

An initiative of



InnoHEALTH

India's First Magazine of Healthcare Innovations

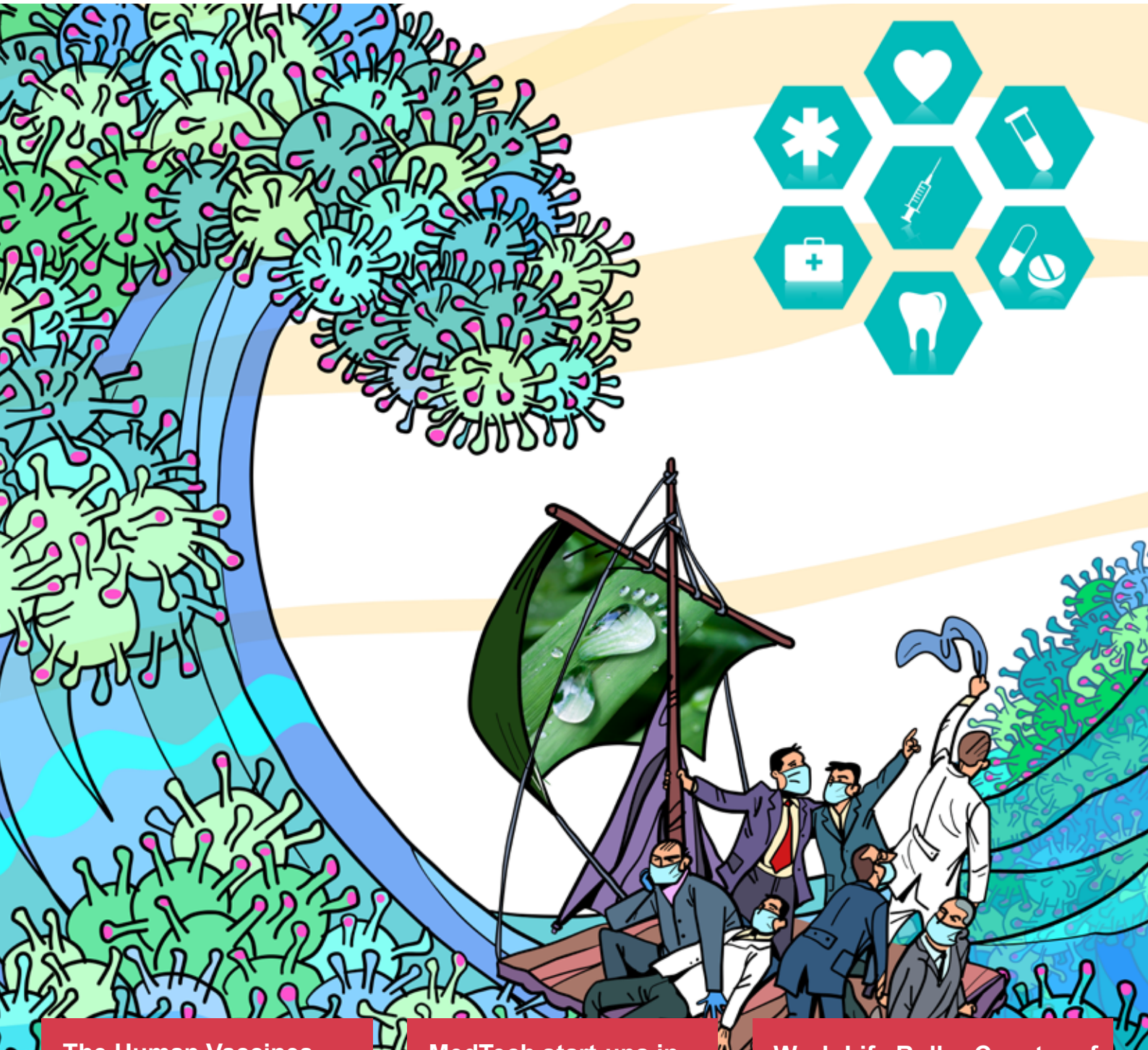
www.innohealthmagazine.com

VOLUME 6

ISSUE 2

MARCH - APRIL 2021

INR 100/-



The Human Vaccines Project (HVP)

by Dr. Frans van den Boom

MedTech start-ups in India

by Dr. Shirshendu Mukherjee

Work-Life Roller Coaster of Indian Women in Science

by Dr. Sarita Jaiswal

Readers Feedback

A Brief Review on InnoHEALTH

Most liked article of the last Issue...

InnoHEALTH

PERSONA

Reinventing India post COVID-19 with Speed, Scale and Sustainability



Dr. Debleena Bhattacharya, Associate editor, InnoHEALTH interviewed Dr. Raghunath Anant Mashobkar in November 2020, for his valuable scientific insights.

Q1. India post covid-19 is ready to reinvent itself. You have been at the helm of affairs from a Science & Technology perspective. What is your advice on the top 3 thrust areas for the country to bet?

I would say that there are three D's that we need to concentrate on. These are technologies that will drive digitalisation, decentralisation and decarbonisation. Let me explain each of these.

First digitalisation. The dream of digital India is taking good shape. For example, it took India 25 years for 2G but Jio helped move India to 4G in just 3 years. India jumped from 155th position in mobile data consumption to the first position in just a matter of few months, thanks again to Jio. But digitisation of education, health, financial services, and also digitalisation for business transformation was proceeding slowly. Post COVID the digital transformation will take place at a rapid pace. Why?

Satya Nadella has said that two years of digital transformation took place in two months. A medical expert in UK has said that what would have happened in tele medicine in 10 years time, has happened in just 10 days. And in USA, it is reported that what one would have seen in e-commerce in 10 years has happened in 10 weeks.

Working from home, telemedicine, digital financial transactions are gathering pace. For instance, it was reported that India jumped to the top position in real

time digital financial transactions by doing 41 million transactions per day.

But digitalisation will become critical in other areas. For example, within hundred days, 1.6 billion children around the world went out of school, and home became their school and Indian children were no exception. Online learning by using digital technology became the new norm. This process was taking place slowly, it has suddenly accelerated. Indian poor suffer from digital deprivation. Their children will suffer, if we do not do digitalisation. But no digital access would mean no access to education.

The second is decentralisation. Rather than aiming for mega factories in urban India, which causes the shift of migrant labour from rural India, we need to aim for decentralised development. We need to promote technologies that will make it possible.

For example, 3 D printing, which is based on additive manufacturing, helps in decentralised manufacturing and does away with usual manufacturing, which involves huge supply chains, which create carbon foot print.

We need technologies that will create less carbon footprints. For instance, hydrogen produced from centralised large refineries is one option, which has the additional burden of cost of transportation, but hydrogen produced from local biomass can do away with this problem, while also generating local employment.

Rather than having centralised medical testing facilities, creation of decentralised point of care non invasive user friendly testing technology will again lead to decentralisation. Shifting to decentralised

InnoHEALTH

micro grids for electricity is already happening. In every endeavour, be it energy, water, health, and several other endeavours in manufacturing and services, development of technologies leading to decentralisation is possible.

The third is decarbonisation. The pandemic was a trailer of what would happen if there was a full fledged impact of our inability to control the climate change. Huge disruption of supply chains, also of demand, and also extremely rapid global transmission and amplification happened during the pandemic. Worst will happen with climate change threatening our common future.

We need green growth and that will help us become net carbon neutral in coming years. Renewable energy, be it solar or wind or bio based will be the key. We will have to focus on technologies that will help us build our new economies, like bio economy based on biofuels technologies, hydrogen economy based on hydrogen fuel cells technology, etc. We have to look at similar strategies to technologies in other areas such as electronics, where our import from China is heavy.

Q2. When we look at healthcare, the new normal is digital delivery of health care. PM recently launched the National Digital Health Mission. We have always resisted digitalisation in traditional sectors in the country. Healthcare is one of them. What challenges and opportunities do you see for a diverse country like India with Digital Health?

COVID-19 has amplified digital innovation to historic levels. Healthcare organisations around the world are setting aggressive strategy agendas to explore the enormous benefits of emerging digital technologies. The greatest shift in the pandemic is towards digital health, and especially telehealth. Customer adoption of telehealth during the pandemic has skyrocketed worldwide. For instance, the pandemic, in USA, use of telehealth jumped to 46 percent which was just 11 percent in 2019. But India was no exception. 50 million Indians accessed healthcare online from March to May 2020, with 80 percent of all telemedicine users and patients using it for the first time.

Indian shortages in doctors per patient are not only severe but also very uneven. In India, 60 % of hospitals, 75 % of pharmacies, and 80 % of doctors are in urban areas. This creates the challenge of access for the rural areas. But we can meet with this challenge with telehealth by ensuring better connectivity in villages, which is the agenda of GOI anyhow.

Internet of Things (IoT) —connected devices—is part of the telehealth revolution. Smart devices have become more prominent as people have moved them into their lives to help fight COVID-19 and to share data with their doctors.

Donee is a young Indian start up, which showed the power of IoT. It created a contact free health monitor based on IoT, that can be placed below a mattress and track vital parameters, which can convert any bed into a continuous health monitoring unit, almost like converting normal beds into step down ICUs. Let me tell you about other breakthroughs in digital health created by Indian startups.

Mumbai-based startup Qure.ai uses an artificial intelligence powered solution to identify 24 abnormalities in a chest x-ray including ones indicative of a Covid 19 infection. And does it fast and very cheaply.

Hyderabad based start-up Salcti technologies addressed the issue of pre-screening of Covid 19 patients by pre-proposing its mobile application that uses artificial intelligence to analyse the coughing.

But there are concerns also about telehealth. In a recent healthcare consumer survey, 79 percent said that they were concerned about data privacy and businesses tracking their online activities, behaviours, locations, and interests. Digital health of the future has to address how we're going to protect data privacy.

Q3. Has COVID-19 been a boon for some of the industries?

Technology companies (for example Apple, Amazon, Google) that had adapted to platformisation did very well. Bio Platform was a classical case, being able

to get an amazing investment of US \$15 billion during the pandemic. Technology sectors got a big boost as working from home, disappearance of physical meetings and emergence of virtual meetings took place. For example, Zoom Video Communications grew exponentially during the pandemic. Zoom began the year with a market cap of \$19 billion and on Oct 29, Zoom's market valuation crossed \$139 billion, surpassing the of major Exxon Mobil.

The Online Gaming and Entertainment grew exponentially with Netflix adding 25.86 million subscribers in the first half of 2020, giving the company its biggest growth spurt in its history. The E-commerce growth was phenomenal, for instance, Amazon's Market cap grew from \$945 Billion to \$1661 billion since beginning on the year.

The same was the case with FinTech. For example, Zerodha, a broking firm jumped from 1 lakh new customers per month to about 3 lakh customers per month during lock-down period. UPI payments jumped from 1.3 billion in February to 2.07 billion in October. Google Pay grew 3X in September 2020.

Closure of schools during the pandemic and demand on online learning suddenly catapulted the Edtech sector. About 5X growth in funding was observed in just 12 months, with India becoming home to the second highest number of Edtech companies after US.

There are 4000+ active Edtech start-ups in India today. Among these new-age Indian edtech companies like Byju's, Unacademy, Vedantu, Toppr and Whitehat IT grew exponentially as consumers in India as well as outside lapped up their services.

Q4. How do you see the Atmanirbhar Bharat Initiative by the GOI? What does Atmanirbhar Bharat mean to you in today's globalised world?

'Atmanirbhar Bharat' means self-reliant India. But in today's globalised world, idea of self-reliance cannot be about a return to import substitution, or to licence-permit raj and inspector raj but an active participation in post-COVID global supply chains coupled with a strategy to attract foreign direct investment.

Feedback and Testimonials

Fight Corona IDEathon & Mega Online Challenge SAMADHAN

It is a huge crowd and immense responses...you guys are managing it well

Sujith R

SRM Medical College Hospital and Research Center
SRM IDT, India

Congratulations to all the teams, mentors and not to forget - the organizing teams; you pulled out a great initiative and took it to the logical conclusion - Great!

A loud shout to the Organizing Team - Its not easy to get all this planned, coordinated and executed flawlessly - Hats off!

Atul Bengeri

Director
AcumenToday, India

To Forge and IC - You guys pulled it off! A first-of-its-kind 100% Digital Ideathon. Hats off to the whole team. You brought so many Indians together to synergize on a country-wide problem. The commitment, the program structure, crisis management was commendable! Cheers to everyone from your team who worked behind the scenes too!

Arjun Ramakrishnan

Asst. Manager - Innovation
National Life and General Insurance Company SAOG,
Oman

Supporting Nurses & Midwives webinar

Panel Discussion on Supporting Nurses and Midwives in Pandemic COVID-19 was very interesting and informative.

Sheetal Kothare

Assistant Professor
L. T. College of Nursing,
SNDT Women's University, India

Working with you all was a good experience, I really appreciate the efforts and the coordination by your team.

Manju Chhugani

Professor & Dean
Jamia Hamdard, India

The session was very informative. we got different options & suggestions by panelists to handle the COVID19 pandemic. Thanks to the support of the organiser.

Debashree Dash

Nurse Educator
Sri Sathya Sai institute of
higher medical sciences
India

Solving Diabetic Retinopathy diagnosis through Artificial Intelligence webinar

Thank you for giving me this opportunity to join such an informative webinar like this. I enjoyed a lot and learned a lot hoping for more webinars in future on different topics.

Yashwant Technohand

Sales & service Engineer
Technovision India Pvt Ltd, India

Diabetic Retinopathy webinar was very useful. Speakers presentation was very excellent

Hemapriya Prabakarane

Assistant Professor
Vinayaka Missions College of Nursing, India

Miscellaneous

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 - praising, thanking and protecting nurses amid COVID-19 challenges segment provided the community with a nice introduction to our goals and services.

Neha Lal

Sr. General Manager
GCS Medical College, India

EXECUTIVE OPINION

Atmanirbhar Bharat

Healthcare has been neglected so long but Covid 19 has forced all stakeholders to change their mindset to place healthcare as number one priority. Country created additional beds overnight, started manufacturing PPEs, oximeters, and ventilators. New vaccines against Covid have been produced by India. We are now not only self-reliant in these products but even exporting to other countries. Research and development, innovations and manufacturing has become utmost priority for the Government. This year's budget has boosted fund allocation to healthcare hence opportunities too. The vaccine diplomacy of India is lauded even by WHO for humanitarian consideration.

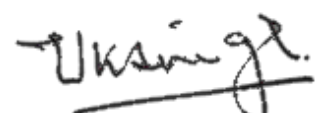
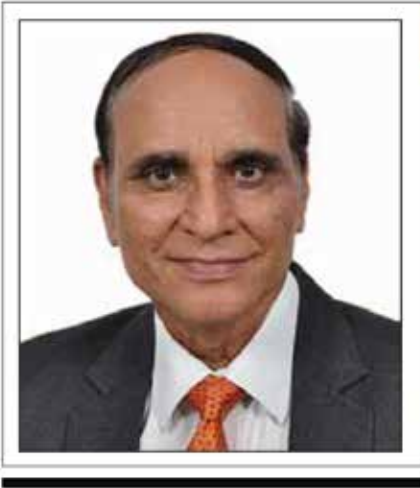
Taking a holistic approach to Health, the focus of budget is on strengthening three areas: Preventive, Curative, and Wellbeing. A new centrally sponsored scheme, PM AtmaNirbhar Swasth Bharat Yojana, will be launched with an outlay of about Rs 64,180 crores over six years. This will develop capacities of primary, secondary, and tertiary care, making robust health systems, strengthen existing national institutions, and create new institutions, to cater to detection and cure of new and emerging diseases. This will be in addition to the National Health Mission. The Budget outlay for Health and Wellbeing is Rs 2,23,846 crores in year 2021-22 as against earlier of Rs 94,452 crores an increase of 137 percent. Additionally, Rupees 35,000 crores for Covid-19 vaccine has been provided in this year's budget. Pneumococcal Vaccine, a Made in India product, is presently limited to only 5 states and will be rolled out across the country. This will avert more than 50,000 child deaths annually. Indeed, allocating resources and push by the Prime Minister is commendable.

Swachh Bharat Mission would organize cleanliness of urban India, by focusing on complete faecal sludge management and waste water treatment, source segregation of garbage, reduction in single-use plastic, reduction in air pollution by effectively managing waste from construction-and-demolition activities and bio-remediation of all legacy dump sites. The Urban Swachh Bharat Mission 2.0 will be implemented with a total financial allocation of Rs 1,41,678 crores over a period of 5 years from year 2021-2026. Nutrition, safe drinking water to all, pollution free air is also the focus of the government to improve quality of life and resources too have been allocated for these initiatives.

A holistic approach and taking care of the common man approach by the government is commendable, but what is important is impact analysis, strict control and judicious use of funds. These initiatives should not end up like "Health for All by 2000" and "National Rural Health Mission" which failed not for lack of funds but for want of judicious control. Another initiative is "National Digital Health Mission" which would be able to provide appropriate technology to control and course correction. What is more important is implementation to translate the outcome on ground. This is the best time for healthcare opportunities created out of necessity and the government has also made resources available for the same. We compliment healthcare warriors and frontline workers to make others live where some even did at the cost of their lives.

Let us get views from readers of magazines to bring out issues and possible solutions and we would reach out to policy makers. Let us use the knowledge platform we have created in the format of club, webinars, conference, awareness, training and panel discussion time to time. We are also striving to make new concepts, tools and techniques known in the health sector like Artificial Intelligence, Cybersecurity, Ideathon and Hackathons to find problems and solutions for government and private sector in India and abroad. We would be glad to have your feedback to improve our initiatives and also collaborate if required.

Let us make India "Atmanirbhar Bharat" to fulfil dream of the Prime Minister and make us feel proud in the world. It would also bring new opportunities to its people and a better quality of life; the government has done its bit by allocation of resources and let us do our role.

Dr. V K Singh

Editor-in-Chief & MD,
InnovatioCuris

vksingh@innovatiocuris.com

Subscribe to InnoHEALTH magazine



Get easy and early access to
innovations in healthcare

✉ magazine@innovatiocuris.com

☎ +91 9711777328

Visit: innohealthmagazine.com/subscribe

Editor-in-Chief

Dr. V K Singh

Executive Editor

Sachin Gaur

Editors

Alok Chaudhary
Dr. Brijender Singh Dhillon
Dr. Avantika Batish
Parthvee Jain

Associate Editor

Dr. Debleena Bhattacharya

Creative Editor

Clarion Smith Kodamanchili

Senior Designer

Neha Prakash

Business Development Editor

Sanjay Gaur
(Contact for ads +91 9711777328)

Advisory Board

Thumbay Moideen, Founder
President, THUMBAY Group, UAE

Sandipan Gangopadhyay

President and COO at GalaxE.Solutions, USA

Prof. Paul Lillrank

Professor at Aalto University, Finland

Global Editorial Board

Dr. Sunita Chauhan, Director,

Robotics & Mechatronics Engineering Program,
Monash University, Australia

Dr. Sarita Jaiswal, Chief Scientific Officer at Carpere,
University of Saskatchewan, Saskatoon, Canada

Dr. Jaanus Pikani, MD Chairman
ScanBalt & Tartu Biotechnology Park, Estonia

Tanya Spisbah, Director
Australia India Institute, Delhi, India

Prof. Dalena Van Rooyen, Executive Dean (Acting)
Faculty of Health Sciences Nelson Mandela University, South Africa

Dr. Annie George Chandy, Innovation Manager
Lund University, Sweden

Dr. Debbie Wake, CEO & Chief Medical Officer
MywayDigitalHealth, United Kingdom

Dr. Khalid Moidu, CIO
Hofstra University, United States of America

Printed and Published by **Sachin Gaur**
on behalf of **InnovatioCuris Private Limited**
Printed at InnovatioCuris Private Limited
Editor: Sachin Gaur

DCP Licensing number: F.2.(I-10) Press/2016

RNI: DELENG/2016/69964

© **InnovatioCuris Private Limited**

All rights reserved. Neither this publication nor any part of it may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior permission from InnovatioCuris Private Limited.

Disclaimer

Readers are requested to verify and make appropriate enquires to satisfy themselves about the veracity of the advertisements before responding to any published in this magazine. Sachin Gaur, the Publisher, Printer and Editor of this magazine, does not vouch for the authenticity of any advertisement or advertiser or for any the advertiser's products and/or services. In no event can the Publisher, Printer and Editor of this magazine/ company be held responsible/liable in any manner whatsoever for any claims and / or damage for advertisements in this magazine. Authors will be solely responsible for any issues arising due to copyright infringements and authenticity of the facts and figures mentioned in their articles. InnoHEALTH magazine is not liable for any damages/copyright infringements.

CONTENTS

PERSONA

The Human Vaccines Project (HVP) <i>by Dr. Frans van den Boom</i>	06
MedTech start-ups in India <i>by Dr. Shirshendu Mukherjee</i>	09
Genesis of InnoHEALTH magazine and its journey of last four years <i>From the Desk of Dr. Debleena Bhattacharya, Associate Editor, InnoHEALTH</i>	12

THEME

Digital Health Mission	14
Work-Life Roller Coaster of Indian Women in Science	17

INNOVATIONS

Healthcare Trends	20
-------------------	----

WELL-BEING

Predatory bacteria: a potential solution for combating superbugs?	25
Impact of Covid-19 on the Global Telemedicine Market	27

IN FOCUS

Chasing The Art of Acceptance	29
Your guide to the best ways of burning fat rapidly	32

RESEARCH

Digitalisation of Health to improve Universal Health Coverage in India	34
The Duality of Identity Faced By Athletes	37

NEWSCOPE

Latest news in healthcare	39
Pilot initiatives of using digital health technologies to promote evidence based tele-medicine practice during COVID 19 period in rural India	52

The Human Vaccines Project (HVP)

Dr. Frans van den Boom has served as the Vice President, Country and Regional Programs and Executive Director Europe of the International AIDS Vaccine Initiative (IAVI) for ten years, he is responsible for vaccine preparedness and community mobilization programs, the social and behavioral sciences program, and resource mobilization. Earlier he served as Executive Director of Policy, planning and evaluation at Qatar Foundation and also as Executive director of the Dutch Top sector Life Sciences and Health. He joined the Human Vaccines Project three years ago as an Executive Director.

Sachin Gaur interviews him on his viewpoints about the initiatives taken by The Human Vaccines Project amid covid-19 pandemic.

Q. Tell us briefly about the organisation you represent and if your organisation planned any support actions during the covid-19 pandemic.

A. The Human Vaccines Project (HVP) is a nonprofit public-private partnership with a mission to decode the human immune system and accelerate the development of vaccines and immunotherapies across major global diseases. The Project brings together leading academic research centers, industrial partners, non-profits and governments to answer core questions about how the human immune system fights disease and pioneer a new era in human health.

The project has three pillars: the Human Immunomics Initiative, a collaboration with the Harvard T.H. Chan School of Public Health; the Newborn Immunity Initiative, a partnership between HVP and the Telethon Kids Institute, the Newborn Immunity Initiative Cincinnati Children's Hospital, and Université Libre de Bruxelles; and the COVID Vaccine Initiative (CVI).

The CVI seeks to learn as much as possible from the current COVID-19 pandemic to enable it to better respond to and perhaps stop the next before it starts. The CVI is working with industrial partners to understand how and why COVID-19 vaccines have been so successful, and to understand how well such vaccines work in vulnerable groups such as older adults where vaccines often do not work well.



The CVI through its Global Lab Meeting and COVID Report has provided indispensable, unbiased updates from the world's leading researchers in the COVID space.

The CVI is now at the forefront of thinking about how to stop the next pandemic, thinking forward to a universal coronavirus vaccine capable of stopping the next pandemic before it starts.

Q. Vaccine development takes enormous time and money, that was our understanding prior to covid-19. Do you think Covid-19 has changed that for good, or is too early to say that.

A. As always, the future will tell. However, I am optimistic that SARS-CoV-2 and

COVID-19 will change things for good. This pandemic has taught us that an infectious disease agent can have an enormous impact on every aspect of life. The human, social, cultural and economic toll is enormous. It has been estimated that the current pandemic will end up costing between USD 8 and 16 trillion globally, but there is also an estimate that it will cost USD 16 trillion for the US only. Surely this has opened the eyes of decision makers that a continuous investment in infectious disease R&D and the underlying basic mechanisms to understand infection, disease development and severity, and immune response is necessary. We now have platforms such as mRNA and others that have allowed us to develop vaccines faster than ever. These new platforms rested on decades of research and investment and are capable, as we have seen, of bringing vaccines faster to the public faster than ever. Despite these advances we still have much work to do on the research side in understanding how to generate immunity to disease that works across all populations and including the really tough diseases like HIV or malaria where we need effective vaccines.

Q. A shorter vaccine development cycle is raising eyebrows, especially around safety concerns, there are population groups missing in clinical trials that we discover as the vaccine is administered. If we were to do it again, how can we do it better? Also, what can be done to improve the communication around vaccine campaigns in general?

A. It is important to realize here that the risks taken were financial, not on safety. We were able to bring vaccines to market so fast because we had invested billions in the development of new platforms like mRNA in the decades before this outbreak. Second, governments around the world started building highly expensive manufacturing plants before we knew the vaccines would work at a great cost and risk to capital. Usually the vaccine industry waits to see if the vaccines look like they will work before making such an investment stretching the development time to years. So the acceleration of the cycle was really due to previous investments and willingness to take financial risk.

I believe it has been shown that a quicker vaccine development cycle and market authorization do not have to go against safety. Safety is the key issue for industry, regulatory agencies and policy makers, and the vaccines went through the standard safety testing and clinical process. That said we have to acknowledge that risks from vaccines are few, but real. The harms coming from vaccines are almost always seen in a short time—allergic reactions being the most common by far. So large trials with shorter observation periods are adequate to find these even if they are unusual. We also have systems for seeking very rare events after vaccines are in use (one event per million doses), and those are now being used. But traditional vaccine and drug development has a lot of delays that don't really add to safety of the product. That being said, policy makers and politicians should not put pressure on industry and regulatory agencies to move faster if that would jeopardize safety.

Secondly, Yes, population groups were missing in the clinical trials, which is common practice in vaccine R&D: children, pregnant and lactating women,

people with (severe) underlying health conditions were not included in the first trials. Elderly people were included, but not in very large numbers. This means that additional studies are needed, as we are witnessing now: studies are carried out amongst immune-depressed patients, cancer patients, people with auto-immune diseases, children etc. This is not an easy issue to be fixed in clinical trials, because the golden rule is that you enrol 'healthy' volunteers, usually people between 18 and 55. This needs a lot of thinking and a careful balancing of risks and benefits if you are going to enrol vulnerable populations. Again, this is where post-marketing surveillance systems or additional clinical trials after the vaccine is being distributed, can help without slowing down access to a life-saving intervention.

Thirdly, improving communication around vaccine campaigns in general. Vaccine hesitancy is a big issue worldwide. WHO identified vaccine hesitancy as one of the top 10 threats to global health. The challenge for public health authorities stretches beyond COVID-19. I believe that we are entering a completely new paradigm around vaccination. Social media and social networks have become important shapers of the frame, as we have seen in so many countries with the introduction of the HPV vaccine; opinion makers and leaders - whether in media, science, politics, religion - can make or break vaccination programs; lack of consistency and trust are critical issues.

On top of that, given the enormous amount of time spent on reporting on COVID-19, people are becoming more knowledgeable about vaccines and vaccine development: herd immunity, level and duration of efficacy; side effects; halting trials because of (serious or severe) adverse events. The public also is gaining an understanding of gaps in our knowledge

after a vaccine has been licensed such as the level of protection against new virus variants, the efficacy of a vaccine in the aging population and in people with pre-existing morbidity. Last but not least, the top 3 categories for vaccine hesitancy (scientific evidence; knowledge and awareness; religion/culture/gender/socio-economic) remain relatively constant, but even the most cited category (scientific evidence - risk benefit) only accounted for less than a quarter of all categories cited, emphasizing the complexity and variability of vaccine hesitancy globally. So this is a daunting challenge for public health authorities.

I believe it is key to (re)establish trust. And trust is created by being honest / transparent, fair, reasonable and realistic. A recent study showed that the most important determinant for being vaccinated is that people believe and are confident that vaccines are important for their own safety and health. That in my opinion is going to be critical. Communicate clearly and consistently about the impact of vaccination on life expectancy; invest in understanding why some are hesitant and some confident; invest in making immunisation accessible, affordable and acceptable. Understand community dynamics and social and peer group pressure. I believe it is critically important to involve social and behavioral scientists in order to understand the social and behavioural dynamics.

Q. What are the barriers that prevent vaccine development and a well-coordinated global effort. If you were to suggest top three recommendations for a healthier and safer world through timely vaccine development, what would they be?

- A. ♦ Sharing real-time information if an infectious agent is identified as the cause of a (potential) pandemic in order to start working on a vaccine.
- ♦ Communicate as much as possible and don't shy away from saying sorry, if new insights require different approaches.
- ♦ Develop a MoU between biopharma and the international community (WHO, World Bank) on advance market and advance purchase commitments, and other innovative financing mechanisms.

The Human Vaccines Project (HVP) is a nonprofit public-private partnership with a mission to decode the human immune system and accelerate the development of vaccines and immunotherapies across major global diseases.



Q. What are the other promising directions that you see coming in near future that can enable a healthier and safer world?

A. Obviously, our ability to decode the human immunome. The recent convergence of technological advances in biomedical, computing and engineering sciences will lead to the next revolution in health, including but not limited to vaccine discovery and development.

Q. Are all viruses bad? About 8% of the human genome is ancient viruses! What is the relationship of life in general and humans with viruses? Are we against them all the time?

A. Viruses may have a bad reputation. Because of the SARS-CoV-2 pandemic, their reputation seems worse than ever before. However, we would not survive if our body did not host its share of viruses. Wishing to be 'virus free', actually is a bad idea. The great majority of viruses are

actually not 'interested' in humans at all, but in bacteria. These 'bacteriophages', or bacterial viruses destroy bacteria and keep bacteria populations under control.

Everybody carries around a huge number of microbes, known as the microbiome. The microbiome is made up of around 100,000 billion microbes, which is more than all the human cells of your body. Most of these microbes are bacteria, and they are vital to your health. Nevertheless, these bacteria need to be kept under control. That is why the bacteriophages in your body outnumber the bacteria 10 to 1. Nature uses bacteriophages as a sort of 'biological pest control' for bacteria,

which prevents humans from being overwhelmed with bacteria. We would die without viruses.

Q. Any message that you would like to share with the readers of our magazine.

A. Stay safe and stay healthy. Remember that behavioural modifications limiting exposure of you and those around you are a crucial protection against COVID-19 that can work together with vaccines to defeat this pandemic.

Interviewed by
Sachin Gaur, Executive Editor,
InnoHEALTH Magazine

The microbiome is made up of around 100,000 billion microbes, which is more than all the human cells of your body. Most of these microbes are bacteria, and they are vital to your health.

GUEST COLUMN

MedTech start-ups in India

■ Dr. Shirshendu Mukherjee

India is on the cusp of epidemiological transition. There is a big shift in health burden from communicable to include non-communicable diseases, which in turn is driving key MedTech segments. There is a demand for both cutting-edge precision technologies and for affordable low technology.

The Indian MedTech innovation ecosystem is fast evolving and vibrant with academic research, venture capital firms, government funding and promising start-ups developing products specifically for the Indian market. In many ways, the ecosystem is very reflective of the Swiss MedTech innovation ecosystem.

India's MedTech market was valued at USD 10 bn in 2014 and is expected to touch USD 50 bn mark by 2025. This is in part due to India's rising income levels, swelling private sector investment in healthcare, ageing population, growing medical tourism industry, and government incentives in the MedTech space. All these factors make India an extremely attractive market for international firms. There is a need to use MedTech effectively to address the huge gap between demand and supply of healthcare services in India.

The MedTech sector in India is at a nascent stage with most of the indigenous manufacturing restricted to medical consumables. In fact, imports still constitute over 75% of the current MedTech market. India is looking to improve self-sufficiency in MedTech as a part of the "Make in India" initiative.

India's MedTech market was valued at USD 10 bn in 2014 and is expected to touch USD 50 bn mark by 2025.

The rapidly expanding sector presents immense opportunities to global players.

MedTech market analysis

The Indian market is among top 20 markets globally in terms of market size. In Asia, it is 4th after China, Japan and South Korea. The MedTech sector in India was worth USD 10 bn in 2014 and is growing at 12% compound annual growth rate (CAGR). In contrast, the global MedTech market is growing annually at the rate of 4.1%.

Healthcare in India

MedTech sector and the healthcare sector are interdependent. Hence, it becomes imperative to understand the health status and healthcare delivery status in India. These inform the need of MedTech solutions and product development. In 2014, India was the 6th largest global market in terms of size and is expected to rank in the top 3 by 2025. India accounts for 20% of world's population and is forecasted to cross 1.4 bn by 2025, of which 50% will be over or below 30 years. India's average expenditure on healthcare over the last decade has been around 4% GDP.

In India, 58% of all healthcare expenditure is out-of-pocket. India has a wide socioeconomic index consisting of people who are able to afford world-class treatment and those who are pushed deeper into poverty due to healthcare

expenditure. In comparison, Swiss only pay 25% of their health expenditures out of their pocket, a result of higher state expenditures on public health, advanced social security coverage and more widespread insurance penetration.

Despite advances, health infrastructure is not equitably distributed and overall the infrastructure is well below WHO guidelines. To drive equitable healthcare, the role and market opportunity of every segment in healthcare delivery systems is paramount; given the large unmet needs of the growing population to provide high quality and affordable healthcare.

Some of the key drivers for the Indian MedTech market are:

1. Epidemiological transition: The health burden of India has shifted from communicable to include non-communicable diseases. cNCDs include asthma, acute bronchitis, problems of joints/ bones, hypertension, cardiovascular diseases (CVDs), diabetes, cancer, etc. There is a pattern of increasing morbidity with age. Chronic NCDs have increased over five-fold in prevalence in ageing populations especially those over 60 years. Rise in NCDs has not replaced communicable diseases either.

2. Increasing population and Life expectancy: From 1.2 bn in 2011, India's population is set to grow to 1.4 bn by 2025. Declining infant mortality and increasing life expectancy will augment the demand for healthcare. Even though the Indian population is currently young – with a median of 26 years – the population distribution is slowly changing. Indian population over 60 years will contribute to 12.5% of the total population by 2025, which means a whopping 175 m will be elderly.

3. Rising income levels increases affordability: Access to affordable healthcare is a major constraint for 59% of households with an annual income of < USD 3000 per year. Households in the income bracket of USD 3000 – 7500 are expected to increase to 47.5% by 2020. This increasing population group, who are willing to pay for better healthcare services, will be favourable for the industry.

4. Increasing Health Awareness Drives People To Seek Healthcare: In January 2016, India crossed 1 billion mobile phone subscribers mark. The ubiquitous reach of mobile phones has made it the most effective way for last mile connection. Of these 302 m had internet connections (33). Cheapest calling rates in the world and increasing internet penetration are of consequence for tele, e- and mhealth. This translates to an increased market opportunity for MedTech in this segment. Connected devices are currently one of the top 5 fast-growing segments in MedTech in India.

5. Health Insurance Coverage: In 2014 only 17% of the Indian population had health insurance (34). So, the ability of lower income groups to access quality healthcare still remains an impediment. Government sponsored schemes account for around 80% of the health insurance coverage provided. The low penetration is set to change as the commercial health insurance policies have been increasing at 10% CAGR (35). Health checkups which are mandatory for health insurance will also rise requiring quality MedTech to service the demand.

6. Medical Tourism in India: India is currently one of the top three destinations for medical tourism in the world. The medical tourism industry in India is expected to grow to USD 10.3 bn by the year 2020 from USD 2.8 bn in 2015. Investments in luxury healthcare are growing because of the strong demand for high quality below-international prices of

healthcare. Although some of the key drivers for the MedTech market are as stated above, the key considerations for a successful MedTech venture could be the following:

a. Purposeful Innovation: Solving Indian Healthcare Challenges, One Startup at a Time

The Indian MedTech sector continues to be dominated by imports, which account for 75per cent of the market. So far, Indian companies have been making “me-too” products, which compete with MNCs primarily on affordability. However, there is a new crop of MedTech startups which are creating novel technologies and proprietary, patented, products for healthcare challenges facing the ordinary Indian. This new wave of MedTech is driven by purposeful innovation- i.e. innovation that addresses specific challenges, and taps associated economic opportunities, seen in Indian healthcare.

Globally, MedTech is a focus sector for start-ups – a study of technology incubators showed that over 25 per cent of incubated start-ups were in MedTech, the second largest sector after IT. In India too, startup activity in the MedTech sector is growing by leaps and bounds, albeit from a low base. Today, there are several startups solving Indian healthcare challenges by creating novel technologies and generating a global intellectual property in the process. Startups are tackling challenges such as hypothermia management in premature babies, lung infection in ventilated patients, life support for babies outside the NICU, more accurate labour monitoring, vertigo diagnosis, post-cardiac event monitoring, and screening for blindness, cancers and other conditions. These startups leverage cutting-edge technologies such as machine learning and artificial intelligence, along with electronics, mechanical engineering, and product design expertise, to create innovative, patented, products that not only serve Indian needs but address global

market opportunities.

b. Financing Challenges Facing MedTech Innovators

Globally, MedTech startups have access to both grant and equity (VC) funding at all stages of product development. Thankfully for Indian start-ups, grant funding for innovative MedTech projects has increased exponentially over the last few years. BIRAC, the funding arm of the Department of Biotechnology, has been instrumental in this phenomenal development. Under the visionary leadership of Dr Renu Swarup, Secretary, Department of Biotechnology & Chairperson BIRAC, the organization has funded more than 100 MedTech projects and been instrumental in the design and development of many innovative technologies addressing critical Indian challenges. Additionally, there are other international foundations such as Millennium Alliance, Gates Foundation, Wellcome Trust, Lemelson Foundation, and USAID that provide grants to the Indian MedTech sector.

Venture capital investment in MedTech startups has also been increasing over the years- however; it is still negligible compared to digital and consumer sectors. This is largely due to the relatively long timelines in MedTech - 3-5 years for product development and another 3-4 years for commercial success. However, given the breadth of opportunities in this sector, and the relatively low number of startups, this sector is getting increasing interest from savvy VCs and family offices.

c. The MedTech market- The Public Procurement Challenge

Most innovative MedTech products in India today have been designed and developed for low-resource, low-skill, public health facilities, and can transform healthcare for low-income consumers who depend on public healthcare. However, over 90 percent of MedTech procurement in government happens through the tender system- where multiple companies bid to supply a product, typically competing on price. This method does not work for an innovative product, which is manufactured and supplied by just one company, the innovator. This systemic

The MedTech sector in India is at a nascent stage with most of the indigenous manufacturing restricted to medical consumables.

issue leads to delays, and sometimes outright rejection, in deploying life-saving, affordable, innovative, technologies that are made for India.

A defined public procurement system, specifically for indigenous innovative products, perhaps certified by the central government, would go a long way in getting these innovations into the public healthcare system, where they can save innumerable lives. Deployment of such innovations can also be supported through the creation of an Innovation Fund, which funds procurement and deployment of relevant innovations in a pilot district- to generate real-world data on effectiveness and outcomes, and drive nationwide adoption of the best innovations.

d. Partnership with Established MedTech Companies

After a startup develops an innovative product, it faces further challenges in manufacturing, commercialization, distribution, and service. In the West, a startup typically partners with a large MedTech company, which takes on these activities. This partnering ecosystem is still nascent in India, with the result that most startups focus on these activities themselves, and not on their core competency of innovation and product development. As the ecosystem matures, it is hoped that India too sees such partnerships between startups and established companies, which get these lifesaving innovations to the market faster, and allow the innovators to focus on what they do best- innovate.

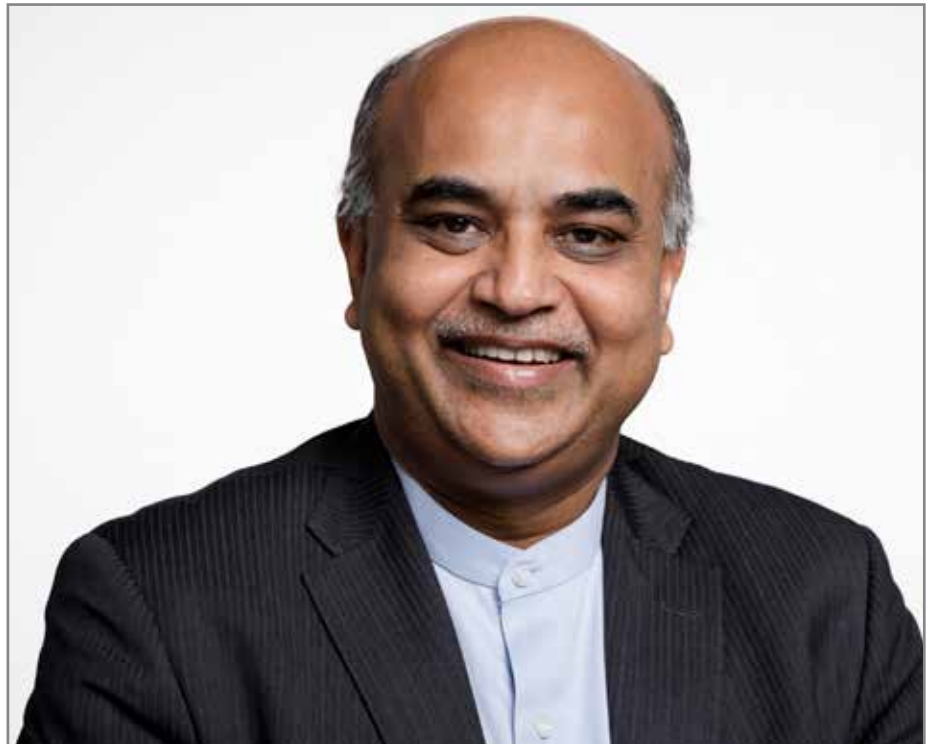
e. Product development takeaways for India

Tailoring the product to India, specifically to the market (private or public)/ region (urban or rural, specific state or city) one intends to sell

- Cost differentiation
- High quality at lower prices
- Portable products that can be used at lower levels of health infrastructure
- Products requiring less training (low operational requirement)
- Saleability at early stages of development
- Innovative business models

The Indian market is very unique. In India, consumers shop for healthcare. This means there's a market for every segment of MedTech to enable healthcare delivery. Ideas for the MedTech and healthcare segment are plenty – innovative business models, working directly with clinical research and hospitals to provide customized solutions, using the population as a base to inform big data and analytics, developing new products and manufacturing in India. By 2020, Asia-Pacific will surpass the European Union in terms of size of the MedTech market, with the majority of the customers beyond the premium segment. Further, individual markets that make Asia-Pacific are a complicated collection with different political systems, culture and disease profiles.

Doing business in India gives a heady mix of the same extraordinary challenges and big opportunities, mimicking that of Asia-Pacific market as a whole. Worldwide, healthcare systems are in great economic stress and are increasingly demanding greater returns on investment. Innovating for India automatically focuses on maximum value. This learning translates to helping healthcare systems worldwide with their cost curve, a global opportunity. India is characterized by complexity, ambiguity, uncertainty. However, a country with over a billion people cannot be ignored. To succeed, come with the right mindset, establish local leadership, create innovative business models, pay attention to the customer and make MedTech for India.



Dr. Shirshendu Mukherjee, is currently the Mission Director of the Grand Challenges India, the flagship program of the partnership between the Department of Biotechnology, Ministry of Science & Technology, Government of India, the Bill & Melinda Gates Foundation and Wellcome Trust. This platform supports initiatives that could dramatically change the health and development landscape in India. He also heads the Intellectual Property (IP) & Technology Transfer (TT) and Communications Division in BIRAC. In addition to the above, Dr Mukherjee also leads the National Health Authority (NHA) (Ayushman Bharat – PM-JAY) Start-up Grand Challenges program from BIRAC.

Genesis of InnoHEALTH magazine and its journey of last four years

■ From the Desk of Dr. Debleena Bhattacharya, Associate Editor



InnoHEALTH is a registered magazine with RNI (Registered Newspaper of India), Government of India. Its first issue was launched by Shri J P Nadda the then Minister of Health & Family Welfare, Govt of India in July 2016. It was his encouragement to publish a magazine for those who have interest in innovations in healthcare. It is now bimonthly used to be quarterly and has its reach to 88,000 readers globally. We have brought 19 issues in the last four years. We had interviews from many global personalities to name a few are Dr Deepak Chopra, Dr Jeffery Sach, Shri J P Nadda and Dr Harsh Vardhan, Ministers of Government of India, Dr Yasmin Ali Haque, UNICEF head of India, Lt Gen (Dr) Rajesh Pant, Cyber

coordinator Prime Minister office, Dr. Ramesh A Mashelkar, National Research Professor along with Ambassadors, Academicians and Bureaucrats etc. We are thankful to our readers, advisors, authors and advertisers to make the magazine a popular knowledge platform.

The year 2020 is something we want to remove from our memories but the pandemic had a devastating effect on our life and it was a lesson in disguise for mankind to survive when the whole world is in lockdown. If we see the positive side of the pandemic effect then the crisis has made us more aware of the fact that the healthcare sector needs more sustainability. Online telemedicine along

with virtual healthcare can also be the medium to help people. In constraints times of lockdown we continued e-magazine instead of printed form. The year of lockdown has connected us virtually and here is a brief recap of the issues published in 2020.

The upcoming issue of the magazine is coming in March and keeping in touch with the International Womens' day we bestow our gratitude to women who stood at the front lines of the COVID-19 crisis, as health care workers, caregivers, innovators, community organizers and as some of the most exemplary and effective national leaders in combating the pandemic.



The **January-March** issue came with Guest column written by Maj Gen A K Singh (retd) on Telemedicine force multiplier for delivery of healthcare. This issue also incorporates the Lithuania-India Cooperation: synergies between the two regions, India – Netherlands long term relationship: not a zero-sum game, Innovative biomarkers for early diagnosis and treatment of life-threatening diseases, Unmet needs – leading to innovation – InnoHEALTH 2019 report and a book review of “Why we get fat and what to do about it”.

bit.ly/ih-v5i1

In the **April-June** issue of the magazine we saw the possible synergies for India Estonia co-operation in the field of Biotech has made a new benchmark and What it takes to organise India’s largest COVID-19 IDEathon also was promulgated. We commemorated the contributions of Supporting Nurses and Midwives in a pandemic situation like COVID-19 and a book review of “The Reluctant Billionaire” also was part of this issue’s journey. The guest column on ‘Indian Healthcare Towards Global Leadership’ was wonderfully articulated by the Director of Yashoda Hospitals, Dr Upasana Arora.

bit.ly/ih-v5i2



In **July-September** issue of the magazine the Guest column was enlightened by celebrity author Deepak Chopra with an article on “Shakespeare, COVID, and the Plague” and The Key Strategies to Control the Pandemic by CSIR as elucidated by director general of CSIR Dr. Shekhar C. Mande. Alongwith the above people the issue also covered an article by the then Secretary, Health and Family Welfare, Govt. of India by Preeti Sudan on Minding Our Minds During COVID-19: Taking Mental Health “HEAD ON” and book review of “Atomic Habits” by James Clear.

bit.ly/ih-v5i3



In the **October-December** issue highlighted with the Guest column by Dr. Rakesh K Mishra, Director of CSIR-CCMB, Hyderabad on “Recent pandemic situation and its effects”. Also the issue featured an insightful article by Dr Anil Koul, Vice President of Johnson & Johnson on “The recent Global unprecedented situation due to COVID-19 and measures taken to control them”. The pandemic has taken the toll and how the mankind has adapted to the new normal was explained in the article COVID-19 and Virtual Existence and many more articles.

bit.ly/ih-v5i4



With a hope to see a new dawn we marched in the next year 2021. Whenever we recall the past year it sends a shiver in our spine that we existed and faced the virus. Your continued support during the unprecedented time gave us the motivation to bestow our readers with the latest update and insights from the best possible source for the new normal.

Digital Health Mission

■ Nidhi Gani



The Fourth Industrial Revolution is here and set to herald transformation in all industries like energy storage, quantum computing, transportation, agriculture, manufacturing, communications, biotechnology and healthcare. Industrial 4.0 has the potential to connect the world and innovate like no other revolution, the pandemic has especially demanded and accelerated this in the healthcare sector throughout the world and India is no exception. During the pandemic India saw online consultation queries increase by more than 200% and overall telemedicine calls increase by 500% since March as per report published by Practo titled, How India Accessed Healthcare. This may be a sign of India being ready for the digital transformation despite its diverse

challenges. Although the per person disease burden, measured as disability-adjusted life year (DALY) rate, dropped in India by 36% from 1990 to 2016, the total disease burden has increased in all states since 1990 because of non-communicable diseases. These include cardiovascular diseases, diabetes, chronic respiratory diseases, mental health and neurological disorders, musculoskeletal disorders, cancers, and chronic kidney disease. India ought to jump on the bandwagon of

digital health like the rest of the world to tackle these diseases incrementally faster.

On India's 74th Independence Day National Digital Health Mission (NDHM) was launched with the aim to develop, design, and implement digital building blocks that are essential for an integrated healthcare system. Health ID (will have history of the patient), DigiDoctor (database of the doctors), Personal Health Records (an electronic record of health-

National Digital Health Mission (NDHM) was launched with the aim to develop, design, and implement digital building blocks that are essential for an integrated healthcare system.



related information of an individual), Health Facility Registry (single repository of all the health facilities in the country to promote standardization of data), telemedicine and e-pharmacy are the services that form part of the digital health mission. A centralized system that can connect the whole country is the first step to a systematic approach to group the siloed healthcare system. The beauty of NDHM is that the data is owned by the individual, it cannot be used without consent. While the government is responsible for creating the ecosystem, the systems and data is open to private players for offering their solutions. This move from the government provides opportunity for innovation in Healthcare and IT. Given that India has the second largest population this is a herculean task, hence a strategic approach is vital. We need to consider questions like what is the plan to train all the doctors to shift from paper based to electronic. How will this be transferred to the patients? Training

plans of rural and elderly population. Is there going to be an app? How can this technology be inclusive of the rural, uneducated and the elderly population? Health equity is key to this policy especially when the pandemic is hurting the poor financially hard.

NDHM is a good start for the government to use this mission as an opportunity to set the ground to transition from treatment based healthcare to preventative. That cannot happen unless we solve the current challenges faced by the healthcare sector:

Awareness

Majority of the Indian population lacks health and technology awareness. A study by Mittal K and Goel MK in Indian journal of community medicine summarised that in urban Haryana found that only 11.3% of the adolescent girls studied knew correctly about key reproductive health issues. A review article on geriatric morbidity found that

only 20.3% of participants were aware of common causes of prevalent illness and their prevention. Many patients do not adhere to medications prescribed by the doctors and quit midway due to lack of awareness. All these unnecessarily increase the disease burden and in turn the healthcare costs. Creative health education training programs using digital solutions must be conducted to increase awareness for the poor, uneducated and the geriatric population.

Accessibility

Primary Health Centers (PHCs) lack basic infrastructural facilities such as beds, wards, toilets, drinking water facility, clean labor rooms for delivery, and regular electricity. The further one lives from towns – the greater are the odds of disease, malnourishment, weakness, and premature death. Lower caste and minority religions have decreased access to healthcare given their living conditions which results in poor health outcomes. Making provisions that for digital health solutions reach the rural population, providing training to educate the rural population about nutrition and teaching the use of digital solutions is important.

Many patients do not adhere to medications prescribed by the doctors and quit midway due to lack of awareness.



Affordability

70%-75% of healthcare expenditure comes out-of-pocket. Given that the private sector is prominent in healthcare services and does not have any enforced cap on the billing of medical services, families are forced to choose between life and life savings resulting in households slipping into poverty to meet medical needs. Households with high healthcare needs (SCs/STs, and the poor) are in a more disadvantaged position in terms of spending on health care. Healthcare services are only bound to get expensive, it is time for the government to step-in and spread the financial risk across the entire population equitably.

Accountability

Enforcing procedures and processes is vital. Succumbing to temptations such as corruption and bribery should be discouraged. While building the processes, NDHM body should proactively involve all the key stakeholders i.e. the doctors, nurses, hospital administration and the patients to understand their pain points. A holistic approach to develop the processes should be applied for successful

implementation of the procedures. Regulations for data standardization, validation of processes, cybersecurity standards for controlled supply chain of data are key to ensure accountability and success of the NDHM mission.

Absence of healthcare professionals

India has a shortage of an estimated 6,00,000 doctors and 20,00,000 nurses. India only has one government doctor for every 1,139 people. Right now, the facility is availed mostly by the elite and educated. There are only 0.7 hospital beds per 1,000 people in India with variations across the states, as per World Bank estimates³. Government must simultaneously work on producing more healthcare professionals and deploying telemedicine aggressively to balance the scarcity. Appropriate regulations and education of the poor, uneducated and old in utilizing such technologies has the potential to ease the pressure on healthcare workers.

Focus on innovation

NDHM should not just focus on processes, especially solutions like DigiDoctor are neither creative nor financially sensible.

The Indian Medical Association already houses a database of all the doctors, instead of duplicating and spending resources on something that already exists, NDHM should take advantage of the new Medical Device Regulations and heavily focus on innovation of quality digital health/software products. Innovation in products has numerous advantages - softwares that aid in clinical decisions can improve efficiency and compensate for the scarcity of doctors, innovation in diagnostics can save lives in a timely fashion, apps that measure vital signs like ECG, heart rate, heart rate variability, respiration rate, temperature, oxygen can provide real-time insights into patient's health for effective treatment, help plan for emergencies better, reduce readmission, hospital bed and labor costs, apps can help with management of diseases by encouraging patients to log in their diet and medications. Developing digital biomarker banks of different diseases for diverse populations while focusing on patient health outcomes both clinically and economically will not only encourage value-based care but also improve patient selection for surgeries and treatments.

The transition from treatment based care to prevention of diseases should start in the first half of this decade and must not be separated from The National Nutrition Mission. If executed meticulously by engaging all the stakeholders, by diligently complying with the software, cybersecurity, regulatory and quality standards to produce high quality digital health systems India has the potential to become a powerhouse of innovation in both products and processes in a way that healthcare can become patient centric while empowering lifestyle choices and ultimately reducing healthcare costs of the country. That will be a win-win situation!

Nidhi Gani is a Regulatory Affairs Specialist with Smith & Nephew, Boston, USA. She brings over four years of Regulatory experience working with leading companies such as Smith & Nephew, Terumo cardiovascular, specializing in Manufacturing set-up and transfers, New Product Development strategies and Remediation for Medical Devices in international markets such as North America, EU, Asia Pacific, Latin America.

NDHM should not just focus on processes, especially solutions like DigiDoctor are neither creative nor financially sensible.

Work-Life Roller Coaster of Indian Women in Science

■ Dr. Sarita Jaiswal



Centuries have passed, but women in science are still struggling to create a niche for themselves in this male dominated field. The gender gap is very much distinct in the STEM (Science, Technology, Engineering and Math) careers. Among female students opting for science in high school only a fraction of them are able to finish post-graduation. Even in this fraction of highly educated females, majority of them opt for full time teaching. It is not surprising that females represent only 13.7% of management position and meagre 7% at senior management level, which is much below global average. Although the

enrolment percentage in higher education increased from 17.9% in the year 2010-2011 to 26.4% in the year 2018-2019, the actual number of females in professional work field has declined. Education plays an important role in women empowerment. One may wonder in spite of seeing growth in female education level, why there is a decline in their representation in professional work front area. Answer to this question lies within our families. It is a generally accepted norm that a woman should prioritize housework rather than professional work. It is no wonder female professionals struggle more to create work-home balance than

males. The pressure of negotiating gender and professional role gets more intense for females in their late twenties and thirties. Marriage, family responsibility, child bearing and caring for elderly are common reasons for female's career break or dropping out from work place. Many of them do not focus on skill development, which makes the re-entry more difficult.

It is no surprise that females in their professional space confront more work life balance questions than males and are considered not competitive enough to manage intensive competitive positions at management level. There is no denial to this truth that even in this century; women remain underrepresented in engineering, computer science and physical science. Dr. Bimla Buti, who specializes in Plasma Physics and honored with many awards (Vikram Sarabhai Award for Planetary Sciences, 1977, the Jawaharlal Nehru Birth Centenary Lectureship award, 1993, the Vainu Bappu International Award in Astrophysics, 1994, and the

The gender gap is very much distinct in the STEM (Science, Technology, Engineering and Math) careers. Among female students opting for science in high school only a fraction of them are able to finish post-graduation.

Lifetime Achievement award of the University of Chicago in 1996) opted for remaining single to give full justice to professional commitment. Still she faced gender differential treatment from the scientific community in India. By giving this example, I am not implying that marriage is a hurdle for female scientists. Support of family is definitely essential to sustain the motivation, curiosity, imagination and scientific desire in women. Scientific community needs to discourage gender bias. There are many female Indian scientists, who achieved great success in conjunction with their family responsibilities and support.

Becoming a fellow of national science academies is considered a stepping stone for establishing one's scientific achievements in India. To become the fellow first one needs to be nominated and then elected. Academic merit definitely plays an important role but there are several unwritten rules including knowing people in decision-making bodies apply in the process. In this area women scientists easily lose out. Personal interactions with male colleagues are deeply constrained by the patriarchal cultural barriers. Dr. Kamala Sohoni who discovered enzyme 'cytochrome C' in plant cells and was the first female student of Professor C. V. Raman was denied IISC fellowship just because of being female.

When personal connections matter in achieving targets, women scientists can easily lose out, since personal interactions of women scientists with male colleagues would be deeply constrained by the standard patriarchal cultural barriers of so-called morality. No wonder very few female scientists achieve academy memberships. Another indicator of status of female scientists in the country is getting nominated on government-constituted advisory bodies. This includes being a member of the research advisory board, scientific advisory committee or research council for various national institutions, being a part of the committees that make decisions about accepting or rejecting projects for extramural funding from CSIR, DAE, DBT, DST, ICMR etc.

Scientific community needs to discourage gender bias. There are many female Indian scientists, who achieved great success in conjunction with their family responsibilities and support.

There is no specified criterion for selection of these positions but one definitely needs to be considered "good enough," by influential peers. Another major hurdle in women scientist careers is age limit. In India every academic/research position is categorized under age brackets. Female scientists often face interruption in their career history. These specifications make their comeback more difficult.

However, despite these challenges and lack of enough recognition in the scientific community, there are many inspiring Indian women scientists who made heroic contributions to science and society. Some of them may not achieve recognition in their own lifetimes, but their achievements will remain inspiring for generations of female scientists in our country and worldwide. Last year Indian government established 11 research chairs honoring Indian female scientists Archana Sharma (Cytogenetist), Janaki Ammal (botany), Darshan Ranganatham (biochemistry), Asima Chatterjee (Chemistry), Kadambini Ganguly (medicine), Iravati Karve (anthropology), Anna Mani (meteorology), Rajeshwari Chatterjee (engineering), Raman Parimala (mathematics), Bibha Chowdhuri (physics) and Kamal Ranadive (biomedical science). Increase of recognition for women in science encourages young female researchers to follow their passion and cultivates a sense of belonging.

In my own experience as a female biologist, we women do not require special provisions to achieve our worth but this does not justify the unnecessary gender bias and unrealistic expectation to achieve work-family balance. It will truly help if capability rather than age, knowledge

rather connections become the criterion of selection for research positions and titles. Senior women scientists should be involved in taking policy decisions relating to hiring norms and encourage young women in their scientific career prospects. The gender pay gap exists even in the scientific field and is more evident in the private sector. A female researcher often paid less than male in the industrial sector. Not just this they also face other forms of harassment and incivility that could be humiliating or threatening.

Last, but not least there is unwritten rule in many scientific institutes of not hiring husband and wife together, even when both are suitably qualified. In my opinion if a scientist couple work at the same place they achieve more success and beneficial for the organization. There is no written rule for this prohibition but these stated rules are often guided by instincts and misconception of authorities or colleagues.

Dr. Sarita Jaiswal is an experienced plant biochemist working at the University of Saskatchewan and Ex Chief Scientific Officer Carpere, Canada. Her area of specialization is carbohydrate structural chemistry, metabolism and nutrition. She has sixty research publications inclusive of R&D articles, books, manuals/ modules, and book chapters. She has worked in many academic and industrial research projects. She also has keen interest in cosmetic formulation development and working on her own brand development.

VIRTUAL EVENT as a SERVICE

OUR EXPERIENCE?



Low Cost with a
Higher Return on
Investments



Modular and
Repeatable



Interactive and
participative



Great value for
participants



Greater
Outreach



Scalable and
Measurable



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	
The Cancer Genome Atlas 2020	1500+	

PARTNERS



CONTACT

+91 9643799179

info@innovatiocuris.com

▶ INNOVATIONS

PERSONA
THEME
INNOVATIONS
WELL-BEING
IN FOCUS
RESEARCH
NEWSCOPE

UK CARE HOMES TO DEPLOY ROBOTS TO REDUCE LONELINESS.... PERCEIVED TO BE INHUMANE



robotic dogs which sit at attention at the command of their owners to robotic human figures that greet businessmen after their long day at work. These efforts really remind people about the importance of companionship. But it is still seen that robots cannot provide the compassion and altruism which should be at the centre of a caring system. It is



In the United Kingdom some care homes are ready to deploy robots with an intention to reduce loneliness and give a boost to mental health. These robots are wheeled machines which will initiate very basic conversations, teach the users some languages, play residents' favourite music and offer some practical help including reminders for taking their medicines. The robots are being introduced after being showcased in International trials wherein they were found to reduce loneliness and anxiety. These robots can be programmed to people's interests. Though these robots are being put into use as a filler for caregivers to the lonely elderly seems to be a sad state of affairs as they neither offer a permanent solution to handle the issue of loneliness nor can they replace the positive effect of human interaction.

In Japan and the United Kingdom Robot companies have been trialled using

thought that if elderly interact with these robots for long instead of reaping benefits from these machines, the elderly will land into a deeper pit of loneliness as in the long term their interaction with actual humans would have reduced further leading to an increase sense of disconnect.

A resident robot named Ifbot was introduced in a Japanese Nursing Home in the year 2007 which sang songs, asked trivia quizzes to the elderly and provided them emotional companionship to the elderly. It was then reported by the staff that these elderly people lost interest in these robots after a month of interacting

with them and instead preferred stuffed animals for interaction which can be hugged and also sometimes moulded by the shape and temperature of the human body. Robots also seem to be very mechanical many a times and also insufficient for cultural awareness.

Food for thought here is that loneliness is not just a physical affliction but also a deep mental issue which can be handled well by providing the right kind of companionship to help improve one's health and overall well-being.

Care of the elderly and infirm is a political and cultural choice. One should remember that this section of people were and still are a part of our social fabric and extended families. Many stories come to light which show that these people are ill-treated, ignored and not well looked especially during/after pandemic. So with a globally ageing population worldover, many countries are making an effort to revisit then remodel their care homes in a way which reflects their economic, demographic and cultural needs. One needs to find the best possible solution to reduce the aspect of loneliness in these deprived sections of people which will alleviate them of their pain, agony and solitude.

SOURCE: www.theguardian.com

'BED COMPASS' TO TRACK SLEEP USING RADIO FREQUENCIES

Massachusetts Institute of Technology (MIT) has made another innovative device known as the 'Bodycompass' which is a wireless device that can monitor sleep postures and track sleep by using radio frequencies.



These radio signals are reflected from a small device that is mounted on the bedroom wall. The USP of this device is that it can identify sleep postures and measure sleep without attaching any sensors or cameras to the body. It is important to track sleep postures in certain situations where people are suffering medical conditions like parkinson's disease or epilepsy. Studies have shown that sleeping on the stomach

increases the risk of sudden death in Epileptic patients. Similarly patients suffering from Parkinson's Disease slowly lose their ability to turn over in the bed. Thus body monitoring becomes important and any such device could help patients to assess their risk and when an intervention system is combined with it, patients can be saved from sudden death.

In the study 26 healthy people sleeping in their own bedrooms were observed for over 200 hours of sleep data to test the accuracy of Bodycompass. Initially the subjects were made to wear two accelerometers taped to their stomach and chest, also 94% of the time the device predicted the correct body posture. This device can also monitor sleep patterns in infants. Bodycompass could also aid in the treatment of patients who are more likely to encounter bedsores and sleep apnea since both these conditions can be managed better by efficiently handling the body postures of patients.

User privacy has been taken care of when a person uses bodycompass as the device only records information necessary for detection of sleeping posture and



breathing patterns. There is no discomfort to the user as no sensor or camera is attached to the body. The device analyses, collects and sends the reflected radio signals from the objects in the room including the human body wherein the researchers map the paths of the reflected signals to determine the posture of the body. In the future the team of MIT researchers intend to make an update in the device as per which they would be able to alert the user of bodycompass to change their body posture if required. They also intend to integrate the device with bed mattresses that can slowly turn a patient to avoid dangerous sleep positions.

SOURCE: www.thehindu.com

ODOURLESS TECHNOLOGY BASED N-95 FACE MASKS BY IIT KANPUR

Credit for the creation of super-activated carbon N-95 masks based on odourless technology goes to IIT Kanpur alumni Sandeep Patil, Ankit Shukla, Nitin Charate and Mahesh Kumar.



These masks are first of its kind to be made in India as these masks will provide protection not only against coronavirus infection and external pollution but also it's users' from their own respiratory odour and bacteria. The odourless technology here implies that the mask absorbs odour-producing particles. Carbon is a harmful chemical for the body but when it is charged and prepared, it's property changes and it becomes harmless to the body. The carbon particles used in the mask absorb in odorous particles, thus giving a free and fresh feel to its user while wearing the mask. The mask is also coated on the outside with treated nanoparticles.

These masks will be produced by e-spin, a start-up which is set up at the incubation centre at IIT Kanpur. The masks have passed the testing phase and are now



ready to be produced in larger quantities.

SOURCE: www.republicworld.com

‘MITRA’-THE ROBOT BECOMES A FRIEND FOR COVID-19 PATIENTS AT NOIDA HOSPITAL

Invento Robotics, Bengaluru-based start-up has designed and developed Mitra, the robot which has been installed at the entrance of Yatharth Hospital in Noida. The robot helps the Covid-19 patients speak to their near and dear ones, their families and friends along with counselling the patients to smoothly overcome the tough times of covid by keeping their anxiety levels under control. The robot also aids in the initial process of checking the symptoms of incoming patients. It asks the patients about their symptoms and screens their temperature. When the relevant statistics are normal then the robot prints an entry pass for the hospital visitor mentioning the result of screening, name and picture of the visitor. The robot keeps patrolling the wards throughout the day. Since most of the covid hospitals don't allow phones inside the ICU, a friend like Mitra is surely to come in handy as it can also make video calls and connect patients

with their families. A tablet is attached to its chest which allows the patients to see their relatives and medical staff who cannot access the covid wards.

There is facial recognition technology equipped in it that helps the user to recall the ones with whom they had interacted earlier.

Psychiatric consultations too happen via the screen on the robot through which the doctor interacts with the patients replying to all their queries. Mitra is also being used to carry out remote consultations with specialists at the hospital to reduce the risk of contracting the infection.

The hospital has procured two Mitra robots at a cost of INR 10 lacs each, one is installed at Yatharth Hospital, Noida and the other one is installed at the hospital's non-covid branches in sector 110, Noida and sector Omicron 1, Greater Noida to

screen patients for influenza like illnesses wherein it screens nearly 500 OPD patients and relatives of IPD patients on a daily basis.

SOURCE: timesofindia.indiatimes.com



CLAIRCO- CLEAN AIR START-UP RAISED FUNDING



Bengaluru-based start-up named Clairco founded by Ayush Jha, which turns air conditioners into air purifiers recently raised undisclosed funding from Angelist India. Clairco is a B2B SaaS company which offers air

quality monitoring and management for indoor spaces on a real time basis based on the concept of predictive intelligence. A monthly subscription fee is charged by the company from its customers for businesses of all scales and sizes.

Presently the company's IoT solution on air monitoring and purification services are being implemented on the premises of India's biggest health, fitness and home rental brands. Clairco also comes under the ambit of Brigade Reap, the real estate accelerator. The company intends to use the recently raised money to expand its footprint in key cities all over India alongwith strengthening its core technology team.

SOURCE: www.yourstory.com

VISTAR 550-INDIA'S FIRST INDEGENOUS SMART AIR PURIFIER BY IIT MADRAS



Air pollution is a silent killer responsible for killing nearly one percent of the world's population every year. Air pollution is a health hazard and of concern worldwide. Out of the ten most polluted cities in the world, six are in India. To contribute in controlling this alarming situation, AirOK, a start-up incubated at IIT Madras by three former students Yasa Pawan Reddy, Deekshit Vra Prasad and Vanam Sravan Krishna of the institute, developed Vistar 550, a smart air purifier to filter out major pollutants and gaseous substances. Presently AirOK is supplying these purifiers to various sectors like real estate, hospitality, healthcare and IT. Vistar 550 is also being used in the B2B segment. The indigenously built filter uses efficient granular absorbent particulate arrester (EGAPA) technology to filter out particulate matter, fungus, microbes and gaseous substances like sulphur dioxide, nitrogen dioxide and carbon monoxide.

The above mentioned property of filtering such pollutants is said to be the USP of this purifier.



The purifier has a clean air delivery rate of 480 m³ per hour which is 10 % more than the air purifiers already available in the market. The filter will need replacement after one year of use in comparison to the HEPA filters which need to be replaced

twice a year. The filter covers an area of 550 square feet but customisation for larger spaces can be provided by AirOK. Its shape is circular with 360 degree coverage of the area. The purifier has been tested at many places and has gained popularity making Vistar 550 a promising remedy to tackle air pollution. The team is in talks with automakers to make these filters a default feature in cars. The team is also eyeing kitchen spaces for purifying homes. The purifier has a unique sensor-based design to assess pollution levels on the go. Depending upon the pollution levels, the sensor switches the device on or off.

The market of air purifiers is projected to reach \$209 million by the year 2021 due to the increasing awareness about the negative effects of air pollution both indoor and outdoor on human health. Also the sales of air purifiers are expected to grow at 24% between 2018 and 2024.

AirOK has a vision to become the one-stop solution for all air polluted related products in the market in India and intends to place indigenously developed huge purifiers in public spaces similar to those already in place in China. Their mission is to help people counter air pollution and lead a pollution free life.

SOURCE: www.yourstory.com

IMEDX- THE TELEMEDICINE SOFTWARE BY IIT KHARAGPUR

PERSONA
THEME
INNOVATIONS
WELL-BEING
IN FOCUS
RESEARCH
NEWSCOPE



In the times of pandemic it is becoming important to reduce the contact point between the patient and the caregiver for the safety of both the parties. Working in this direction a team at IIT Kharagpur from the Department of computer science and Engineering has launched a software

of telemedicine for providing critical healthcare support to patients at their doorstep via remote consultation by a doctor. IIT had announced eight R&D projects for COVID Healthcare Services, out of which one was the development of iMediX launched on 2 October, 2020.

The iMediX system is accessible by any standard internet browser or a mobile device. The system works by allowing the patients to put in a request for consultation by choosing a department of the hospital, mentioning their chief complaint and uploading their previous medical records. Prior to this the patient signs up to get an account by providing his/her email id or contact number. The hospital then processes their request and assigns the patient with a suitable consultant. The consultant then logs in to

set an appointment mentioning the date and time for the consultation and then either via email or sms an alert is sent to the patient. On the consultation day, the consultant gives his advice by writing a prescription for the patient which is sent to the patient via an email, the report can be then downloaded from the patient's account.

The team of researchers is in touch with healthcare MSMEs for commercialisation of the copyright version of the technology. The telemedicine software will also be integrated at the Dr B.C Roy Technology Hospital at the IIT campus which offers emergency healthcare services for the employees and campus residents of the institute.

SOURCE: economictimes.indiatimes.com

BREATH ANALYSER DEVELOPED BY SINGAPORE START-UP TO DETECT COVID-19 INFECTION UNDER A MINUTE



of months for mass screening at places like hotels, airports, transportation hubs and sports venues. The estimated price of this test could be around \$ 20 each.

SOURCE: www.Indianexpress.com



Amidst COVID, Breathonix, Singapore's start-up has developed a new tool for screening Covid-19 infection which can analyse people's breath to determine whether they are covid positive or not within one minute. The company has carried out clinical trials for the same achieving atleast 90% accuracy after screening participants on site for 60 seconds. The test could be as easy as just breathing into a tube. The test is based on mass spectrometry which analyses the

many volatile organic compounds that people exhale with every breath in order to establish a specific signal among those with an active corona infection.

The pilot study was conducted on 180 people, showing an overall specificity of 95% and sensitivity of 93%. The company still feels the need to conduct more trials to improve and validate the accuracy of their device. They intend to make the device commercially available in the next couple

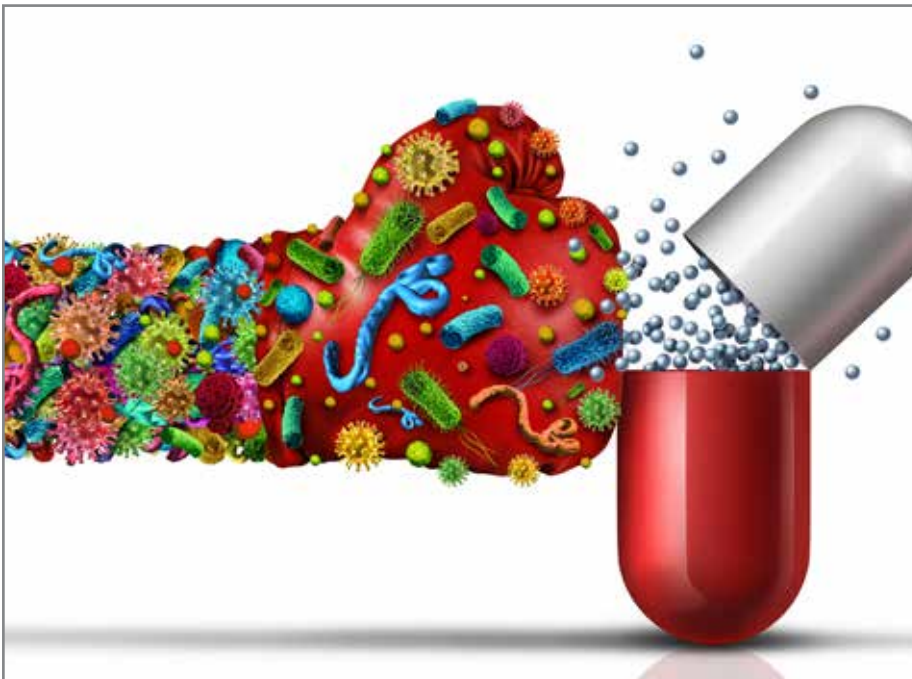
Compiled by:

Dr. Avnatika 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

Predatory bacteria: a potential solution for combating superbugs?

■ Anagha S Setlur



Current scenario of drug resistance

The rampant rise of resistance to antibiotics is one of the biggest perils to global health today. Persistent use of antibiotics, self-diagnosis and medication, exposure to infections in the hospitals and misuse of antibiotics have all led to the emergence of multiple drug resistant bacteria. Since the infections caused by these bacteria are hard to treat due to their resistance against most available antibiotics, they are now termed as 'superbugs'. Some examples of such superbugs existing today include but are not limited to, Methicillin resistant *Staphylococcus aureus* (MRSA) and Vancomycin resistant *Staphylococcus aureus* (VRSA), both of which can cause sickness ranging from skin to invasive

illnesses such as pneumonia and septicemia, multidrug resistant *Pseudomonas aeruginosa*, a hospital-acquired pathogen that causes blood and lung infections, multidrug resistant *Acinetobacter* which affects the urinary tract, lungs, blood and are present in wounds and carbapenem resistant *Enterobacteriaceae* (CRE) which is also an invasive contagion. India is home to some of the biggest superbugs and researchers have estimated that by 2050, two million deaths are projected to occur due to antibiotic resistance. Therefore, there is an obvious and pressing need to address this situation.

Use of predatory bacteria

Since conventional therapies are now not

very effective against multidrug resistance, research is now focused on exploring safe alternative approaches for combating this difficulty. A novel, developing area of study in this regard is the use of predatory bacteria as a potential therapy for fighting superbugs, by the study of predator-prey interactions. Bacterial predators make use of other pathogens as food by preying on them, thereby eliminating them. Some common examples of predatory bacteria are *Myxococcus xanthus*, *Bdellovibrio bacteriovorus* and *Micavibrio species*. Lately, studies pertaining to the use of *Bdellovibrio bacteriovorus* as a 'living antibiotic' is enthusiastically being carried out, for the reason being this obligate predator, although harmful to other pathogens in the microbial world, is absolutely harmless to humans. The lifecycle of this bacteria is primarily divided into two main phases: a free-living, non-replicative and rapidly swimming attack phase and an actively dividing, non-motile growth phase. The bacteria feeds by first latching itself to the surface of its prey and forming a bdelloplast (a modified form of *Bdellovibrio bacteriovorus* developed inside its host) post its entry. A gradual elongation of the bdelloplast inside the pathogen occurs due to consumption of its host as food, followed by its septation and lysis of the pathogen to reveal multiple re-established *Bdellovibrio*. These are then ready to hunt for its next pathogen/prey. A unique attribute that makes this predator a passionate subject for study is that it feeds without competition and reduces the population of prey drastically, therefore making it an ideal prospective candidate for use in therapy and as biocontrol agents.

Why it is the best solution

Currently, there is great substantiation in support of the theory of using *Bdellovibrio* as a living antibiotic. Studies have shown that this Gram-negative predator kills other Gram-negative pathogens as prey, including some of the threatening ESKAPE pathogens, a group of clinically significant species that have developed multiple drug resistance and comprise of *Enterococcus faecium*, *Staphylococcus aureus*, *Klebsiella pneumoniae*, *Acinetobacter baumannii*, *Pseudomonas aeruginosa* and *Enterobacter* species. Furthermore, *Bdellovibrio* is also demonstrated to reduce the formation of biofilms in several Gram-positive and Gram-negative bacteria, via the release of enzymes. Additionally, these predators do not elicit an immune response from the body when ingested, injected or used

topically, which is suggestive of their use against a wide range of Gram-negative pathogens. It is also very unlikely that the prey develops resistance to *Bdellovibrio* due to the fact that *Bdellovibrio* is non-antibiotic. Scientists have also stated that there is no transfer of genetic material between prey and pathogen which improves the likelihood of its safe use in the future.

Limitations and future perspectives

Despite its numerous advantages, one major drawback is that this predator is ineffective against Gram-positive organisms due to the thick peptidoglycan layer on the membrane of Gram-positives. Research, however, is trying to counteract this problem via combination approaches by amalgamating both predators and antibiotics in order to combat mixed

bacterial infections caused due to both Gram-positive and Gram-negative pathogens. Another challenge that the scientific community is now facing is the sub-optimal effectiveness of *Bdellovibrio* in human serum due to high serum osmolarity. Although this snag is yet to be resolved, further ethical questions regarding the use of live bacteria in humans arise, which pose debatable scenarios. While the issue of acceptance can be settled with awareness, there are still several avenues unexplored pertaining to the use of predatory bacteria as a living antibiotic, making it a dynamic area of study for scientists. Considering the current situation revolving around drug resistance and emergence of superbugs as well as the existing treatment regimens, the use of predatory bacteria appears to be a sound and reliable solution for the post-antibiotic epoch.

Persistent use of antibiotics, self-diagnosis and medication, exposure to infections in the hospitals and misuse of antibiotics have all led to the emergence of multiple drug resistant bacteria.

Anagha S Setlur Master of Research graduate from Nottingham, UK, Molecular Microbiology. An avid reader of books and scientific publications with a history of working in several research projects in academia.

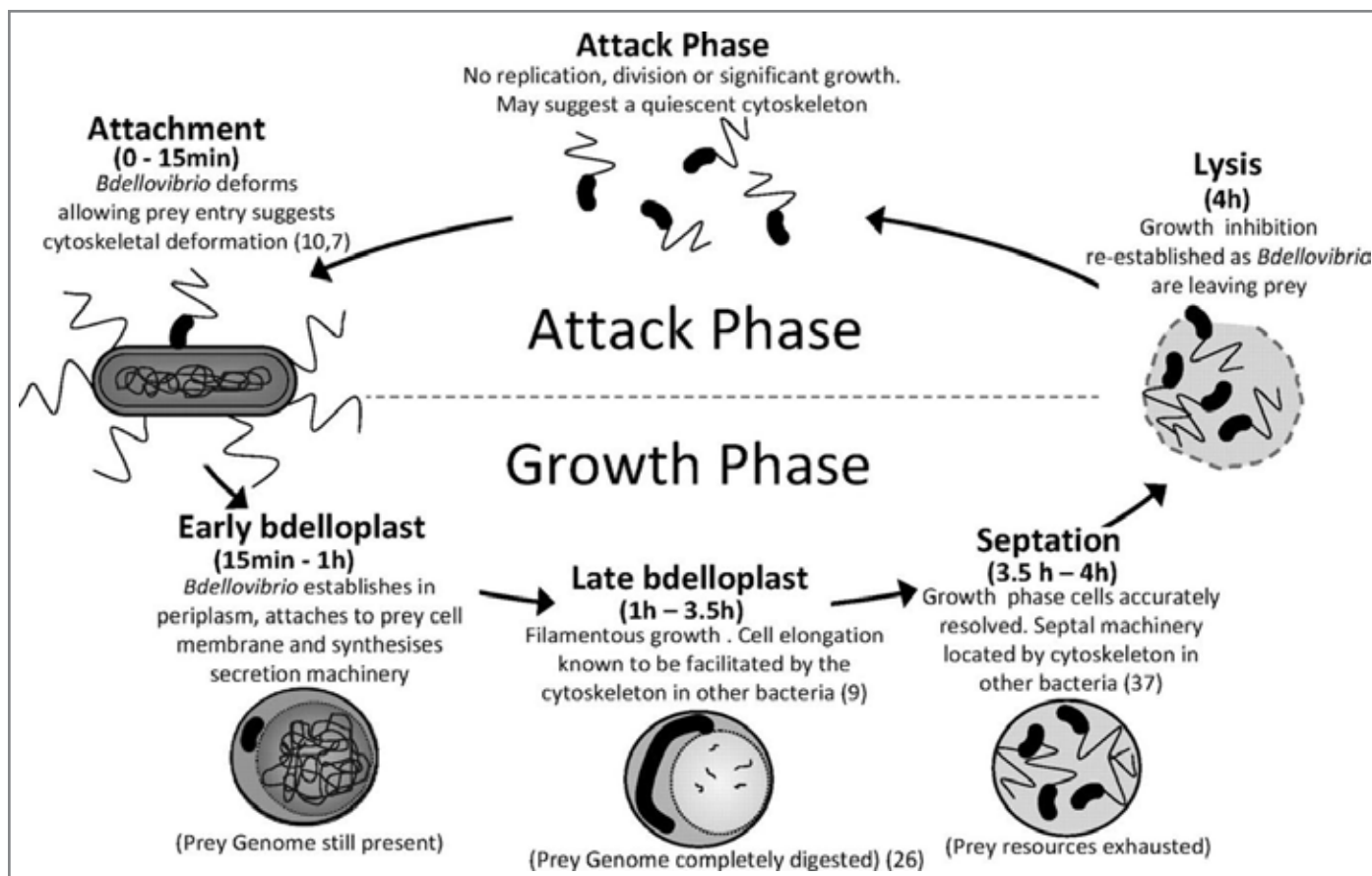


Figure: Life Cycle of *Bdellovibrio bacteriovorus*, a Gram-negative predatory bacterium

Impact of Covid-19 on the Global Telemedicine Market

■ Ratnasri Korlepara



What is Telemedicine?

Telemedicine uses electronic communication platforms to provide healthcare services to patients across the world. Telemedicine is considered the most versatile technology utilized for health education, healthcare information, and healthcare in remote areas. Telemedicine has witnessed the largest market share over the forecast periods. It provides communication between the patients and doctors along with it reduces the extra cost burden to the hospitals as well as other clinics. While considering the benefits offered by telemedicine, the physicians and the hospitals are looking forward to encouraging use of telemedicine as a communication platform. The telemedicine market is gradually becoming highly competitive on introducing different platforms and the key market players' entry into the market with high investment to develop the market standards.

Moreover, Telemedicine can minimize expenditure and maximize outcomes. According to the survey results, over 64% of the consumers are willing to adopt online consultations during the COVID 19 pandemic period.

Telemedicine Market Size (2020 to 2025)
According to the trending data, the size of the global telemedicine market is forecasted to worth USD 80.61 billion by 2025 from USD 35.46 billion in 2020, registering a Compound annual growth rate (CAGR) of 17.85% between 2020 to 2025.

Market Trends

The telemedicine market has witnessed a better market share over the forecasted years with the influential growth factors. Telemedicine has more advantages than challenges. The Telemedicine market growth is considered to be driven by the factors such as the telemedicine platform which provides various opportunities for the players in the market to improve clinical management; also, the telemedicine platform delivers effective care by enhancing the quality and access to healthcare services.

The necessity to improve the quality of care and to curtail the cost burden on the hospitals and clinics, health education, health information, and healthcare at a distance was made possible through versatile technology, which is the major driving factor.

However, despite beneficial factors, it also has some growth restricting factors which are restraining the growth of the market. The factors such as the telemedicine market require huge capital for the maintenance of such platforms, the primary concern for both the medical professionals and the patients is that the privacy on the data exchange, the doctors and the patient share confidential information using telemedicine platform, where there is a chance of getting breached. Moreover, the lack of security to the patient's confidential data impedes market growth over the years.

Physicians and patients frequently lack familiarity with the introduction of new practices and lack of awareness in the older people. The older people may refuse the telemedicine services due to the unfamiliar technology, which was a challenge for the telemedicine market.

The Artificial intelligence(AI) and analytics applications in telemedicine services provide risk prediction and management therefore it also expands the efficacy of AI to offer various opportunities for the market growth in the coming years.

COVID-19 impact on the telemedicine industry

The outbreak of COVID-19 has made a positive impact on the healthcare sector. It has created significant acceleration for the telemedicine market and helped them reach new heights in the recent past. The COVID-19 is providing immense opportunities for telehealth solutions. People around the world are opting for virtual consultation instead of physical presence to stay safe. The manufacturers are focused on developing virtual apps to make seamless communication between the doctors and patients; thus, telemedicine's market growth had a positive impact during the pandemic period. However, the market is expected



to have witnessed the largest market share in the coming years.

Geographical Presence

The North American telemedicine market held the majority share in the global market in 2019 and forecasted the same to be continuing during the forecast period. The majority share is attributed to the increasing prevalence of chronic diseases to minimize the hospital expenditure and increasing geriatric population in this region.

The European market is anticipated to register the better growth of the TeleMedicine market during the forecast period. The influential factors such as the rising geriatric population in this region, increasing technology adoption, and rising investment activities are having an effect on the market growth over the years.

The Asia Pacific held the largest market share of the Telemedicine market in 2019 due to widespread chronic diseases and overcrowding hospitals. An increase in the need for Telemedicine platforms to communicate with healthcare professionals is expected to drive the market growth of the Asia Pacific region.

Middle East Africa held a large market over the years in the Telemedicine market, and it is expected to record a majority share in the market forecast period. An increasing need for Telemedicine and investment and advancing technologies are anticipated to hold the market share.

Key Market Participants

AMD Global Telemedicine, Honeywell Life Care Solutions, Philips Healthcare, Cerner Corporation, Medtronic, Inc., GE Company, Lifewatch, McKesson Corporation, InTouch Technologies, and

others are some of the notable players dominating the global telemedicine market.

Recent Happenings in this market

- In 2020, The Phillips had launched the Avalon CL Fatal and patch for remote monitoring in the United States. Australia, Europe, Singapore, and New Zealand to encourage fetal and maternal monitoring.
- In 2020, the collaboration happened between the Koninklijke Phillips, American Telemedicine Association has helped increase the adoption of Telehealth and homecare settings.
- In 2020, Bio-Telemetry, operated by Envolv people care, inc., acquired remote patient monitoring and coaching platforms to expand RPM and coaching solutions.

Telemedicine is considered the most versatile technology utilized for health education, healthcare information, and healthcare in remote areas.

Ratnasri Korlepara, currently working as a Research Analyst with experience in the Healthcare industry. She has firm knowledge of predictions and identifies trends that can impact the market and business growth.

► IN FOCUS

Chasing The Art of Acceptance

■ Rachit Shah



Sure-shot dissimilarities were noticed between the last leg of these mega-events where all eyes on Google-earth were glued on fireworks demonstrated by the Big-Boys before ACCEPTING to seal their fate in 2016 vs. in 2020 when voters in the United States (US) got wooed by their 46th Presidential candidate. This article comes in the catalogue of some unpredictable moments with a touch of nostalgia as my fate was also sealed in 2016 when I anticipated to be in the best health-equity but God was using an inevitable ink-color to re-write my story.

I still remember that evening when this foursome-effect changed it all for me being diagnosed with a rare medical condition, Isaac Syndrome (a diverse disorder as a result of muscular hyperactivity), Membranous Glomerulonephritis (a slowly progressive disease of the kidney), Lymes (a bacterial infection that can be spread to humans by infected ticks),

Glaucoma (an eye conditions that damage the optic nerve often caused by high pressure) and the journey still continues.....Easy said than done but only Accepting this hurricane blowing off, my cards-of-health was the only option.

As I grew up living alone past my post graduation, I realized that self-

I still remember that evening when this foursome-effect changed it all for me being diagnosed with a rare medical condition.



responsibility teaches some of the greatest life-lessons, realizing early not to hypnotize life as it takes seconds for the glory of the past to consign into

flames of the present. After all the evil-symbolizing tantrums of life, it left me with little but no choice to accommodate and make room for the

In a split-of-seconds, my health cover seemed insufficient, travelling for leisure appeared farfetched, daily jogs & cycling diverged to weekly walks, consuming cartons of medicines was a daily practice, compulsive attendance with doctors than friends was the new normal etc.

“ACCEPTANCE PRESCRIPTION”.

Initially it was like a grenade launched from a power-packed missile but slowly as time graduated, the ‘Acceptance of God acclimatising for something new got evident as differences between the performing spirits of the past vs. demonic losses of the present bought me face-to-face with my reality and the courage to re-work on life.

Since 2016, a 180 degree shift initiated my unworried world slip into virgin territories when the illegal immigration of health-damage set it’s foot by unleashing the changed format being of the new law of life. In a split-of-seconds, my health cover seemed insufficient, travelling for leisure appeared farfetched, daily jogs & cycling diverged to weekly walks, consuming cartons of medicines was a daily practice, compulsive attendance with doctors than friends was the new normal etc. At a point in life I was scratching the surface, not peeping inside with the fear of being declared defeated but ‘Acceptance is all about finding our own Ikigai (Japanese term, the relevance of which exaggerates to its closeness with ‘Accepting life situations, focusing on overall up-liftment & wellbeing to contentment).

All of us have our unique stories:-

Recently I took the liberty of watching “The Pursuit of Happiness” a journey of a life-hero being homeless & then a millionaire, ‘Accepting failures & living through his personal catastrophe to succeed. The movie has the right ingredients in the light of performance where it took only one conversation to seal Mr. Gardner’s future forever.

This was one of the epics that inspired my ways to challenge limits & re-discover perceptions whenever the symptom-mystery deepens enacting as a scorpion sting engulfing the relations between my bones & muscles experiencing torn pieces between frequent medical changes & technical comfort graph.

- For me Acceptance is not merely Parroting the ‘A’ word instead submit to addressing my zeal to recovery where the word zeal denotes happily agreeing to offers made by life

- I can feel the difference in attitude since I was touched by the art of 'A' as its taught me to handle uncertainties, better
- 'A' is one of the key therapies that acted like a vastu-tip sublimating my brain-waves towards the truth of the moment becoming another synonym for inner peace
- This art tested my tolerance to sail through 'n' number of undesired encounters
- 'A' is very helpful in providing a safety net defeating the intensifying peer group competition
- 'A' inched me from a black-board to a smart-board with a baseline making necessary timely amendments in my daily routine creating a fight-back aura
- 'A' is living in the moment instead of planning the future, a step forward surrendering to the omnipotent.

CRUX :- The emotional quotient needs to be well-balanced while sailing through any crisis, if handled with 'Acceptance becomes a positive emotion. During my journey I realized this art, apart from being a time-consuming language, also demands loads of practice. It's importance is inescapable for growth-mileage.

As only a Golden vessel is equipped to hold Lion's milk until the pH is altered similarly God chooses his special vessels to handle certain humanitarian crisis and therefore I end by urging my peer-group to create an aura around the art of 'Acceptance as even these hard times of Covid recites the same mantra to the world.

Though I admit my target & target-points shifted places but the need of the hour is to mute the background music & surrender to these new algorithms, expecting that someday these lost-dark-years would surface



back in the form of wisdom. Currently the only thing that echoes my mind is to ACCCEPT the fact that I haven't come this far for a casual walk.

I wish to hear from my readers, if I have collided with fatigue by merely Accepting my today??

Rachit Shah (pseudonym identity for writing articles to create awareness) was diagnosed with Isaac Syndrome in 2016 presently residing in Mumbai, India. He is a masters in business management with over 13 years of Investment Banking experience (had to quit because of his health condition)

As only a Golden vessel is equipped to hold Lion's milk until the pH is altered similarly God chooses his special vessels to handle certain humanitarian crisis

Your guide to the best ways of burning fat rapidly

■ Lucy Jones



Whether it improves the overall health or your desire to slim down, burning excess fat is a challenging task. Along with diet and exercise, various other factors may influence fat loss. There are many simple steps which you may take to increase your chances of fat burning. By following these steps regularly and being consistent in your effort to lose weight, you may get the desired results.

Take a glance at the best ways to burn fat and promote weight loss quickly:

Begin strength training: Strength training is a kind of exercise that requires you to contract your muscles against resistance. It increases strength and builds muscle mass. Strength training generally includes lifting weights to gain power.

Studies reveal that strength training has multiple health benefits when it comes to losing weight. It helps to reduce visceral fat in people who have metabolic syndrome. Visceral fat is a dangerous fat that builds around the belly organs.

Moreover, studies also reveal that a proper combination of strength training with aerobic exercise effectively reduces belly fat and body fat. Furthermore, resistance training can help to preserve fat-free mass. They can also increase the number of calories that your body burns while you are at rest. Regular bodyweight exercises, gym equipment, or lifting weights are easy ways to start your strength training.

Go for a high protein diet: By including protein-rich food items in your diet, you may reduce your appetite and burn body

fat. A protein-rich diet gets connected to a lower risk of belly fat. They also play an essential role in preserving muscle mass and increasing metabolic rate. Moreover, increasing your protein intake may subsequently increase the feeling of fullness, reduce calorie intake, and decrease appetite. A few examples of Protein-rich food items, encompass eggs, meat, legumes, seafood, and dairy products.

Get more sleep: By increasing your sleep, you may give a much-needed boost to your fat burning attempt. There is a connection between weight loss and getting enough sleep. Studies reveal that people who increased their sleeping hours have received desirable results in a short period. Getting at least seven to eight hours of sleep per night increases the

likelihood of successful weight loss. On the contrary, the lack of sleep may bring changes in hunger hormones, increase the risk of obesity, and increase appetite. Also, by sticking to a regular sleep schedule, limiting your use of the electronic device, and limiting your caffeine intake, you may support your healthy sleep cycle.

Involve vinegar in your diet: Vinegar has health-promoting properties. Along with its positive effect on blood sugar control and heart health, it also increases the body's fat-burning metabolism. By consuming one to two tablespoons of vinegar regularly, you may reduce your body weight, waist circumference, and belly fat over twelve weeks. Moreover, the consumption of vinegar enhances the feeling of fullness and reduces appetite. Apple cider vinegar, along with water, is a tasty beverage.

Along with all this, going for a balanced diet and performing regular physical exercise is also equally important. Try to eat healthy fats like avocados, seeds, nuts, coconut oil, and olive oil. Studies reveal that the Mediterranean diet is rich in healthy fats and stays linked with burning fat. On the other hand, unhealthy fats like Trans fats help increase body fat, belly fat, and waist circumference.

Moreover, you may increase your intake of healthier beverages and abstain from sweetened beverages like cold drinks and caffeine drinks, which only add calories to your body. These beverages only increase

body fat and have little nutritional value. You may opt for calorie-free beverages such as green tea or water. Green tea is an excellent option as it contains antioxidants and caffeine. Both of them play a significant role in increasing fat burning and enhancing metabolism. Green tea extracts increase fat burning by 12% as compared to placebo.

Soluble fibers absorb fluid or water and thereby move along the digestive tract, helping them feel fuller for quite some time. Studies reveal that you may protect yourself against fat accumulation and fat gain by increasing your high fiber foods intake. They also decrease the feeling of hunger, thereby reducing calorie intake. Vegetables, fruits, whole grain, legumes, seeds, and nuts are examples of high fiber food items. They provide a much-needed boost to your weight loss and fat burning.

By reducing your refined carbohydrates intake, you may lose extra fat. Refined carbs have a higher glycaemic index. It may cause crashes and spikes in blood sugar levels, thereby increasing hunger. A diet that is high in refined carbs gets linked with increased belly fat. On the other hand, a diet that is high in whole grains is associated with lower body weight and lower body mass index. Moreover, a high intake of refined grains increases the risk of various diseases. Thus, you may follow these ideas to work on the different ways of reducing body fat to lead a healthy life.

Caffeine is the essential ingredient of

fat-burning supplements that can reduce body weight; it is found in coffee and other food items and plays a vital role in increasing metabolic rate. Moreover, it acts directly on the central nervous system and increases the breakdown of fatty acids. Caffeine intake may temporarily enhance energy expenditure and also increase metabolism by three to ten percent. To maximize the health benefits associated with coffee, skip sugar, and cream. Enjoy black coffee with little or no amount of milk to prevent extra calories.

By opting for high-intensity interval training or HIIT, you may keep your heart rate elevated. Studies reveal that this form of exercise effectively increases fat burning and promotes weight loss. It helps to burn more calories shortly in comparison to other forms of cardio. Hence, by incorporating some healthy habits into your schedule, you may make a big difference to your lifestyle. Also, minor changes to the lifestyle may have powerful effects on fat burning. It will help if you become focused on becoming healthy and fit.

Lucy Jones is a freelance content writer and blogger who writes about health and wellness. She loves to spend her free time in an orphanage and teach people how to be fit for a healthy lifestyle.

**SOLICITING
FEEDBACK**
for **InnoHEALTH Magazine**

Want a column to be added, seek any technical upgradation for the improvement of the magazine?

Help us to give you a seamless experience

www.bit.ly/feedback-ih-magazine

Digitalisation of Health to improve Universal Health Coverage in India

■ Dr. Sumant Swain and Dr. Arpita Dhawan



India has been putting constant efforts to promote digitalisation of entire health data nationwide. The goal behind these efforts is to achieve Universal Health Coverage (UHC) and Sustainable Development Goals (SDGs) by making health accessible, affordable and equitably distributed. Digital health simply means digitisation of health data. Health data can be anything like outcomes, medical record, medical staff records etc. National Health Policy 2017 of India clearly laid down the provision of digital health and identified the need for development of the National Digital

health policy has given significant emphasis on leveraging digital technologies for enhancing the efficiency and effectiveness of delivery of all the healthcare services. To manage the deficiencies that exist in the current health care systems, the policy recommends a paradigm shift from the existing silos to a holistic and comprehensive health eco-system through the latest digital architectures and technologies. Health Management Information under the National Health policy, 2017 emphasised that the health system should ensure district-level electronic database of information

on health system components by 2020, strengthen the health surveillance system and establish registries for diseases of public health importance by 2020 and establish federated integrated health information architecture, Health Information Exchanges and National Health Information Network by 2025. According to the health policy, the government of India has implemented National Digital Health Mission (NDHM).

Global Strategy on Digital Health

The World Health Organisation (WHO) adopted the Global Strategy on Digital Health 2020-2024. The purpose for a global strategy on digital health is to promote healthy lives and wellbeing for everyone and everywhere at all ages. This robust global strategy integrates financial, organizational, human and technological resources to deliver its potential, national or regional digital health initiatives. In the context of this global strategy, digital health is understood to mean “the field of knowledge and practice associated with the development and use of digital technologies to improve health”. Digital health expands the concept of e-Health to include digital consumers, with a wider range of smart and connected devices. It also encompasses other uses of digital technologies for health such as the Internet of Things, advanced computing, big data analytics, artificial intelligence including machine learning, and robotics. Majority of the nation has been adopting WHO global strategy on digital health which is a very comprehensive and well formulated policy.

India's position towards digitalisation of health

Indian public health infrastructure is divided into primary, secondary and tertiary

care services in both public and private sectors. Public health sector is funded by the Government. India has progressed many steps about digitisation of the health sector, still way more to go. Digitisation of health records is happening now in both the private and public sector. Public sector did not progress much due to insufficient funds or ineffective utilisation of funds allotted by the central and state governments.

India is working in a planned manner to achieve its goal of digitalisation. It launched the “Digital India” programme in 2015. Aim of this programme is to provide digitally and electronically advanced means to the citizens that will facilitate to connect rural areas with urban areas through network devices and services. The programme is designed to ensure that the government services are accessible to all including poor and downtrodden people, through electronic means. This will help for fastening, rendering of services and improving the quality of life of even the lowest stratum of society.

India is now the 2nd fast digital adopter in the World. India is planning to provide high speed broadband services to all the villages and remote areas. On the other hand, India is facing immense problems like poor doctor-patient ratio and poor indicators of health outcomes. Digitalisation of the healthcare sector can solve these problems of insufficient infrastructure, less doctors, less staff, travel issues, lack of access to healthcare and high cost.

To accomplish this vision, network access has been improved by increasing bandwidth. Advanced digital technologies are adopted to facilitate and increase the digital infrastructure of the country. National Health policy 2017 advocates development of Digital tools and technology to enhance the healthcare system and achieve universal health coverage for all. As a result, NITI Aayog in 2018 released a proposal for National Health Stack to provide foundation for health IT programs in India. The committee formed by NITI Aayog has come up with National Digital Health Blueprint in 2019. The blueprint is not merely an ‘architectural document’ but also has specific details of the building blocks required to fulfil the vision of NHP 2017. It has the institutional mechanism and an action plan for realizing digital health in a comprehensive and holistic manner. The key features of the blueprint are a 5-layered system of architectural building blocks, Unique Health Id (UHID), privacy, consent management, national portability, EHR, applicable standards and regulations,

health analytics and above all, multiple access channels like call centre, Digital Health India portal and MyHealth App. NDHB also recognised the formation of a National Digital Health Mission that can drive implementation of NDHB. National Digital Health Mission is launched in 2020. The vision of NDHM is to create a national digital health ecosystem and support universal health coverage. NDHM will be rolled out in four phases and four primary systems are launched in its 1st phase which are-Health ID, Health facility Register, Personal Health records, Electronic medical records and Digi doctor.

Digitisation of health will help to solve the problem of accessibility, availability, affordability, quality of care and safety of patients. NDHM integrated database will be available for analysis, implementation and policy designing of health programmes. Digitalisation can be very helpful for supply chain management or inventory control and it can give notifications about stock and warning about inventory control. Training of staff can be done digitally which will save lots of cost. There would be more transparency as all the data would be made online and would be accessible to citizens of the country. It will help reduce paperwork and increase GDP of the country. The main challenges of digitalisation in India are lack of infrastructure and required technology to support this. Servers are overloaded, lack of network in rural areas and high cost of application. It is time consuming in initial phases as double data entry work is done in both register and computers. Lack of digital education for most of the staff in rural areas particularly frontline health workers, security and privacy issues are noticed main hurdles to implement digital health.

Telemedicine

Telemedicine has now turned out to be the most useful and cheapest tool to bridge the gap between shortages of doctors in rural areas. Efficacy of telemedicine has already been shown by many projects established during COVID-19 period. Anticipating the increased need of telemedicine by healthcare providers, the Medical Council of India released practice guidelines in March 2020. During this pandemic period, telemedicine has proven to be more effective as it permits consultation and discussion between doctors and patients irrespective of their

location.

The first Telemedicine Pilot Project was launched by Indian Space Research Organization in 2001 by linking Chennai’s Apollo Hospital with the Apollo Rural Hospital at Aragonda village in the Chittoor district of Andhra Pradesh and this hospital became a pioneer of Telemedicine in India. There are other examples of successful telemedicine work like the First Coronary Care Unit in Siliguri District Hospital and Bankura Sammilani Hospital, Bankura, West Bengal, mammography services at Sri Ganga Ram Hospital, Delhi; oncology at Regional Cancer Center, Trivandrum; and surgical services at Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow and many more.

Telemedicine pilot project in Karnataka has already provided more than 10,000 teleconsultations and brought multi-specialty healthcare to a significant section of the rural population of Karnataka. This network would serve as a model for the utilization of ‘HEALTHSAT,’ which is proposed for launch in the future.

Telemedicine can support and advance primary healthcare via-providing easy access to people living in remote areas, simplify communication between healthcare providers and individuals regarding prevention, diagnosis or management of a health condition. It can help promote and maintain healthy behaviour in the community.

Artificial Intelligence (AI)

Many articles mention that digital health enhances quality, efficiency and safety of primary health care, but its complete digitalisation of PHC’s is a very slow and time consuming process. India presents unique challenges to healthcare such as less patient doctor ratio, patient nurse ratio, patient to bed ratio and now demographic transition and shift of disease burden from communicable to non-communicable diseases. All these can be handled by AI.

Sunil Wadhvani, founder of the Wadhvani Institute for Sustainable Health and cofounder of Wadhvani AI, was one of the earliest drivers of rural healthcare in India. He recited a story of a poor farming couple he interacted with in rural Rajasthan

Indian public health infrastructure is divided into primary, secondary and tertiary care services in both public and private sectors.



to provide quality of care, better health outcomes, facilitate availability, accessibility, and affordable health care through universal health coverage. Telemedicine and artificial intelligence will be facilitated to accomplish quality health care delivery to the common people through digitalisation. Health has become a global subject now. Digital health is one of the emerging trends of this decade and will have a profound influence on geopolitical and socioeconomic realities in the future. Importance of digital health cannot be neglected, and it should be scaled down to the health and wellness centre and community level. However, it requires political will and a huge budget to implement religiously. Despite many constraints, India will fulfil digital health mission in future with determination. This is the high time to think about the virtual hospital, digitalisation of healthcare facilities, software based disease diagnosis, telemedicine and use of extensive AI in healthcare settings to deliver healthcare services timely and effectively to the common people specially in India.

about a decade ago, where the wife was suffering from high diabetes and the family had no means of providing her the care she needed. He remarked that today, with wearable technologies and instant blood sugar detection kits, her condition could have been indicated much sooner and she could have received timely help. But this is easier said than done. India's rural and deep interior regions still struggle with limited to no access to healthcare. But what's different now is the concentrated efforts made by the government in collaboration with private sector entities, to capitalize technology and provide a continuum of care. He elaborated on the National Health Policy, the establishment of Ayushman Bharat and more recently, the National Digital Health Mission as ways to integrate all key stakeholders to impact change. He

also spoke of the WISH Foundation that's using technology extensively to transform primary healthcare. More recently, his endeavor Wadhvani AI with brother Romesh, was started to drive high impact AI projects in healthcare and agriculture – these include TB detection, maternal and fetal care, and precision farming to name a few. India under Ayushman Bharat has initiated use of AI to smoothen the process of digital ID formation and for NDHM. During the Pandemic period and critical health crises, digital health is necessary

Dr. Sumant Kumar Swain is an Assistant Professor in IIHMR Delhi. He has more than thirteen years of experience in national health programme evaluations, operational and formative research projects using both qualitative and quantitative methods in various health and social programmes. He has various national and international accolades on his name.

Dr. Arpita Dhawan is working on NDHM project in Iqvia. She has more than five years of experience of working as a dental surgeon. In her journey to pursue public health she has done Internship on various projects pertaining to recent pandemic Covid-19.

Telemedicine and artificial intelligence will be facilitated to accomplish quality health care delivery to the common people through digitalisation.

The Duality of Identity Faced By Athletes

■ Dr. Dawn Kamilah Brown



Nobody's identity should be defined by just one thing. An identity is almost always brought together by a wide array of everything that makes someone exactly who they are as an individual. We may balance many different labels that can each represent a portion of who we are.

For athletes, this balance of identity often gets especially tricky to manage. The label of "athlete" can grow to overpower all the rest and leave those with an athletic lifestyle straddling a duality of identity. On one side is their sport and life as an athlete and on the other side is every other part of what makes them who they are as individuals.

In the world of high-performance sport, the wider array of what makes up a person

is easily lost to all that comes with being an athlete. And the challenge of living this duality can really complicate mental health for athletes. Instead of the strong mental health foundation that comes with knowing yourself as an individual with a multi-faceted identity, athletes, who put so much weight into that one identity, are vulnerable to any blow to that part of who they are.

Living a duality of identity can make the athletic lifestyle a very delicate situation for mental health. Yet it has become an almost inevitable fact of the lifestyle as well.

Defined By Athletics From a Young Age

Athletics may become such a large part of an athlete's identity because they hardly

get a chance to create any other identity. At younger and younger ages, those that play a sport are becoming defined by this part of their lives. Starting in childhood, it becomes no longer just something they do, but something that determines their future and almost completely defines who they are.

Excelling at a sport often requires pretty big time commitments and can command significant dedication. It makes sense that some other components of a young person's full life would fall away when they choose athletics.

And then they start competing for athletic scholarships, some even winning their education as early as middle school. When their value as a person begins to rest on their athletic performance, that



identity as athlete quickly becomes the most important one. The whole balance falls apart before they've gotten the chance to create a balanced identity.

It doesn't help that as athletes move up further into their sports careers, they do so in view of the entire sports-enthusiast public. Performing for a fan base, identity is no longer just being created by the athlete, but also by the audience that follows them.

Living Under A Public Perception

Being an athlete, especially at the elite level, is a very public way of life. From the idolization by fans to all the rest of the attention that surrounds athletes, a spotlight is on them. And athletes can quickly feel the pressure to live up to the expectations of others and match their public persona.

That public perception of their identity is often also pretty one-dimensional. Others see them as an athlete and not much else. With the pressure of that public perception constantly on them, it can be difficult for athletes to break away from the label and see themselves as anything more than an athlete either.

Athletes today are more than ever living life in the public eye, and in the public eye, the side of their dual identity that matters

most is that of them as "athletes". That athletic side becomes everything.

Loss of Individual Identity for Athletes: Losing the Sport Can Mean Losing Everything

For professional athletes, their sports career can easily become more than just the way they make money. Taking up a huge portion of the way they spend their time and a significant aspect of what they are valued for, it can become the main factor in their identity.

Having one thing define you more than any other can always become a problem, no matter who you are. For athletes, defined by the sport they play, it's an incredibly common cause of mental health issues. When so much rests on that athletic identity, losing your sense of self as an athlete can mean losing yourself entirely.

What does an athlete, defined by being an athlete, have left when the winning streak ends, their passion for the game dries out, or they are forced to give up the athletic career? Particularly for athletes forced to retire after serious injury or poor performance, losing half of who they are can feel like losing it all.

Facing the only side of themselves left, an individual with unique traits and a

particular character, can be an incredibly difficult task to take on. Often athletes who have lost their known identity may deal with mental health issues such as anxiety, depression, and other psychological effects resembling grief.

Parting with the athletic lifestyle, whether voluntary or involuntary, is truly a loss. For many athletes, what they lose is the central core of their identity.

Acknowledging All Aspects of an Athlete's Identity

Crucially, even before the loss signified by retirement, an athlete is more than one thing. Most are navigating a complex endeavor of holding a duality of identity. An athlete on the one hand and an individual on the other, it's time to recognize athletes for who they really are: human beings.

You don't have to be just one thing. You can live on both sides of yourself. For the sake of your mental health, you really should get to know all of what makes you who you are, in and out of athletics.

Dr. Dawn Kamilah Brown is an internationally recognized ADHD expert, double-board certified Child, Adolescent, Adult and Sports Psychiatrist.

NEWSCOPE

LATEST NEWS IN HEALTHCARE

ROCHE ANNOUNCES THE UPCOMING LAUNCH OF THE SARS-COV-2 RAPID ANTIGEN TEST NASAL ALLOWING FOR PATIENT SELF-COLLECTION

Roche announced that it has obtained the CE mark for its new SARS-CoV-2 Rapid Antigen Test Nasal. The test will be available in countries accepting the CE mark by mid-February 2021.

In comparison to the existing Roche SARS-CoV-2 Rapid Antigen Test, the SARS-CoV-2 Rapid Antigen Test Nasal collects the sample from the front area of the nose instead of the nasopharynx, resulting in a simplified and faster testing procedure. This testing method can help reduce overall patient discomfort, particularly in sensitive individuals such as children, elderly people and/or people with disabilities.

Besides being less invasive, the test also provides patients with the option to self-collect their nasal sample under the supervision of a healthcare professional. Through reduced physical contact, this method of testing can help to decrease the risk of exposure to the virus for healthcare professionals. Whether the test could also be used without supervision of a healthcare professional will depend on local regulatory requirements.

“Rapid testing continues to play an



important role in the fight against COVID-19, especially in places where laboratory testing is not available and quick results are needed, such as nursing homes, healthcare facilities, and schools.” said Thomas Schinecker, CEO Roche Diagnostics. “The SARS-CoV-2 Rapid Antigen Test Nasal provides patients with a more comfortable testing experience.”

The launch is a partnership with SD Biosensor Inc., with whom Roche has also launched a SARS-CoV-2 Rapid Antibody Test in July and a SARS-CoV-2

Rapid Antigen Test in September 2020. SD Biosensor, is currently preparing to submit an Emergency Use Authorisation (EUA) to the U.S. Food and Drug Administration (FDA).

The test is the latest addition to Roche’s comprehensive COVID-19 portfolio to support healthcare systems in diagnosing SARS-CoV-2 infection.

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

BUDGET 2021: FINANCE MINISTER ANNOUNCES RS 64,180 CRORE BOOST FOR HEALTHCARE SECTOR

Finance minister Nirmala Sitharaman announced a new centrally sponsored scheme for the healthcare sector in Budget 2021 on February 01, 2021.

The ‘PM Atmanirbhar Swasth Bharat Yojana’ will be launched with a total outlay

of Rs 64,180 crore over a period of next 6 years. Sitharaman said that the scheme will focus on developing capacities of healthcare systems, develop institutions for detection and cure of new and emerging diseases.

She said that the main interventions under

the scheme will support over 17,000 rural and 11,000 urban wellness centres.

This will be an addition to the national health mission, she said. In addition, the finance minister also announced that the government will provide Rs 35,000 crore for Covid-19 vaccines in 2021-22. She also mentioned that two more India made

Covid-19 vaccines will be available in the country soon.

The finance minister highlighted that the budget proposals for 2021-22 rest on six pillars -- health and well-being,

physical and financial capital and infrastructure, inclusive development for aspirational India, reinvigorating human capital, innovation and R&D, minimum government, and maximum governance. For the first time this year, the budget is

being presented in a paperless format. It would be available to parliamentarians and the public online.

SOURCE: www.timesofindia.indiatimes.com

COVID VACCINE: SINGLE-DOSE JOHNSON & JOHNSON JAB IS 66% EFFECTIVE



PA WIRE

Dr Claire Cole from Manchester University NHS Foundation Trust volunteered in the Janssen jab's Phase 3 trial

A new single-dose vaccine has shown to be 66% effective against Covid-19, and offered complete protection against hospitalisation and death in trials.

However, there are signs the jab, made by Belgian pharmaceutical firm Janssen, is less effective against the new variant spreading in South Africa.

The Johnson & Johnson-owned company is looking at whether two doses will give stronger or longer-lasting protection. It aims to make one billion doses this year.

The UK has ordered 30 million doses, the US 100 million and Canada 38 million.

UK Health Secretary Matt Hancock said if the jab was approved by Britain's Medicines and Healthcare Products

Regulatory Agency (MHRA) it could "significantly bolster" the country's vaccine programme.

Crucially, no one needed hospital treatment or died from coronavirus after the Janssen vaccine took effect in the international trial.

The news comes shortly after Novavax announced their jab was 89% effective overall in the UK and 60% in South Africa. Both new vaccines will need to be reviewed by regulators before they can be used.

Meanwhile, the EU's drugs regulator has approved the use of the AstraZeneca vaccine for people aged over 18.

It comes amid an ongoing dispute over whether AstraZeneca is breaking its

vaccine delivery commitments to the bloc, which has seen the EU confirm that it will bring in export controls on Covid vaccines made in the bloc.

The EU has temporarily overridden a section of the Brexit deal in relation to Northern Ireland, over concerns the country could become a backdoor for vaccines from the EU to be sent into the wider UK.

Arlene Foster, DUP leader and Northern Ireland's first minister, called the move "an incredible act of hostility" by the EU.

It comes as the UK reported a further 29,079 new coronavirus cases on Friday, and 1,245 deaths within 28 days of a positive coronavirus test in the government's daily figures, bringing the total deaths by that measure to 104,371.

Crucially, the Janssen trial looked at giving just one dose of the vaccine, which makes it significantly easier to roll out than those requiring two. It is also investigating whether giving two doses will give either stronger or longer-lasting protection.

The fact it works as a single dose and can be kept in a standard fridge, while others need super-cold storage, means the vaccine could have a significant role around the world.

“A one-shot vaccine is considered by the World Health Organization to be the best option in pandemic settings,” said Dr Paul Stoffels, the chief scientific officer at Johnson & Johnson.

He added the vaccine could “potentially protect hundreds of millions of people from serious and fatal outcomes of Covid-19”.

The Janssen vaccine uses a common cold virus that has been engineered to make it harmless.

It then safely carries part of the coronavirus’s genetic code into the body. This is enough for the body to recognise the threat and then learn to fight coronavirus.

This trains the body’s immune system to

fight coronavirus when it encounters the virus for real.

This is similar to the approach used by the University of Oxford and AstraZeneca.

Dr Mathai Mammen, from Janssen, said: “A single dose regimen with fast onset of protection and ease of delivery and storage provides a potential solution to reaching as many people as possible.

“The ability to avoid hospitalisations and deaths would change the game in combating the pandemic.”

The results are based on nearly 44,000 people who took part in the trial and 468 cases of Covid-19.

However the vaccine was just 57% effective in the South African part of the trial, where a new version of the coronavirus is spreading, compared with 72% in the US.

Prime Minister Boris Johnson said that the results from the early trials were “very encouraging”, and if the vaccine was approved doses should be available later this year.

Mr Hancock said the Janssen announcement was “yet more good news”.

“If this jab is approved this could

significantly bolster our vaccination programme, especially as a single-dose vaccine,” he said.

“Once the full data has been submitted [to the MHRA], they will consider the evidence to determine whether the vaccine meets robust standards of safety, effectiveness & quality.”

In the UK, the latest estimate for the R rate from the government’s scientific advisory group, Sage, is 0.7 to 1.1. It means that on average, every 10 people with the virus will infect between seven and 11 other people. Last week, the R rate was between 0.8 and 1.

The number of coronavirus cases in the UK remained virtually unchanged in the week to 23 January, according to Office for National Statistics (ONS) data. Its survey suggests the epidemic is levelling off or perhaps very slightly falling - but not at the rate hoped.

More than 7.8 million people in the UK have so far received a first dose of a coronavirus vaccine, according to the latest government figures.

SOURCE: www.bbc.com/news

COVID-19: NOVAVAX VACCINE SHOWS 89% EFFICACY IN UK TRIALS



A new coronavirus vaccine has been shown to be 89% effective in large-scale UK trials.

The Novavax jab is the first to show in trials that it is effective against the new virus variant found in the UK, the BBC’s

medical editor Fergus Walsh said.

The UK has secured 60 million doses of the jab, which will be made in Stockton-on-Tees in north-east England.

Meanwhile, a single-dose vaccine developed by Janssen is 66% effective, trial results have shown.

Janssen, a company owned by Johnson & Johnson, is also investigating whether giving two doses will give either stronger or longer-lasting protection.

The company said its initial findings showed one dose prevented 85% of severe cases.

Both the Novavax and Janssen jabs will need to be reviewed by regulators before they can be used.

The PM welcomed the “good news”, with doses of the Novavax jab expected to be delivered in the second half of this year if approved for use by the Medicines and Healthcare Products Regulatory Agency (MHRA), the government said.

The UK has so far approved three coronavirus vaccines for emergency use - one from Oxford University and AstraZeneca, another by Pfizer and BioNTech, and a third from drug firm Moderna.

The Novavax jab, which is given in two doses, was shown to be 89.3% effective at preventing Covid-19 in participants in its Phase 3 clinical trial in the UK, and around 86% effective at protecting against the new UK variant. The jab’s efficacy against the original Covid-19 strain was calculated to be 95.6%.

The Phase 3 trials - the final stage before a vaccine is looked at by a regulator - enrolled more than 15,000 people aged between 18-84, of whom 27% were older than 65, US firm Novavax said.

In the South African part of the trial, where most of the cases were the South African variant of the virus, the vaccine was 60% effective among those without HIV. Stan Erck, chief executive of Novavax,

said the results from the UK trial were “spectacular” and “as good as we could have hoped”, while the efficacy in South Africa was “above people’s expectations”.

He told the BBC the manufacturing plant in Stockton-on-Tees should be up and running by March or April, with the company hoping to get approval for the vaccine from the MHRA around the same time.

Minister Lucy Frazer told BBC Breakfast the government could not put an exact timeframe on when the Novavax jab might be approved as the regulation process is “out of our control”.

Health Secretary Matt Hancock said the new vaccine would be “another weapon in our arsenal to beat this awful virus”, if approved.

Prof Paul Heath, chief investigator of the UK Novavax trial, said the trial findings were “enormously exciting”, particularly because of the jab’s efficacy against the UK variant.

England’s chief medical officer Prof Chris Whitty said, if the jab is approved, it “increases our future resilience” against the virus.

Nadhim Zahawi, the UK minister responsible for the vaccine rollout, said he was “particularly thrilled” to see the positive results as he had taken part in Novavax’s trials himself.

In total, the UK has ordered 100 million doses of the Oxford-AstraZeneca vaccine and 40 million of the Pfizer-BioNTech vaccine - both are currently being rolled out in the UK.

Another 17 million doses of the Moderna vaccine, which was approved by the MHRA in early January, are expected in the spring.

The aim is to give everyone in the top four priority groups - up to 15 million people - a first dose by mid-February.

Pfizer and Moderna vaccines rely on technology that has not been used in previous vaccines, but the Novavax jab uses a more traditional method of recreating part of the spike protein of the virus to stimulate the immune system.

Like the Oxford vaccine, the Novavax jab can be stored at regular fridge temperature - which means it can be distributed more easily.

SOURCE: www.bbc.com/news

COVID: INDIA LAUNCHES ONLINE MEMORIAL TO COMMEMORATE PANDEMIC VICTIMS



An online memorial to commemorate Indians who have lost their lives to Covid-19 has been launched by a group of doctors and

social workers. The virtual memorial will allow family members and friends of the victims to pay their tributes.

India has reported more than 154,000 Covid-19 deaths, but infections have dropped sharply in recent months.

Social workers helped by doctors, health workers and journalists will help run the memorial.

The memorial - nationalcovidmemorial.in - was launched at the weekend by the Covid Care Network, a non-governmental organisation led by a team of doctors in the eastern city of Kolkata.

Tributes are already being posted on the site - families need to upload the death certificates of their loved ones or provide their phone number for verification.

“A national Covid memorial is an initiative for Indians to keep alive the memories of their loved ones who succumbed to the disease. This is a place where everybody can join,” Dr Abhijit Chowdhury of the Network said.

“This memorial will restore some dignity of the people who died and were cremated without even their families being allowed to attend the funeral”.

During the pandemic, family members of the victims were mostly not allowed

to attend the funerals. Such was the stigma and fear over the infection that a crowd in south India in August violently prevented the burial of a prominent doctor who died of the disease.

N Ram, director of The Hindu Group of Publications, said volunteers, NGOs and journalists would be needed to help gather tributes of “the poor and the destitute” who lost their lives to the virus.

“The memorial has to be inclusive. We

should not be missing anyone,” Mr Ramsaid. V Mohan, a physician who is advising the memorial’s founders, said India didn’t have a tradition of commemorating the dead.

“We don’t have a tradition of memorials. We don’t remember the dead,” he said. “The tragedy and emotional trauma Covid caused will stay with the affected families for decades. This is one place people can visit and relive memories. This should become a national movement.”

SOURCE: www.bbc.com/news

MESSE FRANKFURT INDIA & AMTZ TO LAUNCH MEDTECH INNOVATION FORUM IN INDIA



Messe Frankfurt Trade Fairs India is to collaborate with India’s medical devices manufacturing ecosystem, Andhra Pradesh MedTech Zone Limited (AMTZ), to launch a MedTech Innovation Forum. The aim of the project is to showcase growth potential and developments in the Indian medical device industry,

The co-operation between the global organiser and AMTZ should give further impetus to the development of

India’s medical devices manufacturing industry and accelerate investment in its technologies.

Slated to run 7–8 October 2021 in Visakhapatnam, a port city in the Indian state of Andhra Pradesh, the first edition of the Innovation Forum is expected to bring industry leadership together with government and medical consultants to address challenges of import dependency and the need for technology collaborations. The forum has received

support from apex industry bodies - AIMED (Association of Indian Medical Device Industry) and ADMI (Association of Diagnostics Manufacturers of India) ADMI.

Raj Manek, managing director, Messe Frankfurt Trade Fairs India, said: “India’s response and agility in scaling up manufacturing of medical devices together with strong initiatives by the government on making the sector self-reliant makes it an opportune time

to introduce a forum that focuses on bringing medical technology innovations to the forefront. We are proud to combine strengths with AMTZ in this goal.”

The Indian medical devices market, which accounts for more than 13% of the Asia-Pacific (APAC) medical devices market, is expected to grow at a compound annual growth rate of 7.5% through 2025. Dr Jitendra Sharma, MD & CEO, AMTZ elaborates: “The industry is poised for significant growth in the next five years. However, it is still largely import-driven

with 90% of sophisticated devices being imported. The dialogue with medical device manufacturers and innovators will open up opportunities to empower the country’s strong healthcare and medical devices industry in the post Covid-19 era.

Messe Frankfurt India has been actively involved in tracking industry growth and addressing rising concerns on counterfeit products in the pharmaceutical industry through its Pharmasafe India conference and webinar series. In August 2020, the Indian subsidiary held the first virtual

edition of the Medical Device Innovation Summit and is now closely working with industry leaders in the sector to launch Medtech Innovation Forum as a large-format Confex in October 2021.

Touted as India’s largest medical devices manufacturing park, AMTZ is a scientific infrastructure supported by the government, which intends to reduce import dependence and lower cost of healthcare by up to 50%.

SOURCE: www.exhibitionworld.co.uk

INDIA-MADE COVISHIELD PART OF PAKISTAN JAB DRIVE UNDER VACCINE ALLIANCE



India’s vaccine diplomacy took further wing with 1 lakh anti-Covid shots being sent to Oman, a close partner in the Gulf, after having supplied the jabs to immediate neighbours. Later this week, India is scheduled to send over 5 lakh doses to Afghanistan.

India will also send 2 lakh doses to Nicaragua, 1 lakh to Barbados, 70,000 to Dominica and 1.5 lakh to Mongolia, though dates are yet to be finalised.

Egypt, Algeria, UAE and Kuwait have

all purchased vaccines and are on the commercial export list. Apart from the gifts, Mongolia (10 lakh) Nicaragua (3 lakh), Saudi Arabia (30 lakh), Myanmar and Bangladesh are among those who have contracted to purchase vaccines from India. The purchases are made commercially but need export clearance from the Indian government.

Meanwhile, around seven million made-in-India doses of AstraZeneca’s Covishield vaccine will be part of Pakistan’s free Covid-19 vaccination drive starting next

week under the global Covax alliance, PM Imran Khan’s special assistant on health Dr Faisal Sultan said on Sunday.

As a special Pakistani plane departed for China to fetch the first batch of Sinopharm’s Covid-19 vaccine, Dr Sultan announced that around seven million out of the 17 million committed doses of Covishield would reach the country by March.

“Though AstraZeneca is being prepared in India, it will come through Covax,

an international alliance which has announced free vaccines for 20% of Pakistan’s population. DRAP (Drug Regulatory Authority of Pakistan) has already registered both Sinopharm and AstraZeneca,” Dr Sultan said.

The UN Covax initiative will see India selling about 100 lakh doses of vaccines. In addition, the UN will be buying about 4 lakh doses for its own workers all over the world.

India’s vaccination drive is attracting attention, with Indian ambassador to the Philippines Shambu Kumaran tweeting on Sunday that the Asean nation was examining India’s rollout of inoculations, pointing to reports in the local media there.

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

Country And Date	Grant	Comm. Export	Country And Date	Grant	Comm. Export
Maldives, Jan 20	1L		Brazil, Jan 22	20L	
Bhutan, Jan 20	1.5L		Morocco, Jan 22	20L	
Nepal, Jan 21	10L	20L*	Mongolia	1.5L*	10L*
Bangladesh, January 21-25	20L	50L	Saudi Arabia		30L*
Myanmar	15L	20L*	Egypt		50,000
Mauritius, Jan 22	1L		Algeria		50,000
Sri Lanka, Jan 28	5L		Kuwait		20L
Seychelles, Jan 22	50,000		Nicaragua	2L	3L*
Bahrain, Jan 28	1L		Barbados	1L*	
Oman, Jan 30	1L		Dominica	70,000*	
UAE		20L	COVAX (Africa)	100L*	
			Afghanistan	5L*	*In Feb

L&T TECHNOLOGY SERVICES WINS 2021 BIG INNOVATION AWARDS, USA

L&T Technology Services Limited (BSE: 540115, NSE: LTTS), a leading global pure-play engineering services company, announced that two of its digital solutions have been recognized with the 2021 BIG Innovation Awards in the “Product” category presented by the Business Intelligence Group, USA.

LTTS has been recognized for its innovative products - Chest rAITM, LTTS’ AI based chest X-Ray analysis system to assist radiologists in improving speed and accuracy of diagnosis and LTTS’ proprietary building automation framework, i-BEMS that operates as an enterprise IoT solution and unifies all campus operations under one system.

There is an acute shortage of radiologists across the globe, leading to delayed interpretation & decision and thus longer wait time for patients. The AI-assisted solution from LTTS assists radiologists by fast triaging abnormalities in X-Ray, annotating and automatic report generation. LTTS has been lauded for creating a product that will benefit millions.

LTTS has also been recognized for contextualizing its offering to suit the ‘new normal’ scenario and create a new module, i-BEMS Shield for a safer workplace environment.

i-BEMS, LTTS’ smart building solutions for a post-COVID future - enables features such as automated temperature detection, monitoring of building air quality, and smart maintenance of social distancing norms.

Maria Jimenez, Chief Operating Officer of the Business Intelligence Group, USA said, “The pandemic has made mankind realize the true potential of technology in positively influencing our lives like never before. The world has witnessed some of the best of innovations in the last few months including democratization of access to new-age medical technologies. The role of engineering services in these disruptions is commendable and we value the consistent contributions made by LTTS on this front.”

Dr Keshab Panda, CEO & Managing Director at L&T Technology Services said, “We are pleased to receive the prestigious

BIG Innovation Award, which is a true testament to the exemplary work done by LTTS engineers for our global customers. With a formidable digital portfolio that includes over 550 technology patents, LTTS is continually blending ideas and innovations with investments in new age technologies to deliver differentiated engineering solutions uniquely designed to address complex real-life problems faced by the industry.

Having joined hands with leading lights of the academic world to create innovations such as the Chest X-Ray analysis system, LTTS believes in creating an ecosystem of excellence to continue engineering the change for the benefit of society.”

The BIG Innovation Awards, recognizes organizations and people who bring new ideas to life from companies across the globe, are judged by a panel of experts which include a select group of business leaders and senior industry executives.

SOURCE: www.exhibitionworld.co.uk

FDA RELEASES ACTION PLAN FOR MEDICAL DEVICES



Medical devices have come a long way. From standard monitoring systems all the way to wearables, these devices provide powerful and, at times, life-saving aid. Now, as more and more devices incorporate artificial intelligence (AI) and machine learning (ML), they require regulation. The U.S. Food and Drug Administration recently announced new steps in that direction.

On January 12, 2021, the FDA released its plan — the Artificial Intelligence/Machine Learning (AI/ML)-Based Software as a Medical Device (SaMD) Action Plan. In the document, the administration lays out the next steps for regulation and rolling out medical devices of all kinds.

The plan comes at a time when the COVID-19 pandemic is again reaching peak levels in the U.S. and around the world. As societies respond to the pandemic, digital health has become a norm. Now, the FDA is getting on board and seeking to make the right changes. That way, they can ensure these devices are effective and safe for everyone.

However, with changes like these, industries of all kinds — primarily manufacturing, healthcare, and technology — are going to see ripples. An

adjustment is coming in America, with the FDA trying to stay ahead of the trends and the pandemic.

Details of the Plan

The plan spans from initial changes to the widespread effects the FDA hopes to see. First, the agency takes into account product life cycles, patient care, safety, effectiveness, and innovation. These factors are the underlying motivators for making medical device changes. How functional are these devices? Do they last a while? Can they predict conditions properly?

The actions that the FDA is now focusing on include better machine learning development, improved patient care, smarter algorithms, and creating a real-world performance impact. With these goals, the agency can now focus on making medical devices as effective as possible.

Another main action point in this plan is for the FDA to continuously release regulatory frameworks. These guidelines will help manufacturers, tech workers, and healthcare employees understand how they can create, optimize and carry out the right interactions with medical

devices.

Regulations and guidelines have long since been part of the FDA's protocols. Medical device manufacturers comply with ISO 13485 FDA requirements, ensuring safety and standardization for health technologies. As the general public in the U.S. focuses on privacy and security during a pandemic, manufacturers will again need to reevaluate consumer requirements for effectiveness and security.

A top priority will be ensuring these devices have proper encryption to secure all the patient information. Each organization that develops them will be responsible for patient care. These changes are especially important when scams and breaches are abundant.

The AI/ML plan comes from stakeholder feedback that the FDA received in 2019. Moving forward, the agency is sure to consider the needs of the supply chain, too.

How a Biden Administration Changes Things

You may notice that political shifts change everything. The effects trickle

down to even the smallest of things, like medical devices. Now that President Joe Biden is in office, the FDA's methods will look different. Not only does a Biden presidency mean there's a new head of the FDA in place, but executive orders from the Trump era may see a reversal.

For instance, a Trump executive order from January 2017 changed regulations. It dictated that executive departments, including the FDA, would need to find

two regulations to be repealed whenever new regulation comes about.

A seemingly counterintuitive move, adding regulations just to take some away would not help healthcare patients. Instead, Biden is gearing his focus towards the pandemic. This shift means that regulations will be strict and, at times, swift. Helping people, like rolling out new guidelines for medical devices, is the end goal.

The Bigger Movement

The age of digital health is here. With quick adaptation through the pandemic, healthcare providers know how to use tech in-person or from afar. AI and ML devices are part of this movement. As the industry continues to evolve, the FDA is now seeking to catch up with such rapid changes. Then, digital health can truly work for the good of humanity.

SOURCE: www.intpolicydigest.org

AI-POWERED MEDICAL DEVICES: WHAT CAN INDIA LEARN FROM THE REGULATIONS FLASCOS IN EUROPE & THE US



According to a recent report by The Lancet Commission, AI-powered medical devices are poorly regulated in the European Union and the United States.

Recently, scientists from University of Zurich have published a report on the approval process of medical devices in the EU and the US. The review exposed glaring loopholes in the process. Here, we try to analyse the failures of the

EU and the US governments in regulating AI-powered medical devices. We will also delve into the regulation of such devices in India and what needs to be done to improve it.

What Is Happening In The US & The EU?

Majority of the AI-powered medical devices in the EU and the US are used by radiologists to interpret CT and MRI scans. The US and the EU have approved a

substantial number of medical devices in the last five years as the clinical adoptions increase.

However, according to the study, out of 462 approvals, only five devices in the EU and the US sufficiently demonstrated safety and effectiveness.

The US has a centralised approval system, where the Food & Drugs Association (FDA) solely maintains a repository of all

the approved medical devices. However, it still does not have a specific pathway to approve AI-based medical devices. The most stringent 'premarket approval' process was used for only three of the 222 devices cleared in the US.

However, the US has mooted an action plan to regulate AI-powered medical devices based on the product's lifecycle.

Meanwhile, in Europe, the approvals are not centralised. The EU-27, Norway, Iceland, Liechtenstein, Switzerland and Turkey are allowed to approve medical devices individually. Approvals are based on the device's classification, from Class I to III. Class III has the most stringent rules for approval.

Interestingly, only two devices out of the 240 were approved using Class III. Moreover, the approval of Class II and III can be done by Private Notified Bodies who can confer Conformité Européenne (CE) mark to the devices. Less than two in three devices were approved using this mark.

India's Status

India's medical devices sector saw an inflow of FDI worth \$1.8 billion from 2000 to 2019, with the market size expected to hit \$50 billion by 2025. Forget AI-powered medical devices space,

India lacks the infrastructure and legal frameworks for AI in general.

In India, medical devices and drugs used to be under the same category until recently. A clear distinction was made only in 2017 under the new Medical Device Rules. However, it did not take into account softwares used for medical purposes under its purview. In 2020, an amendment was introduced. The change in law also mandated ISO certifications for importers or manufacturers of the device.

While compliance with international norms does ensure some quality, the proposed framework still does not have specific provisions to deal with the dynamic demands of emerging technologies, the research showed. At the same time, adopting Western standards and mechanisms for AI-based medical devices might limit AI innovations in healthcare, given the country's unique ecosystem.

India does not have a framework to classify various medical devices based on a clinical understanding or AI modalities. Different levels of approvals, depending on a 'risk-assessment framework', can drive innovation. Based on the framework, the deployment of low-risk medical devices can be prioritised, and stringent regulation around high-risk medical devices can be ensured.

It is also essential to take stock of the AI-enabled medical device's interaction with humans, especially for high-risk machines. The human element should be accounted for in the approval process to do a more holistic assessment of the medical devices.

Lastly, under the Medical Devices Rules, the US' FDA or EU's CE certified medical devices can be marketed in India without undergoing clinical trials. In the light of The Lancet Commission's study, this is worrisome, and India needs to consider the various categories of FDA and CE approvals in detail. This is especially true in CE-approved devices since 12 CE approvals were found to be unsafe or ineffective by the FDA.

Wrapping Up

AI is making huge inroads into the healthcare industry. It presents immense potential, especially in a country like India, with a flawed healthcare system. However, as medical devices enter the market, it is also essential to ensure their effectiveness and safety.

Countries worldwide need to develop effective standardisation frameworks for AI-based medical devices with the right balance of innovation and safety.

SOURCE: www.analyticsindiamag.com

COVID-19: INDIA NOW 3RD TOPMOST COUNTRY TO GIVE HIGHEST DOSES OF VACCINE

India has become the third topmost country in the world in terms of the number of Covid-19 vaccine doses administered, the Union Health Ministry said on Sunday. Only the United States and the United Kingdom remain ahead of India.

The ministry said 12 states in India have vaccinated more than 2 lakh beneficiaries each. Uttar Pradesh alone accounts for 6,73,542 of all vaccinated beneficiaries. Till February 7, 8 am, a total of 57.75 lakh beneficiaries have received the

vaccine under the countrywide Covid-19 vaccination exercise.

The cumulative vaccination coverage includes 53,04,546 healthcare workers and 4,70,776 frontline workers, the ministry said.

In a span of 24 hours, 3,58,473 beneficiaries were vaccinated across 8,875 sessions. Also, a total 1,15,178 sessions have been conducted so far.

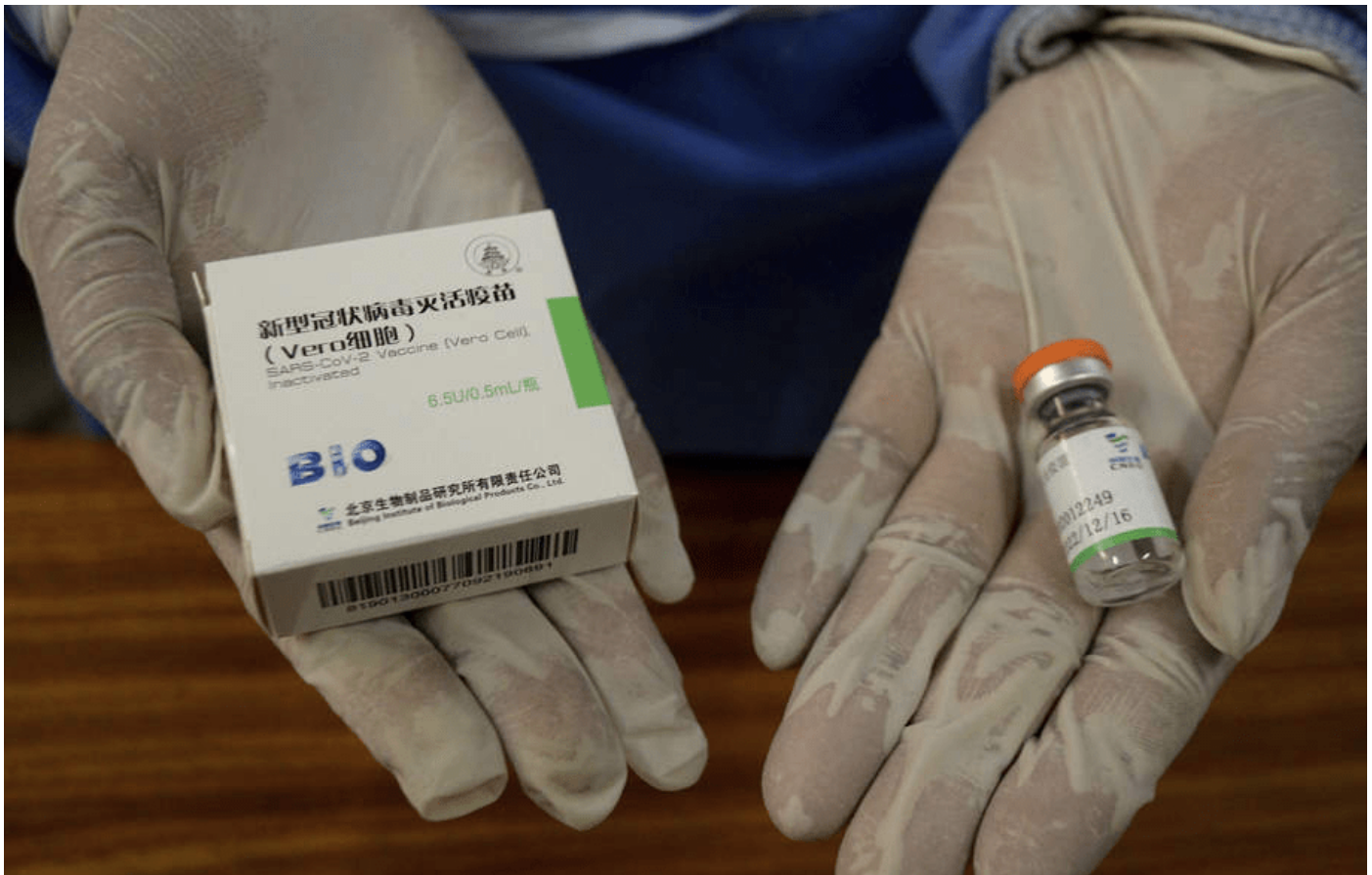
"There has been a sustained increase in the

number of beneficiaries being vaccinated every day," the ministry said.

"In another significant development, the country has reported less than 80 daily deaths in the last 24 hours, lowest in nine months," it said.

The country's total Covid-19 active case is 1.48 lakh which consists of 1.37 per cent of India's total infections.

India's cumulative recoveries surged to 1.05 crore. A total of 12,059 new daily



cases have been recorded in a span of 24 hours whereas 11,805 patients have recovered and discharged during the same period.

The ministry said 81.07 per cent of the new recovered cases are observed to be concentrated in 6 states and UTs.

Kerala has reported the maximum number of single day recoveries with 6,178 newly recovered cases. A total of 1,739 people recovered in Maharashtra in a span of 24 hours followed by 503 in Tamil Nadu.

The ministry said 84.83 per cent of the daily new cases are from 6 States and UTs.

Kerala reports the highest daily new cases at 5,942. It is followed by Maharashtra with 2,768, while Karnataka reported 531 new cases.

A total of 78 fatalities have been recorded in a span of 24 hours.

Five states and UTs account for 69.23 per cent of the daily deaths. Maharashtra saw the maximum casualties (25). Kerala

follows with 16 daily deaths and Punjab reported 5 casualties, the ministry said.

Seventeen states and UTs have not reported any deaths in a span of 24 hours. These include Haryana, Goa, Jammu and Kashmir (UT), Jharkhand, Puducherry, Meghalaya, Nagaland, Lakshadweep, Assam, Manipur, Sikkim, Andaman and Nicobar Islands, Ladakh (UT), Mizoram, Arunachal Pradesh and Tripura.

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

HOW IS TRAINING FOR COVID-19 VACCINATION ACTIVITIES BEING DONE?

Training of healthcare workers for COVID-19 vaccination drive is a major task that the Ministry of Health and Family Welfare has taken up with the help of other ministries. For this like any other new vaccination program healthcare providers are responsible for handling and administering the vaccine as well as be a major source of information for the community.

Health-care personnel including state and district programme managers, medical officers (MOs), vaccinator officers and alternate vaccinator officers, Information Education and Communication (IEC) officer, cold chain handlers, supervisors, data managers, Accredited Social Health Activist (ASHA) coordinators, Mahila Arogya Samiti, Non-Government Organisations (NGOs), Civil Society Organisations (CSOs) and other frontline

health workers from health and line ministries are engaged through cascaded trainings. Earlier, the Union Health Ministry has written to states, directing them to prepare protocol to train private vaccinators to administer shots once a vaccine is available.

The vaccination plan also says that in case of shortage, alternate vaccinators may be arranged from recently retired



staff, medical and nursing colleges, private hospitals and other organizations like Defense, Railways, and Employee State Insurance (ESI) etc. Separate training sessions have been organized for ASHAs, Anganwadi Workers (AWWs), Mahila Arogya Samitis and volunteers for effective community mobilization. The officials and staff of the Department of Women and Child Development have also been oriented for it.

The various categories of staff have been deployed at the COVID-19 vaccination site. They will be trained as per their roles. At the initial stage vaccination officers have been deployed to check registration status

of beneficiary and photo ID verification before entering the waiting room/area (Police, home, guard, Civil defense, National Cadet Corps (NCC), National Service Scheme (NSS). The next level will have vaccination officers to Authenticates / verify documents in the Co-WIN system (Health / Integrated Child Development Scheme (ICDS) / other government department e.g. election model). The last stage of vaccination officer is responsible for vaccination of beneficiary, recording and reporting and provides key messages. All these activities are supervised under a Supervisor, who is responsible to supervise 3-5 vaccination sites. He will also be responsible to ensure adequate availability

of vaccine and logistics and ensure timely reporting of coverage and other data. In addition, plans are there to orient the faculty of Preventive and Social Medicine departments in medical colleges as well as professional bodies such as Indian Medical Association, Indian Academy of Pediatrics, Indian Public Health Association (IPHA), Trained Nurses Association of India (TNAI) etc. involved in immunization service delivery.

All training sessions are interactive and are used for the adult learning methodologies such as PowerPoint presentations, instructive videos, role plays, exercises and interactive discussions. Recent trainings of health workforce on infection prevention and control and modalities for sustaining immunization coverage during COVID-19 pandemic across the country were undertaken using virtual platforms without any major issues in reaching block level programme managers, although some limitation of Information Technology access was observed in training of frontline work.

SOURCE: www.vigyanprasar.gov.in/isw/How-is-training-for-covid-19-vaccination-activities-being-done.html

Compiled by:
Parthvee Jain, Editor,
InnoHEALTH Magazine

Advertise with InnoHEALTH magazine

(Online editions)

01 ADVERTISE ON WEBSITE

Promote your products, events, services and organisation using space on our website

Rate card
innohealthmagazine.com/advertise/website-advertisement-rate-card

02 POST SPONSORED CONTENT ON WEBSITE

Post articles (personal, knowledge, services and event promotions) on our website

Rate card
innohealthmagazine.com/advertise/sponsored-content-rate-card

magazine@innovatiocuris.com
+91 9711777328

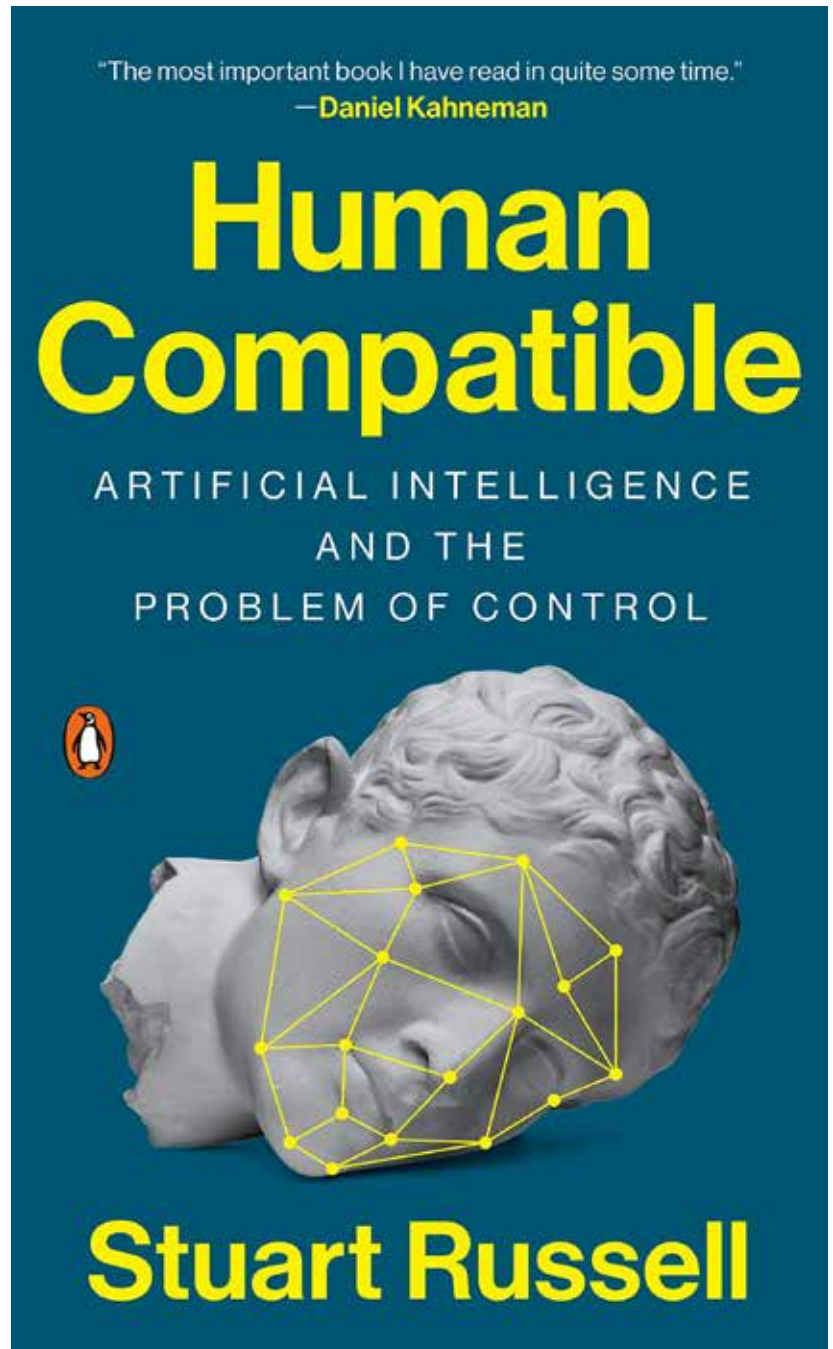
► BOOK REVIEW

Reviewed by Sachin Gaur
Executive Editor
InnoHEALTH Magazine

In the past whenever a defining technology has emerged in the biotech to nuclear, the governments have taken stock of the situation and defined frameworks so that we do not have an apocalyptic scenario.

Safety and security are right in the centre of deployment and not an afterthought. For the topic of artificial intelligence it seems that it is not the governments who are in the leading seat but the large internet companies for which the goals may not be the same. Also, the weakest link in the global supply chain could be naïve software programmers working in these large corporates rolling out software updates impacting billions of people without much attention to safety and security.

Healthcare is a topic where artificial intelligence has much to offer in terms of increasing access and reducing the cost of care. Having said that patient safety and quality in healthcare is also a key aspect. Hence, when we onboard AI tools into the care process, we should pay attention to the debate of control problems, how AI operates in tandem with the human, is the decision explainable and operation of the AI controllable. If you are interested in how this important debate is shaping up on making AI compatible with humans and can humans control AI, this book is for you.



Pilot initiatives of using digital health technologies to promote evidence based tele-medicine practice during COVID 19 period in rural India

■ Partha Chakraborty

Importance of digital health solution in the current world during COVID-19 Pandemic situation

Providing efficient health solutions to this growing population is posing a major threat to this current world. Digital health platform is providing overall health coverage and has become a vital tool to serve the vulnerable. According to Bernardo Mariano, WHO's Chief Information Officer, "Digital Health is the future of healthcare. As we take the big leap into digital health, we must ensure that it is people centric, delivers positive health outcomes, does no harm to people and it actually improves the healthcare system as a whole." The limitations of physical healthcare system infrastructure and supplies have worsened the whole health system scenario during Covid-19. People living in rural areas are not getting proper treatment due to lack and cost of transportation. Not only patients, the doctors and health workers also get benefited from this digital health platform by providing necessary advice without visiting the actual infected area. In addition to this, the social distancing norm has effectively shut down the traditional face-to-face care. Digital health platforms can become the solution here during this COVID-19 pandemic situation.

Arogyam Telehealth solution with connected devices

Arogyam Medisoft Solutions Pvt. Ltd, a Kolkata based startup, incubated at BioNest, SIIC, IIT Kanpur, has invented



HaemurEx device

a tele-enabled, battery operated, point of care photo analyzer, designed for potential clinical purpose(s) and a cloud based lightweight tele-health management system, known as Arogyam Health. HaemurEx can test 25 clinical chemistry parameters blood & urine related to diabetes management, liver, cardiovascular, and kidney function. Use of HaemurEx has been cleared by CDSCO, Govt of India with regulatory approved reagents and received CE compliance certification. It comes with the Arogyam Health is easy to use e-Health platform, accessible through various computing devices, such as a tablet, laptop or desktop.

It is also integrated with digital prescription and electronic medical records. Apart from the standard features available in a telemedicine platform, Arogyam Health is connected with a lightweight 12 lead digital ECG, BP Monitor, SPO2, thermometer, stethoscope. All the equipment can transmit information remotely to a health-cloud, hosted on EU GDPR (European Union General Data Protection Regulation) and HIPPA compliant platform. All the health information remains protected and confidential on HaemurEx cloud server. It gives real time advice even in the Indian languages.

conferencing will not be sufficient to practice evidence-based medicine in future. The ability to measure oxygen saturation, blood pressure, temperature and cardiac outputs, to hear chest & lungs sound have made this device unique in this pandemic situation as determining the co-morbidities has become one of the most important aspects of the whole treatment. Ability of testing of these biomarkers at point of care, specifically in rural healthcare can be beneficial for the successful management of various disease conditions. Ease of use, not depending on 220 V power supply and ability to carry the system in a small bag are other unique features of this platform.

This platform can advance **universal access to healthcare** in countries like India. It can bring all primary health centers and sub centers and outreach clinics together where the patients get doctor's consultation and follow-ups as well as medicine. This collaborative plan between the community leaders and health care providers is bringing the unconnected individuals especially the villagers into formal healthcare systems.

Arogyam Medisoft is supported by **Dept. Of Science & Technology**, Govt of India. It has been showcased at WHO global forum of medical devices, promoting accessible and affordable healthcare. It got awarded in various forums including Bengalathon organized by **Govt of West Bengal**, HealthHack organized by **BCCI & Medica Hospital, NASSCOM Emerge 50**. It has been recently selected German Development Corporation (Deutsche Gesellschaft für Internationale Zusammenarbeit - GIZ) for piloting the platform further.

Pilot Application of Arogyam Health Solution

Arogyam Health platform & devices are developed in consultation with physicians



Remote consultations and check up are going on at Purulia

and rural hospitals, practicing community medicine and piloted so far to treat more than 16000 patients.

In a remote clinic of Serving the God Foundation at Purulia, West Bengal

This platform is being used in interiors of Purulia District of West Bengal, 300km from Kolkata, for the past two years in a pilot initiative of evidence-based community medicine practice to provide healthcare services to population outside the mainstream healthcare system in collaboration with Serving the God Foundation, Kolkata, led by Dr. Santanu Bannerjee, treating more than 3500 patients. The clinic at Manihara village is set up by the foundation and all the components of eHealth are progressively being installed at the clinic. The doctors visit the remote health center once in a month. The physicians provide their consultations remotely through Arogyam Health platform. The patients are

provided essential medicine charged Rs 10/- at no profit basis. Arogyam Medisoft has been able to provide a scalable infrastructure that comes with physician's consultation, essential diagnostics & essential medicines for 100000 people. Serving the God Foundation, Kolkata treated more than 700 patients, added an ambulance, an infrastructure to remotely treat diabetic retinopathy and remote consultation by leading gynecologist, Dr Mitali Mukhopadhyay and Dr. Lipika Das Mukhopadhyay. Dr. Bannerjee is extending outreach through medical camps at nearby villages to provide support to the patients suffering from chronic diseases like diabetes and hypertension.

In remote clinics & camps of Shramajibi Swasthya Udyog at Cooch Behar & Purba Medinipur, West Bengal

One similar project is being run by Shramajibi Swasthya, led by Dr. Punyabrata Gun where they are using Arogyam Health platform successfully to deliver health outcomes to more than 200 rural patients during Covid 19 period since June 2020.

Not only patients, the doctors and health workers also get benefited from this digital health platform by providing necessary advice without visiting the actual infected area.



Training is going on with Arogyam's help in Arunachal



Health clinics going on using HaemurEx and Arogyam Tele-Health Platform in Arunachal Pradesh

In remote primary health sub centres of Govt. of Arunachal Pradesh

Being chosen as winner of the Arunachal Pradesh Social Entrepreneurship Meet, Arogyam Medisoft has deployed HaemurEx & Arogyam Health Platform in Changlang District of Arunachal Pradesh, under the supervision of DMO, since November 2020, connecting District Hospitals with community health-centers (CHC), primary health centers & sub centers, providing e-Healthcare, essential diagnostic and essential medicines. Arogyam provides all types of the technology infrastructure, training by teaming up with a local partner, in collaboration with Govt. of Arunachal Pradesh. physicians from leading centers across India and USA are providing treatment using Arogyam Health Terminal in Arunachal. Effectiveness of the program will be evaluated in the next 6 months to decide on speed of further scale up.

In employee health centers of a

plantation in African country, Arogyam Medisoft has deployed HaemurEx & Arogyam Health Platform for a plantation in African country, where the company wants to extend the facility of modern medicine for the safety and welfare of its employees in an affordable and accessible way.

Conclusion

The HaemurEx device and the Arogyam Health platform has huge potential in rural health during this pandemic situation due to its ease of use, portability, no dependence on external power supply and calibration-independent nature. This system can be used in all primary health centers and sub-centers and outreach clinics in combination with provisioning of physician consultation and essential medicine. In future, a micro entrepreneur-based model using a local partner is envisioned, ensuring local livelihood generation in the rural areas. If the plan can be deployed over 600 health centers through one particular

state, it can generate employment of 1000-1200 rural youth. It can also be linked with the National Rural Health Mission, Pradhan Mantri Jan Oshudhi Program and Ayushman Bharat Wellness clinic programs. It can improve preventive health and wellness and as well can reduce pressure on hospitals. This, in turn, can advance universal access to healthcare in countries like India.



Partha Chakraborty is the Chief Scientific Officer at Arogyam Medisoft Solution Pvt. Ltd. Arogyam Medisoft (www.arogyamedisoft.com) is an IOT based digital solutions company focused in the healthcare & agriculture industry.

The ability to measure oxygen saturation, blood pressure, temperature and cardiac outputs, to hear chest & lungs sound have made this device unique in this pandemic situation as determining the co-morbidities has become one of the most important aspects of the whole treatment.

IC InnovatorCLUB

A not-for-profit initiative

About

The IC InnovatorCLUB is created for innovators and its mission is to support the growth of its members in their roles as a innovators, mainly through education, local and global networking, and strategic alliances and partnerships.

Membership details

The membership for the IC InnovatorCLUB is open for individuals, organisations and institutions in both **physical** and **virtual** formats. Enthusiasts can fill the form available at www.bit.ly/ic-club-membership

Benefits

To encourage the knowledge dissemination within the healthcare community, we are providing the following benefits to the members of the club.

- *Free access to theme based bimonthly club meetings*
- *Upto 50% discount on conference/ master class tickets prices*
- *Complimentary InnoHEALTH magazine digital format yearly subscription*
- *Free access to embassy meeting and foreign delegation visits*
- *Exclusive perks with respect to B2B and B2G meetings*

Associated institutional members



InnovatioCuris

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

Our activities include

**InnoHEALTH
Quarterly magazine**

innohealthmagazine.com

Market access

innovatiocuris.com/market-access

**Training
& Consulting**

innovatiocuris.com/training-and-consulting

**VIRTUAL EVENT
as a SERVICE**

innovatiocuris.com/veaas

Our activities include

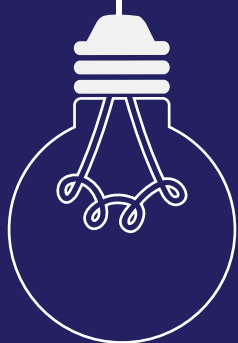
**InnoHEALTH Annual international
healthcare conference**
innohealth.in

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

Webinars
icfhe.in/webinars

InnoBRIDGE
icfhe.in/innobridge


Experiments with sugar
experimentswithsugar.in



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

 www.innovatiocuris.com

 info@innovatiocuris.com

 (+91) 120-427-4630

Connect with us

 /innovatiocuristeam

 /innovatiocuris

 /innovatiocuris

 /innovatiocuris

 /in/innovatiocuris-team