

An initiative of



InnoHEALTH

India's First Magazine of Healthcare Innovations

www.innohealthmagazine.com

VOLUME 6

ISSUE 4

JULY - AUGUST 2021

INR 100/-



Yoga not only improves physical fitness, but it is something much more, it is means to achieve holistic health

by *Nivedita Joshi*

Data-Driven Digital Diabetes

Future trends and a Scottish Exemplar

by *Dr. Debbie Wake*

A Myth Buster on Bronchial Asthma and Its Treatment

by *Dr. Michelle Lolly*

Readers Feedback

A Brief Review on InnoHEALTH

Most liked article of the last Issue....

PERSONA
THEME
INNOVATIONS
WELL-BEING
IN FOODS
RESEARCH
NEWSSCOPE

PERSONA

FELUDA paper strip test for COVID-19 detection

Dr. Debjyoti Chakraborty is presently a Senior Scientist at CSIR-IGIB, Delhi. His lab is engaged in developing genome editing tools for contributing to sustainable healthcare solutions including therapeutics and diagnostics. Apart from this lab also focuses on understanding neurodevelopmental diseases using brain organoids.

Dr. Debleena Bhattacharya interviews him regarding his views on his recent achievements on developing a cheaper, faster and simpler alternative to RT-PCR, the gold standard in the diagnosis of COVID-19 known as FinCas9 Editor Linked Uniform Detection Assay (FELUDA), a paper based strip test for coronavirus.

Q. Three important events happened in 2020 linked with life sciences and the topic that you work upon, COVID-19, Nobel prize for the work of CRISPR and AlphaFold winning the CASP 14 challenge. What is your reaction to them? What is the impact of these events in the next 3-5 years on life science research?

A. The impact of each of these things will be unprecedented in coming years. CRISPR Nobel Prize was only a matter of time, however the award going to two female women scientists in a year when women have excelled in almost every field from politics to science is hopefully going to improve gender inequalities and inspire young female scientists to take up a career in scientific research. AlphaFold development can potentially revolutionize custom protein design and is only the beginning of our understanding of what AI can do and achieve. Finally the pandemic, with all the negativity that it has created across every spectrum, has truly brought science to the forefront. The collective action of the medical and scientific fraternity to fight against this pandemic through innovations and discoveries will hopefully prepare us for more challenges to come. Importantly, it emphasizes the importance of funding good science consistently.

the former is the sensitivity to ultra low copy numbers while the USP of FinCas9 is its high specificity to mismatches and remarkable accuracy. This is to put to rest with RAY (Rapid variant Assay) that can diagnose CoV2 variants that are different by a single mismatch ([https://www.thelancet.com/journals/lanonc/article/PIIS0140-6736\(21\)00470-0/fulltext?articleid=info](https://www.thelancet.com/journals/lanonc/article/PIIS0140-6736(21)00470-0/fulltext?articleid=info)).

Q. You are also focused on CRISPR related work with sickle cell anaemia, which is an important topic for India. When do you expect the implementation of the successful treatment using CRISPR based methods in India? Also, will these be affordable solutions for the larger population?

A. That is my primary work and we are extremely passionate about bringing it to people if some day. We are at a point where we have finished with the studies and are now going to investigate if our approach is feasible on non human models. We have extensively worked on engineering the FinCas9 to make it more suitable for therapeutic editing. Actual implementation would require thorough trials and most importantly the support of the policy makers. Doing genome editing in human cells for therapy will require understanding and discussions across various strata of stakeholders and the common public.

not mainstream globally despite being developed already last year in some archons are developing diagnostic i for vaccines. Being a researcher self, what was your journey like for past one year? If you can also share pivot from working on sickle cell anaemia to developing Feluda and then ?

The pandemic showed the power collective work. In addition to our serial patients (This Medical and justice) we have continuously sifted from discussions and support i scientific colleagues across institutes, ups, policy makers, clinicians and most people. As a researcher most ur time is spent in the lab in normal s; this, the experience over the last has been remarkable. Not only did open how to implement experimental plans but also to discuss and instead the views of different types of news in this process. When we were going on the SCA, we devoted our skills ly from the scientific viewpoint. We ad its application in CoV2 diagnosis early (Jan 2020) and thanks to the lasting efforts of a talented bunch adults, were able to implement the UDA prototype at back-neck pacar normal conditions, innovative lab to market are long and arduous s. The pandemic taught us that this isn't necessarily have to be so. While doing FELUDA and the tech transfer i product TATA MD CHECK, both Dr. Dr. Souvik Nath had multiple to play, several of which we learned he job. The support and constructive actions of Dr. Anurag Agrawal, ctor IGIB has been phenomenal ng this whole process.

Many industries have suffered to COVID-19 impact, especially d and tourism. WHO and others talking about a vaccine certificate si passport which allows people to v. Do you think CRISPR based tests get wider acceptance cross border i as RT PCR. What can be done to out pressure on these distressed nt? Why are CRISPR based tests

My choices for books would be The Double Helix, Spenser and the newly released The Code Breaker.

Q. In the CRISPR journey we have seen some fundamental basic curiosity driven research leading towards important applications. What is your message to students and young researchers who aspire to take the same path? What should we focus on in India in the next 3-5 years for example, to get good results from the incorporation of CRISPR / AI in life sciences?

A. It is important to remember that at the end of the day, CRISPR is a technology and like any other technology it will evolve, get better, have more applications and be eventually replaced. Thus it should not be seen as the one-stop solution to your problem. Every problem requires critical thinking and innovative approaches, a one-size-fit-all need not be the best or the most apt way to solve a range of biological questions. The best minds will find ways to learn from nature like scientists learned in the case of CRISPR and come up with improved solutions.

Q. We have seen many scientists embrace the arts route in infusing the new ideas in their scientific journey. Being associated with music in your opinion how does hobbies play an important part in teaching us life lessons?

A. Arts and humanities teaches us to appreciate and enjoy life in a non-objective manner. I would insist that pursuing an alternate interest (outside science) should be done seriously and not just as a hobby. This is because it pays rich dividends even in one's scientific career. Practice associated with perfecting an art improves the analytical skills of a scientist and helps make friends and contacts in unexpected locations. It is a disease point for stress and anxiety.

Q. What inspires you to do research in life sciences (around CRISPR)? Any Indian / global scientist/personality that inspires you on a daily basis? If you could also recommend a book to younger readers that may inspire them to take up science?

A. My approach towards science has been one of problem-solving. The excitement of solving a biological question is what inspires me. Once I started working on genome editing I have been getting mails from parents of kids who have a lot of hope in this technique and feel one day it can save their children from some of the incurable diseases that they are suffering from. This is my greatest inspiration and something that I am happy to focus on priority over other scientific pursuits.

A lot of scientists inspire me. Feng Zhang, George Church, David Liu, Jennifer Doudna, Martina Cavazzana are few of the contemporary names in my field. I am intrigued by George Church's approach to science as an innovator and the fresh ideas he comes up with. Among contemporary Indians, Gagandeep Singh, Shabir Javed and our very own Anurag Agrawal are some of the personalities I admire for their depth of knowledge and outlook towards scientific and clinical problems.

Interviewed by
Dr. Debleena Bhattacharya,
Associate Editor, InnoHEALTH

Most read articles

Effects of Mobile Phones on Children's Health
[innohealthmagazine.com/2019/well-being/effects-mobile-phones](https://www.innohealthmagazine.com/2019/well-being/effects-mobile-phones)

Top Telemedicine companies in India
[innohealthmagazine.com/2020/innovation/top-telemedicine-companies-in-india](https://www.innohealthmagazine.com/2020/innovation/top-telemedicine-companies-in-india)

Advantages & Disadvantages Real Time Health Monitoring Devices
[innohealthmagazine.com/2018/research/real-time-health-monitoring-devices](https://www.innohealthmagazine.com/2018/research/real-time-health-monitoring-devices)

India's top Artificial Intelligence Organizations in Healthcare
[innohealthmagazine.com/2020/innovation/top-artificial-intelligence](https://www.innohealthmagazine.com/2020/innovation/top-artificial-intelligence)

Difference Between Pranayama and Breathing
[innohealthmagazine.com/2018/theme/pranayama-breathing-difference](https://www.innohealthmagazine.com/2018/theme/pranayama-breathing-difference)

Feedback and Testimonials

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

Dr. Shubha H. V

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

Tamanna Sachdeva

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

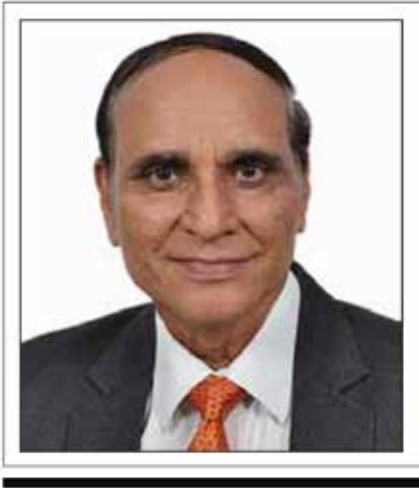
Ramesh Kumar Nanjundaiya

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

EXECUTIVE OPINION

Pandemic: Challenges and Lessons



Dr. V K Singh

Editor-in-Chief & MD,
InnovatioCuris

vk Singh@innovatiocuris.com

“ *The GDP allocated for healthcare was meagre 1% and now increased to 2.5 to 3%, USA spends 16.9% and even many smaller countries are doing better than us. There is no accountability for lapses as reported from time to time by the press.* ”

The pandemic has thrown many challenges and taught us many lessons. Health care is the subject of center and state in concurrent list. Health was not taken seriously by successive governments. The GDP allocated for healthcare was meagre 1% and now increased to 2.5 to 3%, USA spends 16.9% and even many smaller countries are doing better than us. There is no accountability for lapses as reported from time to time by the press. Proper follow up or impact analysis was not done. We have one hospital bed per thousand population while WHO has recommended 3.5 beds. Present government has launched a few good initiatives, but it is too late and too little. Some of these initiatives are yet to be implemented to give results.

We have to make ad hoc arrangements on vital items like oxygen which was flown from other countries of the world including some very small countries. Considering the cost and time along with the loss of human life we can summarise that we did not plan well.

States cannot shrug their responsibility and blame the center all the time. I have been part of the National Disaster Management Authority and have written many national guidelines along with other experts, but these were never practiced and implemented as required. The lesson is to improve medical infrastructure as being done now to construct 50 modular hospitals in the next three months in addition to DRDO made hospitals which are run by Armed Forces Medical Services. One can create hospitals overnight but not manpower which takes a long time to implement. We can only take care of disasters if our healthcare system is in place for day-to-day functioning and emergencies. There is a need to develop a system to achieve holistic healthcare. We need to pay much attention to the rural healthcare system where 70% of the population of India lives. There are challenges to deploy healthcare manpower in rural settings and need to incentivize them. One can think of transporting medical manpower by road every day to work in rural areas since roads have now improved and they can also be allocated residence nearby where all facilities exist for family like school etc. User friendly technology to treat the population should be used, there are many case studies to emulate such best practices.

We handled COVID-19 first wave very well but became complacent and suffered badly in the second wave. Our wearing mask and social distancing behaviour went for a toss as many instances of showing bravado could be noticed on news channels. One ignored basic precautions in religious congregations, political rallies and various demonstrations. Many times, culture took precedence over scientific facts.

The vaccination drive is a big learning exercise. How can one expect villagers who have no access to smartphones to book a slot on a portal, a study reveals that 60% of the rural population is unaware of how to enroll for vaccination, a simple approach is to be publicized and adopted. Many advertisements are not for awareness but for visibility of political leadership. Waste of taxpayers' money which even the court has pointed out. We, as citizens too, have a responsibility to the country and fellow citizens to follow COVID discipline.

The negligence was clearly transparent when around one lakh took fake COVID-19 certificates to attend Kumbh, whom are we fooling? Opposition parties should do value-based politics in such national emergencies instead of criticizing the ruling government all the time. Many times they are misguiding the population by spreading misinformation for electoral gain. We all have to take the blame for mismanagement and ensure to make India better to live in future, though it is easier said than done.

There is a need to develop a robust healthcare infrastructure and system, strictly following the guidelines laid out by the government. There is a need to safeguard the have nots and marginalized. A redefined Hub & Spoke model, supply chain, an audit of every penny spent and penalize the defaulters.

We need to be “Atmanirbhar” India in true sense and we have enough talent to handle everything in true sense. This pandemic should be taken as an opportunity in adversity.

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, Ex-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

Yoga not only improves physical fitness, but it is something much more, it is means to achieve holistic health <i>by Nivedita Joshi</i>	06
Data-Driven Digital Diabetes <i>Future trends and a Scottish Exemplar by Dr. Debbie Wake</i>	08

THEME

The soulful path of Yoga transversed by a classical dancer <i>by Molina Singh</i>	11
Physical Activity and COVID-19: A remedy in disguise <i>by Sarthak Kapoor</i>	16
The Ecosystem Restoration Process: Water <i>by Dr. Debleena Bhattacharya</i>	18

INNOVATIONS

Healthcare Trends <i>Compiled by: Dr. Avnatika Batish</i>	20
---	----

WELL-BEING

How Blockchain can help improve care outcomes in India <i>by Dr. Vikram Venkateswaran</i>	28
The unrivaled power of Faith and Gratitude <i>by Veena Joshi</i>	30
The journey of striving through the COVID <i>by Dr. Amit Raj</i>	32

IN FOCUS

A Myth Buster on Bronchial Asthma and Its Treatment <i>by Dr. Michelle Lolly</i>	34
--	----

RESEARCH

Digital Adaptation in Healthcare: Opportunities, Use Cases, Implementation Challenges and Suggestions <i>by Vishal Satish Aggarwal</i>	37
Why are some babies born with heart defects? <i>by Malka Breidenstein</i>	40
Eco-Innovation <i>by Prof. Dr. Hubert Rampersad</i>	42

NEWSCOPE

Latest news in healthcare <i>Compiled by: Parthvee Jain</i>	45
---	----

PERSONA

Yoga not only improves physical fitness, but it is something much more, it is means to achieve holistic health

Nivedita Joshi is a multi-dimensional person with significant accomplishment in the field of Yoga. She is imparting her knowledge about Iyengar yoga through her institute 'Yogakshema'. Her personal ordeal with slipped disc, cervical spondylosis, an early-stage scoliosis has made her bedridden and invalid for eight long years. She even lost her ability to move her hands and legs. An inspirational road to recovery started when she joined as a patient under the tutelage of the legendary B.K.S. Iyengar, pioneer in the field of Iyengar yoga. Her twenty-two years of training and hard work has motivated her to help others through her knowledge. She has penned down her knowledge in a book on Yoga for the visually impaired in Braille. This book was released internationally during the first International Day of Yoga celebrations at the UNESCO Headquarters in Paris.

Surgeon R Admiral V K Singh, Editor in Chief of InnoHEALTH took her interview to get a glimpse of her inspirational journey from yoga to Yogakshema. This interview is important to honour her to let people know about her achievements on International Yoga Day.

Q. What are different types of Yoga and how are these different from each other?

A. All types of yoga are Patanjali yoga with 8 limbs: Yama, Niyama, Asana, Pranayama, Pratyahara, dharana, dhyana & Samadhi. Different yogis had their own style and contribution in the field of yoga & that developed into different schools of thoughts in music or dance.

Q. Is meditation part of yoga ?

A. Dhyana is part of yoga Or Meditation, its 7th Limb of Yoga. Practice of asana prepares your mind to focus & aims towards dhyana.



Q. You could cure yourself with help of your guru Iyengar from cervical spondylitis and slip disc which had put you in a wheelchair for 12 long years in pain and agony. How to emulate your dedication and motivation and how Iyengar Yoga is different.

A. When I met Dr. B.K.S Iyengar for the first time without me saying or explaining anything to him he diagnosed my issues just by looking at my skin at the base of the neck & I was amazed to see the depth of his knowledge and surrendered at his feet that very moment. When he started teaching me, as a student of science I realised, his work and knowledge is very scientific & par excellent. I was already fed up with modern Allopathic medicines & their respective side effects. The

improvement with this practice of traditional knowledge reaffirmed my belief in Indian medicine system.

Few qualities that make Iyengar Yoga different from other school of Yoga are-

1. *Alignment*
2. *Precision*
3. *Sequencing of asanas*
4. *Timing of asanas*
5. *Improvisation of asana without diluting its classical effects*
6. *Innovations of Props and use of them for people with different health conditions. For e.g. A person like me who was unable to move her body was not only doing classical asana & holding the pose also but was also gradually recovering*

I was motivated to practice every day as after so many years, I was able to move my body & limbs & there was great hope to walk again normally. I started to have a life without pain. He was an excellent Guru with immediate improvisations his forte, whenever he saw my limitations, he would invent then & there new improvisation of asana & would give me the confidence to do it and make me feel better & better day by day. He worked very hard on me as I was an interesting and challenging case for him & I reciprocated by practicing equally hard & making notes of his scientific way of teaching the way he wanted & the bond of Guru & shishya became stronger & stronger.

Q. You are doer and show the way by your personal example and grit to your learner. What are diseases you have attended in which yoga has been helpful?

A. Patanjali Yoga sutra says “Heyam dukham anagatam”! means practicing of yoga will postpone the setting up of the disease or if it does set in, one would sail through easily in the recovery, so practice of yoga is beneficial for anyone & everyone. There were many diseases such as back pain, neck pain, knee pain, heart ailments, Aasthama, hip joint pain, Stress, BP, etc. which were treated through yoga.

Q. How has yoga been beneficial for stress management of young professionals, children, pregnant women and senior citizens ?

A. Yoga not only improves physical fitness, but it is something much more, it is beyond physical health. The human persona is not only a body but is also mind, intellect & soul. Yoga attempts to harmonise all of them. As a result, one possesses a healthy body, a sharp intellect & an unflickering or focused mind so practice of yoga is the best way in such a fast moving world to work on our stress.

Kids have immense energy yoga channelising their energy and bringing an excellent focused mind which allows them to excel in their endeavour.

It is said “ As you sow, so you ripe “. In the time of pregnancy practice of yoga not only gives excellent health to the mother but also gives excellent health to the child.

Pregnancy practice of yoga keeps hormonal level normal, it doesn't allow B.P. to go up & sugar levels are maintained normal . It gives peace of mind and as a result the child is very healthy.

For senior citizens when they are at home practice of yoga not only brings good health of body and mind but makes them independent. In the Iyengar system practice of asana and pranayama is very easy as it allows the use of many props and improvisation of asanas which not only give them confidence but also gives the satisfactions of being able to use the body and mind in the correct direction.

Q. Can you give details of book you have authored and what is its learning

A. I also teach visually impaired people yoga & they enjoy studying it. I am the first person in the world who has written a yoga book “Yogikashparsh in Braille so that visually impaired people can also get the benefit of this.

Q. Today's interaction is important because of International Yoga day on June 21. What message would you like to give to people to commemorate it ?

A. Yoga is the best gift India has given to the world. Yoga teaches us the fundamental unity between human beings & humankind between us & the environment. The essence is to experience that “All in one”. Keep practising yoga!!

Interviewed by

Surgeon R Admiral V K Singh,
Editor-in-Chief of InnoHEALTH

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

GUEST COLUMN

Data-Driven Digital Diabetes

Future trends and a Scottish Exemplar

■ Dr. Debbie Wake



Diabetes now affects around 9-10% of the global population/costing ~£500bn per year as per the study of International Diabetes Federation (IDF), with huge associated morbidity and mortality. As per the study of Grand View Research Reports, in parallel, the global digital health market is growing, and now totals over \$206 billion, and by 2025 is expected to reach \$509 billion. CAGR (compound annual growth rate) is 27.7%. Diabetes lends itself well to a digitally supported model of care delivery, and data-driven IT systems and digital applications may facilitate improved diabetes outcomes.

Internet based technology can

- i) support people with diabetes directly, enabling better self-management (e.g. through internet linked apps supporting education, lifestyle or treatment titration)
- ii) support health care professionals to

deliver better care through electronic health records, decision support, remote consultation tools, and population analytics.

In addition, new sensor-based technology that measures glucose (interstitially), through flash and continuous glucose monitoring (CGM) is transforming the lives of people with type 1 diabetes. Closed loop systems (i.e. continuous glucose monitors linked to insulin pumps, with dose adjustments driven by automated algorithms) are becoming the gold standard. Advanced glucose sensing technology is also showing promise for some aspects of type 2 diabetes management, although price currently inhibits widespread use.

The current COVID-19 epidemic (and poorer COVID outcomes in people with diabetes) has further increased the

need for digital solutions, particularly technology which supports remote care models and population triage suggested in some scientific literature by Nagi and his team. Scalable remote technology based patient education approaches such as massive online open courses (MOOCs) may be highly cost effective (Mackenzie and team). Systematic literature reviews, evaluating use of digital tools and apps in diabetes self-management more generally, have demonstrated improvements in clinical outcomes, but show significant variability between interventions.

Data-Driven Care

Gathering and exchanging data is key for any learning health system. Data in diabetes may come from electronic health records (e.g. demographics, clinic measurements, lab data, medication, appointments, past medical history

DIABETES DATA

Healthcare Record

- Lab results
- Diagnoses
- Medication
- Screening results
- HCP goals/ advice
- Social Care

Questionnaires PROMs/ PREMS



Home Recorded Devices

- Glucose Monitors
- Wearables
- Home Devices (e.g. scales/ BP)
- IoT
- Home Urine ACR
- Smart Insoles
- Smartphone Apps

Environmental / Social Data

- Shopping, travel, weather, social media...

etc.), screening programmes, and from patients directly through home devices such as activity monitors, glucose meters and increasingly through a plethora of home diagnostics and ‘internet of things’ sensors and devices. This may include foot pressure/ heat sensors to aid early detection of neuropathy, leading to foot ulcer prevention through to home urine testing linked to smartphone apps, to support detection of urine albumin. In addition, lifestyle and diet apps (including some with inbuilt food nutritional analysis) are supporting day to day self-management decisions. Data may also come from questionnaires/ patient reported outcome/ experience measures (PROMs/PREMs), and other internet sources including social and environmental data.

The ability for a system to use data effectively to improve health care can be summarised by the informatics maturity model (table 1). The highest level (level 8) is associated with transformation of data and delivery to clinicians or patients through outputs which support a personalised precision medicine approach.

Precision Medicine /Decision Support

Using data to enable more personalised care, through data modelling and decision support could be transformative. A recent American Diabetes Association (ADA)

/European Association for the Study of Diabetes (EASD) consensus report highlighted key areas where diabetes care is ready for precision diagnostics, therapeutics and prognostics, noting that "pragmatic studies of decision-support systems utilising rich information in health care systems... are needed". Data-driven precision medicine in diabetes can support better diagnosis (including diabetes subtyping), more personalised prescribing (drug-response), and better prediction of short and long complications enabling early intervention. In addition, image-analysis AI is being used to support more rapid retinal image screening and for tracking diabetic wound healing.

To date, evidence for the use of Artificial Intelligence (AI)-driven decision support in clinical settings for chronic disease management remains limited. Data visualisation, or linked decision-support advice/ alerts can empower end users, i.e. turn data into knowledge and action. Clinical decision support (CDS) provides timely information, usually at the point of care, to help inform decisions about a patient's care. A recent meta-analysis (BMJ) demonstrated that clinical decision support interventions in a more general setting achieve small to moderate improvements in targeted processes of care, with limited evidence to date demonstrating improved

Table 1

Level 8	Personalised Medicine and Prescriptive Analysis
Level 7	Clinical Risk Intervention and Predictive Analytics
Level 6	Population Health Management and Suggestive Analytics
Level 5	Waste and Care Variability reduction
Level 4	Automated External Reporting
Level 3	Automated Internal Reporting
Level 2	Standardised Vocabulary and Patient registries
Level 1	Enterprise Data Warehouse

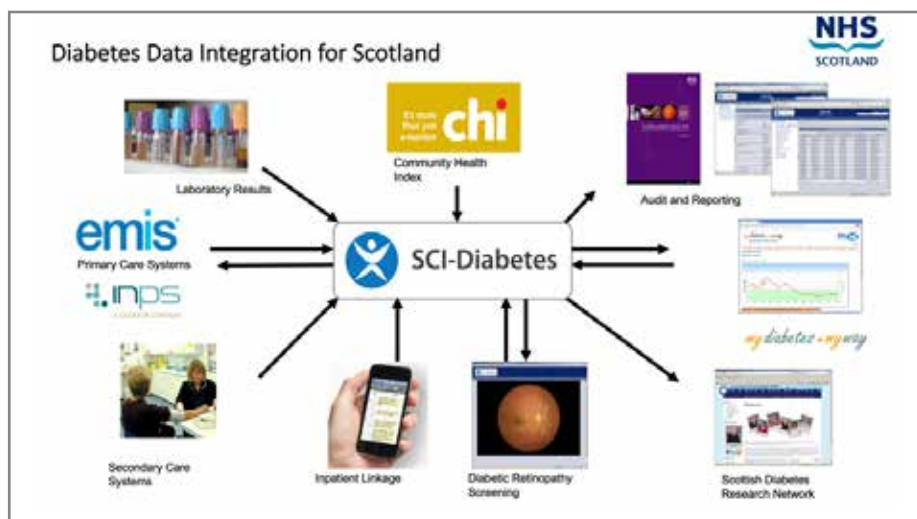
clinical outcomes. The paper calls for a human factors approach to understand workflows, patient-orientated support, and the use of AI to improve prediction, and preventative care decision support.

Case Study (Scotland)

Over the past 20 years, Scotland has taken a national approach to diabetes management underpinned by exchanging linked data. The national SCI-Diabetes platform which is accessible to all clinicians in Scotland who manage diabetes, exchanges data from all primary care clinics, national laboratory data and national screening programmes. Data exchange is possible through the use of a unique patient identifier [Community Health Index (CHI)]. Data is made available for clinical use, audit, research and patient self-management. The use of a national data platform in Scotland has been associated with significant improvements in care quality and outcomes.

My Diabetes My Way (now MyWay Diabetes)

SCI-diabetes data is made available to patients through Scotland's MyDiabetesMyWay (MDMW) patient data access and education platform. Around 500,000 people have used the MDMW website and >60,000 registered for data access (since 2010). This platform also supports online structured education courses. MDMW use has been associated with improvements in key parameters such as HbA1c and cost-savings with ~ 5:1 return on investment. More advanced AI-driven predictive analytics and linked decision support is currently being tested; supported by MyWay Digital Health.



Summary

Digital technologies and data could have wide benefits for people with diabetes and other long-term conditions, enabling better personalised self-management, scaled through internet-based delivery. In addition, given the high prevalence of diabetes, most care is provided by generalists, who may lack specialist knowledge; accessible guideline-linked evidence-based decision support, could be a great enabler. Population management systems can further focus care toward those in most need. Data-driven solutions have the potential to reduce mortality, morbidity, reduce complications, drive more effective treatment prescriptions, improve quality of life, improve patient safety, enable more effective diagnosis and prescribing and delivery system efficiencies. Investment in underlying infrastructure and policies to support data standardisation, interoperability, information governance is essential to realise these benefits, and ongoing research is encouraged to better understand the impact.



Dr. Debbie Wake is a diabetologist, Clinical Reader at University of Edinburgh and Diabetes Consultant, (MBChB, BSc, PhD, Clin Ed Dip), and CEO and co-founder of MyWay Digital Health (MWDH). She leads national programmes on diabetes artificial intelligence/ international diabetes education programmes (Kuwait/ China). Previously, she was a health columnist for a national UK newspaper and TV doctor/ presenter for STVs 'The Hour' programme.



Legend: MyWay Diabetes data integration patient self-management portal.

THEME

The soulful path of Yoga transversed by a classical dancer

■ Molina Singh



It is said that the first yogi or 'ADIYOGI' was Shiva, and he is also the king of dance Nataraja. Maybe that's why the Classical dances of India have their roots in Yoga, and their goal is union with the supreme consciousness through bodily transcendence. Thankfully, most of the reputed performing arts institutes and gurukuls have incorporated yoga in their curriculum.

I was drawn to yoga right from childhood

as both my parents were classical dancers. It is hard for me to pinpoint when I started Yoga as it has always been there for as long as I can remember. But my formal introduction to Yoga (as it was a mandatory subject) was when I joined **National school of Kathak**, fondly known as Kathak Kendra, New Delhi under the tutelage of Nisha Mahajan.

So my first formal yoga session was as a Kathak student. We were told to sit in

"Nispanda bhava" which is sitting with legs stretched out, taking support of a wall, hands resting on the thighs and just passively listening to any sound. Gradually I started to feel that my senses were getting heightened.

Interestingly, though I was sitting in a passive state I was actively aware of the minutest movement, faintest of the sound, smells and even touch. So, when I came out of it I was completely rejuvenated,



Molina Singh, author, a classical dancer and yoga guru showing synergy between dance and Yoga

Nispanda bhava, as I got to know later is a conditioning method introduced by Shri Yogendra ji of “The Yoga Institute”. In which all the basic five senses (Jyanendriyas/ ज्ञानेन्द्रिया) gets highly activated and you are conditioned to start your YOGA practices .

Recently, when I was doing this Advance teachers training course, from the yoga institute, I could finally understand its relevance with the first sutra (code) from the book “YOGSUTRA” written by sage Patanjali. The first sutra “ATHA YOGA ANUSHASANAM” (अथ योग अनुशासनम्) means “Now

begins the instruction on the practice of Yoga.” One has to be absolutely

present in the moment (i.e. NOW) to initiate and understand the lessons of Yoga.

However Nispanda bhava can also be practiced to relax when you are tired.

In today’s time when most of us are getting consumed physically, mentally and emotionally, Yoga provides the much needed servicing of our body and more importantly conditioning of our mind.

The similarities between a classical dance regime and yoga session.

The final talk during my Advance teachers training course (ATTC) in yoga was on the similarities of dance and yoga. It is

hard for me to put it in a nutshell here . But let me try. Before going further let me tell you that Patanjali’s Yoga has eight limbs or stages called ASHTANGA Yoga. They are further divided into two groups - Bahiranga (external or physical state) and Antaranga (internal or emotional/ intellectual state).

The very foundation of Indian classical dance begins by following a strict timetable or routine, which includes regular practice or ‘RIYAAZ’.

The ‘Riyaz’ is only possible when you follow a code of conduct towards yourself first (health and hygiene), secondly your conduct towards others (behaviour, attitude), and then of course respecting Space and valuing the Time.

There is a similarity to the first two stages of Ashtanga yoga (the eight limbs of yoga) i.e. YAMAS, the ethical and moral values and NIYAMAS which is virtuous habits and observances.

The dance form which I am currently

In today’s time when most of us are getting consumed physically, mentally and emotionally, Yoga provides the much needed servicing of our body and more importantly conditioning of our mind.

pursuing is Odissi, which incorporates postures and movements that find their base in KARANAS.

The Karanas are co-ordinated movements or actions of the body. 108 such karanas or units of dance are named and defined in the Natya Shastra, the most ancient text on the performing arts composed by Sage Bharata Muni. The unit of dance is defined by the stringing of postures (angahars), movements, hand (Hastak / हस्तक or Mudras/ मुद्रा) and feet positions(pada bheda / पाद-भेद) etc. This is somewhat similar to Vinyasa yoga which is a flowing sequence of specific asanas co-ordinated with the movement of the breath. So here one can correlate dance movements and ASANA, which is the third limb of Ashtanga Yoga.

Indian classical dance movements are complex and tough. A very highly efficient neuromuscular co-ordination is required to carry out complex choreographies, not to forget that an average solo dance recital might last from 30 minutes to an hour duration. It is a fact that to last 30 minutes on stage a dancer should at least practice 2-3 hours daily. And to sustain that long on stage you need immense stamina and consistent flow of energy. This can be achieved by practicing different breathing techniques which comes under Pranayama or the fourth stage. Regular practice of Pranayama helps a dancer to maintain a steady flow of energy throughout the performance.

The above four stages described comes under Bahiranga Yoga, which enable or help the dancer to master the technical aspects of the art form i.e. Nritya or pure dance.

Then comes the interesting transitory phase, PRATYAHARA or the ego detachment. The word Pratyahara means “to withdraw”. In Ashtanga Yoga, it is known as the bridge between the Bahiranga yoga and the Antaranga yoga.

This is a stage when a dancer starts to learn how to separate or withdraw from self and immerse in the dance. The internalizing of the teachings/ techniques one has received till date acts as the route to achieve higher understanding and



Author in classical dance attire



delving into deeper levels of dance. This is also the time when the seed of individual's spiritual journey as a dancer is sowed.

When a dancer is fully focussed (DHARNA, the sixth limb of Ashtanga yoga) and absolutely engrossed to a point where the performance becomes like an act of Meditation (DHYANA) it may lead to a yogic experience. This is when one sees the dance and not the dancer and can experience the RASAS (emotions). It is said that performing and watching performances (rasikas) with the objective of experiencing such detached states of mind is spiritually beneficial and would account for the centuries of close association between dance and religion (temple rituals) in the Indian tradition. While there are many philosophical and practical connections between yoga and dance, the principle of unifying opposites is essential to both systems. Practitioners of HATHA YOGA are often told that the word "hatha" represents the figurative joining of the sun (ha) and the moon (tha), respectively masculine and feminine energies. On a practical level,

this often translates as the balance of differing qualities within a pose: strength and flexibility, inner relaxation and focus. Within Indian classical dance forms, this balance of the masculine and feminine is understood as the balance of TANDAVA and LASYA.

Yoga bestows and withdraws

Freedom from all biases which a human mind can possibly create or has created. The moment the mind starts to let go of "I" or EGO, it starts assimilating or understanding the magnanimity of the creation, the whole cosmos. It takes away all possible NEGATIVITY if practiced with full integrity and honesty. To keep a check on self, Swadhyaya (स्वाध्याय) / self-reflection is a part of the

practice.

The various yoga forms and the preferred style

Formally, I was introduced to Ashtanga yoga, so I mainly follow that style. But whenever I have to do ASANAS, I prefer the Vinyasa form in which the sequencing of the asanas are like dance movements linked to the next through breath.

It is hard to choose a preferred style of yoga for an individual. As for me there has been only one preferred style that is traditional ASHTANGA yoga. Any true system of yoga is designed to refine your consciousness and take you from the lower to the higher levels, where only the methods differ. For example, HATHA

While there are many philosophical and practical connections between yoga and dance, the principle of unifying opposites is essential to both systems.



Yoga acknowledged that the body was actually an amazing tool for shifting our consciousness so more emphasis was given to Asanas, Kriyas and Pranayama. Then there is Kundalini Yoga which relates to opening chakras or life force energy.

Health measures taken for practicing Yoga in some people

Certain care is definitely needed to be taken for people who have heart condition, blood pressure issues, recent body injuries accidents etc. There are certain do's and don'ts augmented for pregnant, menstruating women and people with special needs.

Importance of flexibility in yoga

Flexibility of body is not a must but flexibility of mind is definitely a pre-requisite.

Advise for the yoga beginner's

The second sutra, chapter one of Patanjali's YOGSUTRA says "yogashchitta vritti nirodh" (योगश्चित्तवृत्तिनिरोधः) which means "yoga is controlling the fluctuation

of mind". As a yoga practitioner cum dancer I often connect the above sutra to Natyashastra's "yatho hastha tatho dristi" which translates to the meaning that where the hand goes the eyes follow, "yatho dristi tatho manah", where the eyes go the mind follows, "Yatho manah tatho bhaava", where the mind goes emotions follow, "yatho bhaava tatho RASA", where the emotions are in accordance the essence arises. Yoga is an experiential science. Each individual might take the same route but the journey will be different. However no matter what the destination is one.

Inspiration for Yoga

My biggest inspiration is Life, embodied with the mysteries of our body and mind. Yoga is also said to be union of mind, body and soul. ("Yuj samadhau") I conclude with this quote-

"The universe is not outside of you. Look inside yourself; everything that you want, you already are."- Rumi

Molina Singh is an accomplished Indian classical dancer, actor, producer and yoga teacher. She has received many accolades and appreciation for her work. She was bestowed with 'YUVA RATNA' for her achievements in dance. Apart from being a classical dancer she is a certified yoga practitioner. Her maiden theatre production is NAHAKGEE NUNGSIRABI (yours lovingly) - LOCAL FOREIGNER which has received huge appreciation in theatre arena.

While there are many philosophical and practical connections between yoga and dance, the principle of unifying opposites is essential to both systems.

Physical Activity and COVID-19: A remedy in disguise

■ Sarthak Kapoor



We are in a state of distress. Trapped in our houses, not knowing what time of the day it is and wondering when will this suffering end. Staying in all day, working from home in pyjamas, binge-watching our favourite movies and TV shows and having all that we need to be delivered at our doorstep; surely was a dream for some people in the early days of the pandemic. It's different now. Things have gotten monotonous and all that once appeared euphoric has become daunting. Most necessarily, the freedom to go outside that

kept us moving is not there anymore. This might not appear as serious a threat as it is, and I wish to address the gravity of this major lifestyle change through this article.

Reality Check

A usual day for an average person has regularity to it. One thing is followed by another and that pattern elicits uniformity. When this is repeated day after day, our biological clock or circadian rhythm gets synchronised. There are also times when the release of hormones in our bodies result in specific desires, much

like there are codes and algorithms in computers for particular actions. Leptin, for example, diminishes hunger. Sadly, we aren't living normally anymore and above all have adopted a more casual approach to life. Sleeping when we want, snacking when we feel like it and procrastinating for most of the day. This has taken a toll on not just our habit of doing regular chores but has specially derailed our willingness to be more physically active. Now, this can have some serious consequences as Jeffrey A Woods and colleagues said 'humans evolved as physically active animals and regular physical activity is in our genes'.

We aren't living normally anymore and above all have adopted a more casual approach to life.

Thinking of sitting on your bottom all day in one place until your legs turn to jelly?



Well, I would recommend otherwise. Many studies have shown that physical inactivity exposes our bodies to life-threatening diseases. And if that doesn't scare you, do remember that COVID-19 is better off in bodies that are preoccupied fighting other illnesses. Also, bodies that fail to fight the coronavirus require ventilator support, where the less efficient respiratory system is artificially supported to maintain the exchange of respiratory gases. This life-saving intervention has an unavoidable downside; weakening of the respiratory muscles or ventilator-induced diaphragm dysfunction (VIDD). The reason for mentioning this is because it separately inhibits the weaning of patients from the ventilator, and contributes to a substantial number of deaths. Surprisingly, studies have shown that endurance training for as few as 10

consecutive days can result in protection against the weakening of respiratory muscles and VIDD. This not only reduces the chances of adverse events but can also possibly prevent the worsening of preliminary covid symptoms that usually require medical assistance.

What Shall Be Done Then?

According to a study examining the influence of physical activity on corona patients adhere to the US Physical Activity Guidelines of 150 min/week of moderate to vigorous physical activity was strongly associated with reduced odds for severe COVID-19. Splitting these 150 minutes equally over five days gives us 30 minutes of work for each day with two days of rest a week. Brisk walking is a nice way to gradually start transitioning from no

physical activity to moderate-intensity work. It is, however, subjective to decide what type of activity you wish to indulge in. Feel free to experiment and also don't shy away from incorporating more than one activity into your routine. Always remember, having fun with your workouts is more important than dragging yourself through something for the sake of it.

(Bear in mind that this approach is only precautionary and is not supposed to be practised while battling the virus)

Future Directions.

Regular physical activity rarely gets the importance it deserves when it comes

to dealing with or preventing chronic ailments. The health spectrum in its entirety is reflective of a person's lifestyle and is judged by two key elements; eating habits and physical activity. We are told at different stages of our lives the benefits of these two factors but rarely is it made clear that resorting to them in case of emergency can only do so much and that regularity is what matters. It's only logical and pragmatic to use the underlying advantages of structured physical activity for the betterment of our well-being. In my opinion, this can be achieved by

- 1) educating the population of this country about the benefits of physical activity related to COVID-19 outcomes
- 2) running a nationwide program to promote regular physical activity during the pandemic. After all, it is a remedy that comes with no side effects and is available to all.

Sarthak Kapoor is a third-year sport and exercise science student from Cardiff Metropolitan University. He also started a brand with a fellow sports physiologist, that focuses on educating the locals about the importance of evidence-based practice in the sporting and health sector.

Brisk walking is a nice way to gradually start transitioning from no physical activity to moderate-intensity work.

The Ecosystem Restoration Process: **Water**

■ Dr. Debleena Bhattacharya



This year's World Environment Day theme was focused on restoring ecosystems. This was an ideal time to pause and think about our role in harbouring and reviving the ecosystem. The ecosystem was harmed by human intervention and rapid urbanisation. There is always a discussion to restore the ecosystem and various strategies

were put in place to revive the already dilapidated ecosystem. There is a long-term goal approach needed to restore the ecosystem where the local conditions along with the community knowledge will help in creating a strong foundation for reviving the ecosystem.

Water is the most important factor

that imparts an important entity in the ecosystem. The conservation and management of the ecosystem will restore our environment and initiate the process of healing.

In India, groundwater has been extensively used with an extraction of 253 billion cubic meter per year. 25% of the groundwater extraction leads to the depletion of water tables across the nation and another major factor is the rapid unplanned urbanization that results from increased level of water pollution in the form of domestic or industrial wastewater, untreated sewage wastewater, unscientific approach of drainage system and conversion of water bodies into dumping

The streams and water bodies are bearing the brunt by giving rise to algal blooms in order to manifest the harmful toxic chemicals used to increase the yield of crops and meet the demands of the population.



yards. All these factors lead to the depletion of entire ecosystems. The amalgamation of traditional methods and innovative technology propels a substantial change and scope for restoration.

To conserve the water there is a need for judicious use of the available natural resources. The need for industry is there for the economic development of the nation but advanced treatment technologies should be incorporated to safeguard the aquatic ecosystem from harmful persistent residual pollutants present in the treated water.

The rapid urbanization has already sealed many of the natural water bodies and recently there was a sudden drowning of a car in a pit in the parking area in Mumbai, India as there used to be a well which was sealed to give way for concrete pavement.

The conventional agriculture has also caused havoc for the water resources and has disturbed the water table level. The excessive use of fertilizers and pesticides leaves behind the residues which eventually leaches to the groundwater or there is a run-off of agricultural wastewater in the nearby surface water. The streams and water bodies are bearing the brunt by giving rise to algal blooms in order to manifest the harmful toxic chemicals used to increase the yield of crops and meet the demands of the population. The eutrophication solicits its presence and depletes the dissolved oxygen leading to death of aquatic organisms.

We need to stop the rapid siltation also as the deforested land has a loosened soil which finds its solace by depositing at the bottom of the water bodies like lakes and eventually drying them.

According to United Nations (UN) studies nearly 30% of the natural water ecosystem has disappeared since 1970, their restoration alongwith the forest will help to save the water utilities around the countries and curtail the water treatment costs. With a hope to revive the past and secure the future for our next generations the restoration of the environment will be a boon!

Dr. Debleena Bhattacharya is the Associate Editor of InnoHEALTH magazine and working as an Assistant Professor in Marwadi University, Gujarat. Her area of interest lies in Environmental Biotechnology focusing on wastewater treatment.

▶ INNOVATIONS

COOL PPE KITS DESIGNED WITH VENTILATION FOR COVID WARRIORS

In today's covid scenario use of PPE kits is a boon to the frontline workers and other healthcare workers but it also has major issues like making the wearer feel very hot and humid inside it. Doctors usually wear them for hours together bearing the discomfort these kits bring to them mainly due to lack of ventilation. In order to provide a solution to this problem, a second year Engineering student, Nihaal Singh Adarsh of KJ Somaiya College of Engineering, Mumbai has developed a belt-like wearable ventilation system for PPE kits named Cov-Tech ventilation system. Nihaal Singh has been assisted in this project by Ritwik Marathe and Sayli Bhavasar. These belts can be worn inside PPE kits which run on a lithium-ion battery that lasts for 6-8 hours at a stretch. It takes the surrounding air then filters it and pushes it back into the PPE suit. This makes sure that the person wearing the kit is not feeling hot and also avoids fungal infections. Cov-Tech Ventilation system is literally like one is sitting under the fan even while he/she is inside the PPE kit. The USP of the product is that it ensures a complete seal from the PPE kit and provides a breeze of fresh air in a gap of 100 seconds to the user.



The creator of such a belt was inspired by his mother who is a General Medicine practitioner who shared with him stories of difficulties faced by herself, colleagues and nursing staff back at their workplace while wearing their PPE suits. Drenching in sweat was the most intolerable feature of wearing the PPE kits for long hours. This led Nihaal to make an innovative invention to help his mother and others at their healthcare setting.

When Nihaal started working on a new product, he developed the first model in 20 days and finally took nearly six months to make an initial prototype that he had to offer to the medical fraternity. The first prototype was to be worn around the neck which could suck air through its U-shaped air inlets and had a pillow-like structure which could just curl around the users' neck. Unfortunately this prototype got rejected as it was uncomfortable to wear around the neck due to the constant sound and vibration this device emitted.

So he started working on new designs and eventually made a product in the form of a belt which can be easily worn around the waist relieving the health workers from the

problem of sweat and humidity inside the PPE suit. It gave the users' dual benefit of, firstly, a well-ventilated suit and secondly, kept them safe from fungal infections by keeping them sweat free. The product is made of high quality components and also safety protection measures are kept in mind as this belt-like product is worn close to the body. This innovation has been supported by Gauran Shetty, Chief Innovation Catalyst at RIDL and CEO of Dassault Systems, Pune.

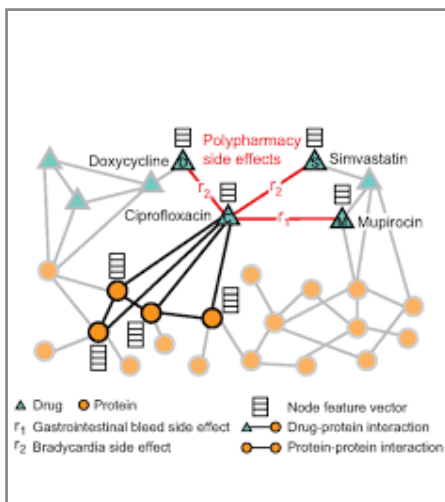
Nihaal has created a Start-up named Watt Technovations and received INR 10 lacs for prototype development and product innovation by the Department of Science and Technology, Government of India.

Cov-Tech ventilation system seems to be a feasible solution to the discomfort caused by PPE kits and hopefully the creators will be able to make this product available in the commercial market soon fulfilling its demand. Presently the belts are being used at Lotus Hospital and Sai Sneh Multi-Speciality hospital, Pune.

SOURCE: www.thequint.com

ARTIFICIAL INTELLIGENCE TO PREDICT THE SIDE EFFECTS OF MILLIONS OF DRUG COMBINATIONS

Popping in many medicines as per Doctors' instructions is as normal as sipping tea/coffee from a cup. Across the globe millions of people take more than five medications a day but testing the side effects of such combinations is practically not possible. But with the arrival of Artificial Intelligence computer scientists at Stanford have made an effort to predict side effects of various drug combinations.



As per CDC estimate in the month of March alone 23% of Americans took two or more prescription drugs. Of the people above 65 years of age, 39% take five or more prescription drugs which by the way has increased three fold in the last many decades. The surprising part is that in many cases doctors do not have any idea what side effects may arise from adding another drug to a patient's personal pharmacy. Taking these revelations seriously, computer scientists at Stanford started working in this direction. On July 10, 2018 at the meeting of the International Society for Computational Biology, Chicago, Zitnik and his colleagues Monica Agrawal, a Master's student and Jure Leskovec, an Associate Professor of computer science presented a paper in which they described Artificial Intelligence not just for tracking but also predicting the potential side effects arising from different drug combinations. They called the system "Decagon" that

could help doctors in making informed decisions regarding which drugs to prescribe in which combinations and also aid researchers to find better combinations of drugs to treat complex diseases. This research was supported by the National Institutes of Health, National Science Foundation, the Defence Advanced Research Projects Agency, the Stanford Data Science Initiative and the Chan Zuckerberg Biohub.

Sadly as of now it is more of a matter of chance what side effect/effects a patient has when he takes different drug combinations but once Decagon is available to doctors in a more user-friendly way, Decagon's predictions would be of advantage. There are nearly 1000 known side effects and 5000 drugs on the market which makes almost 125 billion possible side effects between all possible pairs of drugs. Unfortunately most of these combinations have not been systematically studied thus not prescribed too.



So these scientists started by studying how drugs effect the underlying cellular machinery in the body. They created a massive network to describe how more than 19,000 proteins in a human body interact with each other and how different drugs effect these proteins. The team then used more than 4 million known associations between drugs and side effects to design a method to identify

patterns in how side effects arise based on the fact how drugs target different proteins in our body. To further take up their study the team used Deep Learning which is a kind of artificial intelligence modelled after the brain to look at complex data and extract from it the abstract, sometimes counterintuitive patterns in the available data. The researchers designed their own system to read patterns about the side-effects of various drug interactions and predict previously unseen results from taking two drugs together.

Then the team wanted to validate their observations which were predicted by Decagon and see if they were true. Surprisingly in many cases, they did come true. For example, in the collected data there was no indication that Atorvastatin, a cholesterol medicine and Amlodipine, a blood pressure medicine could lead to muscle inflammation. Yet Decagon predicted that it would and it proved to be true. As the team kept progressing with their study it was seen to be true in other cases as well. The team also searched the medical literature for evidence of 10 side effects predicted by Decagon and to their surprise five out of the ten had recently been confirmed, further giving impetus to their efforts regarding Decagon.

Presently, only the side effects associated with pairs of drugs are being considered by the researchers and in the future they intend to include more complex combinations of drugs. They also want to create a more user-friendly tool that can be given to doctors with an intention to guide them on whether it is a good idea to prescribe a particular drug to a particular patient who is suffering from a complex disease and aid researchers to develop drug regimens for complex diseases with lesser side effects. As per the team as of today it is sad to know that most of the side effects of drug interactions are discovered essentially by accident and they feel their work has the potential to give way to more safer and effective patient care.

SOURCE: news.stanford.edu

USFDA APPROVES INTO'S FERTILITY MONITOR

PERSONA
THEME
INNOVATIONS
WELL-BEING
IN FOCUS
RESEARCH
NEWSCOPE



For want to be parents a fertility monitor is a boon for the female partners and with this ideology INITO, a Bengaluru-based medical technology start-up launched a fertility monitor. This fertility monitor is a small device which allows smartphones to perform laboratory grade tests related to fertility with the convenience of conducting them at home. So recently Inito's Fertility monitor was given clearance by the United States Food and Drug Administration which gives way for the launch of this product in the United States and also those other countries which have signed the Mutual Recognition Agreement with USFDA.

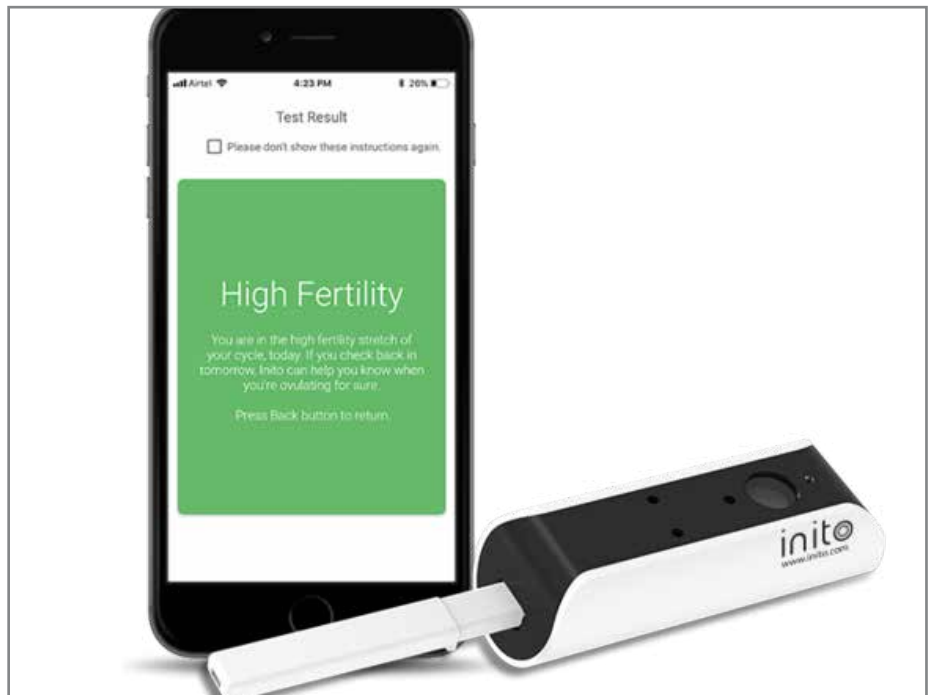
From the past one year this fertility monitor which is Inito's flagship device had been undergoing a series of clinical studies, manufacturing facility setup tests as perGMP standards and quality management system throughout the company to ensure the device's efficacy and reliability. The device measures two fertility hormones in urine which are Luteinizing Hormone and Estrogen alongwith Artificial Intelligence(AI) based data analytics in the application. The USP of the device is that it understands the cycle variations for every individual user in order to give high accuracy in

results which is unique to every woman's body. The Flat-lens technology of Inito allows dozens of tests for fertility, thyroid, vitamin D, diabetes and some more on a single device that can be connected to a smartphone.

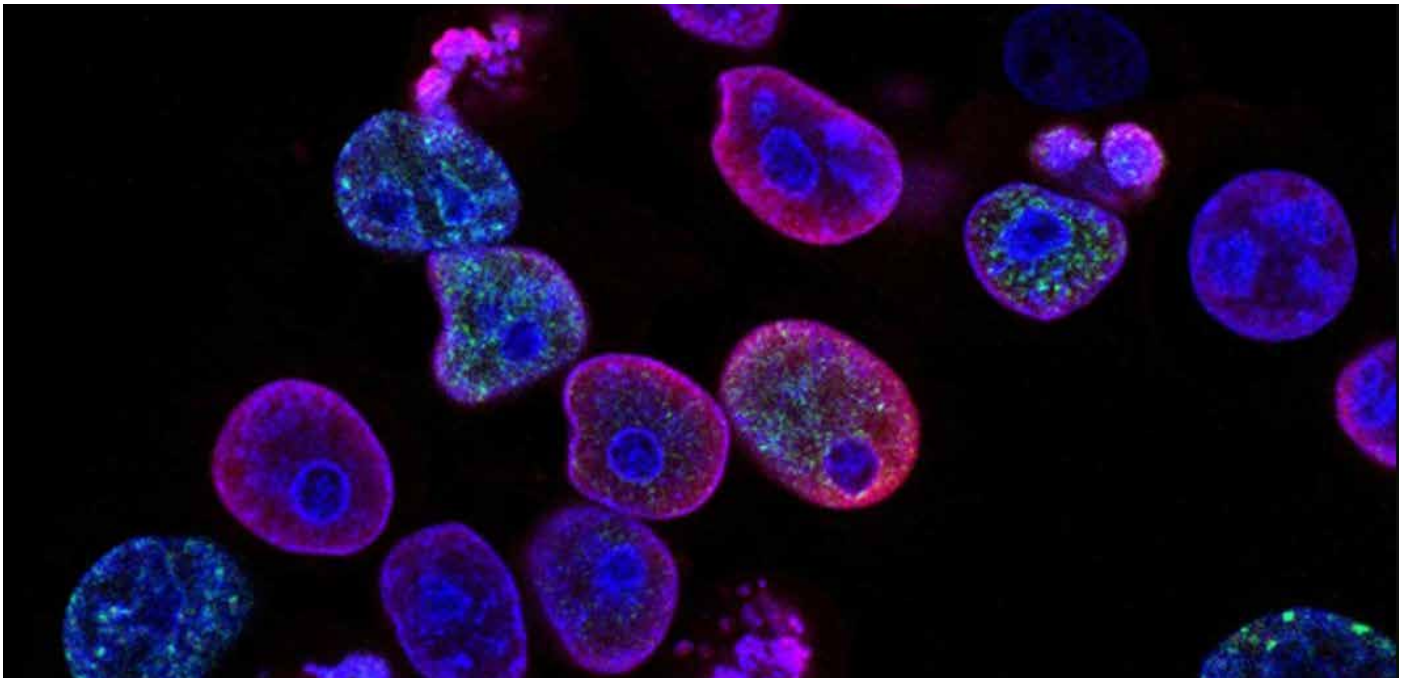
IIT Delhi conducted a study to check the reliability of this device and it

found out that the device achieves a 99.12% correlation with clinical grade instrumentations. Inito believes in times to come home diagnostics will become an integral part of the medical ecosystem and they want to be the leaders of this revolution.

SOURCE: www.timesofindia.indiatimes.com



STUDY SUGGESTS CANCER CELLS MAY EVADE CHEMOTHERAPY BY GOING DORMANT



Scientists at Weil Cornell Medicine, USA have conducted a very interesting study in the field of cancer. As per the study cancer cells have the ability to dodge chemotherapy by entering a state of active hibernation which is similar to senescence which enables them to control the stress induced by cancer treatments which are aggressive in nature and intend to destroy them. So in other words these cells may go dormant to evade chemotherapy.

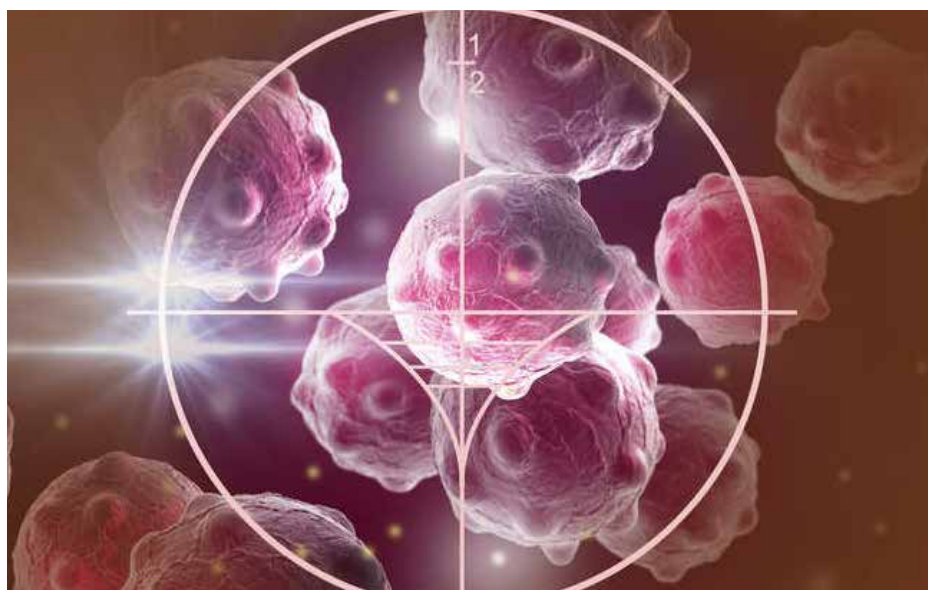
unsatisfactorily unanswered for doctors treating cancers and researchers working in the field of cancer is that why do tumours many a times reappear after they are completely treated or removed by chemotherapy? There are two theories behind this, one of which says that not all cells within a tumour are at the same genetic level that is why a small subset of tumour cells are able to resist the

treatment and the other one says that some of the cells within a tumour have special properties which allows them to re-form a tumour after the complete chemotherapy has been given to the patient. This reveals that work in the field of cancer research needs to be ongoing till answers to many medical conditions are given in a way that fulfils expectations or needs with proof.

SOURCE: www.aninews.in

The research was carried out in both organoids and mouse models made from samples of patients suffering from Acute Myeloid Leukaemia (AML) tumours. Verification of these findings was done by looking at samples from patients which were collected throughout the course of treatment and relapse. This study was published in Cancer Discovery which is a Journal of the American Association for Cancer Research in which the researchers reported that this biologic process could help them in understanding why cancers so often recur despite patient undergoing the complete chemotherapy treatment.

One question that still remains



COVID-19 SELF TESTING KIT GETS APPROVAL FROM ICMR



In India today a person going in for RT-PCR test for covid-19 can witness the rush at laboratories waiting for their turn to come which in turn can be very hazardous as the chances of spreading or contacting coronavirus increases many folds. To overcome this problem a very timely and feasible solution has been given by Mylab Discovery Solutions which is a Pune-based firm in the form of a self-use Rapid Antigen Test for COVID-19 named 'COVISELF' that can be carried out at home.

Very recently ICMR has given approval to CoviSelf which is a self-use test that can be used by symptomatic individuals and immediate contacts of cases which are confirmed as per the guidelines of ICMR. This makes CoviSelf India's first covid-19 home test kit. Each CoviSelf kit will have all testing materials, a leaflet of instructions and a biohazard bag for safe disposal of the kit after it has been used for testing. Nasal swab will be used to conduct the test instead of the nasopharyngeal swab which is very uncomfortable to the person getting tested. The results are given in 15 minutes and the test is priced at an affordable price of INR 250 per test.



The USP of this product is that it comes at an affordable price which is a fraction of the cost of such self-testing kits in the US and this easy-to-use test is combined with Mylab's AI powered mobile application which allows the user to know his/her positive covid status. Also each pack has a unique QR code which must be entered along with the test outcome to get a report on the mobile application. On top of that the result is directly submitted to ICMR for traceability and what to do next in either case of result.

The current capacity of Mylabs is to produce 70 lac test kits per week but it will increase it to 1 crore test kits by early June making it available to a large

number of people soon. Mylabs is also the company which gave India its first RT-PCR test kit in 2020 which is now commonly used for covid-19 testing pan-India. CoviSelf has been launched to overcome hurdles like eliminating the need of a healthcare professional to carry out the sample collection, ease pressures on the overburdened testing laboratories and reducing the delays in the test results which at present takes more than 72 hours in many parts of the country. The company hopes to reach virtually to the doorsteps of every Indian so that India can effectively fight the second wave of covid and save many lives.

SOURCE: www.indianexpress.com

HOW AN IAS OFFICER MADE A MAHARASHTRA TRIBAL DISTRICT OXYGEN-SUFFICIENT



A doctor-turned-bureaucrat, Dr Rajendra Bharud, the collector of Maharashtra's Nandurbar has managed to keep the district running with adequate supply of medical oxygen, hospital beds, isolation wards for Covid-19 patients and a well-planned vaccination drive at a time when the entire country struggled to meet the logistical challenges that a gasping healthcare system posed. The district collector of a small tribal-inhabited district in Maharashtra saw the deadly second wave of coronavirus

disease coming and prepared a series of contingency plan, at a time when the country, including the western state, struggled to meet the logistical challenges that a gasping healthcare system posed.

A doctor-turned-bureaucrat, Dr Rajendra Bharud, the collector of Maharashtra's Nandurbar has managed to keep the district running with an adequate supply of medical oxygen, hospital beds, isolation wards for Covid-19 patients and a well-planned vaccination drive. Today, the

district has 150 vacant beds and two oxygen plants that have a combined capacity to produce 2,400 litres per minute. Not only did the district manage to control the positivity rate of the infection but it also slashed it by around 30%. Its robust healthcare system has led many from the neighbouring region in Madhya Pradesh and Gujarat to seek admission in Nandurbar.

SOURCE: www.hindustantimes.com

IAS OFFICER IQBAL CHAHAL, BMC CHIEF & MUMBAI'S COVID HERO

Mumbai, battered by both waves of Covid 19, has of late emerged as a model of Covid management. On May 5, a Supreme Court bench of Justices D.Y. Chandrachud and M.R. Shah observed, "The BMC is doing some great work...[Other civic authorities] can learn from them." One mark of success is that against Mumbai's daily oxygen need of 230 metric tons (MT), the BMC can supply up to 275 MT per day. Effective oxygen management is one of 25 initiatives the civic body has implemented

to beef up the city's medical infrastructure and systems. Together, these protocols make up the 'Mumbai Covid Model'.

Since February 10, an unofficial beginning for the second wave of the pandemic, Mumbai has recorded around 361,000 new cases and 2,349 deaths. A positive note has been the city's low death rate—at 0.6 per cent, among the lowest in the world. On April 10, Mumbai recorded its highest cumulative active case count—92,464 cases—though the number has fallen

sharply since, to 45,534 on May 10. The city's share of new cases in the national tally has fallen to less than one per cent in May 2021, as opposed to 20 per cent in May 2020. Chahal says the BMC's success in keeping the death rate low is a result of its long-term programmes. During the first wave, contact tracing projects helped identify high-risk patients. BMC workers were able to effectively dispense medical aid to homes in some 2,300 containment zones across the city, with about 150,000 at-risk people isolated in hotels and Covid



care centres across five weeks. These efforts led to a flattening of the curve (of new cases) in July 2020. At the same time, the civic body took over bed allocation in the city's hospitals. "Mumbai is the first and probably only city where patients are [no longer] directly admitted to hospitals," says Chahal. Under the BMC's system, patients apply for hospitalisation—a team of BMC doctors then reviews each case and decides whether it warrants a bed. This micromanagement has helped the BMC ensure a supply of beds for those in need. "There is not a single case where someone who needed an oxygen bed didn't get one," says Chahal.

A protocol considered questionable at first, Chahal decided in late 2020 to scrap the BMC's central Covid command centre. He took a decentralised approach instead, setting up command posts in each of the city's 24 wards, equipped with ambulances, doctors, telephone operators and basic infrastructure to take

the fight to the streets. With each ward responsible for about 700,000 people, this arrangement effectively distributed the massive logistical burden of the all-Mumbai command centre. "We created 24 Mumbais," says Chahal, "each one equipped to fight the battle." A decision to maintain surplus medical capacity also proved wise. Mumbai has five jumbo Covid care centres across the city with a combined 10,000 beds, with an additional 40,000 in smaller nursing homes and hospitals. In early January, its largest centre, at Nesco in Goregaon, had only three patients in 3,000 beds. Though many recommended decommissioning the centres, Chahal insisted on keeping them open. As the second wave arrived, this proved wise—on May 10, the BMC had 612 ICU beds with 24x7 oxygen supply in Covid care centres, more than any other city in Maharashtra.

One piece of advice Chahal offers civic authorities is not to force hospitals to

increase their bed counts beyond the limits of their oxygen storage and delivery systems. Hospitals with more beds than infrastructure inevitably descend into chaos because of supply bottlenecks and logistical trouble, he says. "It is not the supply of oxygen but the inadequate storage that causes a problem," he says, highlighting the need for enhanced oxygen storage systems at hospitals.

As Covid cases continue to mount, Chahal's next big challenge is Mumbai's vaccination drive. The lack of supplies already creates a problem, with Pravin Darekar, leader of the opposition in the legislative council, alleging on May 10 that there was no parity in how the existing supplies were being distributed by the BMC. Chahal, however, is confident. "I have an outstanding team," he says. "We will overcome the hurdles."

SOURCE: www.Indiatoday.com

IIT BOMBAY MAKES A MASK PROTOTYPE TO REUSE OXYGEN IN EXHALED AIR

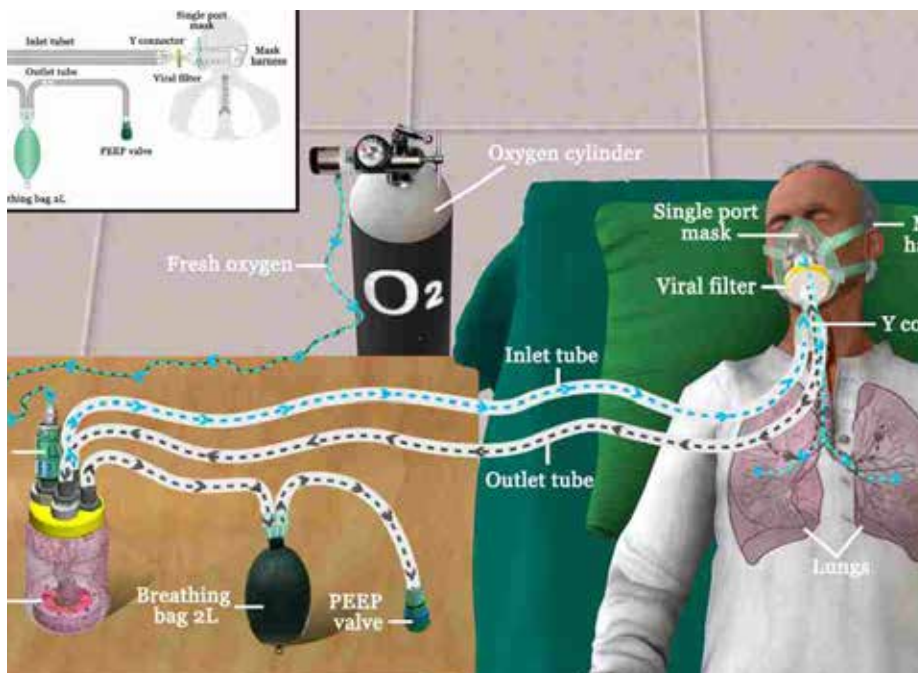
It is a known fact now that oxygen is in short supply across India and is of pivotal importance in the fight against covid-19. Taking a note of this crisis, a team of alumni and researchers at the Indian Institute of Technology, Bombay, India have made a breathing device or a mask which can reduce oxygen wastage when a covid positive patient is put on assisted breathing support like ventilators.

At the input, an adjustable venture valve is located which allows external air to be automatically pulled in based on the desired oxygen flow rate. A one port mask is attached to the patient and exhaled air is fed to a container that has medical-grade soda lime which selectively absorbs carbon-dioxide from the exhaled air and allows the rest of the air to pass through the inlet section of the system. The soda

start the clinical trials soon. The cost of a single unit of reBreather was around INR 10,000. Most of the body of the system is made of plastic and can be sanitised and reused.

As per the team this recirculation of oxygen can reduce the number of oxygen cylinders required by the patient from 9 to almost 1 per day. This calculation is based on the assumption that one cylinder holds 7800 litres of pure oxygen. The prototype has been designed by the staff, students and alumni affiliated with Tata Centre for Technology and Design, Department of Chemical Engineering and a start-up by the alumni 'Nex Robotics'. So if such efficient systems are developed and used it would prove to be a very promising step in conserving the use of supplemental oxygen which has become a very precious resource.

SOURCE: www.hindustantimes.com



The device named 'reBreather' is a semi-closed circular breathing system which would allow patients to breathe in unused exhaled oxygen that has been filtered to remove carbon-dioxide via an inlet section which pumps in fresh oxygen from an oxygen cylinder or a centralised oxygen system in hospitals. The team has used an existing technology of reusing exhaled oxygen which is most commonly used in mountaineering and diving systems to cut down on the wastage of oxygen. The push factor to conduct the study is that covid patients with severe difficulty in breathing are put on ventilators which can supply oxygen via a combination of nasal cannula and mask at a flow rate of upto 50 litres per minute. But our lungs can only absorb one litre of oxygen in a minute implying that the rest of the 49 litres is wasted or breathed out.

lime changes color once it has finished its capacity to absorb carbon-dioxide and then needs to be replaced. So far the testing of the system has been done on healthy volunteers and team plans to

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

How Blockchain can help improve care outcomes in India

■ Dr. Vikram Venkateswaran



As India deals with one of the largest pandemics in recent history there have been many instances of leveraging technology for better management of crises. A good example is the usage of analytics for daily and weekly trends. Also, the backbone of our Covid Management strategy has been the Arogya Setu App which leverages analytics, mobility and APIs to help authorities with track and trace of infected patients.

Hyderabad Based StaTwig has built a Blockchain based supply chain monitoring system to monitor the distribution of the Covid vaccines. As most manufacturers are from Hyderabad this has really helped the organisation build its product around areas like monitoring cold chain (cold storage) for the vaccine. It also helps track fake and expired vaccines as the distributed ledger system used by the Blockchain is immutable, hence it is very

easy to check the pedigree of the vaccines and prevent any mischief.

In addition to these Blockchain has many advantages that can be leveraged in India. One of those is data sharing. With US spending upwards of USD 93 Billion over the last five years in just data sharing costs. Healthcare data is complex – in part due to the non-linear nature of diagnosis and treatment, and also due to differing healthcare standards across regions in the world.

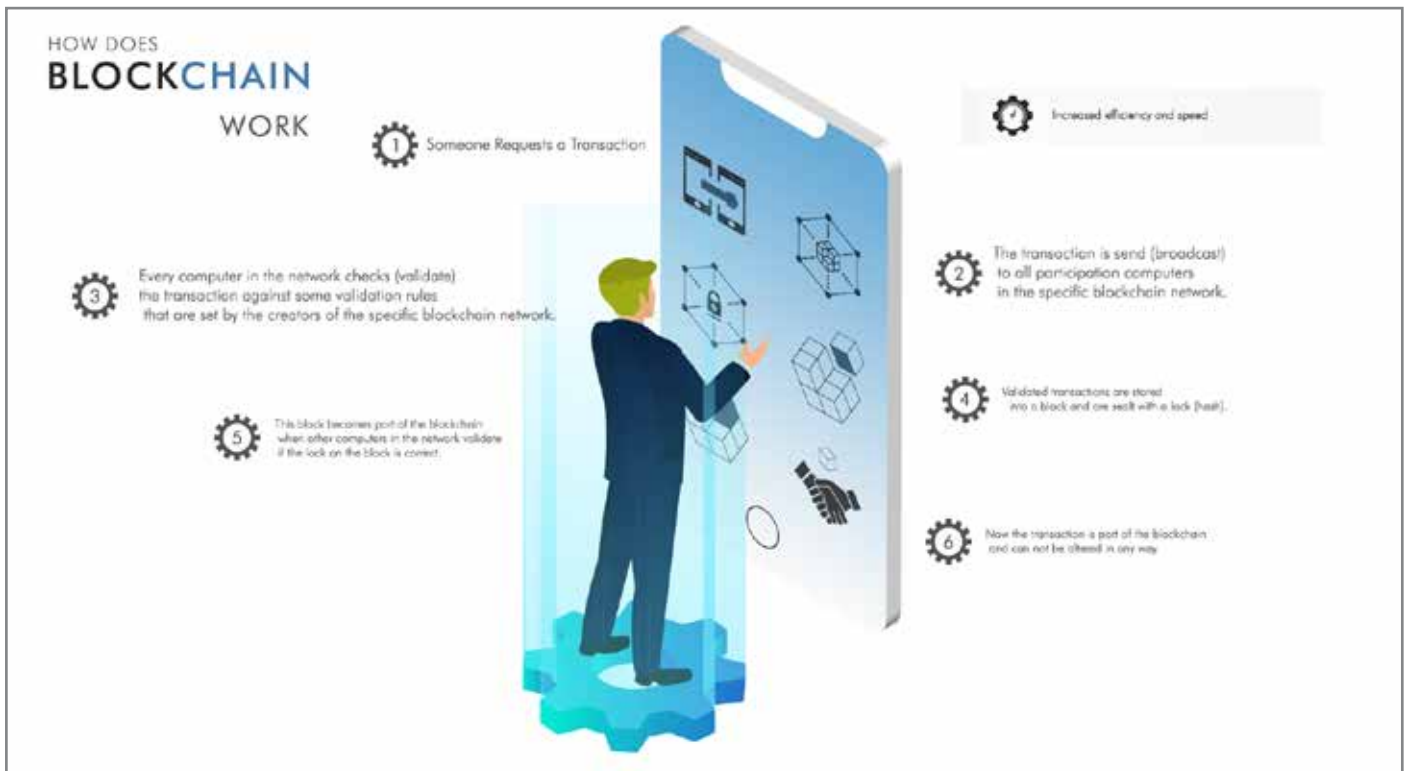
Additionally, data privacy and other related laws can make healthcare information difficult to access and share. So much so that in many countries, including India, a patient may not have complete access to his/her medical record!

Considering that the next paradigm shift in healthcare is expected to come from the adoption of digital technologies

– whether for patient experience or improved efficiency of hospital tasks – it is important to address current challenges around data sharing and access, lest they become hurdles to progress. In that context, block chain could be a savior for the industry.

For starters, blockchain allows all types of data to be integrated into the chain. This means one can add not just doctor prescriptions and treatment records but also nutrition information, fitness data, and recordings from medical devices (such as for blood pressure and diabetes patients) by patients themselves.

Over time the presence of such longitudinal patient data means caregivers can better interpret disease symptoms and prescribe effective treatment that is customized to work for the patient. Currently, doctors rely on data from treating different patients to prescribe



medication. The chances of success for such medication are about 50%. In many cases, doctors wait for feedback from patients to change the medication. With availability of longitudinal patient data, doctors would know in advance what treatments are more likely to suit a patient in line with his/her health history. There are more advantages of leveraging Blockchain for specific use cases. I am listing some of them below

1. Data and Cyber Security – Increasingly healthcare organisations are coming under stack from very sophisticated hackers. Data breaches have resulted in many public health records being put up on the dark web as well as on public domains.
2. Post-Operative Care- One of the areas of concerns in healthcare remains the adherence of the patient to the post-operative care instructions. While the physician can give the instructions, the adherence to them remains a big issue.

3. Health Insurance Contracts- Health Insurance is its ascendancy in India and we see instances of increased coverage. The Health Insurance contracts are the key to providing care and making sure that the provisions of the contracts have been met
4. Clinical Trials – Blockchain can help accelerate the research and speed to market for clinical drugs and vaccines

I think we have made a start but most Blockchain initiatives are still in the POC stage in Healthcare. But earlier this year the government of healthcare launched the document on the Blockchain Strategy for India. I had the opportunity to comment on some of the key recommendations of the strategy. I also laid out some of the key recommendations on how Blockchain can be implemented in the healthcare ecosystem. Some of them are listed below:-

1. Incentive for the adoption of Blockchain- Help healthcare

organisations adopt Blockchain with incentives in the form of tax breaks and help with technical adoption

2. Standards for Blockchain for healthcare- Clarity of the position in case of draft data privacy bill and DISHA
3. Legality of Smart Contract- Clarity on Smart Contracts and how they can be implanted in healthcare
4. Industry – Academia- Push academia to move into emerging areas like Blockchain. Engineering colleges are still teaching redundant technologies and not focusing on emerging ones

In conclusion, I believe healthcare can immensely benefit from Blockchain. The need of the hour is to provide the necessary guidance and standards both from policy, technology and processes for its implementation and development.

Hyderabad Based StaTwig has built a Blockchain based supply chain monitoring system to monitor the distribution of the Covid vaccines.

Dr. Vikram Venkateswaran is a doctor turned technologist. He is the founder of Healthcare India, a research and analysis think tank that works in the public health space.

The unrivaled power of Faith and Gratitude

■ Veena Joshi



Yesterday, I completed the compulsory isolation period of one week after returning from a 12-day hospital stay for moderate covid treatment with Oxygen support as lung involvement / pneumonia had developed. Prior to this, one week was the home treatment protocol, when I was detected Covid positive. In fact, isolation had started even a few days' earlier to test reports being received on the slightest hint of symptoms when lots of my office staff were reporting positive.

So it was a day of Special Gratitude, although Gratitude has been the attitude since the beginning.

Gratitude, that it was only me in the family, who tested positive and rest were spared by the Grace of God.

Gratitude, that my infection did not spread to them as good sense somehow prevailed and I isolated early at home.

Gratitude, that we had the advice of an experienced Covid physician and support of my doctor sister to navigate this journey.

Gratitude, that one of our helpers had just been through Covid with mild disease a fortnight back and by the time it struck our home, he was free from Covid and non-infectious and offered to stay with us and take care of household chores while other part time helpers could not be called as our family was quarantined and advised to stay home.

Gratitude, that so many people who had just navigated the disease advised me to

watch the symptoms and take early or timely action.

Gratitude for my former Boss, who brought to my notice the 6 min walk test, when I told her about my becoming Covid positive on 20th April, when not many knew about this test and were simply monitoring resting oxygen saturation readings. This information became a lifesaver for me because when my oxygen dropped to 84 even on going to the washroom for 5 minutes, I knew it was time to seek a hospital bed.

Gratitude to God that good sense prevailed and I was aware that I had to perceive how I was feeling from inside and not just rely on the readings of the thermometer or oximeter or what the predicted course of the disease would be.

As soon as I felt pain in my chest worsening and on regularly inspecting the sputum coming out on coughing, noticed that from yellow to greenish yellow it was now coming out tinged with blood, I somehow knew that I would be requiring hospitalisation. Search for a hospital bed and mental preparation for the hospital stay could thus be started.

Gratitude that CT and blood tests were done on the correct number of days from start of symptoms so that medications, mainly intravenous steroids and remdesivir could start and control the infection. I am finding out now that if there is delay in hospitalisation, the course of Remdesivir cannot be given or does not have any benefit. Timely use of steroids also saves the lung function from irreversible deterioration.

Gratitude, that being a Government Servant, I was able to find a bed in the best public hospital in Delhi, even if it was in the general ward.

Gratitude, that when the lonely journey of test of my faith in my God and his will for me started, as my husband dropped me at the hospital emergency and I was taken inside on a wheelchair, I had the blanket of prayers, love and concern of so many loved ones, well-wishers and friends accompanying me to the Covid isolation ward.

Gratitude and faith in the medical professionals and care-givers in the hospital. That despite their cumbersome PPE kits and exhausting duties attending to the heavy patient load at the time of the peak of the most virulent wave, they were dealing with us so patiently and professionally without discrimination or favour to anyone.

Gratitude, that I was able to keep my wits about me and focus my energies into assisting what the medications and doctors were doing. I remembered to be calm, talk less, recollect what I knew about infection affecting the body and try

if I could bring my more than 10 years of Yog practice into practical benefit in the hospital situation where I was tied up to the bed, with the oxygen pipe like an umbilical cord. I realised that I should be avoiding sugary food like cookies and juices which could increase the secondary infections.

I have advised my neighbours also accordingly because the concerned families were sending over packed juices and cookies and other snacks for their family members in the hospital. While most of them were on steroids, their sugar levels were already higher than normal. I tried to adopt a few relaxing yoga body postures while in bed, like sitting in a butterfly pose of legs so that chest and groins are opened and relaxation and calm of Baddhakona asana with back supported by inclined bed & pillows, opens the chest and pelvic area to give relief from chest pain, tightening and causes stomach & intestines and nerves to relax, aided with application of ayurvedic massage oil.

Gratitude for the jovial Ward boys ,who sometimes joked with the patients to make the mood lighter and bring a sense of homeliness to the tense and nervous environment. Gratitude for my neighbouring patients, who kept a watch on me and guided me about how to seek assistance from the care-givers, when I newly arrived in the Covid ward and also to the new entrants, who gave me the opportunity to help them similarly.

Gratitude ,that this stay in a public hospital general ward made me realise that it is most imperative that we citizens demand from our Government better healthcare facilities in a public setup and ensure that our medical fraternity working in public setup, who are the most competent doctors & nursing staff, are given best training, best facilities, timely recruitment and promotions and the respect that is due to them from the bureaucracy and public.

In my humble opinion, in a country

like India merely making five-star hospitals and a private insurance-based hospitalisation model will not be an effective solution. The citizens have to make the Government & Politicians accountable for what matters the most.

I experienced that my unwavering faith in the Universal Soul or the Supreme being, whatever form one may visualize it, made me face the diagnosis with courage and a sense of responsibility for my own healing with the assistance of the doctors and medicines. I felt that my God is there holding my hand through this, like my father and mother would when I was young; and whatever he has decided for me, I am under his protection and should accept his will. If the doctors and the medications are trying to heal me then I also have to channelise my inner strength and energy into healing myself consciously with positive thoughts to calm emotions and not get agitated and succumb to fear of the disease and the worst that could happen.

I firmly believed that this attitude helped me in remaining upbeat in the hospital and in early recovery from covid pneumonia. I also observed that other patients who were doing prayers or listening to spiritual music were calm and composed and recovered well. A few youngsters, I know of, have had panic reactions and gone into a traumatic state and stopped eating well and this has probably led to further complications in their disease prognosis. Prayers for the souls we have bid a goodbye to this pandemic.

Veena Joshi is an officer of Indian Revenue Service and presently posted as Commissioner of Income Tax in New Delhi. She practices Iyengar Yoga, upcycle and create beautiful objects of household use. Her interest lies in Indian Arts and Philosophy. In this present article she defines her near-death experiences due to prevailing pandemic and the unfathomable power of faith and gratitude. Her motivation and continuous strive to cross the threshold of death is an inspiration for everyone. We at InnoHEALTH are happy to be her platform for the numerous people who are still fighting for their life in this new normal.

Gratitude to God that good sense prevailed and I was aware that I had to perceive how I was feeling from inside and not just rely on the readings of the thermometer or oximeter or what the predicted course of the disease would be

The journey of striving through the COVID

■ Dr. Amit Raj



Transformation occurred after COVID

In the lockdown, while I was on regular OPD and ICU rounds at COVID hospital, I started noticing some mild symptoms of the Coronavirus.

Being in the medical field and considering the severity of the pandemic situation then, I was very careful and cautious, and observed the symptoms closely.

The symptoms persisted and I had to self-quarantine myself until the medical test reports came. It was important for me to isolate myself from the rest of the medical team and prevent the spread of the virus. Finally, the report came: I was COVID positive!

Stunned and slightly devastated; I broke the news to my family who could not believe it either. As a doctor, I could only treat, comfort and empathise with the COVID patients undergoing treatment; completely isolated from their loved ones.

But now, I could actually feel the

uncertainty of the situation.

I was hospitalized and continued to experience body-ache during the admission. It was a stressful situation where I felt anxious and stressed about everything!

My CT scan reports showed mild lung infection on the day of admission but as the cytokines storm developed my lungs were 76 % damaged in 3-5 days and I was short of breath and my oxygen level deteriorated to less than 80.

Got shifted to ICU with hi flow oxygen and was on a bipap machine which I had purchased a few weeks ago for the hospital and never imagined that I will be using it for myself one day.

My team panicked and they were looking for air lifting me to either Chennai or Delhi or Bangalore whichever higher centre available to bring me out of danger. As hours passed by, I could see the pain

all round.

The two patients lying in my neighbouring beds in ICU were the one whom I had medically consulted a few days back.

The following night, the patient next to me who was on a ventilator expired and that was the same patient I was treating.

This death devastated me from within and I felt as if I was unknown to what was going to be instored for me next. Slowly started to lose hope as I was on the Bipap machine for continuous hours and was becoming weak with every passing hour.

Got the courage to inform my Doctor friends that I shall stay in the same place and would face the consequences.

The worst nightmare was still awaiting. Suddenly due to shortage of oxygen the pressure in the oxygen lines started falling and for a few minutes I was gasping for breath.



Luckily, my nurse incharge due to his good presence of mind has put all ICU patients on cylinders till the main line oxygen pressure was restored. I could see death in front of my eyes but wanted to stay strong mentally therefore I was praying and motivating myself with the thought that I have a purpose to live for.

Few days passed and slowly I was recovering and was off the bipap. Shifted to ward with high oxygen flow.

Parents were in Delhi and virtually I could see them after a few days on a video call. They almost cried on seeing me. Loved ones cheered me through the video calls.

Had immense trust in my Nursing Team and Doctors.

Followed the bombardment of Remdesivir, antibiotics, Pentaglobulins etc.

The storm of Steroid effect started on me with extreme weakness and rapid weight loss.

My ward boys and nursing guys took good care of me irrespective of the working hours.

Fortunately, after 15 days of treatment, and taking proper care and precautions; I was tested COVID negative.

Looking back to those days, I feel that the unpredictability of the Coronavirus situation, the uncertainty surrounding the disease, and the isolation period at the hospital was the main contributor to stress and anxiety rather than the virus itself.

And then I realized that it is only the mental strength, persistence and will-power which can make you thrive through each day.

I am recovering slowly from my weakness now and have started focusing on building mental and physical fitness.

My take-away from the whole experience was that one should work on their

immunity, mental health, improve quality of life and always be positive. Stand up to the highest challenge and face the darkest phase of life with courage.

Where is God no one has seen, but when I prayed in my helpless situation and was bestowed with innumerable blessings when my nursing boys brought nutritious food for me from their house (as parents were away in Delhi).

The need for Remdesivir and was organised by people whom I hardly met ever.

These real-life experiences make you believe that truly there is power named God and he listens to you.

Lots of lessons learnt. Made new friends and lost loved ones in this pandemic wave.

As hours passed by, I could see the pain all round. The two patients lying in my neighbouring beds in ICU were the one whom I had medically consulted a few days back.

Dr. Amit Raj is a critical care Specialist and Cardiologist by profession, working in the Covid Intensive Care Unit at a hospital in Rajkot (Gujarat). An inspiring journey of a forefront worker will inspire you to believe that there is a light at the end of the dark tunnel and it is our determination to hang on that will strive us through.

► IN FOCUS

A Myth Buster on Bronchial Asthma and Its Treatment

■ Dr. Mitchelle Lolly



Asthma is an inflammatory airway disease characterized by wheezing, shortness of breath, cough and chest tightness. It affects about 300 million people globally from all age groups, with an increasing prevalence in developing countries. Viral infections, allergens at work or home like house dust mite, pollens etc., smoking, exercise and stress are the main factors that trigger or worsen asthma.

The main aim of treatment of asthma is to achieve 'control' of symptoms. This includes minimal daytime and nocturnal symptoms with ability to perform any physical activity without much limitation. Inhaler therapy with corticosteroids is "the treatment" to attain asthma control.

However it is often noted that, patients visiting us are frightened by the very word "asthma" and they will be asked an array of questions like "will my asthma be cured?", "will I be addicted to inhalers?" etc. These questions are myths that need to be busted.

World Asthma Day celebrated on May 5 2021 is based on the theme "Uncovering Asthma Misconceptions". Hence this article comes with an aim to focus on some common myths on asthma and their real facts.

MYTH #1: Asthma can be cured.

FACT: Asthma can be well controlled.

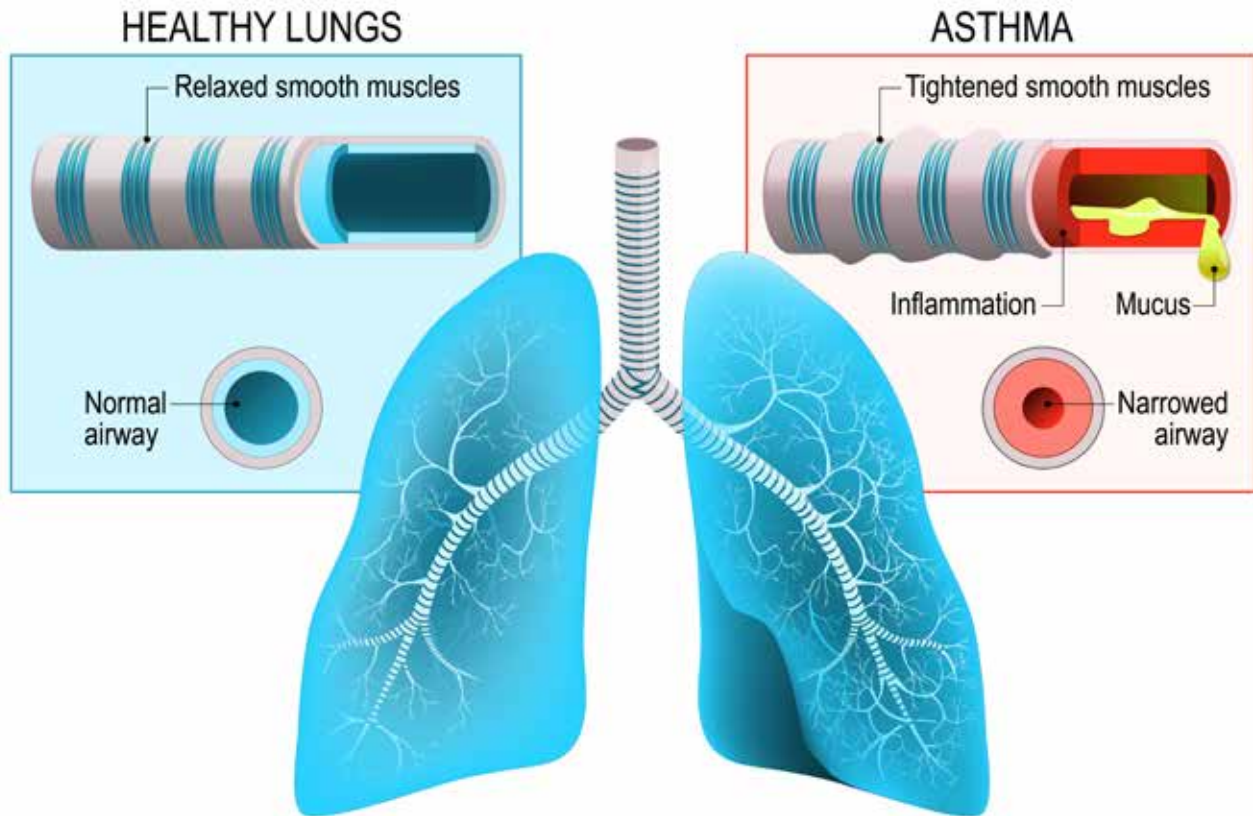
Asthma is a chronic condition with the

symptoms varying over time and can be intermittent or disappear due to changes in the body or environment. The treatment of asthma is aimed at optimum control of symptoms. Inhaled corticosteroids are the mainstay of treatment. If the asthma is well controlled on assessment by a regular follow up every 1-3 months, inhaler therapy can be stepped down from a 'daily regimen' to even 'as and when needed regime'. However, symptoms can resurface at any time and stepping up off treatment may not be completely eradicated.

MYTH#2: Asthma medications need to be taken only during symptoms.

FACT: Asthma medications need to be taken regularly with tailoring of

ASTHMA



treatment based on patient’s ‘asthma control’ when regularly followed up by a pulmonologist.

Asthma medications i.e. inhalers are divided into two – controller and reliever. Controller inhalers containing inhaled corticosteroids which need to be taken regularly and are necessary for asthma control. Reliever inhalers can be used during flare up of symptoms as and when required. The current ‘SMART’ therapy (Single Maintenance And Reliever Therapy) mentions the use of corticosteroid-containing inhalers as both controller and reliever therapy. These controller inhalers need to be taken regularly to achieve a well controlled asthma.

MYTH #3: Physical activity/ sports should be limited if you have asthma.

FACT: A well controlled asthma allows you to lead a normal, healthy life – including regular exercise .

As mentioned earlier, a well controlled asthma enables us to perform any physical activity with ease. If you have any difficulty in performing a physical activity it means that your asthma is not in control. In fact regular exercise prevents obesity, makes your heart and lungs stronger and improves your immune system. Obesity makes asthma control difficult.

It is noteworthy to mention sportsmen like David Beckham and Michael Phelps who overcame asthma, thus emphasising a combination of exercise and medication for good control.

MYTH #4: Inhalers can be addictive. FACT: Inhaled corticosteroids are not

habit forming / addictive.

Corticosteroids used in inhalers are a copy of the steroids that are normally produced in our body. Regular use of these medications does not cause addiction and are often needed to bring down airway inflammation and achieve asthma control. Early discontinuation can cause symptoms to reappear and hence should be used as prescribed by the doctor.

MYTH # 5: Inhalers are ‘strong medications’ and are the last resort for the treatment of asthma.

FACT: Inhaled corticosteroids are the first and the best medication to control symptoms with steroid doses in micrograms.

Inhaled corticosteroids are the cornerstone in the treatment of asthma.



Corticosteroids in inhalers are in microgram doses as compared to tablets/syrup which are in grams. Moreover as they are inhaled, they provide rapid relief of symptoms and reduction in airway inflammation needed to achieve control.

MYTH #6: Inhaled steroids cause weight gain, increased blood sugars, growth stunting in children and other side effects as seen in oral steroids.

FACT: Inhaled steroids reach our lungs only in minimal amounts with no systemic side effects.

As mentioned previously, inhaled

corticosteroids are available in microgram doses. On inhalation only 20% of this dose will reach our airways and lungs with the systemic absorption being almost nil. Hence systemic side effects as seen in oral steroids are never present.

With regard to stunting of growth in children, studies have shown that a very minuscule percentage of children with asthma on regular inhaled steroids have 1 to 1.2 cm less height than their normal percentile in the long term. BUT, it should be remembered that if asthma is uncontrolled then the reduction in height can be much more.

These are the common myths faced by us which have to be communicated appropriately. Therefore an early diagnosis of asthma and an adequate treatment plan with inhaled steroids can help any individual lead an active, normal and unrestricted life without impeding physical and psychological development.

Dr. Michelle Lolly is a pulmonary specialist and is currently in Kochi.

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

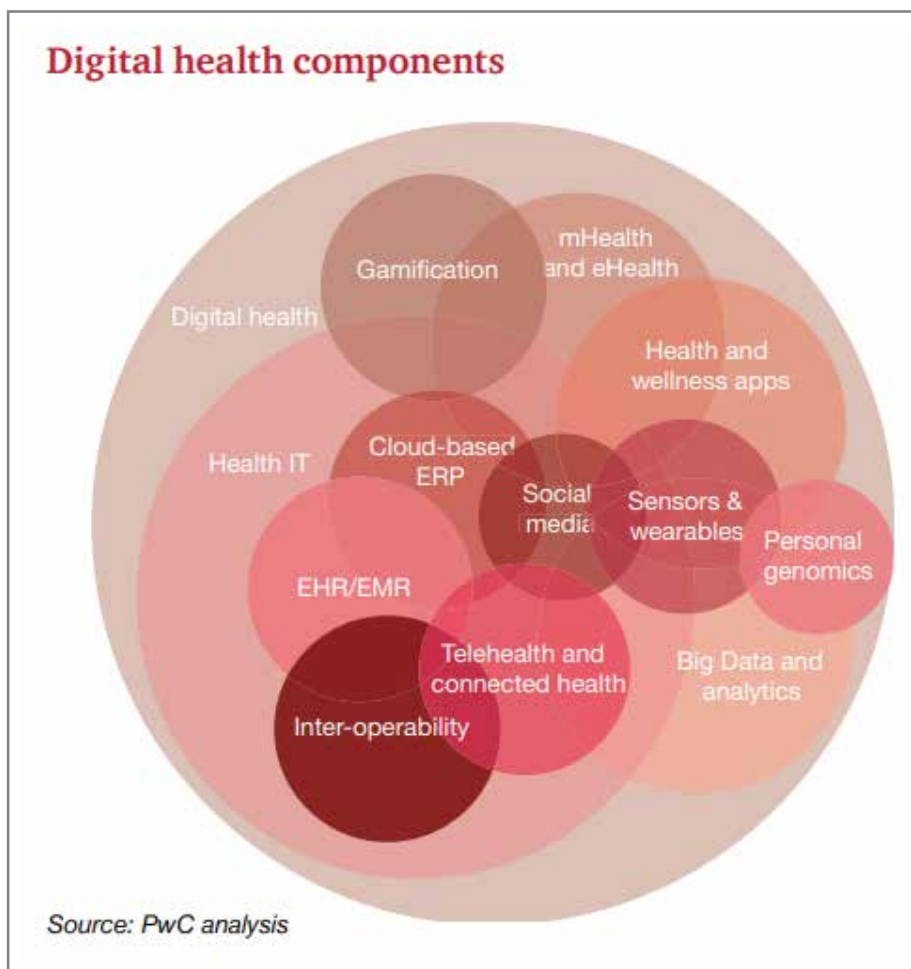
Rate card
innohealthmagazine.com/advertise/sponsored-content-rate-card

magazine@innovatiocuris.com
+91 9711777328

► RESEARCH

Digital Adaptation in Healthcare: Opportunities, Use Cases, Implementation Challenges and Suggestions

■ Vishal Satish Aggarwal



The National Digital Health Mission of the Government defines digital adaptation in healthcare as the creation of an ecosystem supporting universal coverage in an efficient, accessible, affordable, timely and safe manner, providing wide range of data, information and infrastructure services, leveraging open, interoperable, standards based digital systems, while ensuring the safety, confidentiality and privacy of health-related personal information. The above definition, with its *wide breadth and critical nuances*, provides some clue regarding the different aspects that

digital adaptation needs to take care of in the case of healthcare, ranging from coverage, access, affordability to interoperability and data security.

Apart from all these challenges, the gains seem to be appropriately high too. Telemedicine can solve the accessibility issue, virtual clinics can drive down the cost, *Electronic Medical Records* can improve the quality of information available to doctors and hence the quality of care, wearables can aid in faster diagnosis.

A study found that considering the low proportion of Doctors in India (Doctor:Population ratio of 1:1456 against the WHO recommended 1:1000), *digital solutions can free upto 15% medical professional time*. The opportunities are truly endless from that aspect.

Opportunities

Opportunities lie in the areas of Management (resource allocation, monitoring, process improvement), Security (data protection, replication, large scale secure storage), Legal and Administration. Whether it is *Healthcare Information Systems, Medical Devices or platforms for Collaboration*-Digital Adaptation can improve care delivery by leaps and bounds. Electronic Medical Records will provide real time up to date patient information, thus reducing the information asymmetry, medical



devices like sensors, wearables, surgery robots, BioMed devices can help with the diagnosis and treatment, the technology platforms can help with collaboration through remote medical facilities, instant messaging, telemedicine and records sharing.

Exemplary Use-Cases during Covid-19

Using Cloud, AI & ML to predict Covid-19 waves: Providence St. Joseph Health, the 3rd largest health system in the US, entered into a strategic alliance with Microsoft, harnessing the power of Microsoft Azure and Artificial intelligence(AI) to transform patient-centric care. They used the native Machine learning (ML) and AI capabilities of Azure to analyze their data and forecast which hospitals and clinics would need emergency shipments of PPE kits and

ventilators before the start of the new COVID-19 waves emergence and it could *predict waves 2 weeks in advance with 85-90% accuracy* based on patient generated data.

Triaging Covid-19 patients: Many hospital and health care systems have employed chatbots and cameras, equipped with AI and ML algorithms to triage the patients based on probability of infection, severity of symptoms and other factors. This has also helped in efficient allocation of scarce resources during the pandemic. Some notable examples are *PSJH's Grace chatbot, Partner's Healthcare and Florida's Tampa General.*

Indian Hospitals

Apollo Hospitals: Has embraced Internet of Things (IoT) and digital technology for Telemedicine, disease management, real

time patient tracking through '*Patient Mantra*', a RTLS/RFID based solution for tracking movements of patients through a series of diagnostic procedures.

AIIMS: Simply by shifting to online registration, waiting times have been reduced. The AIIMS AVC clinic allows patients to have video consultations rather than in-person visits, making care more accessible.

Fortis: Using the hospital's app, patients can obtain information on physicians and services provided by the Fortis Network, and can use the information to choose and make appointments with the Doctors.

Manipal Hospitals: It's mobile app not only manages payments, but also provides central access to medical reports and can help in tracking health vitality. Manipal Hospitals has also adopted IBM's Watson to recognize patterns in images of human tissues for better diagnosing of cancer.

Challenges for Implementation

The above opportunities and use cases are not without their challenges. Below provides a brief discussion, aided by comments from leading Doctors and industry experts.

Telemedicine can solve the accessibility issue, virtual clinics can drive down the cost, Electronic Medical Records can improve the quality of information available to doctors and hence the quality of care, wearables can aid in faster diagnosis.



Data Security: Cyber security threats associated with electronic medical records can hamper digital adaptation. Health records fall in the category of *Personal Identifiable Information*; thus any leakage will result in grave consequences for the patients. The concern is all the more heightened due to the high value placed on medical data in dark web transactions.

Lack of Human Touch: Healthcare is first and foremost human. It is important to understand that healthcare is personal and even if a robot diagnoses a disease correctly, people might not be satisfied due to the lack of human touch. Another issue are the grave consequences in case of wrong diagnosis or errors in the process, unlike the manufacturing sector.

Interoperability and lack of standards: Dr. Arpit Paliwal, Director of Happy Reliable Surgeries feels that lack of interoperability due to missing standards like DICOM for data production and sharing lead to issues of adoption.

Documentation: Dr. Arvind Kasargod of Cloudnine Hospitals suggests the need for better documentation, especially of outpatient clinics (the responsibility of documentation of outpatient

clinics is that of patients) to facilitate digital health card and digitization initiatives.

Lack of incentives: Absence of stakeholder buy-in and adequate incentives for care providers to adopt digital solutions can lead to lower adoption of the technology. Even in cases of adoption, inadequate commitment can lead to issues and can hinder benefits. Hence, it is important to manage incentives, and ensure that decisions are taken while keeping the long-term vision in mind, rather than based on a transactional approach.

Other challenges: Issues of unclear and delayed returns on investment, huge upfront cost, scarcity of AI talent, complex stakeholder relationship management further complicate the above.

Talent Management to facilitate Digital Adaptation

It is important to have leadership buy-in, who can drive digital adaptation throughout the organization. Many health systems have senior executives holding the posts like *Chief data Officer, Chief Digital Officer* for this purpose. This not only legitimizes the leadership's drive for

digital adaptation, but also helps better planning and implementation. Cross industry hiring from the technology sectors can also help with implementation of better technology.

Roadmap/Checklist for the Digital Adaptation journey

Analyze the baseline: Evaluate what you already have and what is working well

Needs Assessment: Determine the issues, reasons for action, the desired state and the gap

Chart a roadmap: Chart out the detailed roadmap for adaptation by involving stakeholders from all levels including doctors, nurses, the Board and patients.

Experiment and implement: Conduct small scale experiments/trials to ensure adoption and resolve the complications and implement the refined solutions.

Ensure ongoing support for continuous improvement: Ensure the solutions suggested get actually adopted and become a core part of the hospital's processes. Build a culture for continuous improvement, going through the above cycle.

Many hospital and health care systems have employed chatbots and cameras, equipped with AI and ML algorithms to triage the patients based on probability of infection, severity of symptoms and other factors.

Vishal Satish Aggarwal, student from Section B of HCOM course in IIM Lucknow is working under the guidance of Prof.S.Venkataramanaiah.

Why are some babies born with heart defects?

■ Malka Breidenstein



What Factors are Responsible for an Infant's Heart Defect

Some babies can be born with heart defects due to one of the pregnancy complications. The complications in a baby's heart are referred to as Congenital Heart Defects (CHD). There is no reason why some babies are born with heart defects. However, the abnormalities in the number of baby's chromosomes and some other factors may affect a baby's heart.

What is Congenital Heart Defect?

During fetal development, the heart and the blood vessels of a baby may not grow properly. Possibly, the passage of blood inside the heart or vessel is blocked. In such a scenario, the blood runs abnormally through the heart or the parts that are yet to develop.

CHD is an abnormality in a neonatal. It can affect the heart walls, heart valves, and blood vessels of the baby. The abnormal formation of the heart during a baby's growth in a womb is responsible for Congenital heart defects.

Mainly it occurs due to gene or environmental factors. However, the reason for heart defects in babies is unknown in eight out of the ten cases.

Reasons for heart defects in babies

While your doctor doesn't know why your baby has a heart defect, the cause can be any of the following.

1. Single Gene Defect

One cause of a baby's heart defect is gene disorder. A person has around 70,000

genes in each cell of his/her body. Genes are responsible for controlling our traits. They can also lead us to understand several health concerns.

A number of health issues may occur due to a single genetic disorder. This genetic disorder is known as a syndrome. One of the most common symptoms of a baby's heart defect is Down's syndrome.

Some of the genetic syndromes with higher heart defect rates are listed below:

- Marfan syndrome
- Noonan syndrome
- Mucopolysaccharidoses
- Smith-Lemli-Opitz syndrome
- Holt-Oram syndrome
- Alagille syndrome
- Ellis-van Creveld syndrome

Some other genetic syndromes are not



associated with single gene defects but can lead to heart defects. They are:

- Goldenhar syndrome (hemifacial microsomia)
- CHARGE syndrome
- VACTERL association

2. Chromosome Abnormalities

There are around 46 chromosomes in each cell of a person's body. These structures contain genes. Chromosome abnormalities occur when you have too many or less than normal chromosomes. It leads to chronic health concerns and birth defects. When a part of the chromosome is missing, it leads to structural defects in infants.

The issues in chromosomes are responsible for genetic syndromes. It often leads to a higher risk of heart defects in babies.

Following are some of the chromosomes syndromes associated with Congenital

Heart Defects:

- Down's syndrome (trisomy 21)
- Trisomy 18 and trisomy 13
- Williams syndrome
- Turner's syndrome
- Cri-du-chat syndrome
- Wolf-Hirschhorn syndrome
- DiGeorge syndrome (22q11)

After a chromosome analysis is done with the help of a blood sample. It analyzes for a chromosome abnormality in a baby with a CHD. It shows if chromosomes are the culprit.

3. Maternal Factors

In the process of fetal development, when your baby's heart is in a growing stage, a Congenital heart defect may occur due to maternal factors.

Maternal factors for congenital heart defects may include:

- Environmental substances
- Medical Conditions
- Habits like smoking and alcohol consumption
- Viral infections during pregnancy
- Obesity

4. Family history

The risk of congenital heart defect increases by three times if there is a family history of heart defect. In each pregnancy, a parent's heart defect promotes 50% chances of developing congenital heart defects in babies. Similarly, there will be a 50% chance that your baby will not be affected by your congenital heart defect.

1% of neonates are born with congenital heart defects. The reasons can, however, be hidden, but the treatment is possible. Your doctor may advise you on medications, surgical treatment, or combinations of both. It may vary from the severity of the defect.

CHD is an abnormality in a neonatal. It can affect the heart walls, heart valves, and blood vessels of the baby.

Malka Breidenstein is a Content Writer and writes blog about health-related articles.

Eco-Innovation

■ Prof. Dr. Hubert Rampersad



same thinking we used when we created them”. The difference between traditional way of thinking and eco-design thinking. Eco-Design Thinking is the creative process of empathizing with yourself, the end user, and the environment.

The new normal requires sustainability in innovation. The first rule of sustainability is to align with yourself, to continuously perceive what you do and be aware of the influence of your behavior and actions on human beings, animals, plants and the environment. This entails personal integrity and is the foundation of eco-innovation. It’s about embedding authenticity, personal integrity, empathy, agility, and inclusion in innovation.

Eco-innovation is a holistic approach of innovation that makes the link to personal innovation, corporate innovation and social innovation, as shown in this figure. Three types of innovation as follows:

Personal Innovation- the process of unleashing your creative potential, creating new personal opportunities, disrupting your existing target market, that lead to a significant social impact.

Corporate Innovation- the application of new ideas to create new products, processes, or services, that lead to increased corporate value. Incremental Innovation, Radical Innovation, Open Innovation, and Disruptive Innovation are all part of Corporate Innovation.

Social Innovation- the process of developing and implementing new ideas and solutions that aim to meet social needs and strengthen civil society.

This figure shows how in this model personal innovation, corporate innovation, and social innovation are interrelated, and associated with self-learning, organizational learning, and community learning, respectively..

The core of eco-innovation is a new way of thinking, which I called eco-design thinking. *Remember what Einstein said: “We cannot solve our problems with the*

Traditional design thinking approaches are mainly process-driven, focused on analytical thinking and they follow design steps, cozy meetings, how to complete related tasks in certain order and how to use design tools. They do not inspire imagination effectively. Cozy meetings are not always needed to generate great ideas. The best ideas come when you are alone. I have developed many great ideas in the past thirty years when I was alone. Nikola Tesla generated tons of innovative ideas when he was alone. Stephen Hawking made great discoveries from his wheelchair and Sir Isaac Newton discovered gravity while in social isolation. Especially in the Corona era you need to be able to develop great ideas during these difficult times while you are in social isolation.

Innovative designs and successful implementation of these designs need an authentic, holistic, cyclic, iterative, and concentric approach. An approach in which personal innovation, personal

Business Thinking

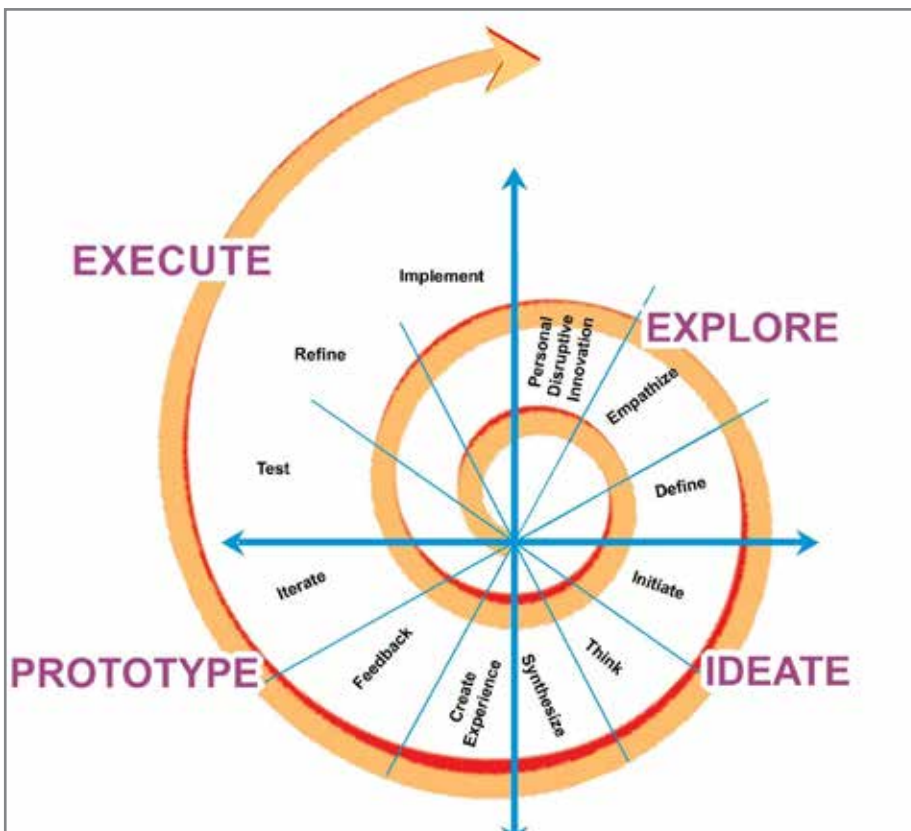
- Using left brain
- Rational & analytical
- Focused on analysis
- Focused on parts
- Focused on knowledge
- Thinking inside the box
- Closed mindset
- Have a big ego
- Human carelessness



© Hubert Rampersad

Eco-Design Thinking

- Using both brain sides
- Emotional & intuitive
- Focused on synthesis
- Holistic focus
- Focused on imagination
- Thinking like there is no box
- Open mindset
- Are humble
- Focused on empathy



disruption, and personal integrity are embedded. You need to understand that all knowledge starts with self-knowledge, all learning starts with self-learning, all innovation starts with personal innovation, and design thinking without personal integrity is not empathic. And without empathy there is no sustainability.

This is the eco-design thinking model that is more suitable for a sustainable circular economy. It entails an iterative, incremental, cyclic and concentric process of exploring, ideating, prototyping, and executing. In the new design thinking model you iteratively create a rough product or process piece in one iteration, then review it and improve it in the next iteration and so on until it's finished.

Prof. Dr. Hubert Rampersad is a Harvard Business School endorsed author of many books published in many languages and former MIT Sloan guest lecturer. The title of his latest book is "Authentic and Holistic Design Thinking for Personal, Corporate, and Social Innovation; A New Design Thinking Blueprint that Inspires Imagination, Creativity and Innovation" (2020).

This entails personal integrity and is the foundation of eco-innovation. It's about embedding authenticity, personal integrity, empathy, agility, and inclusion in innovation.



WHY VIRTUAL EVENTS?

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

▶ NEWSCOPE

LATEST NEWS IN HEALTHCARE

PFIZER'S NEW AT-HOME PILL TO TREAT COVID COULD BE AVAILABLE BY END OF THE YEAR

Tackling the COVID-19 pandemic requires both prevention via vaccine and targeted treatment for those who have contracted the virus. Given the way that the virus is mutating and with its impact globally, it looks like that it will be critical to have access to the therapeutic options both now and beyond the pandemic. Hence, Pfizer has initiated phase 1 study of its novel oral antiviral therapeutic agent against Sars-cov-2. On the brighter side, if this proves to be as effective as it claims, it would be a boon to the healthcare system as it would curtail the shortage of the only existing oral drug (Remdesivir) in the market and will act as a potential oral therapy that could be prescribed at the first sign of infection, without requiring the patients to be hospitalized.



Pfizer CEO Albert Bourla has said that an oral drug for treating coronavirus could be ready next year adding the company is working on two antivirals, an oral and an injectable.

“We are actually on two, one is injectable and the other one an oral (antiviral). Particularly the attention is on the oral for the world and of us because provides several advantages and one of them is that you don’t need to go to the hospital to get the treatment of which is the case with all the injectables so far but you can get it home,” Bourla told CNBC in an interview on Tuesday, as cited by The Hill.

“If all goes well, and we implement the

same speed that we are, and if regulators do the same, and they are, I hope that by the end of the year,” Bourla added.

The only antiviral currently approved for use against the coronavirus is Remdesivir, which is manufactured by Gilead Sciences. The US Food and Drug Administration (FDA) gave the drug full approval in October after it was granted emergency use authorization in May last year.

He also said the medication could be “way more effective against the multiple variants” of the virus than current options adding that the mechanism of action, of the antiviral, is not expected to be subject to mutations, “particularly because it’s not

acting on the spike, as we all know, all the mutations that we are hearing right now are seeing this in the proteins of the spike.”

“This one doesn’t work there so that allows us to believe that will be way more effective against the multiple variants. So, all good news. We are now progressing the studies and we will have more news around summer,” the CEO added.

The Hill further reported that thus far, more than 121 million doses of the vaccine have been administered across the United States.

SOURCE: www.hindustantimes.com

AYURVEDA-BASED COVID VACCINE COULD SOON BECOME A REALITY

In today's advancing medical and scientific (knowledge) industry, there has always been a debate on the efficiency and extent of the long rooted Ayurvedic treatments, which has been an alternative medicine system with historical roots in the Indian subcontinent. And hence they will always have a for and against side to it. With this fight against the COVID-19 pandemic, Megalab is developing a two-dose Ayurveda-based coronavirus vaccine that claims to stop the spread of this deadly virus and would prevent the infection within few days of the first dose. It could soon become a reality that once again Ayurveda would be at rescue in a more efficient manner as in the old days.



The IIT Alumni Council-founded Megalab has secured a Rs 300-crore seed funding and is developing a two-dose Ayurveda-based coronavirus vaccine that can stop the spread of the deadly virus and prevent infection within a few days of the first dose.

The city-based Megalab, set up last April by the council to drive the fight against the pandemic with ideas and money, will also be importing available vaccines from the West to be distributed first in Mumbai and then elsewhere, the alumni council president Ravi Sharma told PTI on Thursday.

Sharma said the seed funding is part of the emergency funds lying with Social Fund, the financing arm of the council and forms part of the Rs 21,000 crore fund raising announced last April in the peak of the first wave of the pandemic.

He said the proposed vaccine, which will be available for sale over the next six months, is an Ayurveda-based adjuvant vaccine that will have both injectable and

nasal drops variants, and is expected to improve efficacy, reduce side effects, and work across all variants of the virus that has killed more than 2.6 lakh people in the country already.

On the plan to import vaccines, he said the move follows the US supporting patent waiver on Covid vaccines and should begin within a fortnight for distribution in Mumbai.

He further said the proposed vaccine is the first antigen-free, novel vaccine that is self-limiting and will be locally manufactured, the discussion for which are already on with drug companies and is based on indigenous technology.

The end objective is to deliver a continuously upgradable vaccine that can outpace the virus thus helping to end the pandemic, Sharma said, adding the vaccine will initially be available to alumni community only.

The imported vaccines will be priced at a US equivalent price point initially and will

be delivered via specially retrofitted buses to office or home locations.

Sharma said the new vaccine initiative is being led by Dr Arindam Bose, a Connecticut-based thought leader of the biotechnology industry, chairperson of the therapeutic group in the Covid-19 task force and a senior advisor to the India Vaccine Stack of the Megalab. Bose previously headed the vaccine development division at the global drug giant Pfizer, while Dr Shantaram Kane, an IIT Bombay alumni and a PhD from MIT, is heading the injectable adjuvant and oral/nasal drops components of the India Vaccine Stack.

The Megalab is in discussions with partners including Krsnaa Diagnostics, Kodoy, Koteleo, Platinae and Brew to divert available technology, laboratory and manpower resources to accelerate vaccine development and delivery, Sharma said.

SOURCE: www.indiatvnews.com/news

TRUECALLER LAUNCHES HEALTHCARE DIRECTORY IN INDIA TO HELP USERS FIND HOSPITALS

As the second wave of the COVID-19 pandemic hits the country once again, with cases peaking at over 3.5 lakh per day, hospitals are now functioning at their maximum capacity. With lack of proper medication and oxygen supplies, empty beds are a scarce resource in hospitals; citizens are scurrying to look for one at other COVID-19 facilities in their city. Under such a scenario, a Swedish company, Truecaller, has launched a COVID Hospital Directory found inside the app or the dialler. Though there's no word on its iOS availability yet, the company says this feature is available for Android beta users currently and should be available for all Android users soon; which could prove an aid to the patients and their peers in need.



Telephone search engine and caller ID service provider, Truecaller, has launched a COVID-19 Healthcare Directory allowing users in India to find hospitals and care facilities in their area.

The directory is built right into the app and can be accessed from either the menu or the dialer, the company said in a statement.

The feature provides contact numbers and addresses of COVID-19 hospitals in multiple states, which have been sourced from official government databases. A search button in the app can help the user

quickly find all information needed in case of an emergency. Users can contact the numbers to check for availability of ventilator beds and other details.

Truecaller said that the company decided to launch the Healthcare Directory to make it easier for everyone in India to find medical care near them.

The COVID health directory appears on the top left corner of the dialer. The contact details will be updated on a daily basis to ensure more and more hospital phone numbers from across India are made available for users.

“The directory includes telephone numbers and addresses of COVID designated hospitals from multiple states across the country, sourced from official government databases”, it said.

“This is part of our mission to make your communication safer and more efficient. Follow us on our social channels for more updates, including Truecaller’s YouTube Channel, Instagram, Facebook and Twitter,” the statement added.

SOURCE: www.cnbtv18.com/business

DRDO DEVELOPED 2-DG DRUG COULD BE GAME-CHANGER IN FIGHT AGAINST COVID, SAYS MINISTER

Apart from targeted treatment, rate of recovery is also a factor that needs attention to www.indiatvnews.com/news/ckle the rising cases in the country. Considering that most of the companies are working hard to provide and find prevention and provide targeted treatment, Institute of Nuclear Medicine and Allied Sciences (INMAS), a lab of Defence Research and Development Organisation (DRDO), in collaboration with Dr Reddy's Laboratories (DRL), has developed a drug that can be a game changer in the fight against COVID-19 as it claims to help in faster recovery of hospitalised patients and reduces oxygen dependence. This could be a life saver for both the patient as well as the industry dealing with the scarcity of the resources like oxygen supplies. What we really look forward to is, how fast the drug can be mass produced and distributed to the hospitals fighting against the rising cases on a daily basis.



The 2-DG drug developed by the Defence Research and Development Organisation (DRDO) could be a game-changer in the fight against COVID, Karnataka Health Minister Dr K Sudhakar said on Friday.

“The 2-DG drug developed by DRDO is a big breakthrough and could be a game-changer in the battle against pandemic as it helps in faster recovery of hospitalised patients and reduces oxygen dependence,” Sudhakar was quoted as saying in a statement issued by his office.

The Minister had visited the DRDO campus in the city where scientists briefed him about the ongoing efforts at the premier research organisation to find solutions to tackle the pandemic.

About the 2-DG (2-deoxy-D-glucose), an anti-COVID-19 therapeutic application of the drug, the statement read that it has been developed by the Institute of Nuclear Medicine and Allied Sciences (INMAS), a lab of Defence Research and Development Organisation (DRDO), in collaboration with Dr Reddy's Laboratories (DRL), Hyderabad.

Clinical trial results have shown that this molecule helps in faster recovery of hospitalised patients and reduces supplemental oxygen dependence.

Higher proportion of patients treated with 2-DG showed RT-PCR negative conversion in COVID patients. The drug would be of benefit to the people suffering from COVID-19, the statement read.

In April 2020, during the first wave of the pandemic, INMAS-DRDO scientists conducted laboratory experiments with the help of Centre for Cellular and Molecular Biology (CCMB), Hyderabad, and found that this molecule works effectively against SARS-CoV-2 virus and inhibits the viral growth, according to the statement.

It said based on these results, the Drugs Controller General of India (DCGI) Central Drugs Standard Control Organisation (CDSCO) permitted Phase-II clinical trial of 2-DG in COVID-19 patients in May 2020.

The DRDO, along with its industry partner DRL, Hyderabad, started the

clinical trials to test the safety and efficacy of the drug in COVID-19 patients.

In Phase-II trials (including dose ranging) conducted during May-October 2020, the drug was found to be safe in COVID-19 patients and showed significant improvement in their recovery, the statement said adding, Phase-II was conducted in six hospitals and Phase IIb (dose ranging) clinical trial was conducted at 11 hospitals all over the country. Phase-II trial was conducted on 110 patients.

Another innovative solution of DRDO - the Oxycare System-optimises the consumption of oxygen and reduces the workload and exposure of healthcare providers by eliminating the need of routine measurement and manual adjustments of oxygen flow, he added.

According to the Minister, the PM-CARES Fund would procure 1.5 lakh units of Oxycare System at a cost of Rs 322.5 crore.

SOURCE: www.medicaldevice-network.com

SPUTNIK V LIGHT, RUSSIA'S SINGLE-DOSE COVID VACCINE, LIKELY TO BE LAUNCHED IN INDIA SOON

The most talked about Sputnik vaccine is the first of its kind single-dose vaccine as compared to other vaccines like Covisheild and Covaxin which follow two dose regimens. Some say that Sputnik will be able to treat the mutated virus unlike other vaccines. But are these all mere speculations or will it really be able to tackle all the existing and upcoming variants, this is something only time will tell.



Sputnik V Light, Russia's single-dose vaccine for Covid19 is expected to be launched in India soon, informed Russia Direct Investment Fund CEO Kirill Dmitriev on Friday.

Earlier in the day, the first dose of Sputnik V Covid vaccine was also administered in India, becoming the third vaccine in the country which will now be used for inoculation drive.

“Sputnik V is a Russian-Indian vaccine. A big part of its production will be in India. We expect to produce more than 850 million doses of Sputnik V in India this year. We hope for the introduction of Sputnik V Lite in India soon,” Russian Direct Investment Fund CEO Kirill

Dmitriev said.

Sputnik Light is the first component (recombinant human adenovirus serotype number 26 (rAd26)) of Sputnik V – the world's first registered vaccine against coronavirus.

The single dose Sputnik Light vaccine demonstrated 79.4% efficacy according to analyzed data taken from 28 days after the injection was administered as part of Russia's mass vaccination program between 5 December 2020 and 15 April 2021.

An efficacy level of almost 80% is higher than that of many two-dose vaccines.

Sputnik Light has proven effective against all new strains of coronavirus, as demonstrated by the Gamaleya Center during laboratory tests.

SOURCE: www.indiatvnews.com/news

Compiled by:

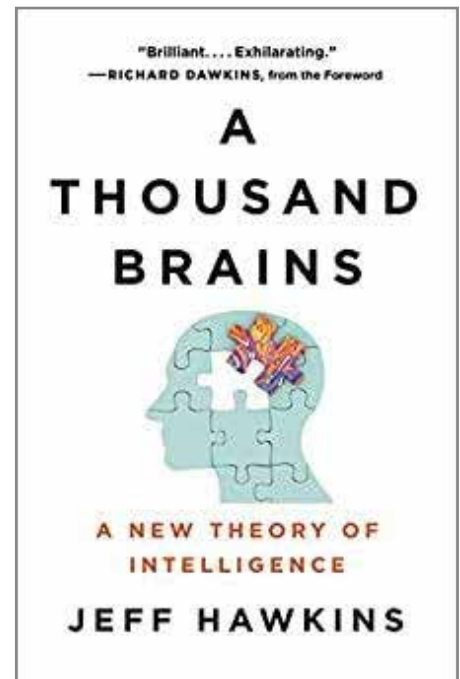
Parthvee Jain is an engineer with specialization and interests in fields of Biotechnology, Healthcare, Food Processing, and Nutraceuticals. Currently working to build key partnerships to impact people's lives in emerging markets through technology and entrepreneurship. She has an expertise in the area of organising and handling virtual events and also in strengthening the collaboration across national and international organisations.

BOOK REVIEW

Reviewed by Sachin Gaur
Executive Editor
InnoHEALTH Magazine

For two years now I have been reading books linked with the topic of Artificial Intelligence(AI) which are covering a wide variety of fields from neuroscience to philosophy to computer algorithms. The recent progress in the field of AI is much inspired from human brain design. Having said that, we are not even close to making a fair comparison between human brains and the state of the art artificial neural networks. Just looking at the dimension of energy consumption, the human brain runs on around 20 W and compared to the state of the art artificial neural network this biological machinery is a thousand orders larger but a million orders more energy efficient. How is this wetware working is a question which has baffled neuroscientists and this is where the work of Jeff Hawkins to me comes as very refreshing. The book

presents a new theory of intelligence, which is that there is not one brain (like one mega chip of computing) in our head but thousands of computational units which are plastic in nature adapting to functions and work in tandem trying to build consensus. The author also shares interesting research over the years from the field and how our understanding is evolving about the brain. The cherry on the cake is towards the last part of the book where the author is contemplating the future of our race and developments that we may see in times to come. It gave me goosebumps going through the ideas presented and I wonder if this book or Mr Hawkins inspired Elon Musk to start a company like Neuralink. If you are looking for something refreshing in the fast evolving field of AI, then this book is for you.



Healthcare thoughts

MEDICINAL PLANTS

The medical plants can help with ailments like fever, cough, and indigestion.

Centella Asiatica (Gotu Kola) plant is a herb commonly used in traditional medicine.

Its leaves are used in medicine for healing of wounds, burns, and to treat sores and ulcers.

Mexican Mint plant is used as a treatment for cough and inflammation or swelling.

The leaves of Mexican Mint plant are used to add flavour to meat and bean dishes.

Sabha snake grass which contains antioxidants and compounds with anti- diabetic properties.

Used in folk medicine to treat insect and snake bites as well as diabetes and gout diseases.

Aloe vera's leaves contain a clear, tasteless tissue which is added to beverages and desserts.

The clear gel of Aloe's leaves can be applied to minor cuts and burns to promote healing.

The leaves of the spearmint plant are used to flavour teas, desserts, and vegetables dishes.

Drinking tea made from fresh spearmint leaves relieves headaches and digestive problems.



Bhupesh Chandra Karmakar was associated with Indian Air force and his wide horizon of interest lies in writing by interacting with people, sharing their experiences and reading articles.

We at **InnoHEALTH Magazine** would like to dedicate a section to innovation success and failure stories

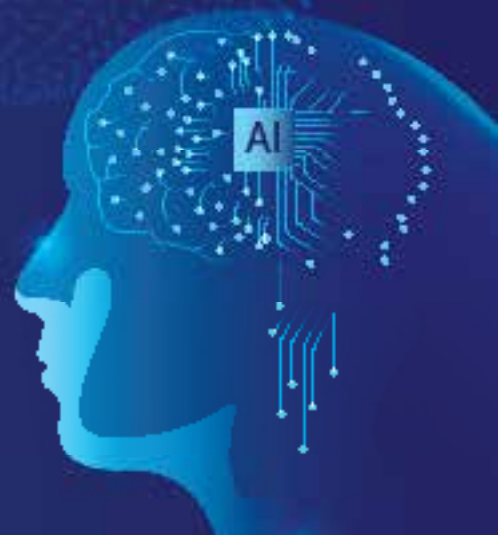
In this regard, we request you to share your journey in about 300 words.

Mail your stories to magazine@innovatiocuris.com

Certificate Course in Applications of Artificial Intelligence in Healthcare

Topics covered

- *AI and ML Foundation*
- *Applications of AI in healthcare and case studies*
- *Data for AI*
- *Steps to build AI and Ethics and regulations*
- *Key enablers in healthcare: A case study from different healthcare establishments*



Express your interest @ www.bit.ly/eoi-ccaaih

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

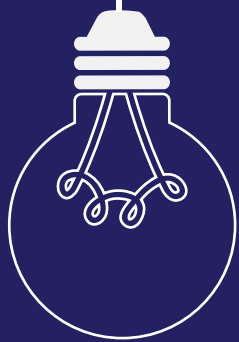
**InnoHEALTH Annual international
healthcare conference**
innohealth.in

**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](tel:+911204274630)


Connect with us

 [/innovatiocuristeam](https://www.youtube.com/innovatiocuristeam)

 [/innovatiocuris](https://www.facebook.com/innovatiocuris)

 [/innovatiocuris](https://twitter.com/innovatiocuris)

 [/innovatiocuris](https://www.instagram.com/innovatiocuris)

 [/in/innovatiocuris-team](https://www.linkedin.com/company/innovatiocuris-team)