make it more responsive and robust.



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# CONTENTS

# PERSONA

## Innovation ecosystem: An effort that has direct or indirect impact on more than million lives across the country

**Dr. Mohit Gambhir, Innovation Director, Ministry of Education, Government of India is doing phenomenal work in promoting innovation ecosystem across the country through various path-breaking initiatives. Working as Innovation Director he has launched many programs like IICs, ARIIA, Smart India hackathons, YUKTI 2.0, KAPILA etc. All of which are having direct or indirect impact on more than million lives across the country.**

**Sachin Gaur, Executive editor, interviews him about his innovation peregrination and the arduous efforts taken by the Government in implementing them for the betterment of the nation.**

**Q. The most crucial part of any innovation is the generation of Idea and what are the plans of the Government to generate the same?**

**A.** You are right. We need to enable the young generation by developing a mind set of problem solving and for the same, there is a plan to introduce the concept of Design thinking to all the students, be it of school or college. Apart from introducing design thinking as a mandatory subject, Innovation Cell of Ministry of Education regularly organises training sessions, online and offline, to disseminate the relevant information among all the stakeholders.

**Q. What are the initiatives taken by Innovation Cell during the covid pandemic and how healthcare innovation focus looks in the future?**

**A.** Innovation Cell was one of the very first department among various government departments to organise IDEAthon and SAMADHAN during the pandemic. These programs provided a platform for innovators and start-ups to present their path breaking solutions in the healthcare space. Healthcare sector is one of the prime areas where India must become ATMA NIRBHAR, and therefore, innovation in this space is undoubtedly poised to attract a lot of attention. As a country, we have different requirements and affordability of decent healthcare facilities is one such concern. I am sure the day is not far when we, as a country, would be able to meet our unmet demands.

**Q. How has been the journey and what are the hurdles faced by you in promulgating the students' innovation and entrepreneurship?**

**A.** The journey has been really mesmerising. It has been close to 4 years since we began in July/Aug 2018 and the impact in the higher education space is amazing. But having said that, I believe there is still a lot more that is still required to be done. For the initial few months, we faced a challenge on how to build the culture among faculty members first but our perseverance and patience paid off. Further, pandemic also helped us in moving everything online, thereby, reaching the last mile became possible, though with some hiccups indeed such as network issues, digital fatigue and so forth.

## We are targeting not only to spread IP awareness but also to increase IP filings from Academia by providing the matching grant to an institution for patent filings

**Q. What role does the Government play in handhelding an innovator?**

**A.** Government has introduced multiple initiatives from various departments to handhold the innovators. I can be more specific about the programs being offered by the Innovation cell of the Ministry of education. We organise various programs such as Smart India hackathon, National Innovation contest, and other similar programs through which innovators showcase their innovations. We have institutionalised the process of handholding the innovators by establishing Institution innovation council (IIC) in colleges and universities across the country. These IICs act as a bridge between the institution and department at National Level so as to streamline the outcomes.

**Q. What are the future plans of the Ministry of Education's Innovation Cell (MIC's) for generating and sustaining the future of the budding entrepreneurs.**

**A.** MIC in itself is ever evolving in bringing in a lot of path breaking initiatives. We are working to introduce a combination of course work and formation of successful start-up as a credit based scheme. This will certainly provide an open environment to budding entrepreneurs to work on their ideas and also get them accounted for as credits in their existing course. Further, we are going to schools now as I strongly believe school is a place where seeds of knowledge are being sowed and what better place it could be to introduce basic concepts then and there itself. We would be introducing School innovation councils shortly so as to provide the right kind of knowledge and platform to the young buds.

**Q. How do you measure the impact around the interventions you are making to foster innovation? Is patents filed a good yardstick, how are we improving the intellectual property being created in this process? Any initiatives that you would like to highlight from the ministry.**

**A.** We have also introduced India's first ever ranking of institutions on innovation achievements, ARIIA (Atal Ranking of Institution on Innovation Achievement). It is named after ex-Prime Minister of India, Sh. Atal Bihari Vajpayee ji. In ARIIA, we capture various parameters that an institution has gone through in past year and then calculate their rankings. ARIIA framework in completely base on INPUT – ACTION – OUTCOME model. Further, we cannot consider number of patents filed as a good yardstick, because filing alone cannot contribute in making a robust ecosystem, it is just one indicator and that too with a very thin reflection. On the contrary, patent grants may still be considered as key parameters and then subsequent commercialisation of that Intellectual property (IP) may be an excellent yardstick.

Intellectual Property Rights (IPRs) is always very close to my heart and it has been almost 18 years now. I am advocating that for a developing country like ours, we must focus on registering or filing for more and more IPs. Ultimately, economies move because of IP. Just for the reference purpose, China files close to 15 Lakhs patents every year, US files around 7 lakhs per year whereas India files only 50K per year as per the data reported by World Intellectual Property Organization (WIP) O. I have been on an INDOVATION mission for 4 years to spread awareness about innovation along with protection of IPRs and have introduced a first of its kind program named KAPILA (Kalam Program of IP Literacy and Awareness), named after our beloved ex-President Dr APJ Abdul Kalam. Here we are targeting not only to spread IP awareness but also to increase IP filings from Academia by providing the matching grant to an institution for patent filings. We have set our target of getting 10,000 patents filed in one year and are moving strongly to achieve the same. Also to highlight, the government has reduced the fee for patent filing and prosecution by 80% for approved academic institutions, thereby, creating a much more vibrant ecosystem for generation of more IP.

**Q. Knowing the talent of young children in exploring innovations, is anything planned by the government to motivate them to accomplish their ideas and make them aware of various opportunities available?**

**A.** Yes, like I highlighted above, very soon we are going to launch School Innovation Councils, which would be aligned with already existing Atal tinkering labs. This would not only enable the use of infrastructure as set up by those schools but also develop the culture of innovation among youngsters. Further, I have introduced Smart India Hackathon JUNIOR track in this year's edition and invited school students from 6th grade to 12th grade to showcase their talent.

**Q. The Prime Minister stated that National Digital University has an unprecedented step which would resolve the shortage of seats in campuses, would you please elaborate on it.**

**A.** Pandemic has brought in front of us, something which we all never thought of. It has on one hand created a lot of losses but on the other hand introduced opportunities as well. It has taught us many things, and one major sector apart from health was education, where online delivery became the norm. Multiple Edtech companies were founded and many observed exponential growths. Considering the challenges faced by learners and to meet the unmet needs, Hon'ble Prime Minister of our country announced setting up National Digital University. Already teams of experts are working day and night to make it happen and realise the dream of our Hon'ble PM. National Digital University is expected to bridge the demand and supply gap for quality education in line with the National Education Policy, that allows multiple exit and entry options for an individual at various stages of the career. I am sure this would set up another milestone in the education sector of India.

## Government has introduced multiple initiatives from various departments to handhold the innovators

GUEST COLUMN

# Spine problems becoming an all-age problem - How AI is helping

Meenakshi

The next endemic likely to affect India is the increasing incidence and prevalence of spine problems. Ranked #1 for YLD (Years Lived with Disability)in Global Burden of Disease, a survey conducted since 1990 by the World Health Organization (WHO), low back pain and neck pain, are becoming an all-age problem, affecting almost all aspects of a person's life - right from socializing to productivity loss at work to lack of sleep.

**60% of Indian population suffers from spine ailments**

Back pain is no longer an age-related problem. It is becoming a problem of lifestyle, affecting people of all ages - from youngsters to the elderly population.

Spine degeneration starts as early as between the age of 20 to 25. It is estimated that every fifth Indian youngster (under the age bracket 20 -30) is suffering from some sort of spine ailment.

Increased usage of smartphones and laptops has augmented the sedentariness in lifestyle, which worsened during the COVID-19 pandemic, as the masses were forced to operate indoors for a prolonged time.

Dr. DV Sharma, a renowned orthopedic surgeon, posits that " Work from home and online classes is the latest culprit increasing the incidence of back and neck among the Indian population."

**Back pain - a ' tough nut to crack '**

Narrowing down the root cause of back pain is a tough nut to crack for two reasons:

- Spine problems can be the result of a single problem or a combination of problems
- Lack of consistent diagnostic and treatment protocols for spine-relate issues

Also, pain is a subjective experience. Consider two people with the same condition, say spinal stenosis - while one might feel the pain to be mild, the other might feel the pain to be severe.

Some spine ailments, for instance - disc herniation, are mostly asymptomatic till the condition worsens, making it hard for physicians/radiologists to diagnose spine problems at an early stage.

**AI in radiology**

The shortage of radiologists is rising at an alarming rate and is one of the biggest challenges affecting the performance of healthcare institutions. Nearly 30k - 50K imaging facilities are currently operating in the sub-continent. But the radiology population is less than 10K. All of which lead to increased diagnostic errors and overworked radiologists.

Despite the evolution of healthcare technology, the healthcare industry is still struggling to curtail medical errors. Over 5.2 million medical errors are recorded in India every year.

Communication gaps, missed diagnosis, delayed diagnosis, poor information flow are some of the primary reasons that trigger medical errors and also play a major role in medical malpractice in India.

AI-powered radiology can help healthcare institutions worldwide deal with the increasing shortage of radiologists, let alone India. AI can also aid in minimizing medical errors and malpractices, while improving clinical communication and information flow.

Many healthtech firms are investing heavily in AI for better radiology. Nearly 94% of Indian healthcare leaders are thinking of investing in AI innovations.

**AI for spine problems**

Since spine problems are a constellation of symptoms, it requires more time and effort to identify the root cause of the problem. Given the dismal shortage of radiologists and the constantly increasing imaging procedures, radiologists are pressed to work on a case within a tight timeframe. On an average, radiologists are able to spend only 3-4 seconds on an image, which naturally increases the probability of missing out or overlooking details that might be of critical value for treatment or surgical planning.

> **Spine degeneration starts as early as between the age of 20 to 25.**

## The next endemic likely to affect India is the increasing incidence and prevalence of spine problems.

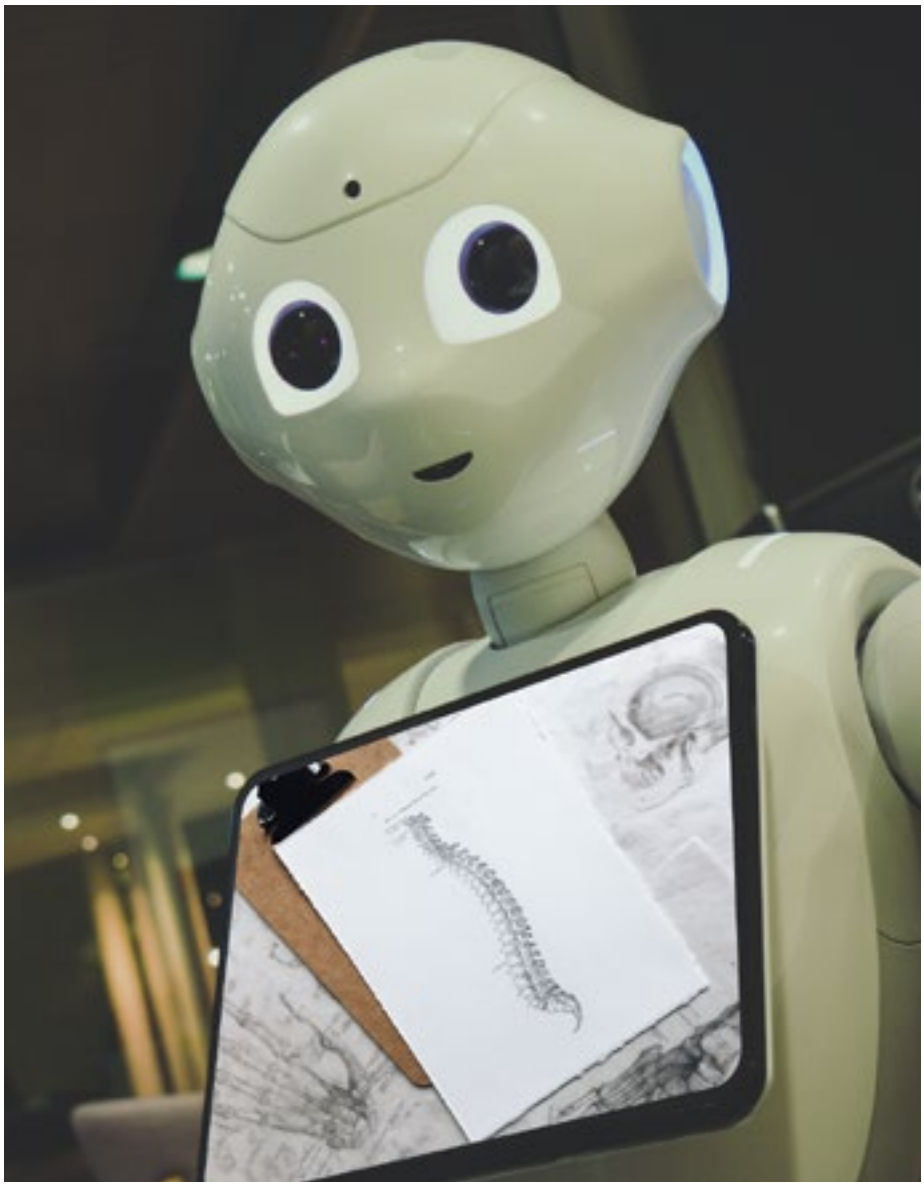
Quick and thorough analysis of an image, without missing out on details, requires a greater potential. It requires intelligence that mimics human intelligence and can outperform human potential in mundane tasks. This is where AI comes into the picture.

*AI assistant for spine MRIs*

AI can not only help in medical imaging analysis but also in recording the findings with objectivity.
Already under the experimental phase and commercially used for some pathologies, AI is proving to be instrumental in diagnosing and generating objective reports for spine ailments.
For instance, Spindle - an AI-powered smart assistant for spine MRIs, can automatically identify and report age-related degenerative pathologies from MRI scans of the spine. This significantly reduces clinical reporting workload as degenerative abnormalities are present in almost all spine MRI scans.

*AI assistant for stress motion x-rays of the spine*

Not just MRIs, AI algorithms are currently trained for almost all types of radiology exams - say, CT scans, motion x-rays, etc. SpindleX, for instance, is an AI assistant for stress motion X-rays of the spine that can help in grading the severity of loss of motion segment integrity, measuring baseline angles and abnormal translation/rotation motion of spine segments.
Using SpindleX, radiologists can carefully study a wide range of traumatic injuries in spinal ligaments and create objective reports in just a click.
After X-rays, artificial intelligence is the next biggest breakthrough in radiology. With the healthcare industry becoming increasingly dependent on medical images and spine problems growing into a socio-economic problem, AI is likely the last hope for healthcare institutions to provide better patient care.



Particularly in India, where 68% of the total population lives in rural areas, AI can improve access to healthcare and imaging facilities, so much so that even the resource-poor regions will have a chance at better patient care.

**Already under the experimental phase and commercially used for some pathologies, AI is proving to be instrumental in diagnosing and generating objective reports for spine ailments.**

An alumni of IIM, Ahmedabad, Meenakshi Singh, has profound experience in building data analytics solutions for various industries. Hailing from a computer science background, Meenakshi has worked with some of the most reputed industry players like Google, LoanIQ, Manhattan associates and Goldman Sachs.
Currently associated with Synapsica as the CEO, Meenakshi leads efforts for clinical validation and international regulatory compliance of Synapsica products and is also responsible for fundraising and marketing

# INNOVATIONS



## OVER THE AGE OF 50 VERTEBRAL FRACTURES AFFECT 17.9% OF PEOPLE

The human body is no less than a marvel and like any machine it's efficiency also decreases with age. The bones in our skeletal system are no exception to it and so they too get weaker with increasing age making them prone to fractures.


Osteoporosis is one such condition which fast forwards the weakening of bones and thus people suffering from this disease are more likely to get spinal fractures. Most commonly osteoporosis results in spinal fractures known as vertebral compression fractures. In this condition there is continuous bone weakening without any visible symptoms until there is a fracture. Roughly 17.9% of people above the age of 50 years of age suffer from vertebral fractures.

Most often spinal fractures are seen in the elderly but they can affect any person who has low bone mineral density. There is a direct neurological impact due to any change in vertebrae anatomy leading to the disability in humans.

Most of the spinal fractures occur in the lower spine and if it is severe then it can result in neurological symptoms like radiating pain which depends on the affected nerve. Physical examination of a patient with spinal fracture is very important as it helps to determine whether nerves are involved or not. In cases where nerve is involved patients exhibit symptoms like muscle weakness, changes in reflex and loss of sensation.

It is advised that one should not ignore back pain in old age as it can be a sign of osteoporosis and fracture of the spine and one must seek an early appointment with the physician to prevent any kind of long-term disability. To confirm the diagnosis imaging tests like MRI and x-ray are often required and once confirmed, patients can either be treated with medical management only or may need surgery depending upon the extent of the fracture. Nowadays with advancement in science, extensive procedures are no longer used; instead vertebral augmentation procedures like vertebroplasty and kyphoplasty are used. In kyphoplasty, at the fracture site a small incision is made to insert a balloon tamp which is inflated to create a bone cavity. Then bone cement is lodged into the balloon to correct the deformity. The cement hardens quickly and acts as an internal cast. Whereas in vertebroplasty balloon tamp is not used and cement is directly inserted at the fracture site. These two methods of spinal fracture management are of choice these days as they have excellent prognosis and patients return to normal life soon after surgery.

**SOURCE:** *www.expresshealthcare.in*

## WORLD'S FIRST-HISTORIC SURGERY GIVES HOPE FOR BRAIN AILMENTS

Accuracy and precision are the keys to carry out a successful brain surgery and the team of neurosurgeons and neurologists at Krishna Institute of Medical Sciences (KIMS), Secunderabad, India have aced the technique of using an artificial intelligence or AI-powered 'Autoguide' robot for Deep Brain Stimulation (DBS). A surgery where every millimetre has an impact on the outcome, this successful technique used at KIMS is the first of its kind in the world. The result of this surgery has sparked hope of revolutionising the treatment of brain ailments linked to movement disorders and parkinson's disease.

A patient named Abhinay kumar, aged 32 years now was diagnosed six years ago with a rare disorder with symptoms of tightness of hands and legs leading to difficulty in walking like parkinson's disease. Initially he had tremors in his right hand, which increased with time and age disabling him to even hold a cup of tea properly. With the disease progression he was not able to walk and that led him to give up his job. So the need of the hour was to carry out a surgical intervention with absolute precision to identify the anomaly in his brain. In early March 2022, Dr. Manas Panigrahi, HOD, Neurosurgery Department at KIMS Hospital alongwith Dr. Dhanunjay, Dr. Praveen Kumar Yada and a team of highly skilled nursing staff

at the hospital carried out the surgery on the patient.

The team of neurosurgeons and neurologists who were specialists in movement disorders and parkinson's disease with the aid of an extremely accurate robotic tool were able to reach the exact location in the brain with high levels of accuracy and precision to treat the problem. Resultantly today the patient is able to resume a normal life.

The Stealth Autoguide robot helps to calculate the exact position and trajectory that is required to reach the targeted area of the brain. The neurosurgeon places a very thin wire with small electrodes on its tip that delivers electrical simulation to a small volume of tissue. A standard accuracy registration for deep brain stimulation usually falls between 0.8-1.2 millimeters and by using the Stealth Autoguide robot, the team at KIMS Hospitals has registered an accuracy within 0.2 millimeter.

The AI integrated robotic system used at KIMS helps to carry out various kinds of brain surgeries including brain tumour biopsy, epilepsy surgery, deep brain stimulation for movement disorders and parkinson's disease and some psychiatric disorders. This use of technology makes the Parkinson's Centre at the KIMS Hospitals as one of the very few places in Asia where such complex procedures can be carried out.

**SOURCE:** *special.ndtv.com*

# RESEARCH REVEALS MICROSOFT, APPLE'S ELECTRONIC GADGETS MAY STOP HEART DEVICES

Research team at the University of Basel, Switzerland claims that Apple AirPods Pro charging case, Pencil 2nd Generation and the Microsoft Surface Pen have powerful magnetic fields that can interfere with life-saving heart devices and potentially stop implanted cardiac devices from working. As per the team they want the public to be aware of the potential risks of portable electronic devices and the team emphasises that any electrical device which contains a magnet could theoretically pose a danger to patients who rely on implanted cardiac devices to jolt their heart back into rhythm.

The study is published in the journal of the American Heart Association and it shows that the Apple products could not be placed closer than 2 cm or 0.78 inches without interfering with implanted cardiac devices (ICDs). But the Microsoft product which costs 70 pounds could not be within 2.9cm or 1.1 inches. The team has thus advised patients fitted with the pacemaker-like devices to not keep electronics in pockets near their chest and in general these electronic gadgets should not be carried in one's shirt or jacket pocket in front of the chest, also when one is lying down on the couch and resting he or she should not place the device on the chest.

As per American Heart Association (AHA) Guidelines, all mobiles should be kept at least 15 centimeters away from pacemakers to minimise the risks. Microsoft recommends its customers to keep the device at least 15 cm of 6 inches away from ICDs and pacemakers.

**SOURCE:** *www.business-standard.com*

# 'HPODS' TO PUSH PREVENTIVE AND PREDICTIVE CARDIOVASCULAR SCREENING IN INDIA

Preventive health checkups can really contribute towards better, more efficient and more effective management of cardiovascular diseases. Not only heart failure, stroke or cardiac arrest but almost all cardiovascular diseases can be prevented if detected early. In India due to the large population carrying out preventive checkups has been a challenge. Keeping this scenario in mind India Health Link (IHL) launched hPod which is a unique non-invasive health device to carry out accurate digitally integrated preventive and predictive cardiovascular screening. These hPod kiosks can detect the onset of disease early, thereby making the way for its prevention. IHL realised that there is a great need of digitally integrated preventive and predictive PHYGITAL (physical+digital) ecosystem to carry out the primary heart screening of the entire 1.3 billion population of India where majority of people hesitate to go to the diagnostic centres and this need has become imperative in the ongoing pandemic scenario. These self service health kiosks are made on the basis of those similar ones which are developed in the United States of America and has done more than 235 million scans. The beauty of this device is that it has been customised as per the Indian requirements over a period of 6 years and has undergone a year-long comprehensive clinical trial at a tertiary care hospital. These kiosks have embedded technologies from Bhabha Atomic Research Centre (BARC), with ITA2008/HIPAA certifications for data privacy, carry US FDA and CE approvals and are enrolled for QAI certification in India.

COVID infections have pushed us to necessarily carry out cardiac screening for the Indian population with emphasis on those who have recently recovered from COVID. It is recommended that every 4 months people who have recovered from COVID should get an evaluation of their heart and vascular health to rule out any abnormal changes.

One of the recent studies shows that people who have recovered from COVID-19 have displayed a sharp increase in 20 cardiovascular problems over the one year post infection. People with COVID infection had a 72% increased risk of heart failure, 52% increased risk of stroke and 63% increased risk of heart attack in comparison to the control group.


It is very important to note that cardiac diseases can be prevented if detected early. So with the launch of these award winning self-service, walk-in hPod (Health ATM or Health kiosk or Fitness station) which connects primary, preventive and predictive healthcare, India is taking a step ahead in effective cardiac care. One can conduct more than 20 non-invasive medical tests including ECG, pulse, SPO2, Body Mass Composition and Blood Pressure without any assistance of a paramadic within 5 minutes. These hPOd create a very efficient phygital healthcare system which empowers an individual to take control of their health, detect problems at an early stage and avail timely consultation by a physician to control the surge of heart diseases.

**SOURCE:** *www.business-standard.com*

# " THE INVISIBLE MEDICINE "

HIMS Hospital in collaboration with Sridhar University recently in the month of February 2022 launched an event named ' The Invisible Medicine ' in New Delhi. The event is unique as it emphasised on two new medicines which were referred to as the invisible medicine. The science of postural medicine which is based on the Law of Gravity was reintroduced, emphasised upon and talked about. The doctors spoke about how the therapy of hot water immersion or simply sitting in the hot water tub has successfully helped thousands of people in treating themselves of various infections and diseases. This therapy is proven to be helpful also in the treatment of cancer, dialysis, parkinson's and other neuro-degenerative diseases.

A total of 12 videos were shared on screen to show top 12 ideas through which hot water immersion treatment can be given and different ways to prepare hot water

tubs. The USP here lies in the fact that a treatment like this involves no medicine or expenditure. This therapy can be freely used even by the poor people just by spending very little money as one does not need any special gadgets or tools or resources to carry it out. To add to it gravitational force is freely available to all of us and cannot be purchased from a shop.

A person can use a broken fridge or a portable water tank and if one does not even have access to these resources then they can simply dig a ditch and make arrangements for the person lying downin hot water. Here gravity and heat work as medicines. The doctors said that if the treatment protocol starts with the appearance of the first symptom of Flu likecold, cough, fever, weakness or fatigue, bodyache then the person can be cured within 2 hours. This therapy of giving heatis absolutely free of cost, scientifically proven and gives instant relief.

A second type of invisible medicine was introduced in the event which is vibration. Sridhar University announced an online course to be started in March 2022 to teach the use of 'vibration is medicine'. The underlying basis for this therapy is that if all the organs of a human body do not work in harmony then the person will always be sick. Vibration always be sick. Vibration is medicine that is also free which can be used by a person on his own, without seeking external help.

The book titled 'The Heat Protocol' was launched and it teaches the use of heat as medicine and through heat one can get rid of Flu, COVID and other respiratory diseases.

**SOURCE:** *www.theindiannewshub.com*

# INDIA'S FIRST MEDICAL ROBOTICS SURGERY SYSTEM

Robotic-assisted surgeries globally have been in use since decades that have given positive results with millions of patients but the access has been scarce. The presently available robotic systems which are in the United States and other developed nations are very expensive and also are associated with steep learning curves. So the affordability of such advanced sciences is of question in most of India. Keeping this challenge in mind and a vision to offer minimally invasive robotic surgery solutions, SS INNOVATIONS has launched SSI MANTRA as India's first completely indigenously made Medical Robotics Surgery System.

Human pilot study with 18 procedures has been conducted at Rajiv Gandhi Cancer Institute. The USP of this system is that it is priced in the range of INR 4-5 crores including annual maintenance cost which is one-third of the price of the system globally. The average lifespan of SSI MANTRA is 10 years and AMC is of essence as each component of the system will have certain life cycles and it is important to provide maintenance accordingly. If properly maintained, it would support 15,000 hours of surgery. This Multi-Arm Novel Tele Robotic

Assistance Surgical Robotic System can be used for all major surgical specialities like thoracic, cardiac, head and neck, urology, gynaecology and general surgery and will also have automated enabling technologies for valve operations and coronary bypass.

As a first human pilot study at Rajiv Gandhi Cancer Institute, within one month surgeons successfully completed 18 complex Gynaecology, Urology and General Surgery procedures. Seeing Robotics as the future of surgery, this innovation by SS INNOVATIONS is praise-worthy displaying their dedication to healthcare and endeavour to make cost-effective, easy to use and applicable to all surgical specialities.

**SOURCE:** *www.biospectrumindia.com*

Compiled by:
**Dr. Avantika Batish,** working as the Director Strategy and Healthcare at International Health Emergency Learning and Preparedness. She is also a guest faculty for MBA (HR) and MBA
Healthcare Management at various B-Schools and is a soft skills trainer.

# WELL BEING

## The 'Pros' of pandemic

Richa Arora

The day in December 2019 when the wave spread on how a deadly virus named Coronavirus (COVID-19) emerged in Wuhan, a city in China, is spreading from human to human through respiration. Soon the emergence of the covid 19 attack led the entire world under a state of shock and the country went under lockdown. Masks, Sanitizers and Social distancing become three lifelines of the person.

This highly transmissible virus primarily affects the lungs and gets on to damage other organs such as the brain, heart and kidney. The contagious disease left a major impact on the physical as well as mental health of human beings and in no time COVID-19 became a major challenge of the lifetime. The virus went on to become a global pandemic that led to the loss of human life and the breakdown of the entire health system worldwide. However, some people affected by the virus have recovered quickly through proper treatment, still, they continue to experience symptoms after their recovery as well. The virus has mostly affected the older age group or the person with many serious medical conditions leaving some great negative impacts on the health such as mental and physical exertion, breathing difficulties, body and joint pain, memory and sleep problems, loss of smell or taste, Depression or anxiety, Fever, Dizziness and unable to perform physical or mental activities.

But, there is always a positive side to everything. So does this pandemic! Doctors and researchers have found some positive side effects of the virus in human behaviour and nature.

1)Health concern becomes the primary thing for people.
2)keeping their issues aside people started interacting with each other.
3)A sense of gratitude has emerged in people which offered a new perspective towards life as nothing should be taken for granted.
4)Covid 19 has taught the importance of humanity and how a helping attitude towards each other can save a life.
5)People are spending quality time with their loved ones.
6)People have started following their hobbies.
7)People have understood the importance of hygiene.

Other than this, some of the positive outcomes of the virus towards nature are:
1)environmental pollution has decreased excessively due to no traveling and no social activities
2)road accidents have slowed down
3)Rivers & lakes look cleaner.
4)Since the people have locked themselves in the houses the wildlife has filled the open space.

People have faced good and bad experiences after the COVID-19 attack. Although we have adapted to the new normal situation and the lives have come on track again, we can't deny the fact that somewhere or the other, lives can never be the same as they were in terms of mentally and physically. Returning to normalcy in future will be quite difficult for those who lost their loved ones in this pandemic. The pandemic has left a strong message that we should move towards a green future. Certainly, the virus has upended the world for a while but it's now deteriorating. However, the side effects of COVID-19 on human lives will last long.

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**The virus went on to become a global pandemic that led to the loss of human life and the breakdown of the entire health system worldwide.**

**Riccha Arora,** is a homemaker and a mother of two year old. She has had a passion for writing from a very tender age and also writes in blogs on parenthood & travel.

# Autoimmune Disease

Sunayana Raju

The immune system is a shield that guards against foreign invaders like bacteria and the virus. That's the actual functioning of the immune system. When the immune system senses the existence of any foreign particle in the body, it immediately makes the antibodies to eliminate them.

In autoimmune diseases, the immune system becomes a war zone. It misinterprets the body's healthy nerves as foreign bodies and attacks them, reducing the ability to fight against infection and viruses.

One such condition is Guillain Barre Syndrome (GBS), one of the rarest autoimmune disorders that affect one in one lakh people in the USA. It affects the peripheral nervous system, severity ranging from mild weakness to depending on the life support system for breathing. Fortunately, there is 80% recovery after diagnosis and 5 – 10% delayed or incomplete recovery. It can affect anyone irrespective of the age group.

The reason for GBS onset is not known, but it is evident that the immune system attacks itself. The immune system produces antibodies when foreign bodies try to attack; these antibodies are nothing but the immune response towards the foreign bodies. But in the case of autoimmune disorder, when any viral or bacterial infection attacks the body, these bacteria or the virus start to resemble the nerves, and the immune system attacks the healthy nerves by mistake.

The onset of symptoms can be a very mild tingling sensation in the limbs to severe breathing difficulty. It starts from the lower body and moves up to the lungs leading to breathlessness, and sometimes occasionally, it starts from the upper body and moves down the lower body. The severity of the symptoms may vary from person to person, depending on the level of nerve damage. Weakness leading to restriction in the limb movement seeks immediate medical treatment.

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Additional symptoms may include:

- Severe pain in the nights
- Blood pressure as a secondary symptom
- Indigestion and loss of control over bladder
- Sometimes coordination problems due to nerve damage which fails to send signals

The symptoms can get severe with the period if not treated immediately and sometimes may lead to paralysis, which can be life-threatening.

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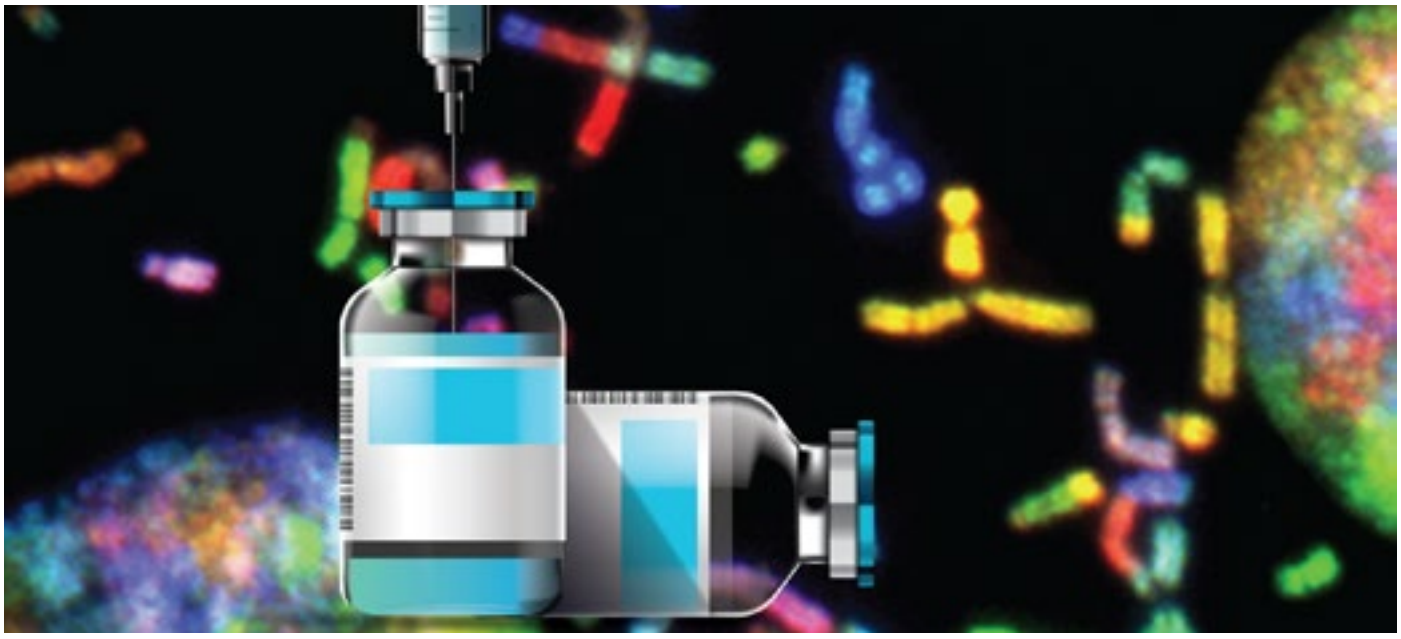

When a person is affected with GBS, his nerves are damaged. Nerves are nothing but conducting wires. Nevers have axons covered with an insulating layer called myelin sheath that carries electric signals from the brain to the central and peripheral nervous system leading to immediate action or response towards the brains' command.

In GBS patients, the myelin sheath is damaged and sometimes the entire axon results in complete failure in signal transmission, and the muscles start to lose their ability to respond to the brain's command. Breathing can be weak, leading to a dependency on the life support system.

Nerve damage may also cause abnormal transmission of signals that give spontaneous sensations called paresthesias, which is nothing but the tingling sensation that generates difficulty in limb movements.

The nerve damage occurs due to molecular mimicry theory, where the molecules of the nerve resemble the molecules of some microorganisms. Hence the microbes and the myelin sheath look similar, and when these microbes attack the immune system, they mistake the microbes for myelin sheath and attacks the healthy nerves treating them as foreign bodies. As a result, the immune system fails to recognise its nerves.

So the immune system basically produces antibodies for bacterial infection caused by Campylobacter jejuni, which attacks the axon in the motor nerves causing acute motor axonal neuropathy, which is one variant of GBS having acute paralysis, loss of reflexes but no sensory loss. This bacterial infection is caused by consuming contaminated food or uncooked food, especially meat.

This syndrome cannot be diagnosed in the initial stages due to the symptoms' variation and intensity. Generally, the physician will examine and check if the symptoms are shown on both sides. Initially, the reflexes start to slow down in the joints. Sometimes, these reflexes are absent as the velocity of signal transmission slows down, which brings us to nerve conduction velocity tests the ability to transmit signals. So in GBS, the cerebrospinal fluid starts to change, and there has been some evidence stating that in GBS patients, the cerebrospinal fluid contains higher protein levels than usual. So the sample is collected from the lumbar region to examine the fluid.

Other diagnostic symptoms include

- Abnormal sensation like tingling in the feet along with weakness
- Diminished reflexes
- High protein levels in cerebrospinal fluid

Treatment

Generally, short-term therapies can treat it to reduce the severity and lessen the recovery time.

So the treatment includes Plasma exchange, and the other one is high dose immunoglobulin therapy (IVIg)

Plasma exchange removes the blood with the help of a catheter via veins. Fresh plasma is extracted and returned to the patient. Plasma contains antibodies, so the PE removes the nerve-damaging plasma and reduces the severity of GBS.

Immunoglobulins are the proteins that produce antibodies against disease-causing microorganisms. In IVIg therapy, the immunoglobulins are injected through intravenous infusion into the patient's body. These immunoglobulins have been developed from healthy donors. Researchers have stated that this therapy shortens the recovery time, has fewer complications, and lowers the chances of the antibodies attacking its nerves by diluting with non-specific antibodies.

As the patients recover, they are moved to rehabilitation care for physical and mental health improvement. Physiotherapy for the muscles and limbs movement and therapy for mental health is a must to regain confidence during the recovery stage. It is a slow process, and the patient may tend to lose hope.

**Immunoglobulins are the proteins that produce antibodies against disease-causing microorganisms**

**Sunayana,** is presently working as research Associate for Hetero Labs limited Hyderabad in formulation R&D injectables department (Non Onco).

# Podcast

*Building the next level of content consumables*

INNOVATIO CURIS

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An on-demand way of designing content, providing an inclusive two way audio communication/discussion/debate over a subject of interest.

## Why a podcast?

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- *Two way communication, making podcasts more personal*
- *Live and pre-recorded formats, making podcasts flexible*
- *Frugal, making podcasts cost effective*

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# IN FOCUS

## Latest Technologies in healthcare

Mr. Nanjundaiya Ramesh Kumar

My discussions here with some tech oriented doctors gave me the introspection that the field of medicine, healthcare and digital technology is going at a pace (now especially after over 2 years as there is a lull in the hospital with reduced number of emergencies associated with covid cases). While the hospitals are busy as usual, that urgent rush and emergencies have reduced, it seems, by almost 70% as compared to a situation just 6 months ago. Notwithstanding the above good situation, the impact of digital technology in the healthcare field is increasing at a fast pace. Today one can see a clear communication channel being established electronically between patients, hospitals, CV virtual consultation, pharmacies and health care insurance companies. One notices a speed in the interconnected ecosystem, thanks to the digital technology which is making its presence felt in the healthcare sector. Most countries in the western world and some in Asia are adapting advanced technologies in the healthcare sector. India is also doing its best to continue its tempo in digital healthcare. Some of the technological advances are briefly discussed in this article.

Today if any patient is visiting a hospital, they only need to give his health card at the reception of a hospital. He can already schedule an appointment with a doctor via his mobile app. Once the data is recorded, then the hospital digitally transfers the information and data of the patient on a real time basis to its billing section, doctor schedule section, and nearest pharmacy, the insurance company for billing and the aftercare department. All these happen at the time of entry of the patient's data. Thereafter the patient is handed over a descriptive sheet with information regarding which doctor to visit, location in the hospital. During this time the consultation fee and other charges are already deducted, pharmacy payment is already done. So the walk-in patient after consulting the doctor goes straight to the designated pharmacy, picks up medicines and goes home.

This amount of development is done by digital technology in the healthcare sector currently. Many healthcare organizations are quick to adopt this cost effective digital technology not only for various medical devices, operation room equipment but also for billing, record keeping, accounting and communication to related stakeholders. The pharmacist informed me that in the use of electronic healthcare billing and records, she feels that a laptop to a doctor is as common as a stethoscope.

**So the latest technologies that can find use in the healthcare sector to manage patients' electronic data being generated at speed. The answer is blockchain technology, Artificial intelligence (AI) tools and cloud technology.**

In the above process today, too much patient data is being created by the hospitals. One needs technology to improve data collection, segregation and compiling for ease of digital communication between doctors, patients, insurance and pharmacy and to ensure that data remains secure at all times.

So the latest technologies that can find use in the healthcare sector to manage patients' electronic data being generated at speed. The answer is blockchain technology, Artificial intelligence (AI) tools and cloud technology. These technologies will certainly help improve work flows, streamline procedures, automate tasks and help open up new ecosystems involving hospitals, patients, insurance companies and pharmacies, by way of integrating all such related activities along with updating health records all at one go. Incorporation of the above technologies will improve the patient care and better management can be done on a timely basis.

Such a system will enable the hospitals and pharmacies dispensing medicines to automate most of their process online and in real time and enabling regular feedback to improve services and be cost effective at all stages.

**Importance of patient's health records:**
Information integration at the hospital level, standardise and store patient information in a secure location. For starters, such a system will provide flexibility. Flexibility can be achieved by using telemedicine technology. Patients and doctors can seamlessly communicate. In addition, wearable devices will also provide data for doctors with better ways to evaluate the patient's conditions and come up with more options to evaluate symptoms and take timely actions.

*How will artificial intelligence assist the healthcare sector?*

A stage will come when too much of patient data generation by various hospitals at various locations can become a landmine. AI enabled tools can shift through large and complex data generated from devices, hospital records, images, blood reports, etc to find a trend of patients undergoing treatment, come up with cost effective options, procedures and take timely clinical decisions to improve quality of experience provided to patients. Here comes the benefits of the blockchain technology which provides ledgers of unchanged data and thus secure the data provided to the patients and the consulting doctor.

Cloud technology works as an aid of the healthcare sector. When so much of technology is intertwined between patients, doctors and hospitals, a cloud environment most likely offers hospitals a chance to customize applications as per their specific reporting methods. Such records can help hospitals accounts departments to calculate costs, operational and financial efficiencies. A hybrid cloud environment will additionally offer various security features that can assist the sector with various report generation for regulatory agencies, State agencies, government agencies and procedure efficiencies.

There will be a five fold increase noticed in doctors appointments virtually and consultations. A great time saver. Lot of convenience will be provided to consult preferred doctors and healthcare workers and ambulance services. All such activities are enabled via laptop or mobile app.

Overall, the digital health technology will make data availability easy, lower costs and will provide the doctors focus on the best line of treatment.

The conveniences are immense in adopting these new technologies for the healthcare sector. By this way, doctors can diagnose diseases with the help of medical imaging capabilities and improve their access and digital infrastructure. Basically a win win situation for the health care provider and the receiver.

**Mr. Nanjundaiya Ramesh Kumar,** is an international banker turned government Advisor, Professor and Global Ambassador with a deep interest in banking, communication, academics, technology integration in biomedical sciences and consulting. His forte is franchise promotion and exploring bilateral trade and investment avenues.

**A hybrid cloud environment will additionally offer various security features that can assist the sector with various report generation for regulatory agencies, State agencies, government agencies and procedure efficiencies.**

# Edible packaging

Aakriti Sharma

Current statistics of plastics in oceans remark the dreadful situation of the marine ecosystem and the devastating health of our water bodies. Nearly 8 million pieces of plastic goes into our oceans each day. 381 million tonnes of plastic are produced yearly in the world (which is expected to double by 2034). The impact is such that 100% of baby turtles contain plastics in their stomachs. Even more than 1 million of seabirds and 1,00,000 of marine animals suffocate to death due to plastic pollution each year. Considering the recent scenarios of plastic pollution, it becomes even more essential to draw the attention of masses towards the healthier alternatives of plastic packaging which is one major cause of plastic waste that tends to remain in the biological environment for years.

Some of the key start-ups have in pockets few wonderful initiatives replacing plastic packaging with edible or biodegradable alternatives. As weird as it sounds, who could have thought that one can consume the packaging along with the product it contains. Nature does it strikingly well since years in the form of outer covering of the fruits such as apple, grapes, berries etc. One of the emerging start-ups in the market, known for its product Ooho which is a 100% edible and biodegradable packaging for beverages such as water, juices, sports drink, alcohol etc. It is made up of a plant and seaweed based sustainable packaging material. Oohos have been used on a large scale at sporting events of London Marathon and Roland Garros (France) for hydration replacing the need of cups and bottles made of plastics. Not just the sporting events, Oohos have been successful alternatives at some of the festive and private events. Apart from Oohos, other products include tomato ketchup sachets, food boxes coating and films which comprises 100% biodegradable packaging and are home compostable. Another such seaweed-based packaging enterprise that is motivated to reduce the plastic footprint of Indonesia which is also the world's second biggest plastic waste contributor to oceans. Keeping in mind the deprived condition of Indonesian seaweed farmers, the enterprise is aiding in providing better livelihood opportunities to them. The primary products include coffee and dry seasoning sachets, food wrap sachets which are completely edible and soap packaging which is totally biodegradable. One of the food and beverage retailers in Jakarta that sells ice creams ordered the Ello Jello edible cups from the enterprise which could be eaten by the customer afterwards. Other significant innovations by yet another start-up include water-soluble films as packaging material which is made up of PVOH and hence dissolve completely upon contact with water or consumed by bacterial microorganisms after use. Products possess diverse applications in detergents, Agrochemicals, Personal care and cosmetics, Laundry bags, Countertops and Solid Surface, Transfer printing etc. This start-up pioneered product packaging material

**Another such seaweed-based packaging enterprise that is motivated to reduce the plastic footprint of Indonesia which is also the world's second biggest plastic waste contributor to oceans.**

**This can be regarded as an initiative at our level to strengthen our determination for reducing plastic waste and following paths of sustainable packaging, thus helping our aquatic ecosystem strive.**

such a way that it disappears after some time. These materials are made from regenerative, carbon capturing and ocean farmed seaweed to replace plastic on a large scale.

Besides the smaller initiatives that we adopt at our level to reduce plastic footprint like preferring paper substitutes over plastic ones for shopper bags, utilising fibre cups instead of plastic ones for household use, we also need to appreciate as well as promote these packaging substitutes and the pioneering start-ups that created it at large scale. This can be regarded as an initiative at our level to strengthen our determination for reducing plastic waste and following paths of sustainable packaging, thus helping our aquatic ecosystem strive. Not just to prevent the marine lives from suffering, but also to help create a better, healthier environment for mankind to live in alongside ensuring sustainability, directing people's interest towards these edible range of food and beverage packaging becomes the need of the hour. Hence, instead of turning a blind eye to what the recent statistics demonstrate upon the future scenarios, we have to be in a position to actively take responsibility of what we leave behind for our upcoming generation.

**Aakriti Sharma** is an aspiring Biotechnologist from Delhi who is an avid reader and often loves to pen down her thoughts on interesting scientific concepts.

# RESEARCH

# Pandemic Blowback on Indian Rural Healthcare

Dr. Gautam Kr Ghosh and Arpita De


In India three consecutive waves of COVID-19 have exposed the seriously compromised state of rural health infrastructure. Interestingly, non-government organizations, enterprises and charities contributed to the dire situation by way of providing personal protective equipment, medical supplies, appliances, rapid testing kits, including monetary aid. Their participation did provide some respite to the struggling rural healthcare setups in confronting the SARS Cov-2 onslaught, but it pointed towards the need for improved strategic policies to build up the rural healthcare systems to face future unforeseen emergencies.

It is well-known that in India there exist substantial differences between the urban and rural areas, with poverty affecting lives of people starting from early childhood and increasing as one grows older. Living conditions aside, rural areas also suffer from the lack of social sector services in general. Rural children in general and, girl child in particular due to prevalent gender discrimination, tend to face worst health outcomes. The health disparities between rural and urban children, as well as interstate disparities in health status go hand-in-hand to projecting concerning scenarios for the country. Again, the rural and tribal areas have fewer movement and connectivity options than urban areas. The settlements are dispersed more than urban areas. This necessitates evolving location-specific healthcare service delivery systems for rural areas.

The first pandemic wave in the country affected health and social welfare aspects of women and children, belonging to poorer section of society, adversely. Many pregnant women, without access to proper medical care during childbirth, lost their lives; while some gave birth to underweight and stunted children. These children obviously got subjected to life-long health problems. As observed, in ordinary times, the Indian healthcare systems, more so rural health facilities, face operational challenges, and the challenges observably grew manifold during the pandemic causing catastrophic effects on socio-economic spheres.

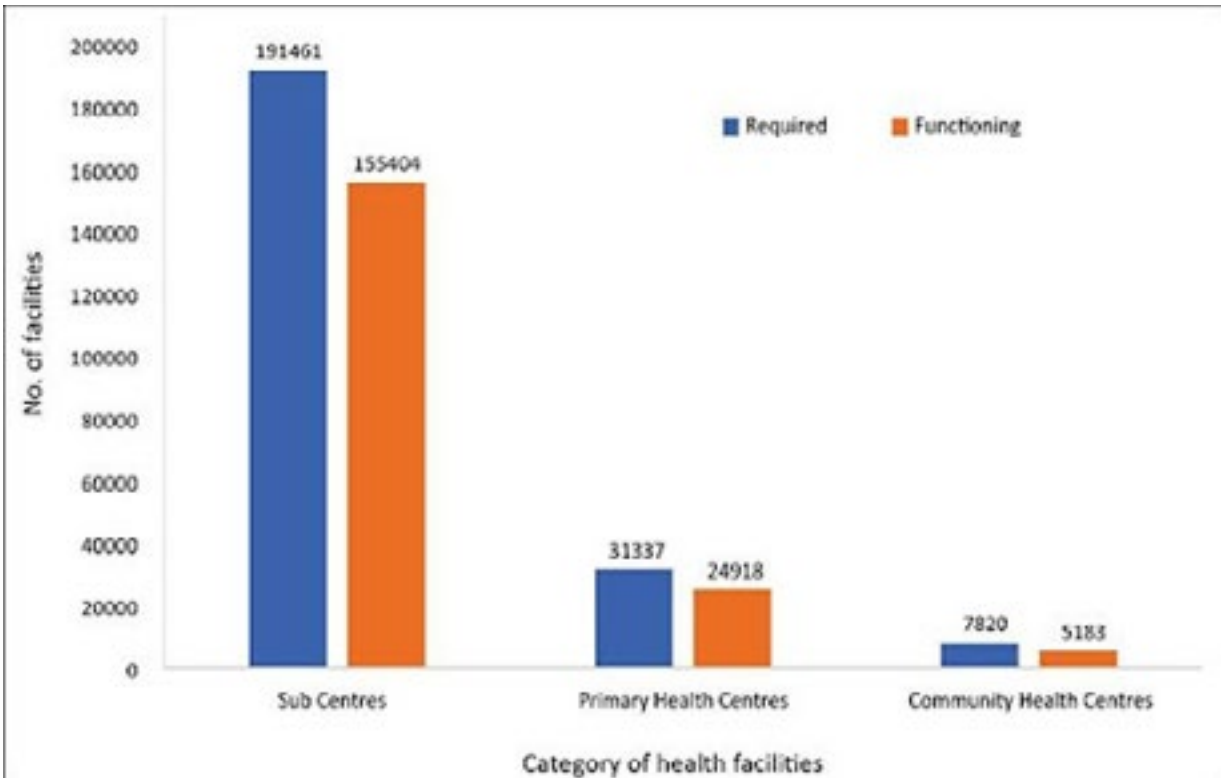
The rural healthcare system in rural India, primarily developed on the suggestions of Bhore Committee Report, guided Government of India in adopting population-based norms for establishing the three-tier public health care facilities, as Sub-Centre (SC), Primary Health Centre (PHC), and Community Health Centre (CHC). The current status, of these rural health facilities, as obtained from

latest Ministry of Health & Family Welfare statistical data upload in their website, indicate shortfall at the three-tier set up as, 18% at the SC level, that consist of 158417 SCs, 22% at the PHC level that consist of 25743 PHCs and 30% at the CHC level that total 5624 CHCs. According to the National Health Profile 2021, in government hospitals one allopathic doctor is available to cater to 11,082 people, one bed per 1,844 people is the current allocation, and one state-run hospital available for every 55,591 people.

In spite of the elevation in rural health facilities over the years, the manpower availability is notably underneath the wanted tiers, as per World Health Organization suggested levels. Of the sanctioned posts, at the SC level 14 per cent posts of Health Workers (Female)/ ANM, and 37 per cent of Health Workers (Male) were vacant, as Government Rural Health Statistics (RHS)2019-20 indicated. The RHS also stated that the number and post-wise shortage in rural health set up as, 1,704 posts of doctors in PHCs across the rural areas, as well as 5,772 posts of nursing staff, 5,066 positions in female health workers, 6,240 posts of pharmacists, and 12,098 posts of laboratory technicians. The report further added that- of the total 155404 Sub Centre across the country, only 5383 SCs was functioning as per IPHS norms, only 8514 PHCs were functioning on 24x7 basis out of existing 24918 PHCs, and just 4957 CHCs, of the sanctioned 20732 CHCs, were currently functioning in rural areas. An International Journal paper published in December 2020 found that rural India has 3.2 government hospital beds per 10,000 people and that some big states such as, Uttar Pradesh with 2.5 with beds, Rajasthan 2.4 with beds, Jharkhand 2.3 with beds, Maharashtra with 2.0 beds and Bihar with 0.6 beds respectively, stood below the national average. Evidently, the rural healthcare set-up does not provide assuring state of affairs, currently. Besides, there is among the states, dissimilarity as far as access to medical care, appropriation of public health expenditure as well as achieving health outcomes. Obvious therefore that even without the pandemic or unforeseen emergencies, the rural health infrastructure is always stressed, while historically having less access to health services as the figure below will indicate.

The rural public health service management, especially in preventing, controlling or eliminating major communicable diseases, such as Tuberculosis, Malaria, and in reducing the risk of deaths in maternal and perinatal diseases has remained a challenge. In India, endemic diseases caused by infection or lack of nutrition still account for over two-thirds of mortality and morbidity. With rural areas lacking access to elementary healthcare, there remain abundant challenges to setting up strong emergency medical services, as well.

Both increases in government spending and private sector initiatives have improved the health infrastructure, but given the rising demographic pressure in India, this increase does not seem to make the desired difference. It is the extension of life expectancy that has a direct impact on many households. The rising healthcare cost exacerbates the problem for lower- and middle-class households, as well. The suggestive way forward, at this juncture, at empowering rural healthcare systems and building healthy rural communities, can be as follows-




Source: Ministry of Health and Family Welfare

**Rural children in general and, girl child in particular due to prevalent gender discrimination, tend to face worst health outcomes.**

**In spite of the elevation in rural health facilities over the years, the manpower availability is notably underneath the wanted tiers, as per World Health Organization suggested levels.**

**Maximize the implementation of Health and Wellness at the Sub Centres and Primary Health Centres levels–** The health and wellness concept under Ayushman Bharat was an excellent start, as the same advocated a more comprehensive, well-equipped, and well-staffed model of primary healthcare in government sub-centres and primary health centers. Updating them in rural areas will undoubtedly enable in achieving the degree of readiness required in rural India in the event of a pandemic or other unforeseen emergency.

**Extended public-private partnerships (PPP) to support healthcare inclusion-** PPP partnerships evidently have potential to revolutionize the rural healthcare system in India, while simultaneously ensuring a long-term viable solution. As the country's population is growing, government efforts will not be enough to strengthen the healthcare system. PPP can assist in overcoming monetary, specialized, pedagogy, and human capital constraints. Private players can also ensure that Government policies at improving rural healthcare infrastructure are implemented appropriately. Continuing partnerships will improve access to healthcare, especially in the inaccessible rural areas, because individual actors' extensive expertise, experience and financial resources may aid in the development of novel solutions.

**Organise a supervisory committee on the ground-** a local supervision committee formation needed for developing a centrepiece masterplan for improving access to better healthcare and overseeing the implementation of rural healthcare projects. Though the majority of rural healthcare programs often get off to a terrific start, the outcomes are not always as anticipated. To revive rural healthcare service systems, through efficient monitoring of rural healthcare strengthening operations, the local supervisory committee is required.

**Continuous competency development and mentoring-** Another key concern in rural regions is skill development and mentoring. The CHCs, which acts as a referral of PHCs in rural areas, currently have a 76.1 percent shortage of specialists, as the Ministry of Health and Family Welfare recent report indicated. Doctors working in rural areas encounter several problems when it comes to accessing training opportunities due to their location. In that scenario deployed Doctors can benefit from skill development courses, and ongoing learning programs to assist address the dearth of trained doctors in rural areas. A focused mentoring program, including online or offline sessions, skill upgradation and exchange programs could be extremely helpful in this situation.

**Coherent machine upgrade and paramedic training-** Essential amenities, such as most up-to-date medical equipment and skilled medical personnel to operate them, are lacking in rural areas. While medical equipment can still be upgraded on a regular basis, training courses for nurses and paramedical workers on how to handle, operate and manage these machines are also necessary. As new technologies become available, the requirement for training becomes more pronounced and required to be recognized.

In summing up, it needs to be pointed out that it is difficult to overhaul the country's rural healthcare system within a short timeline, and that a piecemeal approach to improving rural healthcare facilities will be futile. But, with the ongoing dedication and regular efforts can a sturdy rural healthcare system be developed. Implementing the procedures outlined above will have positive benefits in the long run and will contribute to the development of a robust rural health care management system. Beyond COVID, the central objective should be to devise preparedness strategies for unforeseen emergencies, rather than focusing simply on short-term fixes that will return the system to its previous state once external help is withdrawn.

**Doctors working in rural areas encounter several problems when it comes to accessing training opportunities due to their location.**

**Dr. Gautam Kr Ghosh,** is Ph.D in sociology with PG diploma in Reproductive and Child Health Management, and is research scientist at ICMR NICED, Kolkata, India

**Aprita De,** holds Masters in Public Health degree, and is working as Junior Consultant, NHRC, Ministry of Health and Family Welfare, New Delhi

# Case Study : A Psycho-social Meta Analysis on Pain Disorder

Dr. Tinni Dutta

A 38 yrs old lady came to us for psychiatric assessment with the complaints of chronic pain in abdomen along with a withdrawal tendency. She has left her job without any apparent reason. The pain is severe and has detrimental consequences: loss of job, family disturbances leading to social isolation and emotional loneliness. Pain without an apparent anatomical and neuro-physiological origin was labeled as psycho-pathological features.

Recent epidemiological studies reveal surprisingly high prevalence estimates for chronic pain. Using the World Mental Health version of WHO, CIDI, the twelve months prevalence of Chronic pain was found to be 37% in developed countries and 41% in developing countries. Chronic pain prevalence increases with age and is greater among females than males.

To assess her psycho-social functioning through case study and by administering psychological testing

- Bender Gestalt Test (BG)
- Draw A Person Test (DAP)
- Rorschach Ink Blot Test (RIBT)
- Thematic Apperception Test (TAT)

The above mentioned tests were administered. She was co-operative but a bit apprehensive and agitated, and took longer times to complete the tasks.

The BG test with a z score of 66 put her in the suspect category. Nature of deviation reveals difficulty in sustaining interpersonal relationships, social anxiety, aggressiveness and withdrawal tendency. Analysis of DAP shows immaturity, feeling of inadequacy, need for dependency and a regressive tendency.

The Rorschach test shows very impoverished inner resources and weak ego strength. There is only a piled up instinctual need but she is totally helpless to do anything with it successfully either by finding a social outlet or by intellectual canalization. Only means is withdrawal and somatic symptoms.

In TAT though she is able to establish emotional bonds but with a tendency to withdraw. She has strong aggression which she projects on herself. Only defense she recourses to is isolation and withdrawal.

Analyzing case history, test behavior and findings it appears she is unable to take

**Using the World Mental Health version of WHO, CIDI, the twelve months prevalence of Chronic pain was found to be 37% in developed countries and 41% in developing countries.**

adaptive defenses, the only thing she utilizes are isolation, withdrawal and somatization resulting in "Pain Disorder".

**Dr. Tinni Dutta,** is an academician working as an Assistant Professor in the Department of Psychology, Muralidhar Girls' College, Kolkata. Being a researcher she has visited and provided keynote speeches,lectures, posters and oral presentations in the USA, UK, Germany, Switzerland, France, South Africa and different parts of Asia and India.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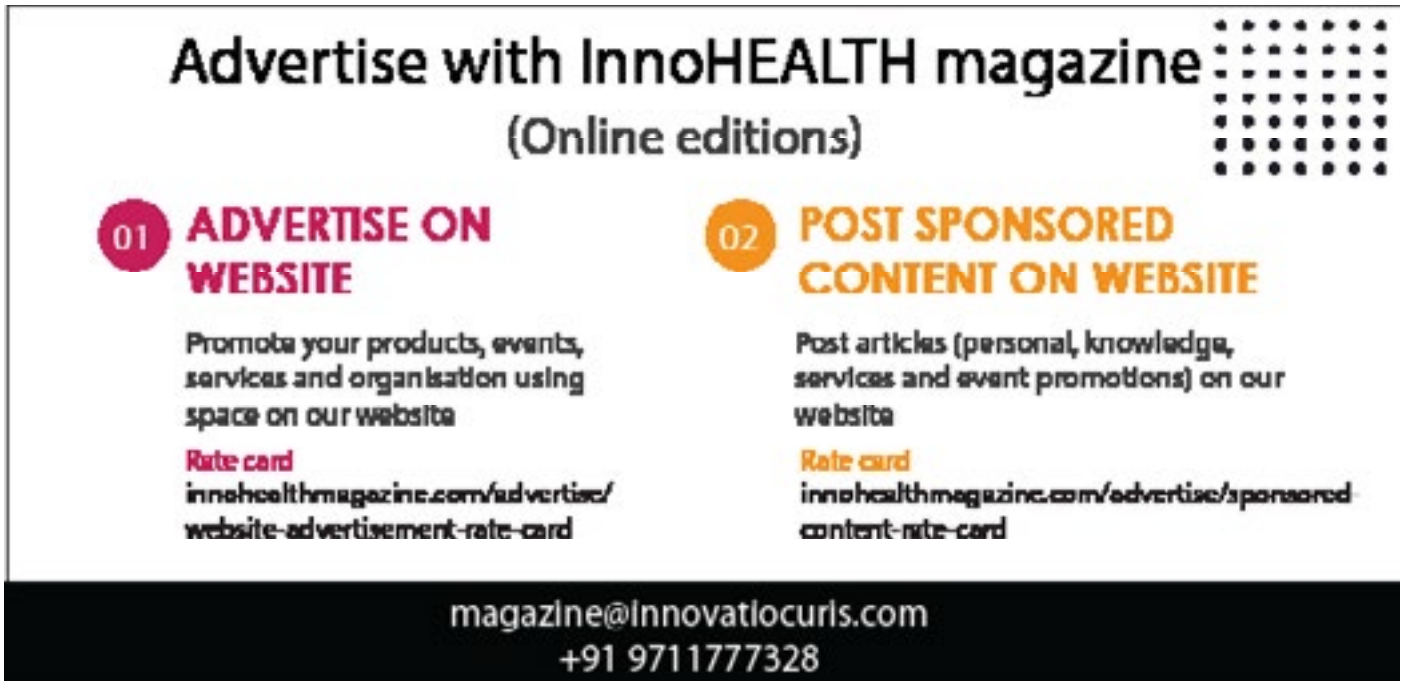
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# NEWSCOPE

## LATEST NEWS IN HEALTHCARE



# SNOWFLAKE LAUNCHES DATA CLOUD FOR HEALTHCARE AND LIFE SCIENCES

*We have heard somewhere or the other that the data is the new oil. But the task of leveraging data for medical innovation is something which is associated with regulatory and technical hurdles. This can be another push that can lead India to lay down a well-defined data policy and help in uplifting the power of healthcare data and its analytics.*


Bozeman, Montana-headquartered data company Snowflake has expanded its "data cloud" ecosystem with the launch of a dedicated offering for healthcare and life sciences industries.

Officially dubbed Healthcare & Life Sciences (HCLS) Data Cloud, the product aims to provide enterprises in these sectors with a single cross-cloud data platform to centralize, integrate and exchange critical and sensitive data at scale. It is tailor-made to solve key challenges that keep healthcare enterprises from leveraging data for innovation and continues to be backed by various technology, data, application and consulting partners, including Equifax, Dataiku, H20.ai, Cognizant, Deloitte and Strata.

### Need for HCLS Data Cloud

For most healthcare or life sciences companies, the task of leveraging data for medical innovation can be described as one associated with regulatory and technical hurdles. The firms often rely on legacy architectures (that keep data in fragmented siloes) and have to follow stringent compliance rules, with no common models for data sharing with the industry. This makes downstream use difficult, affecting advanced analytics and AI projects, including those for patient care and optimizing clinical and operational decision-making.

Snowflake's Healthcare & Life Sciences Data Cloud solves these challenges by providing an agile and interoperable solution that facilitates the storage, sharing, and use of data. It eliminates technical and institutional silos while ensuring the security, governance and compliance required to meet industry regulations. In all, Snowflake's data cloud ecosystem facilitates six key workloads — capabilities of a data warehouse, data lake, data engineering, data sharing, data science and data app development.

"The Snowflake Healthcare & Life Sciences Data Cloud will unlock the next generation of innovation in the industry by enabling organizations to take advantage of borderless data access while ensuring strict data governance, security, and privacy compliance," Todd Crosslin, Healthcare and Life Sciences Industry Principal at Snowflake, said. "The entire industry can benefit from this live, connected ecosystem to get access to the data they need when it's needed."

The solution is already in use by various organizations, including Anthem, IQVIA, Komodo Health, Siemens Healthineers, Spectrum Health, Novartis and Roche.

### Snowflake's competition

The launch of Snowflake's HCLS Data Cloud comes just a week after Databricks' launch of lakehouse for healthcare and life sciences. The two companies are set out for the same goal – to be the one-stop shop for all thing's enterprise data.

In fact, both Snowflake and Databricks, led by Ali Ghodsi, have been expanding their product ecosystem to cover more verticals and use cases. The former recently announced the acquisition of Streamlit to simplify data app development, while the latter has debuted lakehouse for retail and financial services, as well as a solution to integrate partner data tools with ease.

**SOURCE:** *www.venturebeat.com*

# GOOGLE'S HEALTHCARE DATA PLATFORM, CARE STUDIO, IS PARTNERING WITH ONE OF THE LARGEST EHR SYSTEMS

***Over the years, Google has proven to be a relentless force pertaining to innovation. The company continues to find new ways to provide value to billions of people worldwide. Its latest venture is leveraging its Care Studio platform to build new partnerships and create value in the healthcare space. The platform applies the classic Google narrative to healthcare: integrating robust search features, making information digestible, and organizing data in more useful ways.***

As the company describes it, Care Studio "leans on Google's expertise in organizing information to help clinicians find health record information faster. The tool's Clinical Search feature enables clinicians to simply type what they're looking for and quickly find the specific information requested, and even related concepts […] Our tools give clinicians a single, centralized view that automatically brings forward a patient's important information — including hospital visits, outpatient events, laboratory tests, medications, and treatment and progress notes. And the intuitive interface offers unique ways to visualize health data and trends in tables, graphs and other helpful formats."

The company has painstakingly developed the platform in order to specifically address the obstacles that many current healthcare IT systems face. Now, it is slowly ready to use this system to build new parternships.

At the famous Healthcare Information and Management Systems Society (HIMSS) conference last week, Google announced its intention to partner with MEDITECH, a healthcare IT giant and prominent electronic health records (EHR) systems pioneer.

The press release explains: "With MEDITECH, we're working on a deeply integrated solution to bring some of our data harmonization, search and summarization capabilities to their web-based EHR, MEDITECH Expanse. Using Google Health's tools, MEDITECH will form a longitudinal health data layer, bringing together data from different sources into a standard format and offering clinicians a full view of patient records. And with Google Health's search functionality embedded into their EHR, clinicians can find salient information faster for a more frictionless experience, and the intelligent summarization can highlight critical information directly in the Expanse workflow. This will help advance healthcare data interoperability, building on MEDITECH's vision for a more connected ecosystem. Our collaboration expands on the partnership between MEDITECH and Google Cloud and will utilize Google Cloud's infrastructure."

Indeed, this one-of-a-kind partnership is certainly a promising milestone for Google. Although Google has already forged strong relationships with numerous healthcare companies through various other verticals (e.g. cloud, data science, services, etc.), the company is relatively young in its EHR and health IT related ventures. Google's partnership with a large company like MEDITECH signals a level of product maturity, indicating that the company is getting ready to scale its platform to new frontiers.

MEDITECH is a widely used platform, serving some of the largest healthcare organizations across the globe. As Google enters this realm, the possibilities are endless.

Take for example Epic, another healthcare IT company that has exponentially grown its presence in the health sector over the last decade. Epic's EHR system is used by healthcare organizations worldwide and is ripe for collaboration with partners such as Google.

Of course, the pipeline for Google's product is still to be determined. Experts are questioning whether the company will eventually aim to launch the Care Studio product as a stand-alone EHR platform that can compete with other established systems, or rather, continue to partner with existing players as it is doing right now. Time will tell.

Nevertheless, as Google has proven time and again, disruption is just around the corner. Certainly, healthcare IT is ripe for change, and Google will undoubtedly have a significant role to play in the years to come.

**SOURCE:** *www.forbes.com*

# METAVERSE: THE NEXT FRONTIER IN HEALTHCARE?

***The new buzzword is 'Metaverse'. Metaverse may be the next big thing, and lots of implementation steps have been made in various industries but it will take another decade before it's being used actively in the hospitals or medical practices.***

The healthcare technology industry is constantly evolving due to new innovations in the medical space. From MRI scans and X-rays to robotic surgeries and virtual reality, the healthcare sector is seeing massive digital transformation.

As per a study, the US healthcare spending is estimated to touch $8.3 trillion by 2040 from $4 trillion in 2020 due to the adoption of new and emerging health technologies.

The announcement of an emerging technology -- the Metaverse by the CEO of Facebook, Mark Zukerberg -- triggered its potential usage in the healthcare sector. Metaverse is a promising technology and holds lucrative opportunities in the medical field.

This can be used to address certain issues such as mental health, access to health without geographical limitations, virtual wellness, and fitness, and just to connect with people.

Metaverse is a parallel reality or visual representation of reality, however it's neither augmented reality (AR), virtual reality (VR), or MR (mixed reality), but an amalgamation of these technologies that also includes artificial intelligence as well. Further, this technology requires another 10 years of work before people can access it in games, shops, travel, and the healthcare sector. Currently, medical facilities are using VR and MR to assemble medical tools or to design a surgical room and operations.

The World Health Organization is utilizing AR to train COVID-19 respondents and VR is actively used by the mental health experts for treating PTS (post-traumatic stress), and medical schools use it for education.

Likewise, metaverse in the healthcare sector is predicted to help healthcare professionals in numerous areas via a combination of these technologies. Hence, metaverse has the potential to be the next frontier in the healthcare sector.

Here are three areas in which the metaverse is likely to gain dominance in the healthcare industry.

## 1. Surgical operations

Currently, surgeons use technologies such as AR, VR, AI, and minimally invasive surgeries for augmenting patient outcomes. Leading hospitals and universities use these technologies for surgeries because this gives a 3-D view of a patients' body, and helps to interpret surgeries, plan, and perform them.

VR and AR simulation is used for surgical training and is widely used for efficient, safe, and measurable medical training. However, VR or AR comes with unique technical challenges in the healthcare field.

These obstacles include creation of realistic physical objects and surgical interfaces within a computer-generated space, representing interactions between items, and processing signals for complicated events during surgeries.

Furthermore, VR systems are limited to specific clinical settings and mobile VRs offer pocket size immersion. Resolution of devices and computer specifications are limiting aspects for medical facilities.

These challenges can be overcome with the intervention of the metaverse in the healthcare sector as it offers space and realistic interaction between doctor -- patient, including objects. Thus, making it easier to explain surgical operations to patients, along with complications if any.

## 2. Mental health

The metaverse raises interesting concerns regarding mental health such as the following:

- Addiction to virtual realities
- Harming people suffering from mental disorders such as psychosis, schizophrenia, depression, or anxiety
- Revolutionizing mental health treatment altogether

Metaverse in mental health can be used for the treatment of various brain issues such as phobias, PTSD, anxiety disorders, hallucinations, and delusions. Technology has changed the way we seek support from friends, family, colleagues, or healthcare professionals during mental breakdown.

Companies working in the virtual reality space are devising mental wellness applications for metaverse as this technology holds potential benefits for our wellbeing. For instance, in February 2022, Dr Lisa Cortez aka The Anxiety Dr, declared the launch of the Moody Minks, which is an NFT collection to bring mental health in the metaverse.

Moody Mink Society is set to become home to the first META-tation center and NFT holders will be able to access events held by The Anxiety Dr. The visitors of metaverse can interact with each other and play games, attend virtual events, and visit galleries.

Metaverse has an interactive nature and provides an arena for online therapy, improves access to therapy for disabled people, and renders a life-like experience. Usage of psychotherapy formats in the metaverse can help individuals with phobias, stress, addiction, eating disorders, psychosis and much more.

## 3. Medical education and training

Metaverse application in medical education and training would be to produce an augmented reality space to examine the anatomy of a human body in a laboratory setting. This technology holds potential opportunities for creating a new educational environment.

This new environment offers space for communication, provisions for new experiences, freedom to share and create, and high immersion. Challenges suggested are privacy impingement, maladaptation to the students in real world, and commission of crimes.

VR is being used to train doctors and medical providers by stimulating real procedures and displaying cellular level data of the human anatomy.

Currently, AR has made its way in the medical school curriculum and has shown a positive outcome to medicine. For instance, Novarad Corp., a medical imaging software company, announced the launch of its AR software for higher education.

Likewise, a combination of these two technologies in the form of metaverse will augment overall medical education in the coming years. Medical teachers can use this technology to help students solve problems, perform projects, build creativity, and create a learning space for all students.

No doubt, metaverse is the next big thing in not only the medical field, but it will take another decade before it's being used actively in the hospitals or medical practices.

**SOURCE:** *www.informationweek.com*

# UCMDMP WILL TRANSLATE INTO CREDIBLE HEALTHCARE, CURB UNETHICAL PRACTICES: MTAI

*The issuance of the draft UCMDMP indicates that the government has taken cognizance of the fact that a separate code is needed which can accurately capture the ethical marketing practice required for the medical device sector.*

The Department of Pharmaceuticals (DoP) on March 16, 2022, published the draft UCMDMP which is intended to be a voluntary code to regulate fair marketing practices by the Medical Device industry. The marketing practices of the Medical Device Sector are currently being voluntarily regulated by Uniform Code for Pharmaceuticals Marketing Practices (UCPMP) which is a code based on the marketing dynamics of the pharmaceuticals industry.

The medical device industry is an important keystone in the healthcare delivery system and is inherently different from pharmaceuticals. The issuance of draft UCMDMP indicates that the government has taken cognisance of the fact that a separate code is needed which can accurately capture the ethical marketing practice requirements for the medical device sector.

As per the order issued by DoP, stakeholder comments have been sought till April 15, 2022.

Pavan Choudary, Chairman & Director General, MTaI said, "The announcement that the govt is following through the implementation of the UCMDMP voluntarily (which is the right way to go about it) is heartening for every company which follows a high level of ethical standards. It will surely translate into more credible healthcare delivery as well as restrain the fly by night operators- who pose a great risk for patients and the reputation of the medical device industry." "In times to come, we hope it will separate the chaff from the grain and give the ethical players the public esteem they deserve. Its impact will hopefully also spill over and check those operators who have found a way to circumvent the price control affected on scheduled medical devices in this government's regime." Choudary added.

**SOURCE:** *www.health.economictimes.indiatimes.com/news*

# ASTER CMI HOSPITAL OPENS AI LAB WITH INDIAN INSTITUTE OF SCIENCE

*The research facility will initially focus on developing AI tech for neurology. This will bring out yet another opportunity for the startups working in this field.*


Aster CMI Hospital, a multispeciality hospital under the Aster DM Healthcare Group in Bangalore, India, has set up an artificial intelligence lab in collaboration with the public university Indian Institute of Science.

According to a news release, the Aster AI lab aims to build AI healthcare tools and train healthcare professionals in AI. It brings together IISc's expertise in AI development and Aster CMI's clinical competence to "aide, translate, and validate the developed AI algorithms for clinical use".

The research facility will initially focus on developing AI tools for neurology and will later expand to other clinical specialities, said Dr Phaneendra K Yalavarthy, professor of medical imaging at IISc. It will support ongoing research projects, such as the "Development of Deep Learning Methods for Automated Tracking and Segmentation of Nerves in Ultrasound Images" and "Automatic Acute Stroke Symptom Detection Using Mobile Health Technologies".

**WHY IT MATTERS**

In recent years, India has been increasingly investing in AI for various industries, including healthcare. Most healthcare leaders in the country, according to a report by Royal Philips, said their health centres are ready to invest in AI technologies with the aim of optimising operations, integrating diagnostics, and predicting patient outcomes. However, adoption is impeded by difficulties in data management and a lack of systems interoperability.

Dr Azad Moopen, founder and managing director of Aster DM Healthcare, said the Aster AI lab will "open doors for healthcare professionals to undertake research and better utilise AI tools to understand their patient's disease patterns and improve treatment outcomes significantly". Dr Yalavarthy added that it will "enable the development of highly impactful research and technologies with a focus on translation to the bedside".

Following the launch of the AI lab, Aster CMI and IISc will later work on exchanging personnel and conducting joint workshops to increase the cooperation in improving AI for clinicians and patients, according to Aster CMI consultant neurologist Dr Lokesh B.

**THE LARGER TREND**

Aside from India, other health systems in Asia are also setting up AI labs to harness large volumes of health data into improving patient outcomes.

The National Heart Centre Singapore has opened the Cardiovascular Systems Imaging and Artificial Intelligence research laboratory, which aims to enhance the precision of predicting and identifying cardiovascular diseases.

The Hong Kong government through InnoHK has provided funding to set up a health AI and robotics data research laboratory under the Laboratory of Data Discovery for Health, a joint research project by the University of Hong Kong and partner universities in London and Sydney.

**SOURCE:** *www.healthcareitnews.com/news/*

Compiled by:
**Parthvee Jain**, is presently associated with NASSCOM. Her expertise lies in the area of organising and handling virtual events and also in strengthening the collaboration across national and international organisations.

# IC InnovatorCLUB

## Twelfth meeting report

## "What it takes to do real world AI: lessons from deployment"

Vijaya Tripathi


The Managing Director of InnovatioCuris Foundation of Healthcare & Excellence Dr. V.K Singh commenced the meeting with a brief introduction of IC InnovatorCLUB and the objective of the present session based on 'What it takes to do real world AI: lessons from deployment'.

He divulged the present dilemma of relying on AI for every medical issue without any medical assistance from employees, the usage of telemedicine in India following the outbreak of the pandemic and also cited a number of Artificial Intelligence (AI) applications in the medical field. Further he mentioned several legal and ethical challenges surrounding AI, advising that we employ technology as a supplement to our efforts. Dr. Singh greeted the panelists and attendees of the session.

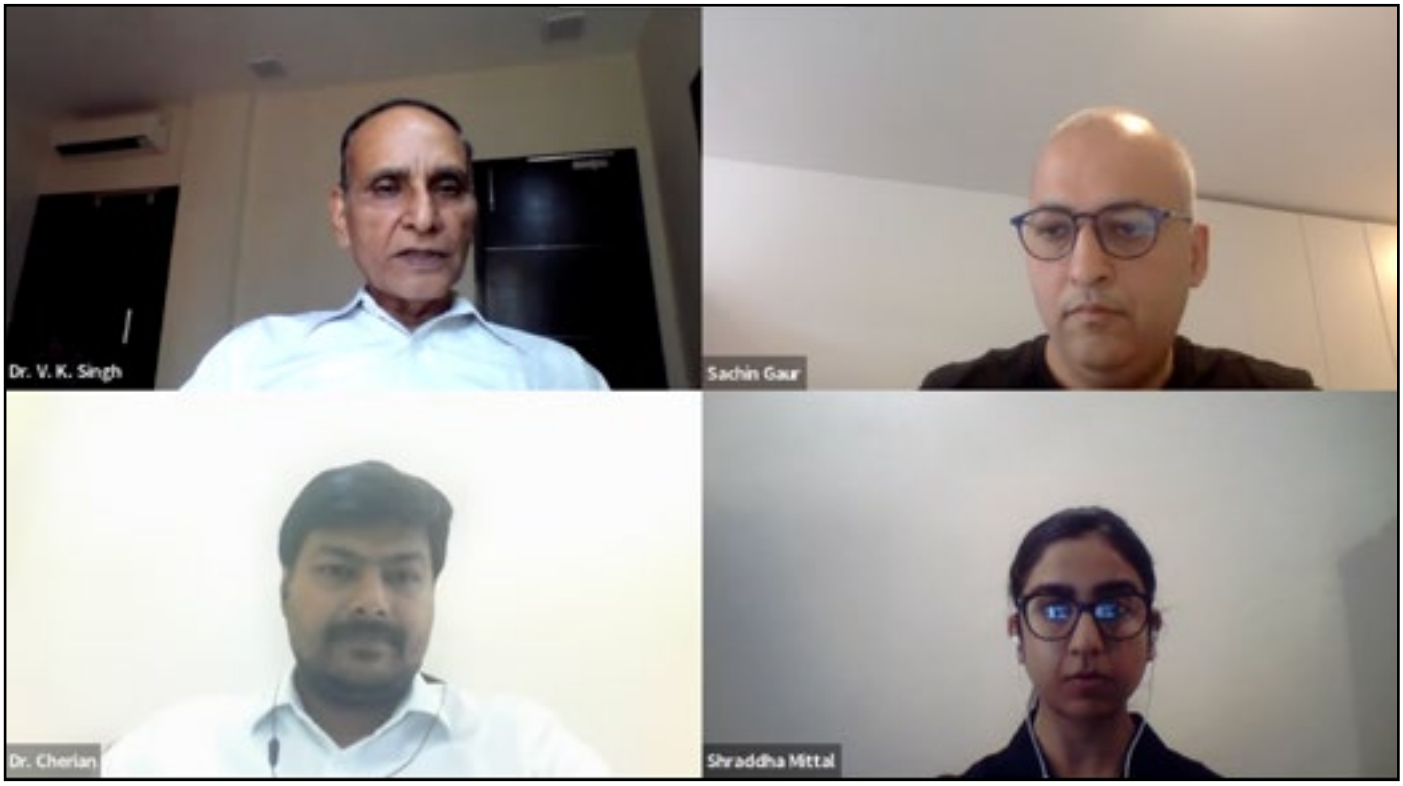
Dr. Cherian, Ms.Shraddha, and Mr. Rohit Ghosh, who joined remotely, were welcomed by Mr.Sachin Gaur,Executive Editor of InnoHEALTH magazine. He emphasized the importance of using AI in the medical industry with a brief overview of the meeting's agenda and the flow of the session. The questions planned to be asked to the experts were in the realm of comprehension, such as what it takes to make an AI product successful in a clinical setting? From a technical standpoint as well as in terms of the actual obstacles and challenges they confront. Participants in the meeting are more likely to obtain insights and learn some crucial lessons if they are aiming to create a business.

Mr. Gaur welcomed the first panelist for this club meeting Mr. Rohit Ghosh who is the founding member and Chief strategy officer of Qure.ai.

Mr.Rohit discussed the difficulties they confront on the ground while installing AI. He added that Qure.AI has deployed AI in approximately 50 countries and 500 hospitals in the United States, the United Kingdom, Europe, Africa, Southeast Asia, and Asia. For smooth running of the installation, he devised a plan to comprehend some of the problems and lessons learned in due course and those he will be sharing during the session.

He initiated his questionnaire session with the first question on AI, "Do you need to enlarge the data sets for training?" "Could you explain the difficulties here"?

He reciprocated that indeed the datasets for training are the most important item for any AI company. His company Qure. Ai has almost finished processing 4.2 million photos for a chest x-ray algorithm




they developed. He underlined the need of using data sets for training, as this leads to accuracy. Although delta improvement necessitates a large amount of data where any amount of data counts.

In response to the second question, "How can we measure completeness of data, representation of groups, and other such things?" He explained that complete data is a theoretical concept where fluctuations such as regional, disease, and seasonal variations, are data sets that should be addressed more. He underlined the hardship to track down all of the data.

His next question was, "How objective are the ground truths of your training data sets, and what can you do to improve the quality objective of ground truth?" In response, Mr.Rohit stated that in AI, you must have an objective function, however in real life or reports, ground truths are not always as objective, such as when radiologists do not always take complete background of the case. So, the need to train any algorithm becomes important. Now, to improve their ground regularity quality, they've standardised ground truthing techniques, such as having a panel of radiologists review reports instead of just one. Another thing they have implemented is to construct a complete NLP ( National Language propository) terms that they use to represent such findings. Therefore it uses multiple reads instead of one to get the objective that a person normally gets from physicians.

"Are the outcomes the system gives explainable and interpretable to clinicians?" comes the next inquiry. Do you have a way to visualise and explain them in a more user-friendly interface or report"? According to Mr.Rohit, explainability is at the heart of machine learning and AI research at the moment, but in his interactions with physicians and radiologists, it is a minor problem because clinicians are already familiar with AI medical imaging.

The next question is what happens when AI and physicians disagree. Is it true that they provide feedback? He justified the query by explaining that there are times when AI and physicians disagree, but just because one result differs from the other does not mean the AI is erroneous. So they have a discordance meeting to discuss the cases that are discordant. Then it's assessed by a panel, which gathers any discrepancies and trains the AI to release future versions.

The next topic was how to provide feedback on your system's performance in a clinical situation. The discordance meeting has already been explained by him and there is also post-market surveillance alongwith a FDA regulatory approval for the algorithms. A subset of everyday assessments is also examined by a panel in order to determine whether AI is making the correct decisions. Qure reads exam samples and then rereads them. AI is just used to ensure that the quality is up to par on a daily basis.

"Does Deployment Change Care Pathways?" was the next question in the discussion. Is there a way to retrofit or intervene? In response, Mr Ghosh elucidated that retrofitting and intervention are both possible as it alters care patterns in some regions. Qure,AI has been able to make a difference since receiving WHO approval for TB diagnosis. The entire TB diagnosis takes one hour.

## What value does your technology add to the healthcare process, such as improving the quality of clinical decision-making systems, automating manual processes, or something else? What do you do to build consensus on the impact?

Finally, what value does your technology add to the healthcare process, such as improving the quality of clinical decision-making systems, automating manual processes, or something else? What do you do to build consensus on the impact? In your perspective, clinicians perceive a gain to the extent you foresee, so what do you do to build consensus on the impact? They're basically increasing patient outcomes, according to Mr.Ghosh.

At Qure.ai, one of the use cases is to reduce work burden and manual labour. Radiologists' turnaround time should be reduced so that reports may be produced more quickly and accurately. Early detection of severe disease and prompt treatment are essential.

In AI, there is a lot of agreement. There is a lot of maturity in the ecosystem right now. Rohit's part of the meeting came to an end with that.

**Sachin Gaur moderating the session welcomed the next panelist Dr. Cherian, Co-founder at Synapsica**

Dr. Cherian introduced himself and gave an overview of Synapsica's work.

In terms of the data sets, he and Mr.Ghosh had different viewpoints. He told us that they have enough data and are working to extend their data sets so that they can build more features and capabilities in AI using the tools they already have. He noted that data preparation, objective ground truthing of data cleansing, and knowing how it will impact your AI system not just in terms of money but also in terms of time are all expensive inputs into the system so it is critical to maintain a sense of equilibrium. From a medical standpoint, adding additional data does not necessarily imply that the AI's output will improve. You can construct more accurate algorithms by using updated algorithms and technological advances that can be used for learning from more data sets. The output is influenced by the quality of the algorithms.

Dr. Cherian agreed with Mr Ghosh that there is no clear technique to measure the completeness of data sets while responding to the next question. The only way to know if your AI is functioning well enough on the data it has been fed is to conduct a real-time clinical setting trial.

Moving on to the next question, he told us that at Synapsica, they do multiple rounds of annotation and take intermittent consensus to achieve an objective to use a true analogy as AI is like a dumb kid, and if one want that dumb kid to excel in trials where it is tested against multiple radiologists, then one would have to hand hold the AI to learn from multiple radiologists rather than a single radiologists. We compared our results to ground rules established by several technologists, which is one simple means of ensuring objectivity in the ground truths put into the AI system.

The method you use to compile your data or ground truth also contributes significantly to objectivity. When looking at the photos, picking out the observations is fairly objective. People can recognise the description by looking at the image, then use the description in conjunction with current medical criteria to come up with an interpretation. This also aids in the development of AI that is more understandable.

In addition to the answer to the next question, Dr. Cherian stated that the majority of AI businesses are preparing annotated photos, highlighting specific areas, and using masking technologies so that radiologists can see and comprehend the problem. They also provide radiologists with engagement, which they believe is vital as every AI outcome won't be accurate all of the time. He went on to say that they think of AI as a junior radiologist in training who provides a report, which is then reviewed by senior radiologists who make modifications. We may learn where we are going wrong and what needs to be fixed by using feedback. The next question was answered by this.

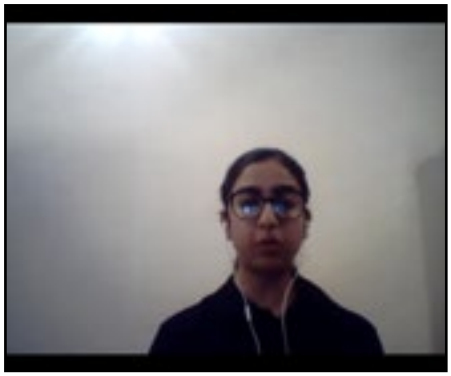
Moving on to the following question: How does your deployment alter the care pathway, and can it be retrofitted? Yes, he replied, we can refit. While looking at the results of AI, radiologists should not switch to different systems because any or all of the efficiency gained from AI will be lost. In response to the question of changing the care pathway, he added that most AI solutions will improve the efficiency of the existing pathway and, in the next step, possibly change the overall clinical care pathway.

Moving on to the last question, Dr. Cherian explained that their AI system focuses on improving the efficiency of radiologists in reading and interpreting this type of exam, which is their main focus. They were able to achieve their goals of reducing the 15 minute time taken to 7 minutes for today's cases by radiologists, and it involves automation of the manual processes that a radiologist will typically spend while reading and interpreting those types of exam. He also stressed the need to reduce burnout. A number of disorders may be made more sensitive with AI.

> **There are times when AI and physicians disagree, but just because one result differs from the other does not mean the AI is erroneous.**

He mentioned that reaching a consensus is difficult, especially when it comes to radiologists who have been working in a certain way for a long time, and their work was done in a different way with AI. Now that they have resumed work and have worked for a long time, AI comes in and asks them to change their work behaviours, that is the most difficult part. The best part of AI is to have a documented proof of accuracy for the items, which will provide the professional the confidence in using the product. Apart from all this there is another issue to consider is for usability. With aforementioned words Dr. Cherian's session came to a conclusion.

**Mr. Gaur invited next and last panelist for day's session Ms. Shraddha Mittal, Implementation Associate CARING Analytics platform(CARPL).**



Ms.Mittal began by highlighting some of the hurdles that these AI solutions face on a regular basis when it comes to using them in real-world clinical workflows. She stated that CARPL is trying to become a single enabling player that provides healthcare providers global access to the greatest AI in medical imaging solutions while also ensuring that these AI solutions are seamlessly integrated into their day-to-day imaging workflow. She went on to say that they are in the process of deploying these solutions throughout their partner hospital sites around the world, resulting in CARPL being used in various locations on many continents. They are stationed at Thomas Jefferson University's academic centres in the United States. They're collaborating with Stanford's Army Center, Mass General Hospitals, and other institutions in the area. She went on to say that they are highly active in Brazil at Albert Einstein Hospital and other imaging centres across the world. They are used in India at various hospitals and the Mahajan diagnostic chain. Some of the issues, according to Shraddha initiates as healthcare providers are unaware of the existence of these AI solutions and their access alongwith with the knowledge to integrate the AI solutions into their daily workflow.

She described the lifecycle that CARPL conducts to effectively integrate AI solutions into hospital medical imaging operations with an attempt to add value to both AI developers and healthcare providers in this ecosystem. The IT infrastructure, she explained, is a key hurdle when it comes to deploying AI technologies in the healthcare ecosystem. As a result, they tend to shorten this period, and their relationship with AI partners is structured in such a way that they want them to concentrate on integrating their solutions. Then it's up to them to spread that answer to as many hospitals as possible around the world. After that, they help with the integration of the AI technology into a hospital.

She mentioned that CARPL allows AI engineers to concentrate on designing more robust solutions as well as the deployment side of moving those solutions from the bench to the clinic. She informed us about the projects they are presently working on, as well as how CARPL can be used as a single interface to provide feedback from all around the world to AI developers in real time. When it comes to onboarding solutions, she stated that they are always on the lookout for high-accuracy solutions, ideally with FDA and CE licences. They've also assisted a few businesses in obtaining FDA approval. She finished by stating that CARPL is expanding into a variety of fields.

The club meeting then progressed to Q&A sessions.

Mr.Gaur and Dr. Singh wrapped up the meeting. Conclusive note by Mr. Sachin stated that AI in science is about knowing what we don't know, not about money or productivity.

After that, Dr. V.K. Singh thanked the panellists and participants and elucidated that AI is a new way of thinking that needs to go, but that it should be remembered as a tool to assist medical professionals, not as a replacement for medicine, medical personnel, or doctors.He stated that he has faith in our people because of the vast amount of data we have because some of our states have more people than any other country. He thanked everyone for their participation in the meeting.

**AI is a new way of thinking that needs to go, but that it should be remembered as a tool to assist medical professionals, not as a replacement for medicine, medical personnel, or doctors.**

**Vijaya Tripathi,** is the Head of Market Access and Partnerships at InnovatioCuris. She is pursuing post-graduation in Healthcare management from IIHMR Delhi. As a hardworking and passionate person, she likes to use her knowledge and skills to work in support and favour of healthcare organizations.

# Trending news

## The Rural India Healthcare Crisis - Shortage Of Doctors

India is struggling with a shortage of trained manpower when it comes to rural healthcare. Community Healthcare Centres are severely impacted by a lack of specialist doctors. But in the midst of this crisis, there are doctors, nurses and frontline workers who are opting to work in remote villages, with communities that are marginalised and impoverished. In this, the month of health on our Banega Swasth India campaign, we salute them.

https://www.youtube.com/watch?v=bkYeh8yBsdo

## Can India attain Universal Health Coverage with web 3.0?

Achieving Universal Health Coverage (UHC) for all by 2030, which is fundamental to achieving other Sustainable Development Goals (SDGs), is what India is aiming for in the next eight years. UHC signifies quality services when it comes to prevention, promotion, treatment, rehabilitation, and palliative care at affordable prices. However, it is still a far-fetched dream because the affordability of healthcare services, which are available in India, is still a challenge for the poor and the middle-class families. Lack of quality healthcare services and capacity in the government set-ups have forced these sections of society to resort to the private hospitals.

https://timesofindia.indiatimes.com/blogs/voices/can-india-attain-universal-health-coverage-with-web-3-0/

## Weak IP laws a deterrent to innovation in Indian bio-pharmaceutical sector

The Indian pharmaceutical industry is on a growth trajectory – being the third largest in terms of volume and the thirteenth largest in terms of value. The pharma sector has registered unprecedented growth in the past decades fuelled by high burden of diseases, higher disposable income, healthcare infrastructure, etc. This growth, led by innovations that lead to discovery of new life-saving drugs, will continue organically and inorganically through alliances, joint ventures, and mergers, and acquisitions and must be protected through intellectual property rights (IPRs).

https://www.financialexpress.com/healthcare/weak-ip-laws-a-deterrent-to-innovation-in-indian-bio-pharmaceutical-sector/2503812/

## Besides innovation, India is a great place for manufacturing medical devices: Krista Donaldson

Shahid Akhter, editor, ETHealthworld, spoke to Krista Donaldson, CEO, Equalize Health, to know more about the latest advancements in medical devices catering to the new borns.

https://www.youtube.com/watch?v=p9F2mfc3gbQ

## SIIC IIT Kanpur Signs MoU With Defence Innovation Organisation, Ministry Of Defence To Support Research And Innovation Among Startups

The technology business incubator of IIT Kanpur, Startup Incubation and Innovation Centre (SIIC) signed an MoU with the Defence Innovation Organisation on 22 April 2022 in the presence of Hon'ble Defence Minister Shri Rajnath Singh at Vigyan Bhawan, New Delhi to become a partner incubator for the flagship program iDEX-Prime. iDEX-Prime will support startups for projects up to Rs 10 crore to add to the evolving innovation ecosystem nationally across various domains ranging from Artificial Intelligence (AI), Advanced Imaging, Sensor Systems, Big Data Analytics, Autonomous Unmanned Systems, to Secured Communication.

https://indiaeducationdiary.in/siic-iit-kanpur-signs-mou-with-defence-innovation-organisation-ministry-of-defence-to-support-research-and-innovation-among-startups/

## DCGI grants EUA to Corbevax for those aged 5-12, Covaxin for 6-12 age

India's drug regulator has granted emergency use authorisation for Biological E's COVID-19 vaccine Corbevax for those aged five to 12 years and Bharat Biotech's Covaxin for children in the age group of six to 12 years, Union Health Minister Mansukh Mandaviya said.

https://www.deccanchronicle.com/nation/current-affairs/260422/dcgi-grants-eua-to-corbevax-for-those-aged-5-12-covaxin-for-6-12-age.html

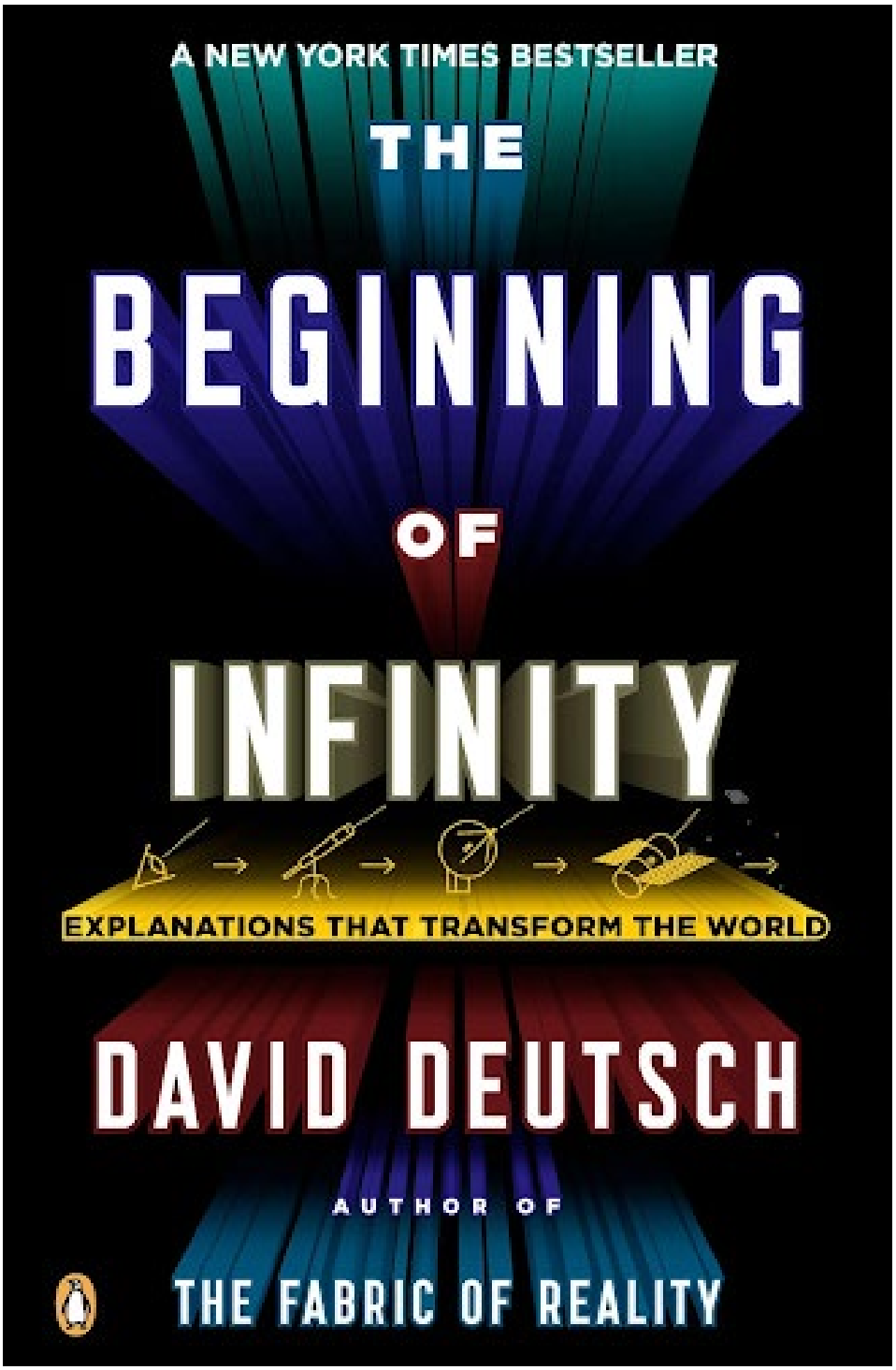
## Indian Health Service Announces $5 Mil for 'Ending the HIV Epidemic in the U.S.'

On April 25, the Indian Health Service (IHS) announced via a press release $5 million in funding for "Ending the HIV Epidemic in the U.S." The funding will support efforts toward the eliminating HIV and hepatitis C in Indian Country.

https://www.hcinnovationgroup.com/policy-value-based-care/health-equity/news/21265567/indian-health-service-announces-5-mil-for-ending-the-hiv-epidemic-in-the-us

# BOOK REVIEW

**Reviewed by Sachin Gaur, Executive editor for InnoHEALTH Magazine**




In this book, the author David Deutsch talks about the evolution of knowledge, its origin and discovery. The book starts from the basics about our understanding of the world and how we acquire knowledge and refers to an interesting conversation between Socrates and his students on topics like epistemology. He later stresses how memes also encode information the same as genes. Further he elucidates about the body of knowledge for us as a species that is responsible for the culture. It is a great book which provides you a methodology to distinguish between dogma and scientific knowledge. The title of the book deciphers the fact that with the tools that we have in the modern days we can create infinite resources (knowledge and otherwise) as long as our pursuit of knowledge is honest.

INNOVATIO CURIS

# VIRTUAL EVENT as a SERVICE

## WHY VIRTUAL EVENTS?

- Low Cost with a Higher Return on Investments
- Modular and Repeatable
- Interactive and participative
- Great value for participants
- Greater Outreach
- Scalable and Measurable

## OUR EXPERIENCE?

**Domains**
- Healthcare
- ICT
- MSME

**Event types**
- Hackathons
- Webinars
- Conferences

## HIGHLIGHT PROJECTS

| HIGHLIGHT PROJECTS | PARTICIPANTS | WEBINARS |
|---|---|---|
| European Union ICT Standardization | 1800+ | 27 |
| European Higher Education Virtual Fair 2016 | 16000+ | 87 |
| European Higher Education Virtual Fair 2015 | 13000+ | 73 |
| Knowledge series webinars with European Union & Indian clients | 2000+ | 30 |
| Fight Corona IDEAthon | 5400+ | |
| SAMADHAN | 9000+ | |
| Smart India Hackathon 2020 | 10000+ | |
| ScanBalt Digital Forum 2020 | ~ 200 | |

## PARTNERS

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# InnovatioCuris

*Finding methods, tools and techniques to deliver qualitative healthcare at optimum cost at all levels*

## Our activities include

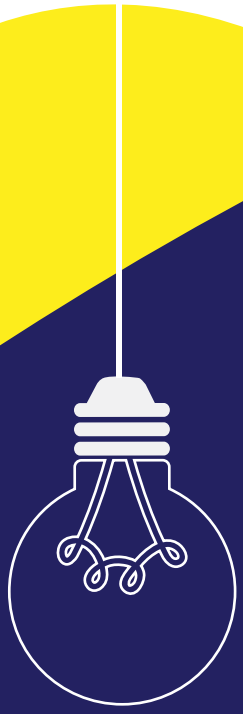
**InnoHEALTH bi-monthly magazine**
innohealthmagazine.com

**Market access**
innovatiocuris.com/market-access

**Training & Consulting**
innovatiocuris.com/training-and-consulting

**VIRTUAL EVENT as a SERVICE**
innovatiocuris.com/veaas

**InnoHEALTH Annual international healthcare conference**
innohealth.in



## InnovatioCuris Foundation of Healthcare & Excellence (not-for-profit)

## Our activities include

*IC InnovatorCLUB*
*Fostering innovations*
**icfhe.in/icinnovatorclub**

*Webinars*
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*InnoBRIDGE*
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