

InnoHEALTH

India's First Magazine on Healthcare Innovations

www.innohealthmagazine.com

VOLUME 5

ISSUE 2

APRIL-JUNE 2020

INR 100/-



CORONA VIRUS

**CORONA VIRUS: A NAME MUCH
HEARD AND FACTS LESSER KNOWN**

**QUARANTINED GATEWAYS
FOR COVID-19**

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MEDTECH DEVICES: REVOLUTIONIZING DIAGNOSIS OF EYE DISORDERS

Written by Dr. Mahipal Singh Sachdev

In recent years, Indian healthcare industry has been growing at a double digit rate. The sector grew at a rate of 18 percent from 2010 till 2016 and is expected to reach USD 280 mil by 2020. The medical technology (medtech) plays a crucial part throughout the healthcare lifecycle and has been instrumental in transforming healthcare ecosystems across the world. For India too, it offers the potential to address healthcare issues by using a mix of nascent as well as advanced technologies.

Medtech is defined as any device, procedure, system developed to solve and improve quality of life. There are an estimated 1.5 million medical devices

used worldwide. These devices are very crucial for the diagnosis and treatment of eye ailments.

A helping hand in the treatment of several eye disorders

In today's world, with the availability of modern technology and advancements in technology and devices, serious eye ailments can be picked up much earlier than what was possible a few years back. Some of the major advancements that help in the treatment of eye disorders include:

■ **ReLEx SMILE or Lasik Surgery**
Long working hours and par use of electronic gadgets have led to sudden

rise in the patients with refractive errors. According to World Health Organization (WHO), approximately 150 million people have visual impairment due to refractive errors. These include myopia (nearsightedness), hyperopia (farsightedness) and cylindrical refractive errors (astigmatism). With the advent of technology, ReLEx SMILE, the new generation laser vision correction offers clear, crisp vision without glasses. Being a bladeless & flapless procedure, it helps you live a hassle-free life and say goodbye to glasses. The quality of life reported by patients who had undergone lasik procedure are feeling similar to patients who never wore glasses, and this has remained stable even 10-15 years later. This shows how comfortable patients feel after they have undergone this non-invasive correction to avoid wearing glasses and contact lenses. Compared to people who wore glasses and contact lenses, refractive surgery patients had a much higher quality of life. People who need glasses to see clearly resent their dependence on glasses which they feel restricts their lifestyle.

■ **Implantable Contact Lens (ICL)**
Not everyone is fit for the lasik surgery. People with high powers and thin corneas have ICL to correct their refractive problems. An ICL is an ultra-fine lens made of collamer, a bio-compatible material with high water content and anti-reflective properties. It transmits light just like the natural lens and has the added advantage of blocking out the harmful ultraviolet rays, thereby protecting the eye from further damage. The spherical ICL is available in a wide range of powers from -3 to -20 diopters and for people with astigmatism, the toric ICL can correct powers from -3 to +23 diopters and a cylinder upto 6 diopters. Most significantly, thin corneas are not a contra-indication at all. The



lens is placed inside the eye between the iris and the natural lens and is invisible to both the patient and the observer. The cornea is not touched at all, so complications related to thin corneas are totally eliminated.

For the patients with thin cornea and high powers, there is no hope beyond lasik. Apart from ICL there are other viable options like other options include SBK or Sub-Bowman's keratomileusis using the IntraLase femtosecond laser and surface PRK using Mitomycin C or Epilasek in which a thin sheet of corneal epithelium is removed to allow laser ablation, thereby saving more corneal tissue. Clear lens extraction with multifocal or toric IOL implantation may be considered in selected patients. For people with keratoconus with progressive thinning and steepening of the cornea, Collagen Cross Linkage (C3R) and INTACS can help to stabilize the disease process and improve the vision respectively.

■ **OCT (Optical Coherence Tomography) and other innovative devices**

Some of the latest computer programmes include Laser Polarimetry (GDx), Heidelberg Retinal Tomogram (HRT) and Optical Coherence Tomography (OCT) of Optic Nerve Head (ONH)/ Retinal Nerve Fibre Layer (RNFL) and Ganglion Cell Complex (GCC) macula. Also, faster techniques (Matrix/FDT) for assessing the functional loss are now available which take half the time taken by conventional visual field testing for glaucoma detection.

■ **Laser Photocoagulation or Laser Treatment**
Laser Photocoagulation is a boon for the diabetic patients. The treatment can save existing sight loss but cannot make it better. It seals the micro aneurysms that are leaking fluid into the retina. This is called the Focal or Grid laser photocoagulation and is done in a single sitting. If new blood vessels are growing, then more extensive laser treatment has to be carried out which is called Pan Retinal Photocoagulation (PRP) and is carried out over two or three sittings spread over a few weeks. In most cases, laser treatment causes the new blood

vessels to regress and the swelling to subside. Laser treatment usually takes three to four months to be fully effective.

Dr. Mahipal S. Sachdev, Chairman & Medical Director of Centre For Sight, was honored with Padmashri Award in January 2007. He is a renowned Ophthalmic Surgeon, recognized for his expertise in the area of Corneal, Refractive & Cataract Surgery, both nationally and internationally. He is widely credited to be a pioneer in India for propagating the technique of Phacoemulsification for cataract surgery and Lasik Laser for removal of glasses. Dr. Mahipal was among the first to introduce Lasik and Phakic IOLs & Femtosecond laser technology for lasik. Dr. Mahipal also has pioneered blade free Femtocataract technology in India.



Words of appreciation that get us going!

TESTIMONIALS AND FEEDBACK FROM COVID-19 IDEATHON

In the past 2 years of my association with InnovatioCuris, we have observed their commitment towards innovation in healthcare. The organization truly stands by its name by innovating newer dimensions to healthcare and making partner organizations aware of the latest in healthcare. Being an institutional member of InnovatioCuris, we are a witness to the discussions in "Innovators' Club" where various stakeholders of the health sector are brought under one roof. Newer and lesser known yet highly important concepts like lean health, cybersecurity etc. are their forte. Use of technology in healthcare is increasingly becoming important and will definitely lead to reduction in healthcare costs and efforts of InnovatioCuris in disseminating this knowledge by conferences, webinars, magazine publication and training is commendable. We wish the organization more success and greater achievements in the coming years.

Dr. Sandeep Bhalla
Director Training PHFI, India

I really appreciate the vision of Dr. VK Singh and the effort that Sachin and his team put in to bring together genuine health care professionals on a common platform to network, exchange ideas and achieve the objectives that they have set out to.

Abhinav Singhal
CEO Oxygen 2 Innovation, India

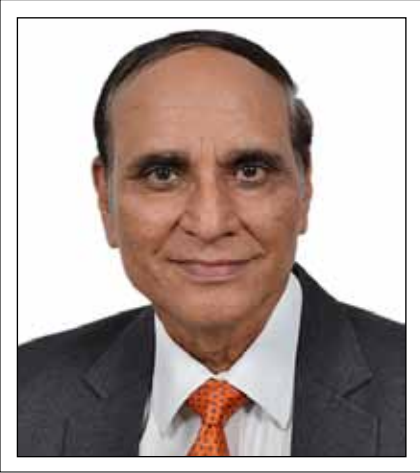
Congratulations to team Forge and InnovatioCuris on successfully completing this online IDEathon. Great efforts of getting all connected and giving opportunity to shape ideas. Had a wonderful experience mentoring teams and guiding them. Thank you once again. The final winner is team Forge, IC, all participants, Mentors and everyone who directly or indirectly tried to shape ideas in IDEathon to fight corona with technology.

Dr. Irfan Landge
M H Saboo Siddik College of Engineering, India

Forge & IC teams, we sincerely appreciate you for taking an initiative in organizing IDEathon to bring out innovative and effective solutions to combat COVID-19. This Innovation Pitch was a much needed one to bring out the best MUP's so as to tackle the current COVID-19 crisis. We thank you for providing us an opportunity to be part of this most valuable IDEathon in assessing and mentoring the teams...Hopefully this IDEathon can result in best MUP's & Solutions to overcome the current crisis..

Murali Krishna Kalivemula
Technical Lead / Software Project Coordinator
ZF India Technology Center, India

EXECUTIVE OPINION



Dr. V K Singh

Editor-in-Chief & MD,
InnovatioCuris

vk Singh@innovatiocuris.com

ARE WE PREPARED FOR DISASTERS LIKE COVID-19 LEADING TO MASS CASUALTIES?

A legal national framework was created in 2005 by an act which created National Disaster Management Authority (NDMA). The act was the result of catastrophe created during Bhuj earthquake and later Tsunami. It has been invoked first time to handle COVID, the question is are we prepared to handle mass casualties. It is matter of concern that many functionaries have not even read guidelines by NDMA and not done any gap analysis for improvement during past many years of its creation and now doing crisis management of unprecedented scale. Disaster does not require only clinical management but is more of management problem. The present disaster has been declared as National Disaster because of its magnitude, thorough introspection is to be done of its management and improve our failures and should also learn from best practices and failures of other countries.

There is need to practice regularly tabletop exercises, mock drills to update our system and make all functionaries aware of their role and responsibilities. The guidelines and mock drills conducted by NDMA to find gaps revealed many startling facts like Gurgaon did not have blood bank in 2007 and on investigations it was revealed that 27 districts in India do not have such facilities, similarly Gurgaon did not have ladder with fire brigade to extinguish fire in high rise buildings. Gautam Budh Nagar (NOIDA) did not have district hospital. We had Japanese encephalitis cases in UP killing many children, did we learn and took actions to update system except knee jerk reactions on occurrence and blame each other. In case we have to handle mass casualties our day-to-day system should be perfect with enough reserves. We must rely on govt hospitals to deliver quality healthcare and to handle mass casualties at optimum cost. Health leadership must be updated on management issues and should be made accountable and answerable. Health is state subject hence more is to be done by states. There is need to revamp primary healthcare and public health. We should investigate all aspects of disaster because it can strike anytime anywhere to create human and economic miseries. In case it is not planned well we would execute solutions which are half baked, costly and people are not aware as what is expected of them. Planning is most important part of management to develop system to execute seamlessly with speed and less cost. Analyze what is happening in present disaster ad-hocism, imports at breakneck speed which were easily avoidable if system was developed in place.

We have many challenges: a population of 1.3 billion, high density of population, 27.5% is below poverty line, literacy rate is still 74.4% despite so much efforts. The large population still feels it is a catastrophe created beyond human endeavours as act of God over which we have no control. Though we have come long way and push of present government is laudable for many initiatives on self-reliance and to lift socio economic status. We are still in stage of bullock cart and landing on moon. We have capability of becoming developed nation with in one decade. We as community and policy makers must seriously consider check on pollution, safe environment and check climatic changes, all these impact disease pattern and our life. We must embark a big movement of good quality of life for citizens to make next generation a big asset to country.

We have created multimedia knowledge platform to write, debate and plan various activities over burning health issues. Recently we have organized IDEathon named HackIndiaCorona with various national & international credible organisations including government. It had participation of 5000 people to search solution to contain COVID-19. We would always endeavor to make our participation better on national health issue with our group of advisors, members and well-wishers. Our aim is to ideate, innovate to optimize healthcare delivery cost and keep quality.

Vijay Singh

“ We have many challenges: a population of 1.3 billion, high density of population, 27.5% is below poverty line, literacy rate is still 74.4% despite so much efforts. The large population still feel it is a catastrophe created beyond human endeavours as act of God over which we have no control. ”

INDIAN HEALTHCARE TOWARDS GLOBAL LEADERSHIP

Written by Upasana Arora

Healthcare innovation at national level in terms of Infrastructure as Smart & Green Hospitals, Processes & Outcomes can obviously be the reason of making India as the destination of choice for healthcare services. Healthcare contributes significantly to the overall service sector of India through service export, FDI inflow, Foreign exchange & Job creation. With a view to strengthen the healthcare innovation, bodies like Services Export Promotion Council (SPEC) & Associated Chambers of Commerce and Industry of India (ASSOCHAM) are working

independently as well as with the government by giving special recognition to Healthcare Sector as one of the Champion Service Sector.

India has emerged as one of the most credible and cost-effective destination for medical tourism especially for curative treatment. Medical Value Travel (MVT) in India has been spearheaded by large corporate hospitals who have created strong global equity areas like cardio surgery, orthopaedic surgery etc. Majority of MVT is accounted by SAARC countries such as Bangladesh,

Maldives and Afghanistan and East African countries such as Kenya, South Africa as well as Nigeria. Under the fresh leadership of SEPC-Healthcare Sector & ASSOCHAM, the said bodies are creating a platform for enclaving the hospitals to showcase the overall healthcare paradigm of India to the world.





With the given scale of healthcare infrastructure and the projected growth, India can further strengthen its standing among the current popular MVT destinations like Thailand, Singapore, Malaysia, Mexico etc. In order to strengthen its position, India would need to focus on dual objectives of 'tourism friendliness' and 'patient centricity'. However, achieving the vision of being the Provider to the World would necessitate coordinated efforts by all key stakeholders be it government, providers, facilitators, regulators, insurers etc.

In fact, we can say with reasonable confidence that success in attaining MVT leadership will have a rub-off effect on transforming the entire Indian healthcare setup with innovations & by overcoming the challenges like - cultural dissimilarities with India; lack of awareness and acceptability of India as a medical tourism destination providing affordable high quality healthcare; UHC excludes medical travel; strong competition from nearby countries like Thailand and Singapore because of relaxed visa norms and good flight connectivity; visa issues; business

practices and excessive dependency on medical facilitators; lack of promotion of India as a medical tourism destination; geographical distance and poor air connectivity; difficult & delayed licensing process for medical training of foreign doctors; issues of remittance of payments with certain countries; penetration of health insurance and their reluctance to provide international treatment is a dampener.

Key aspects that have a major bearing on the 'tourist friendliness' of a country includes aviation infrastructure, amenities at the airport, proper transport infrastructure, affordable accommodation, good food, adequate cleanliness, hygiene, safe drinking water and overall safety concern. The same has been addressed appropriately by the Indian authorities in the recent times.

India has built strong credibility in curative treatment and is positioning itself as the holistic destination for alternative medicine on account of its strength in AYUSH i.e. ayurveda, yoga, unani and homeopathic treatment. Hence, AYUSH Tourism

should be given serious consideration parallel to other modalities of treatment since we are already the global leader in AYUSH.

In the end, it is conclusively said that potential of medicare service runs into billions of dollars and over the years, India, given the professional skills of its medical personnel, can become the preferred destination for medical treatment. Such a development will create significant employment opportunities in the country & abroad.

Upasana Arora is a dynamic leader in the Indian healthcare industry. She has led Yashoda Super Specialty Hospitals (NABH & NABL accredited) and is the First Indian to be awarded the prestigious Fellowship of ISQua (International Society for Quality and accreditation). She has been awarded at multiple forums for her contribution to the field of Ethical Healthcare Practices, Affordability, Community Empowerment and Women Leadership.

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✉ magazine@innovatiocuris.com

☎ +91 9711777328

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Editor-in-Chief:

Dr. V K Singh

Executive Editor:

Sachin Gaur

Editors:

Alok Chaudhary

Dr. Brijender Singh Dhillon

Dr. Avantika Batish

Nimisha Singh Verma

Parthvee Jain

Aarti Khanna

Sr. Designers

Suraj Sharma,

Ritu Versha, Kriti Sharma

Advisors

Thumbay Moideen, Founder
President, THUMBAY Group, **UAE**

Tanya Spisbah, Director
Australia India Institute, **Delhi**

Global Editorial Board

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Dr. Sarita Jaiswal, Chief Scientific Officer at Carpere,
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Printed and Published by **Sachin Gaur**
on behalf of **InnovatioCuris Private Limited**

Printed at Lippe Scan Private Limited 89,
DSIDC, Phase-1, Okhla Industrial Area, Delhi 110020

Editor: Sachin Gaur

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

RNI: DELENG/2016/69964

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PERSONA

POSSIBLE SYNERGIES FOR INDIA ESTONIA COOPERATION IN THE FIELD OF BIOTECH

Contributors: Prof. Andres Metspalu - President of the Estonian Human Genetics Society, Dr. Jaanus Pikani - Chairman of the Tartu Biotechnology Park in Estonia, H.E. Katrin Kivi - Ambassador of the Republic of Estonia to India: interviewed by Sachin Gaur - Executive Editor, InnoHEALTH Magazine



Prof. Andres Metspalu is the President of the Estonian Human Genetics Society and a member of the Steering Committee of the Genomics Center of Excellence, as well as the Human Genetics Society Steering Committee of the Human Genome Organization, American Human Genetics Society, and ScanBalt Academy. He was the Founder and Chairman of Asper Biotech Ltd. in Tartu. In 2017, he was awarded the Baltic Assembly Prize for Science in recognition of "his innovative, diverse and lasting contribution to gene technology and molecular diagnostic".



Dr. Jaanus Pikani is the Chairman of the Tartu Biotechnology Park and board member of a number of life science and health care companies. He is also the Chairman of ScanBalt, a biotech meta-cluster organization in ScanBalt BioRegion, composed of the health and bio-economy communities in Denmark, Estonia, Finland, Iceland, Latvia, Lithuania, Norway, Poland, Sweden, Northern Germany, Northern Netherlands and North-Western Russia with more than 60 universities and over 3000 companies active in the region.



H. E. Katrin Kivi is the Ambassador of the Republic of Estonia to India & concurrently accredited to Singapore, Bangladesh, Malaysia, Nepal and Sri Lanka. She also served as the Estonian Permanent Representative to the Council of Europe in Strasbourg, Ambassador of Estonia to Denmark and worked with the Estonian Ministry for Foreign Affairs. She also served as Director for Asia, ASEM and ASEAN, Deputy Head of Mission in the Estonian Embassy in France, Deputy Permanent Representative of Estonia to UNESCO in Paris and Director for EU General Affairs in Tallinn.

Share with us the Estonian progress in the context of Biotech and your journey. If an overview of Biotech research could be shared for our readers.

Andres Metspalu (AM)

I started with medicine and then eventually genetics and now I am in personalized medicine. I was lucky to have a good exposure early on participating in various international research programs.

When we got independent as a country we wanted to modernize our health system starting with digitization of records. So, Estonia was ready for change and hence we could have early start in various spheres including genetics and bio banking.

Katrin Kivi (KK)

Biotech is doing well in Estonia (like many other ICT related sectors) since our government was wise enough to regulate and protect the achievements in science and technology by a solid legal framework, including data privacy. Thus, the overall system is functioning well, there is quite a remarkable public trust which was essential precondition for collection of private data, i.e. people are not scared about any abuse or criminal leakage.

Biotechnology plays an important role in Estonia's innovation strategy and, with investments into infrastructure already made, the industry is warmly welcoming cooperation with foreign organizations. Estonia's main areas of biotechnology competence are genomics, immunology, the central nervous system and cancer research. The Estonian Genome Centre was founded according to Human Genes Research Act in 2001 specifically to study the following:

1. promote the development of genetic research;
2. collect information on the health of the Estonian population and genetic information concerning the Estonian population;
3. use the results of genetic research to improve public health.

When we got independent as a country we wanted to modernize our health system starting with digitization of records. So, Estonia was ready for change and hence we could have early start in various spheres including genetics and bio banking.

Biotechnology-related legislation in Estonia is well-established and harmonized with EU legislation. The importance of progress in this sector is also recognized by the government as one of the strategic key technologies.

Tartu Biotechnology Park was established in December 2001. Tartu Biotechnology Park provides excellent physical infrastructure as well as business development and consultancy services to companies and R&D institutions in the fields of biotechnology, medicine and veterinary medicine. It supports companies in finding cooperation partners and is active in the establishment process of new companies.

Estonia has identified biotechnology as a research priority. To help close the gap between the academic research environment and industry, the government has, with the help of EU and industry funding, established a series of Competence Centres, which are intended to move innovations along the pathway towards commercialization. Eight have been set up so far, of which four are in life sciences.

Tallinn has centres involved in cancer research and in food and fermentation technology, while Tartu is home to centres doing research on reproductive medicine and biology, and on the intersection between dairy products and health.

The Competence Centre on Health Technologies (CCHT) is a biotechnology company focused on research and product development in personal medicine, drug

development and both human and veterinary reproductive medicine. It works closely with leading Estonian scientists, universities and biotechnology companies as well as scientific, medical and R&D institutions from Europe, Asia and America.

Biotechnology Competence Centre (BioCC) carries out internationally recognized R&D to create, develop and implement innovative biotechnological solutions for feed, food supplements, integrating its and international knowledge in the field of microbiology, biochemistry, genetics, food technology, metabolomics, genomics, physiology, and medicine.

Center of Food and Fermentation Technologies (CFFT) is an R&D company based on extensive use of modern analytical methods, systems biology and synthetic biology principles, aiming at development and introduction of innovative food and fermentation technologies. Biotechnology and food technology-based R&D are very closely related in CFFT via the use of so-called 'omics' methods and in-depth knowledge and understanding of molecules and their behavior.

What were the reasons that Estonia became a pioneer in large scale population genome mapping? What was the role of government in this enablement?

AM: It was a lucky situation that CEO of the Tartu University Hospital (Dr. Jaanus Pikani) was a forward-looking person and being MD understood the potential of the genomics in future health care already 20 years ago. Prof. Andres Metspalu, MD himself,

was the director of the Molecular Diagnostic Center at the Tartu University Hospital and professor of biotechnology at the Tartu University. We proposed the biobank idea to the Estonian government in 1999 and after long public discussions the idea was accepted. Next, the Human Gene Research Act was adopted by the Riigikogu (the Estonian parliament) and with the help of initial seed money from the government we were able to raise 4.5M USD private investment (mostly from USA) to start the Estonian Biobank as a PPP endeavor. Since 2006 the Biobank was transferred under custody of Tartu University and has been financed mainly from public sources (Estonian and EU). Today we have 200,000 people (20% of adult population) in the EstBB and government is continuing supporting us.

The role of bio banking is well understood now but could you still highlight key benefits for our readers.

AM: The key benefit is prevention as genetic profiling gives us risk scores in advance and we can make the population aware of the risks they have in time. Recent investigations on cost benefit analysis even on a single condition like diabetes, show a viable return on biobanking. We can also do personalized medicine and hence pharma companies are also interested in collaborating with bio banks.

Jaanus Pikani (JP)

Biobanks can be a valuable basis to introduce novel personalized medicine tools to everyday practical healthcare. Determining polygenic or familial disease susceptibility risks will help for prevention and early detection of number of diseases. We are about to finalize a pilot project on breast cancer and cardiovascular disease screening based on genetic markers on Estonian Biobank participants and their close relatives, and we are looking in to introduce the genetic population stratification into everyday medical practice soon. The next steps to this direction will

be to widen the list of diseases and to implement PGx digital support system to assist doctors while prescribing medicines to their patients. All these measures will help the healthcare providers to increase efficiency and improve treatment outcomes.

How do you react to the Indian Finance Minister's budget speech talking about genome mapping? Any lessons from Estonia that can be extended to Indian context?

AM: Genomics is the basis of the personal health care – rare disease, cancer, common/complex disease and pharmacogenomics all are based largely on the DNA data. Health care costs are high and shift from the treatment towards prediction and prevention saves money and lives.

JP: Similar to India, Estonia didn't have same amount of funds available and still cannot be compared with more wealthy nations like UK or USA, when starting to develop the Biobank. Therefore, for practical reasons it is of utmost importance to find most optimal strategy and design for the project. In the Estonian model we can underline two elements among others that have paved the way to success: (1) optimal balance between using deep sequencing for population genetic profiling and genotyping for large scale genetic population mapping to reach maximum practical outcome with optimal costs, and (2) seeking innovative models of financing and cooperation incl. partnerships with private sector investors and research institutions to speed up the process.

We believe that you have a cooperation agreement with DBT in India on the topic of biotech. Are you exploring any synergies on that basis already?

Tartu Biotechnology Park (TBP) has close cooperation with InnoHEALTH to facilitate synergies between Indian and Estonian companies and research groups. The Chairman of TBP Dr. Jaanus Pikani has been invited to join the Advisory Committee of Research and Innovation Circle of

Hyderabad (RICH), which is aimed to speed up the success of startups in Health, Food & Agri, and Defence and Aerospace.

We hope to reach to first real cooperation projects in the near future. The announced genome mapping project by the Indian Finance Minister could be a good area to work on.

Please share your expert opinion on the Indian plan as announced by our Finance Minister in the budget speech.

AM: I would like to propose the following, the different study design: sequence deeply (30x) 10,000 individuals, population based, not selected by disease, but by geographical area so that you can capture the maximum genetic variation of India (or a region). Instead of sequencing 10,000 patients use the same amount of money for genotyping with high density arrays (Illumine GSA or Thermo Fisher PMDA, PMDA Plus and PMRA).

Arrays are around 20-25 USD and you can analyse 20 x more people (~ 200,000). Using the WGS impute arrays into full sequence and you can get minor allele frequency (MAF) around 0.1%. This is good enough for association studies (GWAS), personal medicine (polygenic risk scores or drug response in pharmacogenetics (PGx)).

Can you share your ideas on possible India Estonia cooperation leveraging the strengths of both regions.

AM: We have very close collaboration with India on the topic of population genetics. My son, Dr. Mait Metspalu, who is the director of the Institute of Genomics at University of Tartu did his PhD on Indian populations ("Through the course of prehistory in India: tracing the mtDNA trail.") and institute has many scientists from India.

We could work together on personalized medicine, like I described above.

PIPAC: CURE FOR ABDOMINAL CANCER AND CHEST CAVITIES

Written by Dr. Sameer Kaul

What is PIPAC?

Pressurized Intra Peritoneal Aerosol Chemotherapy (PIPAC) is a breakthrough in Cancer treatment, where chemotherapy is delivered into confined spaces in the body like abdominal cavity and chest cavity under pressure in spray form to destroy cancers which have spread there through a simple laparoscope. The therapy is best suited for treatment of cancers of Ovaries, Colon, Stomach, and Appendix which are at the advanced stages involving the peritoneal cavity, where other conventional therapies fail

to treat. It is highly effective in treating cancers that originate from the lining of the abdominal cavity and chest cavity, known as Mesotheliomas.

Such cancers which are currently being subjected to intense chemotherapy as the first line of treatment have provided with unsatisfactory results. Moreover, multiple chemotherapy sessions also render such patients weak and leads to development of fluid formation known as ascitis. PIPAC in such cases are highly beneficial to the patients as the therapy palliates their symptoms

by melting the disease and extending the quality of life.

As no surgery other than taking a biopsy is possible, NGS study is permitted during PIPAC procedure, it is a totally traumatic undertaking, being the beauty of this operation.

PIPAC gaining popularity for treating advanced cancers

While other treatment modules including CRS, HIPEC and third line chemotherapies are being currently used for treatment of cancers, the issue is substandard outcomes.



Surgical treatments- CRS and HIPEC are extensive supramajor surgeries conducted for over 10 hours at a stretch, involve resection of various organs, requiring blood replacements over 8-10 units and a longer hospital stay of more than 3 weeks. Even though after performing such risky procedure, the complication rates are still high due to its curative intent and costs approximately INR 9 lakhs.

Similarly, 3rd line chemotherapies are also not very effective, and patients are loaded with side effects. Classical Intraperitoneal chemotherapy is not as effective as PIPAC because the liquid distribution inside the cavities is not homogeneous and penetration into disease surfaces is low compared to PIPAC.

Radiation therapies- even though being minimally invasive, the latest Cyberknife and Gammaknife radio surgeries are of no use in extensively advanced disease situations of the abdomen or chest wall, while they

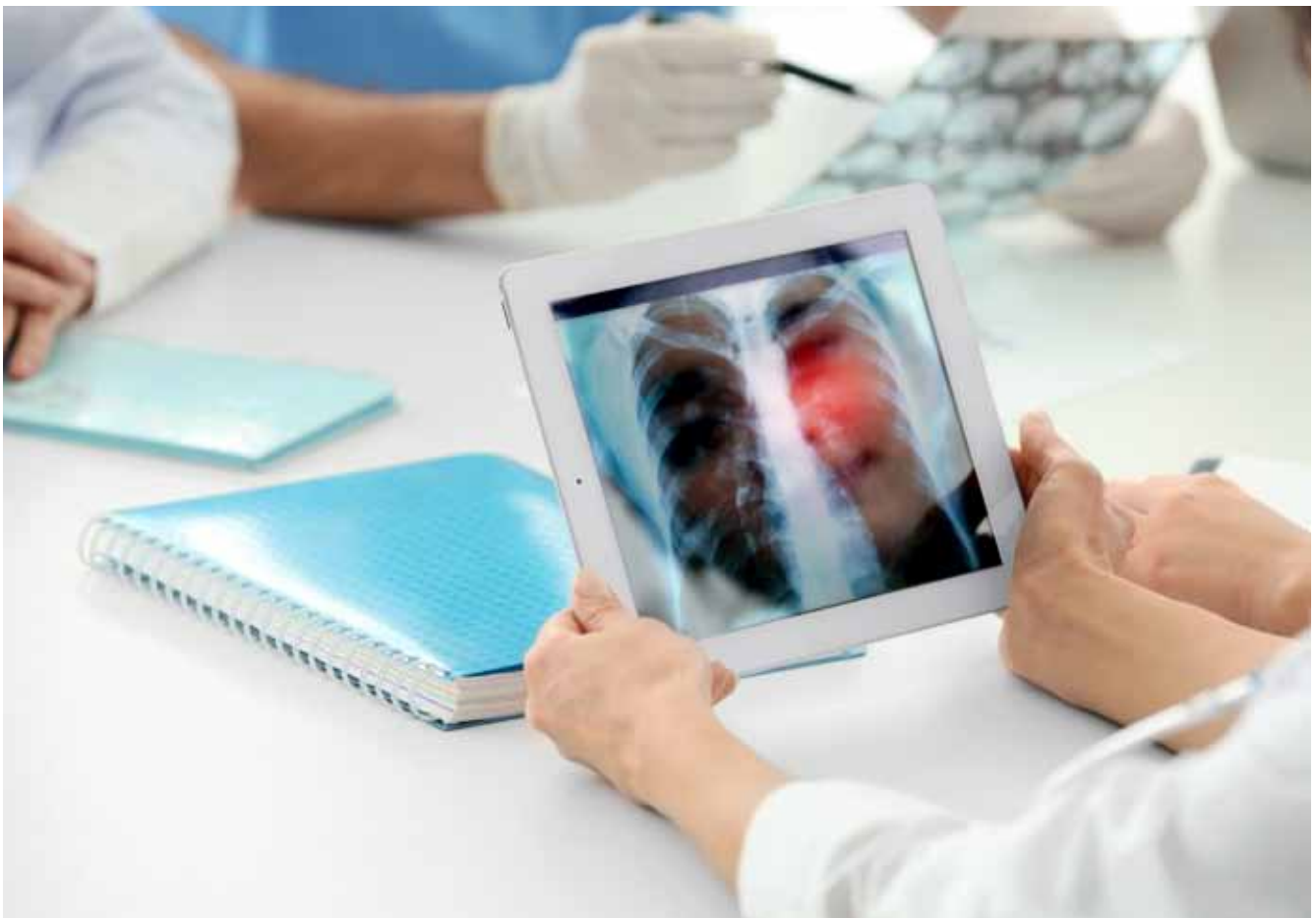
Classical Intraperitoneal chemotherapy is not as effective as PIPAC because the liquid distribution inside the cavities is not homogeneous and penetration into disease surfaces is low compared to PIPAC.

are beneficial in cases of minimal disease progression in other body parts. Microwave ablation is used to treat small tumors in liver or occasionally other organs but is useless in advanced cancers.

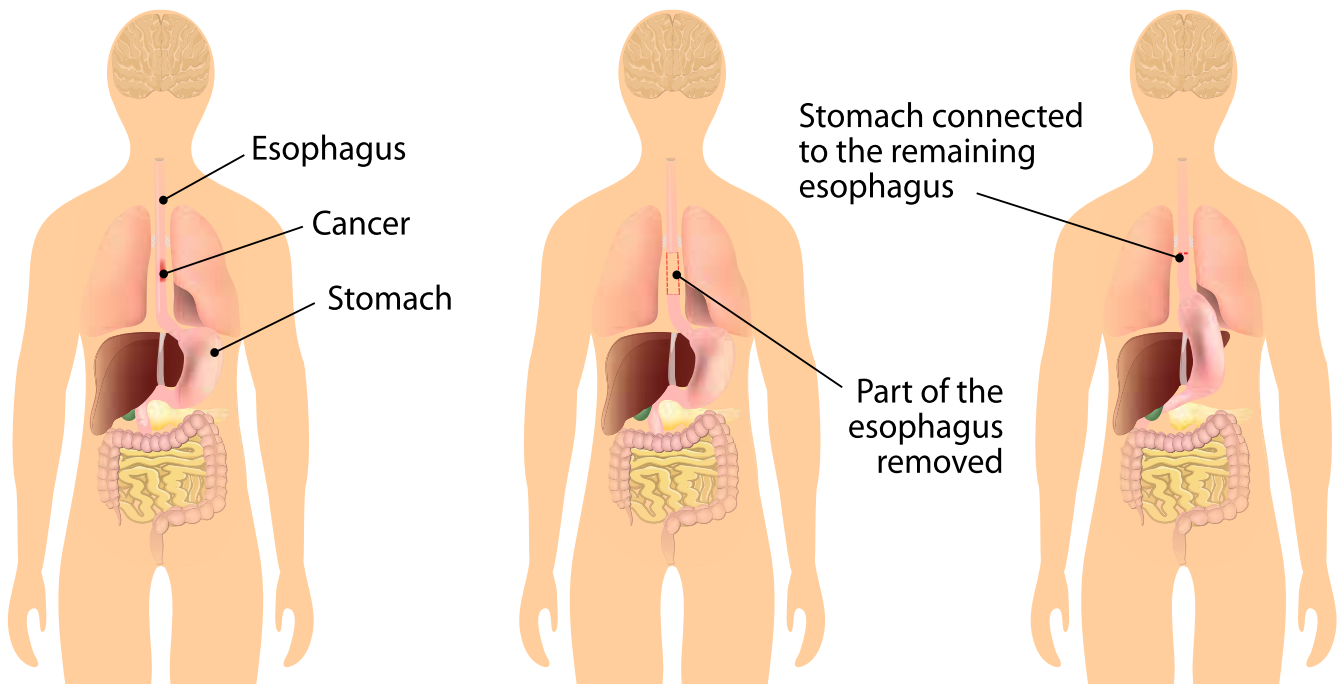
PIPAC currently fulfills an unmet need in Cancers disseminated to peritoneum and pleura where nothing better exists. But studies are showing it can also act as Neoadjuvant therapy to downstage extensive abdominal cancers and make them suitable for curative procedures like CRS and HIPEC subsequently. This is an exciting observation with potential for getting lots of patients into treatment domain that may otherwise have no chance.

In comparison to the above treatment modules, PIPAC is emerging as one of the best game changers for the oncologists, due to the following advantages:

1. No complications/safer procedure- PIPAC has virtually no complications, and the treatment aims for palliation than curative purpose.
2. Cost Effective- In comparison to other treatments, PIPAC costs under INR 3 lakhs.
3. Minimal Hospital stay- Minimizing the hospital stay to only 1 day against 2-3 weeks in case of 3rd line chemotherapies.
4. Quicker recovery - With minimal incisions and decreased tumor



ESOPHAGEAL CANCER



load, making tumors operable, the patient makes a better and quicker recovery.

Potentials of PIPAC in India

This technique originated recently in Tübingen, Germany by Prof. Marc Rubens and is still evolving. Multiple clinical trials are underway to collate solid evidence in its favor. Only a few centers in the world like France, Germany, US have experience and our centre in India is one of them. As more and more centers acquire this expertise, it will become popular in the future.

Depending upon the type of primary cancer, the outcomes of PIPAC therapy may vary. For instance, in cases of advanced (stage IV) ovarian cancer, the objective response rates are very high (over 70%) with better survival (14 months) in comparison to other currently used methods. Appendix and Colon also have similar noteworthy results but outcomes in cases of gastric cancer are not so good due to its adverse biology. PIPAC provides a significant improvement in the quality of life.

Only a few centers in the world like France, Germany, US have experience and our centre in India is one of them. As more and more centers acquire this expertise, it will become popular in the future.

Clinical Outcomes & Patient Satisfaction

Many patients suffering from advanced stages of ovarian, colonic and appendicular cancer have achieved astounding results. Since there are absolutely no side effects and patients can walk out of the hospital, they are usually satisfied and happy. They come back for repeat procedures after 6 weeks or so, which is recommended as well.

Infrastructure required for PIPAC

One requires an Operating Room with laminar airflow or fitted with a Hepa filter so that minute aerosol particles of chemotherapy are sucked out. Laparoscopic cart and scope, a double chamber high pressure injector, a Buffalo filter to suck out vapours, and finally, a uniquely developed aerosolizer called Capnopen are needed. Of course,

the performing Surgical Oncologist should be trained for this procedure which is conducted with patient under general anaesthesia.

Dr. Sameer Kaul is the Founder President of Breast Cancer Patients Benefit Foundation, offering better cancer care to economically underprivileged patients in India and spreading awareness about this dreaded disease. He also runs a Central Drug Repository and trains clinicians in the field of oncology across India and the neighbouring countries. He is an expert oncologist, specializing in Head & Neck, Breast, Genitourinary, GI, Soft Tissue & Bone and Thorax related tumours, with key interest in popularizing innovative techniques in oncology.

THEME

STRATEGIC FORESIGHT: NICE-TO-HAVE OR NECESSARY RESILIENCE MEASURE?

ORGANISATIONAL READINESS DURING COVID-19 OUTBREAK

Written by Haritash J. Tamvada and Sachin Gaur



Strategic foresight is the ability of an organization to create and maintain a coherent and functional forward view and to use the insights arising in organizationally useful ways. This holds good for Government, Businesses and Startups alike across the world. Strategy requires the foresight to identify and respond to ripples on the horizon.

In the light of the ongoing COVID-19 outbreak, we look at whether Strategic foresight or Corporate foresight is a necessity or a nice-to-have resilience measure in the working of an organization. Would it be possible for corporates to build strategic foresight in terms of processes, policies or tools to detect adverse conditions, crisis handling and risk mitigation? While no system can predict or cater to extreme crises, can certain initiatives within an organization help mitigate the risk, buy time or better prepare them? We also look at some of the initiatives by organizations which, in the current situation, mount a robust response that could help reduce possible disruption to their overall operations.

COVID-19 & its Impact

Coronaviruses (CoV) are a large family of viruses that cause illness ranging from the common cold to

more severe diseases such as Middle East Respiratory Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV). Coronavirus disease (COVID-19) is a new strain that was discovered in 2019 and has not been previously identified in humans. COVID-19 is sweeping every country worldwide at an alarming speed and is soon turning out to be a global pandemic. Despite intense research efforts, how, when and where new diseases appear are still a source of considerable uncertainty. World Health Organization (WHO) has been assessing this outbreak around the clock and is deeply concerned both by the alarming levels of spread and severity, and by the alarming levels of inaction.

We have seen how doctors & paramedics along with the entire support staff in hospitals and health centres are literally working on a war footing, despite being hard-pressed with resources, tools and other necessary medical facilities. While the recent COVID-19 outbreak has impacted Travel, Hospitality, Manufacturing and other industries however, the maximum impact has been on Healthcare, especially doctors, paramedics and other frontline

personnel in hospitals when it comes to the direct risk of infection but in general to the economic activities.

Hospitals are not optimized for patient flows with infectious disease. Traditionally Hospitals have been known as a source of infection. This gets amplified, when we have an endemic like COVID-19. To handle large scale population testing for symptoms, a non-contact screening and new kind of patient flow designs might be the need of the hour.

Moreover, health systems are not designed for peak loads. In the case of COVID-19, for health systems one of the main constraints is going to be the ventilators. Governments like in UK are looking to step up the manufacturing of such devices. Also, NHS plans to cancel all non-essential surgeries to free up beds for handling COVID-19. It still might be the case that the constraint in treatment is not beds but the respiration assisting devices such as ventilators. Estonia responded by organizing a 48-hour hackathon for ideas on COVID-19 to which some 1000 people participated and one of the team came up with a DIY breathing assistance device.

Strategic Foresight is all about future-oriented insights, it should always be considered a key concept of any strategic planning endeavour. Strategic foresight & Planning initiatives by organizations in the light of COVID-19 have built several different capabilities which in totality makes them better equipped to handle the short to medium term crises. We look at some of the initiatives below

Adopting Digital technologies is not an option anymore!

Strategic foresight could also be employed in building technology and tools to better predict and monitor future complexities. For example, in the case of COVID-19, can tools like Artificial Intelligence, Machine Learning & Big Data and Analytics play a role in process augmentation and better understanding of the risks, given that a lot of data is available from WHO, UN and other organizations which are collecting data and almost updating in real time for public consumption.

Can hospitals use this to build the necessary capabilities and processes to build predictive capabilities to handle sudden inflow of patients? While it is known that a given hospital can



only accommodate certain number of patients and is not possible for them to take more than their capacity, more so during emergencies, clearly suggests that it is important for the healthcare ecosystem to build certain additional capabilities in terms of access to more doctors paramedics tools funds space and other things which are needed for them to cater to the additional traffic. In Italy, for example a startup has launched an AI chatbot for COVID-19 given the helpline numbers are running busy and citizens have many more queries than the system can handle.

Social distancing is a major recommendation to slow down the infection spread. Behavior change has been a key issue in adoption of digital productivity tools. With remote work as the only option many enterprises would be open for behavior change. How can Enterprises create necessary channels and processes which include communicating with employees, partners as well as customers in a way that business continuity and growth is always taken into account. Here the big potential is in enterprise

communications tools like Slack for group chats and crowdsourcing responses within the team. Virtual classrooms for important debriefing and sharing updates, insights and plans. AI based screening tools and chatbots to reduce the burden on health systems. Wearing masks or protective gear is another example.

De-Escalation and Containment Strategies

Strategic foresight can be a saviour during crisis and recession. How do Enterprises foresee possible distractions from business-as-usual and have contingencies in place to make sure the business is continuous and withstands any potential destruction because of situations beyond control like the one we are seeing with COVID-19? Implementing best practices and learnings from industry peers and others, adhering to WHO and local government welfare and advice can go a long way in better crisis management.

Another strategic foresight which organizations can adopt through their policies can help in helping “Flattening

the curve” as has been popularly called which means that all the social distancing measures is more about slowing down the rate at which people fall sick than to preventing illness. Even if the employees are healthy, they could help slow down the epidemic by following actions such as hand washing, travel restriction, and social distancing, all aimed at Flattening the curve. Larger objective is to reduce the health care capacity to become quickly overwhelmed and not get to a situation where the doctors have to engage in a triage i.e. choose who gets the hospital level care and who does not.

Crisis management team driven with Empathy

Organizations adopting People first based welfare approach have a higher chance of surviving a crisis and support of their employees. Well-being of vendors, employees, their families is very important. Have cross functional teams to respond to new situations. Having diverse stakeholders broadens the horizon and helps take multiple viewpoints and situations into account. Create empathy amongst employees



and other stakeholders in that we are all part of it and we will deal with it together. After all, such black swan events like COVID-19 which threaten the very fundamentals of human life, can bring unity and togetherness across the spectrum as it could impact anyone and as things stand today, no one is immune to it.

Periodic Vulnerabilities Analysis

Doing period simulations internally of such possible black swan moments can help significantly. This will help the organizations improve the crisis management capabilities. Given the ever-growing complexities in which organizations live and compete, having a risk management strategy in place is a necessity. It is also safe to assume that these black swan events can be recurring and the strategic planning on tackling such events needs to be baked well within an organization's strategy.

Conclusion: Strategic foresight as a resiliency measure

Strategy for any organization needs the foresight to respond to ripples in

the horizon for smooth functioning, more so in the ever-growing complex business environments. Organizations that attempt to move into turbulent times, such as the one with COVID-19 outbreak, without a strategic foresight, will find themselves overwhelmed by forces that were indeed visible for some time, but which were overlooked. While no futures method can foresee all eventualities, organizations that routinely employ Strategic Foresight, will find that they are better equipped to negotiate the turbulent conditions than the ones that don't. Strategic foresight, while is seen as a competitive advantage in general, but during challenging times can really be a saviour.

As we've seen in the case of the COVID-19 outbreak, having strategic foresight and planning, the epidemic impact on their activities could be reduced to a large extent. Initiatives like using digital technologies as part of the corporate strategy, de-escalation and containment strategies, Empathy based crisis management, periodic

vulnerabilities analysis of unforeseen circumstances can better prepare the organizations and be resilient. We conclude that employing Strategic foresight and planning, by design, can give organizations strategic agility and a higher degree of responsiveness and preparedness.

Haritash J. Tamvada is the Founder of Elmarqr.com - an Asset Intelligence and Traceability software automating Asset Tracking, Audit & Maintenance for Enterprises. With 12+ years of global Entrepreneurial and Executive experience, he is passionate about Mobile, Digital Technologies and Internet business. He is interested in research around Strategy, Entrepreneurship and Innovation.

Sachin Gaur, Executive Editor, InnoHEALTH Magazine, works on EU funded project, India-EU collaboration on topics of 5G, ITS (M2M), NFV/SDN and telecom /cyber security with main stakeholders – ETSI, TSDSI and EU Delegation India.

PERSONA

THEME

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RESEARCH

NEWSCOPE

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WHAT IT TAKES TO ORGANISE INDIA'S LARGEST COVID-19 IDEATHON

Written by Sachin Gaur

Estonia started with a 48 hr online hack on 15 March to respond to COVID-19, then a few days later Germany and Finland followed. 42000+ people participated in the German edition ending up crashing Slack! We also wanted to respond to the crisis in a meaningful way by doing an online hackathon in India, called an IDEathon! The event started at 6:00 PM on 26 March and concluded at 6:00 PM on 29 March. The original plan was 48 hours and it stretched to 72 hrs because of the overwhelming response.

The three themes of the proposals solicited were, **Saving Lives, Saving Communities and Saving Businesses.**

Through a rigorous process, we could shortlist the top 20 out of the 5000+ applications. Seven entries in the student track, six entries in the educator track and seven in the startup track, each faced an international jury. Eighteen

out of twenty received a cash prize and are now being considered for various government grants to further accelerations to their solutions.

Outreach - Reach more people through partnerships!

When you are in a crisis, traditional models of outreach don't work. Best way is to work through partners who already have your stakeholders. In our case, we started with the Ministry of Human Resources, Innovation Cell run under AICTE. Every year they organise the world's largest hackathon. Along with them, we partnered with an incubator based out of Coimbatore, called FORGE. Then we onboarded various national and international agencies like iHub Gujarat, UN Technology Lab to World Startup in the Netherlands.

The few days we had (four days to be

precise) to do outreach we had 5400+ teams and 350+ mentors applying for the IDEathon.

Technologies to Collaborate

We used a variety of tools. Depending on your need you may use the same or alternate.

Curating Challenges

We reached out to many experts for articulating challenges through video messages. Below is a list of compiled video messages on Youtube. It enabled a quick understanding of the context to participants.

https://www.youtube.com/watch?v=8JN_vnSE2eE&list=PLdKuvvCBPEpjRaPmjuHI3msRj5PUtKu4i

Mentor Dynamics

Mentors are the soul of any such program. People genuinely wanted to help, and if you can map their expertise



Tool	Utility
Slack	Primary tool for onboarding the community, announcements using public channels, Q & A, private channels for managing the selected teams during various phases and internal
Google Forms	To collect registrations from Participants, Mentors and Jury
Guaana	To run various phases of challenge for submissions and evaluation
Google Drive, Docs and Spreadsheets	To exchange information among organisers, Teams and Mentors
Zoom, Google Meet and others	For video calls with jury, mentors, among organisers etc
Twitter, LinkedIn, Email, Instagram	Outreach by organisers and partners
Youtube	Challenge Curation

different time zones. India, Singapore, the Netherlands and USA (East Coast). You can make your event international without any extra effort.

COVID-19 is a global crisis, it is an opportunity to build bridges for innovative solutions by bringing international perspective to your work. The startup / team you helped through the event might get global assignments.

Social Media posts generated from Community Content

In the world full of fake news, how do you do outreach for a cause? As you need to recruit more supporters and make the outcomes more visible, putting together the community content into a meaningful shape (like short videos) is a method that can take you a long way.

The selfie collage post on first page: the filtered participants who burnt the midnight oil to try and find solutions to fight COVID-19.

Sachin Gaur, Executive Editor, InnoHEALTH Magazine

efficiently they can be utilised better by the participating teams. Also, for mentors to stay online without being utilised is not good.

moved along with the various phases. Most of the mentors were available throughout the night to help the teams.

Jury Dynamics

Many of the teams we observed wanted to stay with the same mentors as they

Cyber is a great equalizer, for our startup track we had jury members from 4

FORM IV

- Place of publication: New Delhi
- Periodicity of its publication: Quarterly
- Printer’s Name: Sachin Gaur
Nationalty: Indian
Address: E-2/9, First Floor, Malviya Nagar, New Delhi-110017
- Publisher’s Name: Sachin Gaur
Nationalty: Indian
Address: E-2/9, First Floor, Malviya Nagar, New Delhi-110017
- Editor’s Name: Sachin Gaur
Nationalty: Indian
Address: E-2/9, First Floor, Malviya Nagar, New Delhi-110017
- Names and addresses of individuals who own the newspaper and partners or shareholders holding More than one per cent of the total capital. N/A

I, SACHIN GAUR hereby declare that the particulars given above are true to the best of my knowledge and belief.

Date 2 April 2020

Fight Corona IDEathon



Powered by **Foundation of Healthcare & Excellence (ICFHE)**

Thousands of innovators, researchers, scientists, educators and startups from India joined hands as a true community to discover solutions that can help the nation rise as one in the fight against COVID-19

We responded to the crisis by powering an online hackathon in India, called an IDEathon!

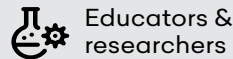
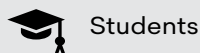
PROPOSAL THEMES

- Saving Lives
- Saving Communities
- Saving Businesses

POTENTIAL PROBLEM STATEMENT CATEGORIES

- Personal Hygiene & Protection
- Medical Systems - Diagnostic & Therapeutic
- Awareness, Preparedness & Responsible Behavior
- Protecting Most Vulnerable Groups
- Community Task Forces/Working Groups
- Remote Work & Remote Education
- Stabilizing Affected Businesses
- Open Category
- Screening, Testing & Monitoring - Devices & IT/Digital/Data Solutions

THREE TRACKS



OUTREACH

When you are in a crisis, traditional models of outreach do not work. Best way is to work through partners who already have the stakeholders.

PRIMES



Eventually various public and private organisations responded to IDEathon call and handed tremendous support in the form of financial and outreach capabilities.



OVERWHELMING NUMBERS



Days for outreach



Number of applications



Number of mentors

TECHNOLOGIES USED FOR COLLABORATION



- Slack
- Google Forms
- Guaana
- Docs
- Google Drive
- Spreadsheets
- Zoom
- Google Meet
- Twitter
- Linkedin
- Email
- Instagram
- YouTube

CURATING CHALLENGES

We reached out to many experts for articulating challenges through video messages. Below is a list of compiled video messages on Youtube. It enabled a quick understanding of the context to participants.

bit.ly/covid19-ideathon-challenges

MENTOR DYNAMICS

Mentors are the soul of any such program. People genuinely wanted to help, and if you can map their expertise efficiently they can be utilised better by the participating teams. Also, for mentors to stay online without being utilised is not good.



JURY DYNAMICS

Cyber is a great equalizer, for our startup track we had jury members from 4 different time zones. India, Singapore, Netherlands and USA (East Coast). You can make your event international without any extra effort.



MEDIA MENTIONS



SOCIAL MEDIA POSTS GENERATED FROM COMMUNITY CONTENT

YOUTUBE VIDEOS



India's support to the participants



Tribute to the participants

CONTACT

Are you interested as a corporate / government / community to take action for your cause or to do open innovation. Don't hesitate in contacting us for a discussion.

Sachin Gaur

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NATURE'S OWN ANTIBIOTIC – BACTERIOPHAGE VIRUS

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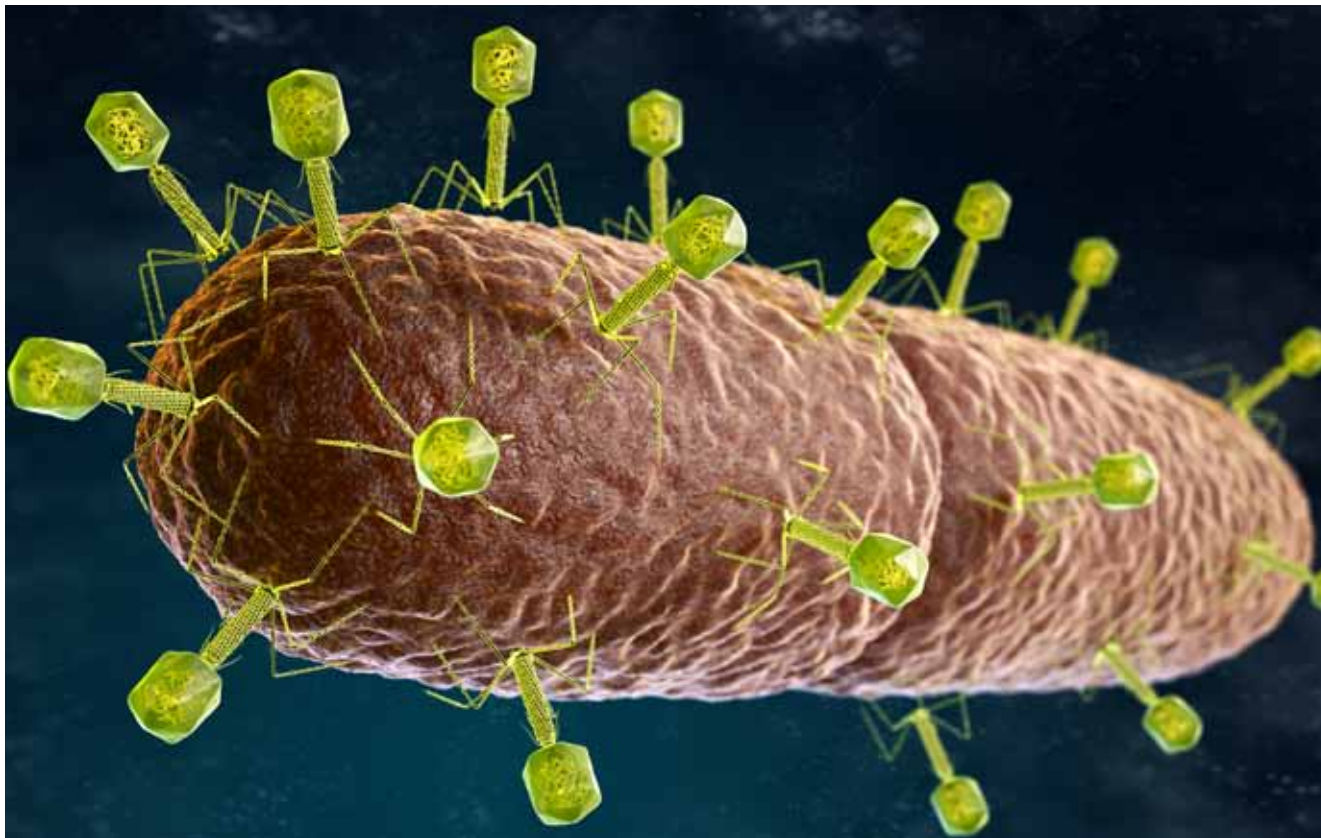
TRENDS

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NEWSCOPE



Written by Mahan Shome

Today, in this era of globalization, I find this subject quite relevant to write as it involves our past researches and at the same time can open a new door for the treatment of superbugs. Superbugs are those bacteria which are resistant to most of the known antibiotics.

According to Darwinian evolutionary theory, every living entity undergoes an evolutionary mechanism by which they better themselves so that they can maintain their existence through the process of 'Natural Selection'. Bacteria are also no exception. Bacteria evolve themselves in order to survive and become resistant to antibiotics. It is almost like the 'survival of the fittest'.

The main cause of it is overuse and misuse of antibiotics due to self-mediations as well as by the

physicians. Superbugs are expected to become one of the leading causes of deaths globally, overtaking even cancer in the next 30 years, according to a report commissioned by the UK government. These infections are also likely to cost the world as much as \$100 trillion. That's threatening both medically & financially. Imagine one small cut on your skin will be enough for your admission in the ICU and still you will be left with no options but to fall into the lap of death gradually. It is the time to act for a better future. We actually have the solution.

Bacteriophage. Yes, it might sound weird, but it is quite realistic and has been implicated for years in some countries like Georgia etc. In short it is also called 'Phage Therapy'. Bacteriophage is the most abundant thing on earth. They even outplay the

number of humans. These deadliest killers are responsible for killing more than 40% bacteria in ocean and keep the environment clean. Bacteriophage viruses are basically 'Nature's Own Antibiotic' that keeps the balance.

The most useful nature of these viruses is – they do not harm human and they live on bacteria. So, it's a 'enemies' enemy is our friend' kind of situation. Once introduced into the patient's body, they enter the target bacteria by infusing its genetic material. Replicate inside the host (bacteria) and ultimately rupture the bacterial cell by its endolysin enzyme.

Yes, TARGET bacteria! one type of phage is specific for one specific bacterial strain and hence it destroyed only the targeted one leaving behind the normal flora of the body. Hence,

side effects are almost nil. Such mechanism provides us and forces us to think another way out to fight this superbug monsters. If we can prepare the 'ENDOLYSIN' enzyme in pure form and modify it in such a manner that it ruptures the target superbug from outside then it can be far more promising because we do not need to introduce the virus into the human body then.

Instead, a specific enzyme will be used as an optimum drug to kill those superbugs. Now let's come towards one of the most valuable points – RESISTANCE. Can these superbugs develop resistance against these bacteriophage viruses or lysins? Well, the answer is YES! But the worry is much lesser. Both bacteria and viruses are living entities. Phages being dependent on bacteria for their survival will also evolve accordingly if bacteria evolve. There is a good possibility that in order to become resistant towards phages, bacteria will have to sacrifice their resistance towards antibiotics!

In that case we might have our old weapon back in the form of antibiotics. Moreover, it took 75-80 years after the discovery of Penicillin by Alexander Fleming to become resistant. Even if we accept that bacteria develop some way to bypass phages, we must accept that it will give us another 100-150 years cushion to prepare new weapons against these enemies of humanity.

So, may be on occasion of 150th or 200th year of 'InnoHEALTH' someone else will be writing on the same topic with different intervention.

But now the point is – if we have such an amazing weapon against our deadliest enemies, why don't we use them? Of course, there is no 'Bacteria Rights' agency that might cause problem! But the main problem is – phages are millions billions everywhere, even inside our body. It's a tough ask to recognize and isolate a specific type of phage that targets a specific bacteria from such huge pool. Plus, if such treatment is not recognized, no pharmaceutical company will



be willing to invest billions on such project that is quite uncertain. One additional problem also comes in the way. Antibiotics that we use in modern days, are useful against more than one bacteria but here in this case, a single type of phage can be directed towards a single strain of bacteria only.

Hence for every single strain, different phages have to undergo laboratory testing for being accepted. That further increases the cost and time. Time! it is the most valuable thing we are lacking right now. We must act immediately to secure our future.

A bioscience company has come up with CASPR-cas3 system. This system basically damages the target DNA beyond repair. CASPR-cas3 shreds the DNA into pieces. If we can combine this system with bacteriophage therapy, imagine the phage virus will attack the target bacteria and CASPR-cas3 system will potentiate its action. But all these possibilities are far from being implemented in US. Food and Drug Administration must have to approve these treatment procedures to come into play. And gaining approval is a lengthy and strict procedure.

I believe India is a huge powerhouse for the future possibilities in Medicine. We just need to execute the talents

properly. Let's hope that our own country comes forward in such a noble task for the mankind. There are some institutes in Georgia which have been working on these interventions for decades. Actually, they are successfully using bacteriophage medicines to cure deadly bacterial infections.

It is high time for the whole world to work hand to hand and show universal brotherhood. Together we can and we will.

That day is not very far when superbugs will be curable. Sounds like a dream? Well may be treating bacterial infections with the help of viruses is a little awkward but it is the future that is basically derived from the past.

It is the time for the young generation to take interest in the subject and work together for the safe and better future only. It is a matter of human existence.

Mahan Shome is a young medico studying medicine abroad. In his leisure time, Mahan likes to read innovative scientific health articles. His dream is to be part of healthcare research that brings about advancement in medicine. He hails from Howrah, West Bengal.



TRENDS

LATEST INNOVATIONS!

NATIONAL CLINICAL COORDINATION COMMITTEE JOINTLY FORMED BY APOLLO HOSPITALS AND MICROSOFT

India has a huge disease burden owing to cardio-vascular diseases and two giant renowned working groups in their field of work, the Apollo hospitals Group and Microsoft India back in 2018 introduced the first ever AI-powered CVD Risk Score Application Program Interface (API), specifically intended to estimate the risk of cardiac diseases in the Indian population. The API built on Microsoft Azure seeks to determine a more precise CVD risk rating for the population of

India taking into consideration various risk factors like lifestyle characteristics such as diet, smoking, preference for tobacco, physical stress and anxiety and level of physical activity. Taking a step forward, recently Microsoft India and Apollo Hospitals Group have joined hands to set up a National Clinical Coordination Committee for AI-Powered Cardiovascular Disease Risk Score API AS PART OF Microsoft's AI network for Healthcare initiatives.

The coordination committee will assist the key team of both the Apollo group and Microsoft by offering advice on all artificial intelligence projects related to cardiovascular issues and cardiology. The committee also aims to provide insights into the development of clinical algorithms and instructions for therapy which will be based on the results of potential domestic, multi-center research.

SOURCE: www.healthtechnology.in

NEW BLOOD TEST CAN DETECT LIVER DAMAGE UNDER AN HOUR

Liver disease is the third biggest cause of premature mortality in the United Kingdom and is one of the leading causes of death which is on the rise. Also, almost half of adults in western countries face an increased risk of liver disease due to overweight or heavy drinking. The problem is that liver disease goes unnoticed until late stages of the disease where the damage to the liver is irreversible. So, it becomes imperative to look for a diagnostic technique that is quick, robust and reliable in detection of liver disease. Keeping this in mind a study supported by the Royal Society, the Engineering & Physical Sciences Research Council (EPSRC), the National Institutes of Health (NIH) and the National Institute for Health Research University College London Hospitals Biomedical Research Centre and conducted by researchers from UCL, University of Massachusetts Amherst, University of Glasgow and iQur Ltd was conducted and resultantly a fast and robust blood test was designed and developed that can detect damage of liver before symptoms appear. The

results of the test have been verified using clinical samples by a team from UCL and University of Massachusetts. The study is published in *Advanced Materials* wherein lies the description of the new method of detecting liver fibrosis which is the first stage of liver scarring that leads to fatal liver failure if left unchecked and undiagnosed from a blood sample in 30-45 minutes. For the blood test, researchers have designed a sensor that uses polymers which are coated with fluorescent dyes that bind to blood proteins based on their chemical properties. The dyes change in colour and brightness giving a different pattern of fluorescence depending on the blood sample's protein composition. The results from small blood samples equivalent to finger-prick check from 65 people were then compared in three groups of healthy patients and those with early-stage and late-stage fibrosis. The groups were determined using Enhanced Liver Fibrosis Test. The sensor could detect different patterns of protein levels in the blood serum of people in the three groups. The sensor array identified

a 'fingerprint' of liver damage known as a chemical nose as it recognises the difference between healthy and unhealthy blood samples without relying on disease markers. The sensing strategy uses a very versatile signature-based approach that is not disease-specific, as it is applicable to wide range of conditions. This feature opens up the possibility of diagnostic systems that can track one's health status, providing both disease detection and the monitoring of wellness. 80% of the time the test could differentiate between fibrotic samples from healthy samples and 60% of the time the test could distinguish between mild-moderate fibrosis and severe fibrosis. The researchers intend to use this test on much larger sample size very soon owing to its accuracy and reliability in the current scenario. The aim is to bring in this technique on a routine basis in GP surgeries and hospital clinics to conduct screening of people who face an elevated risk of liver disease at an early stage. The test is simple, low cost and robust.

SOURCE: *Economic Times*

AUTOMATED ROBOTIC DEVICE DEVELOPED FOR FASTER BLOOD TESTING

Researchers in the Biomedical Research team at Rutgers University have developed an automated robotic device for faster blood testing. The fully automated device consists of an image-guided robot which draws blood from veins, a sample-handling module and a centrifuge-based blood analyser. This blood drawing and testing device provides rapid and accurate results and has created a potential to improve workflows in hospitals and other healthcare related facilities, thereby allowing healthcare practitioners to spend more time in treating patients. The device can be used at bedsides or in ambulances, emergency areas, doctors' offices and clinics. The study related to the device is published in the journal Technology.

SOURCE: news.rutgers.edu

MAKE IN INDIA INNOVATION..... A PEDIATRIC PERIMETER

Presently in India there is no specific perimeter device to measure the field of vision in infants, resultantly most of the defects in the eyes arising during infancy get detected only in adulthood. To cater to this deficiency scientists at L.V Prasad Eye Institute in Hyderabad have developed an advanced device to measure the field of vision of infants. The device is named "Pediatric Perimeter" which can be used for testing the eyesight of infants between two and twelve months by measuring the area of vision and the reaction time of infants. The perimeter consists of a hemispherical dome which is fitted with LEDs in all directions that are controlled using a computer program. The baby is placed inside the dome in a lying down position and then his/her head and eye movements are monitored by an infrared camera mounted on the top of the dome when LEDs are randomly switched on. The duration of conducting the test ranges

from 6-10 minutes. The time taken for an infant to look at the LED after it is switched on is known as the reaction time which when measured helps to identify infants with developmental delay. Healthy infants react within 380 milliseconds and those with developmental delay took 663 milliseconds. To measure the area of vision, the LED was switched along the dome starting from the left and right sides to the centre and also from front to back. The camera then monitored the infants gaze and degree of eye movements along with the reaction time was calculated to identify visual field defects.

Validation of the device was done using adults with normal vision and those with retinal defects and glaucoma. The study is published in Transational Vision Science and Technology.

SOURCE: www.thehindu.com

SMART BANDAGE TO DIAGNOSE AND TREAT YOUR INJURIES

Researchers at Tufts University, Massachusetts and other higher educational institutions have been working on and been able to make a prototype smart bandage that can not only keep track of how well a wound is healing but also deliver drugs directly into the injury site only when they are needed. The bandage consists of sensors to monitor a number of markers showing that how well a wound is healing along with a drug delivery mechanism. All is in a form factor that is flexible enough to be wrapped around a wound. The smart bandage promises to cleaner wounds and better healthcare outcomes. This bandage is first of its kind 'sense-then-respond' type bandage whose sensors detect subtle biomarkers that signal healing of wounds. The device comes with a microprocessor to read the data captured by the sensors, communicate with the mobile and also direct the bandage to release medication, if required. The device senses whether wound is getting enough oxygen, does it have the right Ph, what is the temperature near the wound and if there is any inflammation around the wound and then this information is communicated to a central processor where the physician already has programmed drug release incase antibiotic or growth factor is to be given for improve healing.

SOURCE: www.digitaltrends.com

BUREAU JEEVTRONICS

Cardiac arrest is one of the most common non-communicable diseases that can happen to anybody, anywhere at any given point of time and use of defibrillator is the answer to contain the situation of cardiac emergency. Unfortunately, there are many geographical areas in India and the world where electricity is still not available 24*7 and 365 days a year. In this scenario India's death rate due to sudden cardiac arrest is 3 to 4 times that of developed countries. To cater to this problem of non-availability of electricity and fulfil the need to use technology, a social and technology venture "Jeevtronics", Pune-based social enterprise has developed the world's first dual powered bi-phasic (grid electricity based + hand cranked) defibrillator which works in areas without electricity. The USP of the device is it's cost effectiveness, affordability and availability in underdeveloped and rural areas. The device is surely an answer to improve access to defibrillators to a huge portion of the world which does not have electricity.

Compiled by:

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

CSIR ANNOUNCES INNOVATION AWARDS FOR SCHOOL CHILDREN

Written by Jyoti Singh

Now students may give some novel and utilitarian solution for any existing societal problem, it may be new method, device or utility and for this they would be awarded. Council of Scientific & Industrial Research (CSIR) has announced Innovation Awards for School Children (CIASC) to support their scientific temperament and to encourage innovative spirit among them.

Students may send their original creative technological and design ideas in the form of proposal for the competition. Proposals can be submitted by a student or a group of students of any Indian school. Students of up to Class XII and below 18 years of age as on January 31, 2020 are eligible to apply. They can apply through the Principal or Head of the School.

The proposal would be categorized in

groups such as Biotechnology, Biology, Chemistry, Electronics and Engineering device or design. However, design-based applications would be encouraged. The concept of the innovation should have been proved through a model, a prototype or an experimental data.

The proposal for CIASC Award 2020 should relate to innovations developed or published or exhibited during the period from January 1, 2019 to December 31, 2019. The applications for the award not exceeding 5000 words in English or Hindi with requisite drawings or photographs will be considered.

The write-up sent by the student must describe the subject matter in a problem-solution mode, highlighting the novel features of the innovation and its advantages. The awardees will be selected by a high-level Award Selec-

tion Committee of CSIR. The decision of the Committee will be final. Award would be announced on or before September 26, 2020.

There are fifteen awards for the winners. Besides certificates, there are cash prizes also to be won. The first prize carries a cash award of Rs. 1,00,000 for one, two second prizes of Rs. 50,000 each, three third prizes of Rs. 30,000 each, four prizes for fourth rankers of Rs. 20,000 each, and five fifth prizes of Rs. 10,000 each.

CIASC award was initiated in the year 2002 on the occasion of the World Intellectual Property Day, which is celebrated throughout the world on April 26. CIASC is an annual national competition to harness the creative and innovative spirit of school children.

(Credits: India Science Wire)



Timeline of events

InnoHEALTH 2018

October 5 - 6, 2018

EWS project was launched in InnoHEALTH 2018. The team has more than 15 expert volunteers from different fields focused on bringing awareness to the 70 million diabetic people in India by September 2021.

ESICON 2018

November 15 - 18, 2018

The EWS team participated in ESICON 2018 - A conference hosted by Endocrine Society of India. The EWS team conducted diabetes expert video interviews and session recordings of role play activities. The team covered experiences of endocrinologists and also captured the general view of the public about dealing with diabetic situations.

SPEEDCON 2019

February 2 - 3, 2019

The EWS team participated in SPEEDCON 2019 where Dr Sanjay Kalra, mentor to the EWS project curated a panel of people living with diabetes with diabetologists as audience on unmet needs.

FTR4H, Medical Fair India

February 22, 2019

EWS team hosted a panel in FTR4H on type 2 diabetes as part of Medical Fair India 2019. The panel had experts in diagnostics and digital health on how technology can help in diabetes management. Dr. Mukul Bagga, Dr. Vibha Jain, Dr. V K Singh and Sachin Gaur were part of this panel.

3D - Safe & Smart event

April 20, 2019

Sachin Gaur from the EWS team gave a talk to doctors from 13 countries on artificial intelligence in diabetes at 3D - Safe & Smart event.

InnoHEALTH 2019

October 4 - 5, 2019

The EWS team hosted a session on "Fighting diabetes with technological innovations" as part of the 4th annual international healthcare conference InnoHEALTH 2019.

want to curate a

**Diabetes Panel
in your**

event / workplace, contact us.



WELL-BEING

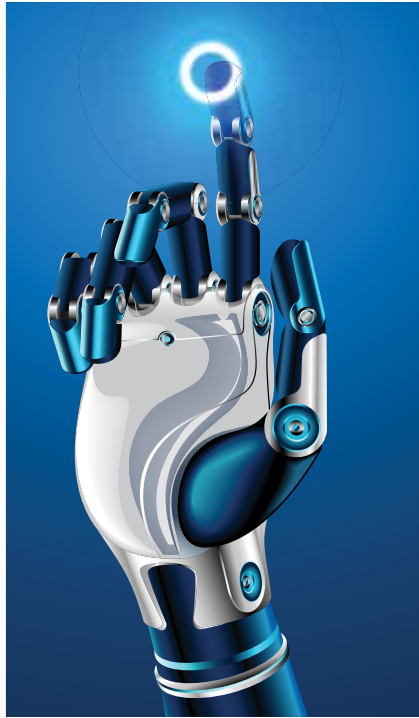
AI REVOLUTION IN THE FIELD OF HEALTHCARE

Written by Gaurav Sharma

A doctor being counter-questioned by the patient armed with newly acquired knowledge regarding his symptoms through numerous online websites is already a frequent occurrence nowadays. Add to that the apps, which monitor your vital parameters at all times and the scope for further improvements; wherein, the test results can be fed to your app and the diagnosis indicated by the app would usually be pretty accurate. When Artificial Intelligence, Robotics and Big Data analysis is added to this, it just keeps getting bigger and better. Like most of the conventional industry, the healthcare industry is going to see a big disruption soon. Should the doctors be alarmed, may be yes, may be no; should they be excited Yes!

The advances made in the field suggest that AI should be embraced with open arms in the healthcare sector as it would augment the medical practitioners in not only penetrating these services to larger percentage of society, but also utilizing the time more effectively on each patient and arrive at a more accurate diagnosis. The data collected and learnings inferred can further improve the medical as well as training processes.

The changes in disease profiles in our country and increase in chronic diseases demand (increase in diseases due to pollution is yet to show its real size) that state and central governments collaborate with researchers and healthcare giants to implement suitable programs that improve healthcare and AI can be a force multiplier in this regard. The effect of AI on major



problems being encountered in India in healthcare sector will be discussed one by one:

1. Neglect of Rural Population. India faces acute lack of healthcare facilities in rural areas in terms of both quality and quantity. As per information in open domain, the rural population which comprises 75% of total populace have access to only 31.5% hospitals and 16% beds. Only 37% of people were able to access IP facilities within a 5 km distance, and 68% were able to access out-patient facilities due to limitation in number of doctors and lack of infrastructure. Unwillingness of skilled healthcare officials to work in rural areas only compounds the issue. Minimum tenures of officials have been made compulsory in some states;

however, the same is grossly inadequate. According to the rural health statistics of the Government of India (2015), about 10.4% of the sanctioned posts of auxiliary nurse midwives are vacant, which rises to 40.7% of the posts of male health workers. 27% of doctor posts at PHCs were vacant, which is more than a quarter of the sanctioned posts. AI based solutions can use this limited infrastructure and manpower much more effectively. The present and predictive analysis of number of patients is one such tool through which the District Administration can keep a tab on actual situation on ground and can even predict the outbreak of an epidemic. The smart use of paramedicals may also be employed. Use of light-weight equipment for measuring ECG, blood pressure, heart rate, auscultation, oxygen saturation and the temperature of a patient which can transmit data wirelessly anywhere is already a reality and is already making big impact through low cost solutions to rural healthcare. 'A3RMT' is one such start-up which assisted in treatment of more than 56,000 patients in 450 locations in India and saved more than 2,000 lives through emergency intervention.

2. Only Cure Based. Though the old saying preaches that 'Prevention is better than Cure', the present trend in India remains cure based. Though the government's thrust on health with awareness of Yoga and general health is in the right direction, it's too little too late. With continuous monitoring of health parameters on individuals using AI, the march towards preventive healthcare can become a reality. Also, self medication is very much prevalent

in India. To equip personnel to verify the veracity of such remedies, a start-up 'Myupchar' has been created. Other such apps can help the users to avoid wrong or non-effective diagnosis, thereby not losing precious time which may prove crucial in certain critical ailments. Also, awareness about health can also be increased by using various tools and apps. Fitness bands have also increased the overall awareness.

3. Low Budget on Healthcare. The present allocation of about 1% of GDP to healthcare budget is way below what is needed. Though the government plans to increase this to 2.5% by 2025, it is still way below the required mark of 5 to 6%. The entry of AI into healthcare also means that the Government healthcare schemes would have much larger coverage with the same budget. The lower and effective medical help would mean lowering of costs of medical insurance thereby making it more affordable. At present 76% of Indians do not have any health insurance. This in turn should bring in more people to buy medical insurance and providing healthcare protection to larger sections of society. This would increase the overall load on the healthcare infrastructure of

the country and thus cheaper medical education to churn out more doctors and nurses with effective use of AI and robotics would become a necessity. As the numbers increase the costs should slide down further.

4. Shortage of Healthcare Officials. A 2011 study estimated that India has roughly 20 health workers per 10,000 population, with allopathic doctors comprising 31% of the workforce, nurses and midwives 30%, pharmacists 11%, AYUSH practitioners 9%, and others 9%. The resource and knowledge sharing in between healthcare organisations can become online and instant depending on present usage of the resources. If the resource can be more effectively (or profitably) utilised by another organisation through virtual allocation by AI, the overall working efficiency would be higher. This is especially important in a country like ours where the infrastructure and number of healthcare specialists are far lesser than the need. Simple example of the same is sharing of ambulances.

5. Lack of Medical Research. The international pharmaceutical companies have for long neglected research in medicines for tropical

diseases due to low profitability and the Indian companies have been limited in success in this area due to prohibitive costs of R&D. With the latest amendment in the rules for CSR by the government, the money can now be utilised for R&D and this would mean that the pharmaceutical giants would be pumping in large amounts of money into research in India. This would mean significant increase in the clinical trials in the country. The AI tools can make the clinical trials more effective and result oriented and would be able to indicate the side effects on the subject much earlier than otherwise.

6. Alternative forms of Medicine. AI tools can be utilised to monitor the results of medical practices like Allopathy, Ayurveda, Unani and Homeopathy. The data on successful diagnosis through these could be compared for various diseases and most effective form of medicine for each type of disease can be computed for further analysis.

7. High Cost of Healthcare. The high cost of healthcare is prohibitive for majority of Indian population and thus proper healthcare facilities remain out of their reach. The factors listed above



will bring down the overall costs of healthcare.

8. Awareness. A study in urban Haryana found that only 11.3% of the adolescent girls studied knew correctly about key reproductive health issues. Since the same is a difficult topic to cover for parents as well as teachers, AI based training modules can be used to teach certain sensitive issues.

9. Accountability. With better data logging and AI based approach, the responsibility can be determined for various actions. Last year, a dengue patient was billed around Rs.16 lakh by Fortis Hospital, Gurugram for 15 days treatment in its ICU despite the death of the patient. In spite of having the best of the doctors and latest technology, cases of medical negligence are reported frequently. In another case, an alive baby was declared dead by Max Hospital, Shalimar. With better use of AI tools, accountability in such cases can be fixed. However, for this, complete legal framework will have to be prepared to ensure that only those are punished who are proven guilty of intentional malpractice beyond doubt. Also, the data once stored should be protected to ensure that no tampering can be done even at back end. The privacy of data also needs to be taken into account.

10. Home Care. Avenues of patients being treated at home also need to be explored. This would ease the load on limited hospital infrastructure and reduce the chances of secondary infection to the patient. This also eases the life of attendants of patients, usually the close relatives. Start-ups like 'PORTEA' are working in this field and providing such avenues with much lesser costs.

The doctors should also be excited as by intelligent use of AI, the major problems faced by them in India could be eased in a limited manner:

1. Understaffing. The doctors are overworked and often complain of fatigue. The problem is compounded due to poor infrastructure and support facilities. A human is after all a human

and human fatigue of doctors in hospitals can be brought down with the use of AI tools effectively. The number of specialist doctors and nursing staff on duty can be brought down with AI machines acting as assistants to the duty staff. The AI machine with complete history of each patient and earlier diagnosis by the specialist can be of great help to the duty staff. This would also mean that time spent on each patient by the doctor reduces significantly thus giving doctors and staff to utilise this time effectively in upskilling themselves. The monitoring of patients with critical illness and assistance provided to them can be greatly enhanced. The use of AI tools in hospital administration would bring up the overall efficiency and hence reduce time spent on avoidable tasks.

2. Troublesome Patient and Relatives. With better sampling of data in case of each patient and data being available for analysis in future, the number of cases of malpractices would significantly come down. This would vastly improve the trust factor between the doctor and the patient, which would eventually bring down the cases in which the relatives manhandle the doctor and damage the hospital property. 'Credihealth' is one of the medical support start-up that gives guidance to the patient regarding finding the right doctor to guiding them in admission to discharge process based on disease to be treated and even give cost estimates for every process. The policy and rules would have to be amended accordingly to cover the legal aspects of medical cases with the availability of AI and big data. All this would also require a framework where the data is protected and reproduced as required without any chances of tampering at back end.

3. Expectations of Instant Relief. Use of AI tools could help convince the patients better regarding the diagnosis administered and time to recover. A predictive graph of such ailments and dosage would greatly dispense fears amongst patients and their relatives.

4. High Medicinal Costs and Charges by Hospitals. Doctors have often

complained that whilst patients bear huge medicinal costs, the consultation costs in India remain very low. With the use of AI tools, the exact dosage for patients can be worked out, which will bring down the medicinal costs borne by the patients. Further weaning off of a patient from medicines could be predicted. Also, as the working of hospitals and organisations could be automated with use of AI, the total operating costs of hospitals could be significantly lowered. This would reduce the total cost burden on a patient and thus higher consultation costs of doctors could be facilitated. The option of choosing between a non-emergency plan and emergency plan of medical cover is also being provided through smart solutions. 'Afforplan' is a start-up that gives plans where one could plan, save and pay for non-emergency planned procedures like pregnancy.

5. Non-compliance by Patients. In instances where the patients do not comply to the instructions of doctors, the blame still comes to the doctor. With better recording of parameters and use of AI tools, the monitoring of patients can improve significantly, thereby reducing the blame on doctors.

6. Prohibitively High Training Costs. The training costs for doctors especially for specialisation are prohibitively high. Presently average cost of completing MBBS from a private college is approximately 25 Lakh and for MD it is almost three times or more. These training costs can be brought down significantly with the use of AI based training and college administration tools. The automotive and other industries have already started moving towards AI based training making it more personalised and focussed. The net throughput to every student in such cases is also higher resulting in better skill of every trainee. Reduction in training costs should also be utilised to educate the young trainees to the financial aspects of the healthcare delivery system so as to bring in behavioural change towards cost consciousness in the implementation of governmental schemes. Also, low knowledge by the providers (both

the public and the private sectors) in low income countries result in gaps between providers' knowledge and the care provided, this is known as "know-do gaps" and is a serious concern in delivery of proper healthcare services. Start-ups like 'Timble Tech' are working in the field of training using AI tools, the same company is presently also working with AIIMS on mapping the symptoms and response to certain kind of diseases.

7. Poor Working Conditions. Majority of the government infrastructure, especially rural lack good infrastructure, proper management, dedicated staff and many other things which are required to provide reasonable and appropriate healthcare. The AI based tools can help this on multiple accounts. The tools can help in better reporting and monitoring of the issues. Also, the staff responsible for administration can be better trained with special emphasis on implications of poor hygiene and infrastructure and finally in better accountability. In 2017, 300 infants were reported to have died in Baba Raghav Das Medical College, Gorakhpur due to shortage of oxygen supply, indicating poor management. There is little evidence to indicate that the lessons learnt have been implemented or rather lessons have even been learnt.

The fear of AI taking away all the jobs should be dispensed with as the machines cannot think, not yet. All they can do is learn from previous results. Thus, large sample size is a pre-requisite for better estimate of probability and hence better inferences by AI operated machines; however, the results differ with different algorithm used on the same data sample. This difference in results based on different algorithms is called the algorithm bias. This issue is compounded by the problem that the healthcare data gathered through various tools may be inaccurate and the same is mostly not counterchecked. The AI operated machine once fed with such skewed interpretations can create havoc if left unsupervised. Thus, for a long time to come, these biases would ensure that the final decision making remains out of the control of machines. The



healthcare industry thus needs to upskill themselves to be able to utilise the AI tools more effectively. Even with the use of AI, more health officials are required to be able to provide adequate medical coverage to the citizens of this country. The legal framework to cover aspects of AI based health coverage and training thus form the most important tasks ahead.

The decision making on use of AI in healthcare sector should be based on penetration of quality healthcare facilities rather than profitability. As the affluence in the populace increases, the profits would eventually rise too. Though AI is not a 'one solution to all problems' remedy, it can facilitate improving the conditions in the healthcare sector significantly. Each AI based solution will have to be built carefully and incrementally to ensure low investment. The study of functioning of each organisation could reveal the areas where the AI based tools should be employed the first; however, it is felt the hospital administration and training are the areas where its demand is going

to be highest. Integrating of every individual's data from smart watches/fitness bands could come in next followed by intelligent resource sharing amongst various organisations. Further advancements could be decided on the Return on Investments on the ones quoted above. There are numerous start-ups in India working in the field of AI being incubated under the 'Make in India' program and should be able to partly meet demands of healthcare sector to move towards AI. The Government and the healthcare sector need to factor the opportunity costs of losing global business by not moving towards AI at the right time. The medical tourism in India is a significant contributor of revenue in this sector. Improved facilities and care could significantly increase the medical tourism in the coming years.

Gaurav Sharma holds M. Tech from IIT Delhi and is a keen observer on the effects of Artificial Intelligence in the field of HR.

SUPPORTING NURSES AND MIDWIVES IN A PANDEMIC SITUATION LIKE COVID-19

Composed by InnoHEALTH Magazine Digital Team



The year 2020 marks the 72nd anniversary of the World Health Organisation, and with it, came the World Health Day slated on 7 April 2020, themed “Support nurses and midwives”. Though unprecedented, this year, the theme became very relevant with the adversity of COVID-19. This situation exponentially elevated the service and efforts these healthcare workers put in to keep the world from destabilizing.

We at **InnovatioCuris Foundation of Healthcare & Excellence (ICFHE)**, had the privilege to hold a virtual panel discussion through a webinar, with some top healthcare workers from around the

globe on 7 April 2020, to commemorate the nurse and midwife community.

The response to the webinar was quite overwhelming. The initial number of registrations stood at **1248**. Due to this, we broadcasted the webinar, live on YouTube, to the rest of the audience who wished to watch the event. Since then, the webinar video garnered more than **1100 views in 12 hours** and the number has been rising steadily. This response reinforced our belief of the newfound love in supporting the real fighters who have been battling COVID-19 with their selfless efforts.

The discussion was initiated by

Surgeon Rear Admiral Dr. V K Singh, Managing Director of InnovatioCuris. He briefly introduced the panelists and lauded the efforts of the healthcare workers. He then handed over the stage to the **moderator Prof. Manju Chhugani**, who is the Dean of School of Nursing Sciences and Allied Health at Jamia Hamdard in New Delhi. She introduced the following panelists of the webinar and their accomplishments in detail:

■ **Prof. (Dr.) Roy K George**, National President, Trained Nurses Association of India (TNAI) & Academic Director at Baby Memorial Hospital Kozhikode, India

"No man, not even a doctor, ever gives any other definition of what a nurse should be than this – devoted and obedient" -

Florence Nightingale

■ **Dr. Della Sherratt**, an independent midwifery consultant from United Kingdom

■ **Dr. Thankam Gomez**, President, Clinical Services, Aarohan Healthcare Services, India

The webinar steered with many aspects, primarily on the challenges being faced by the nursing communities in the COVID-19 pandemic. Also, many revered solutions that each panelist's circles were following, were discussed in greater detail.

Prof. (Dr.) Roy K George mentioned that COVID-19 is the greatest challenge for the nursing fraternity in 150+ years of modern nursing history. Adding to this, Prof. Manju

Chhugani emphasized that swift, strong, skilled and sustained efforts of all healthcare providers will lead to success in winning the battle against Corona. Dr. Thankam Gomez quoted news from WHO and also starkly pointed out the nursing deficit of 2 million in India and 6 million globally as per the 2018 statistics. Dr. Della Sherratt's statement of nurse workload overburden clearly supports the statement made by Dr. Gomez. Dr. Sherratt also mentions the solidarity the people in UK are showing towards National Health Service (NHS) by their applause standing by the windows every Thursday at 8 o'clock, UK time for their constant efforts.

Many more experiences like the above were shared in the webinar and

it circled down to the consolidation of the efforts that the world and in particular the healthcare workers are putting in fighting COVID-19.

Social media

Fun has been a deficit too in these tough times. So, in the form of solidarity, we tried to showcase their support to the healthcare workers by sharing their **SMILING** selfies. Many from the **1000+** attendees did not lose a second in sharing their photographs. We put the photographs together in the form of a collage mentioned below and shared it on our social media portals.

Consolidation

With so much support to the Nurses and Midwives, we would like to re-establish more webinars on topics related to nursing and midwifery to provide the visibility that these communities deserve. We all salute you again for the devotion, obedience, patience, and love towards humanity. Thank you!
#SupportNursesAndMidwives

Webinar on Supporting Nurses and Midwives in pandemic like COVID-19

Organised by:



Foundation of Healthcare & Excellence (ICFHE)



THANK YOU

World Health Day 2020 - April 7th

Opening Remarks:

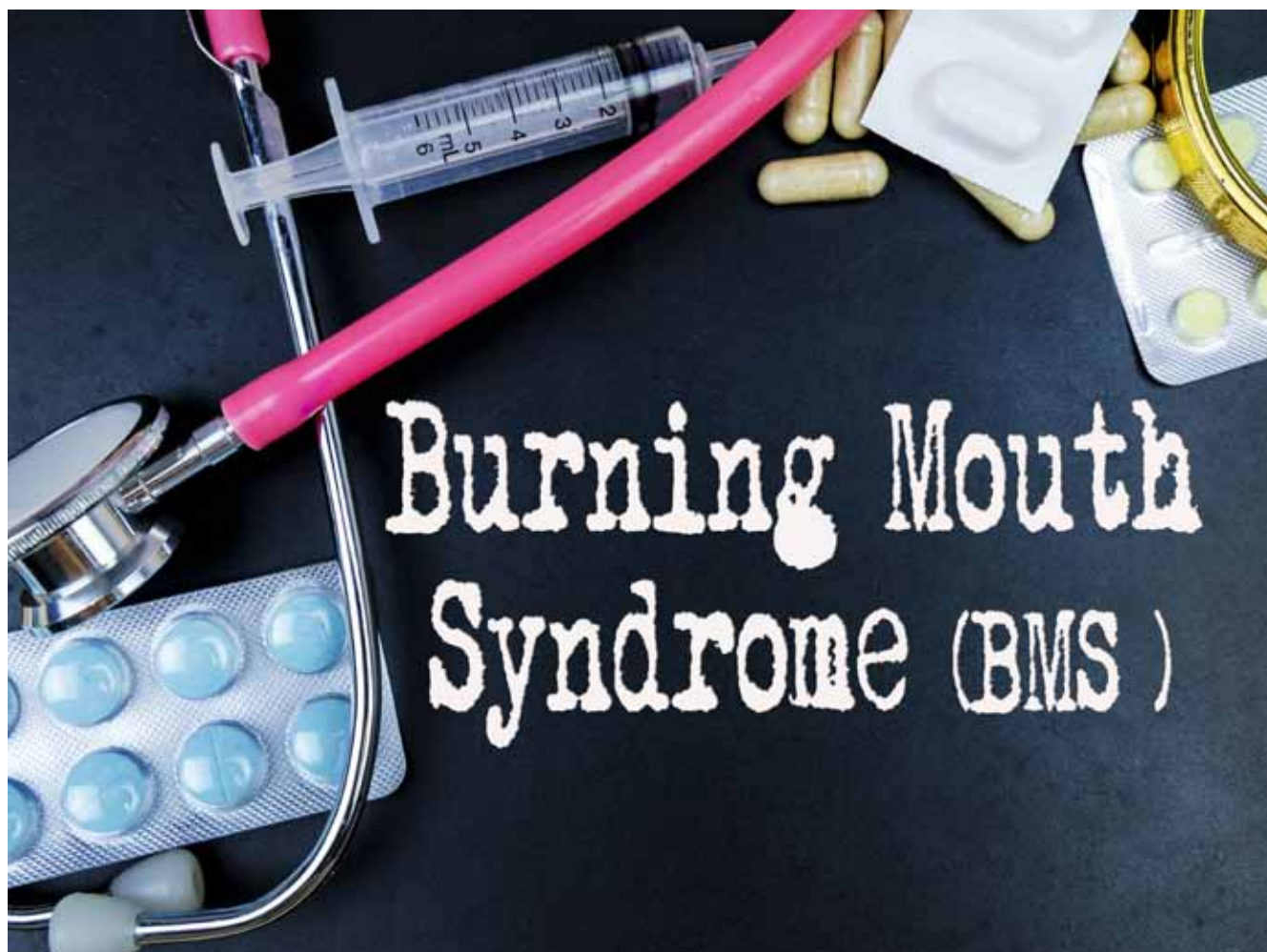
Dr. V K Singh,
Managing Director,
InnovatioCuris Pvt Ltd,
India

Moderator :

Prof. (Dr.) Manju Chhugani,
Dean of School of Nursing &
Allied Health, Jamia Hamdard,
India

Panelists:

- Prof. (Dr.) Roy K George,
National President at TNAI, India
- Ms. Thankam Gomez, President, Clinical
Services, Aarohan Healthcare Services, India
- Dr. Della Sherratt,
Independent midwife consultant, UK



Written by Dr. Vishaj S. Maru

Does it ever feel like your mouth or tongue is on fire even though you haven't eaten anything spicy? If so, it might feel like some burning sensation in the mouth which is basically Burning Mouth Syndrome (BMS).

The main symptom of burning mouth syndrome is pain in the mouth that is burning, scalding, or tingling. Or, the pain which may occur with a feeling of numbness, which comes and goes. Usually, the tip and lateral sides of the tongue is affected, but the pain may also involve the lips, roof of the mouth, or widespread areas of the mouth.

It has no known cause. Well, burning mouth syndrome generally occurs in middle-aged or older adults. But it may occur in younger people as well. But also affects among 2% population of women. The disorder has long been associated

Treatment of burning mouth syndrome is highly individualized and depends on particular signs and symptoms and on the underlying cause.

with various other conditions including menopause, psychological problems, nutritional deficiencies, oral thrush and dry mouth.

Some other possible causes would include:

- Hormone changes
- Stress, anxiety or depression
- Problems immune system
- Damage to the nerves controlling taste or pain
- Reaction to certain types of toothpastes or mouthwashes
- Ill-fitting dentures or being allergic to the materials used to make dentures

There are some medical conditions which might cause burning mouth syndrome. They are:

- Dry mouth
- Acid reflux
- Thrush (a fungal infection in your mouth, also called 'candida')
- Nutritional deficiencies (for example, when your body does not make or store enough iron, vitamin B12 or folic acid)
- Diabetes
- Thyroid problems

Burning mouth syndrome pain can last for months or years. Some people feel

constant pain every day. While for some people pain increases throughout the day. Whereas some feel reduction of pain on eating or drinking.

Treatment of burning mouth syndrome is highly individualized and depends on particular signs and symptoms and on the underlying cause.

Burning mouth syndrome are of two types: primary and secondary.

Primary Burning Mouth Syndrome:

As it has no known cause, there is no known cure for primary burning mouth syndrome. Treatment depends on particular symptoms and is aimed at controlling them. It may take time for treatments to help manage the symptoms.

Few things that can be considered:

- Drink plenty of fluids to help ease the feeling of dry mouth
- Suck on crushed ice
- Chewing sugar-free gum - this helps you produce more saliva which helps to stop your mouth

getting dry

- Avoid acidic foods and liquids, such as tomatoes, orange juice, carbonated beverages and coffee
- Avoid spicy-hot foods
- Avoid products with cinnamon or mint
- Avoid alcohol and products with alcohol, as they may irritate the lining of your mouth
- Don't use tobacco products
- Try different mild or flavour-free toothpastes, such as one for sensitive teeth or one without mint or cinnamon
- Take steps to reduce stress

Secondary Burning Mouth Syndrome:

For secondary burning mouth syndrome, treatment depends on any underlying conditions that may be causing your mouth discomfort. For example, treating an oral infection or taking supplements for a vitamin deficiency may relieve your discomfort. That's why it's important to try to pinpoint the cause. Once any underlying causes are treated, your burning mouth

syndrome symptoms should get better.

If you have persistent pain or soreness in your tongue, lips, gums or other areas of your mouth, see your doctor. Your doctor can search for the possible cause or causes to guide the treatment. Burning mouth syndrome can be painful and frustrating. The good news is that it's a treatable condition.

Although it may take time, with the help of a team of health professionals, you can usually find a treatment plan that's right for you. Patients who experience improvement with treatment can expect good control for years. There is no association of Burning Mouth Syndrome with development of oral cancer.

Dr. Vishaj S. Maru is a dental surgeon. She studied dentistry at the D.Y. Patil School of Dentistry. She does clinical practice in Mumbai with a keen interest in academia and clinical dentistry.



CORONA VIRUS: A NAME MUCH HEARD; AND FACTS LESSER KNOWN



Written by Dr. Jasmeet Kaur Chhabra

An ongoing epidemic, fifty affected nations, numerous health-anxious people across the globe, a major economic fallout, ample of online rumors and a TINY 27-34 Kb VIRUS. Yes! Here we are talking about the major viral outbreak that has taken a toll of almost 2,805 lives up till now; Corona Virus - A virus that doesn't respect borders.

This article intends to present a preliminary opinion about the viral outbreak, the associated myths, the fact check and current situation report.

Origin and the Outbreak

In December 2019, a cluster of viral

pneumonia cases was officially announced due to an unknown cause detected in Wuhan City, Hubei Province of China. On 22 January 2020, origin of a novel virus was declared from wild bats and these viruses belonged to the family of beta-corona virus which contains Severe Acute Respiratory Syndrome Associated Corona virus (SARS-CoV). Both CoV and SARS-CoV belong to same subgroup with only seventy percent similarity at genome levels, as the CoV-19 shows major genetic differences from SARS corona virus. The novel virus was given the interim name 2019-CoV by World Health Organization (WHO) and

was later renamed SARS-CoV-2 by the International Committee on Taxonomy of Viruses. Third in the list of corona viruses which have emerged in the human population in the past two decades, 2019-nCoV has put all public health organizations globally on high alert.

The novel corona virus that is supposedly believed to have emerged from a local Chinese market has killed more than ~2000 people and rapidly spread around the globe. The latest situation reports released by WHO, state 77,780 confirmed cases, and 2666 deaths within China and has known to affect fifty countries across the globe with 2459

confirmed cases, and 34 deaths.

Knowing the Killer

Corona viruses are a large group of viruses surrounded by a core of genetic material surrounded by an envelope with protein spikes. This gives them the appearance of a crown. 'Crown' in Latin is called 'Corona' and hence, the name corona virus.

These are known to cause several respiratory and sometimes gastrointestinal infections in animals and humans. Respiratory diseases can vary from common cold to pneumonia.

The respiratory infections may include Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS). SARS was the cause for the 2002–2003 epidemics which first emerged in the Guangdong province, China. Both SARS and MERS corona viruses originated likely from bats and their direct transmission to humans has been reported. The initial epidemiological investigations

on the pneumonia-like cases that occurred in Wuhan city clearly linked to seafood and animal markets. These point towards the zoonotic origin of the novel corona virus. On the grounds of environmental sanitation and disinfection, the Chinese government immediately had shut down the markets.

With the origination of first case, the infection was probably from animal-to-human (zoonotic) but with the increase in number of infections within and across the borders of China, clearly

implicated a second transmission from human-to-human. Since the day of official outbreak of the epidemic, China has been making continuous efforts to understand the epidemiology, identify the origin, clinical manifestation, possible transmission routes, development of diagnostic kits and global risk assessment. Reportedly, the possibility of human-to-human transmission was raised by the Wuhan Health Commission as infections of family members of the afflicted-market workers and the healthcare workers suggested the occurrence of

Since the day of official outbreak of the epidemic, China has been making continuous efforts to understand the epidemiology, identify the origin, clinical manifestation, possible transmission routes, development of diagnostic kits and global risk assessment.



individual-to-individual spread.

Sources and Modes of Transmission

The secondary cases of infection began to be reported approximately 8–10 days after the first official outbreak. The patients who were newly diagnosed had never been to the allegedly culprit marketplace but had a history of contact with the people working there. The confirmed reports of several infected healthcare workers from Wuhan city indicated the occurrence of human-to-human transmission. The first case of infection outside China was reported on 13 January 2020 from Thailand. Other cases from countries across Chinese borders such as the USA, France, Japan and South Korea have also been reported. Human-to-human disease transmission often happens due to close contact. Like most respiratory viruses, 2019-CoV is also considered very contagious. Its transmission occurs primarily through respiratory droplets which spread when an infected person sneezes or coughs. Ongoing investigations on the spread and severity of disease still are unable to explain whether a person can be infected by coming in contact with an infected surface or object. We lack sufficient data on the infectiousness and severity of the disease and extensive

research is ongoing.

Treatment, Prevention and Protection

Although research is ongoing but yet there is no proven cure for novel corona virus to-date. No vaccine or antiviral treatment currently exists. Ongoing efforts by the healthcare providers majorly aim at managing the symptoms, and supportive and preventive therapy. Regularly washing hands, maintaining safe distance from those who are infected, wearing masks and avoidance of touching one’s own face is highly recommended to prevent the disease.

Clinically, the infected people majorly show initial flu-like symptoms such as fever, cough, difficulty in breathing, and fatigue. Development of the disease can further lead to severe pneumonia, acute respiratory distress syndrome, septic shock and even death. Few of the infected may be asymptomatic, i.e. showing positive test results confirming infection but showing no clinical symptoms. Health agencies have advised that individuals who are in close contact to infected patients should be monitored and examined in real time to rule out infection.

Governments have advised against all the unessential travels to countries with reported infected individuals and country with epicenter of the outbreak.

Though efforts are underway all across the globe, till date there are no specific medications for 2019-nCoV or SARS-CoV-2. Supportive therapies that can provide relief to the symptoms include self-isolation, intake of plenty of fluids and regular flu medications.

As on 27 February 2020, no details were available on the spread of SARS-CoV-2 (previously 2019-nCoV) however, it is known that the droplets of other corona viruses can stay suspended in the air only for a short time. As stated by WHO, they have shown uncertainty on how long the virus can survive on various surfaces.

The drug, Favipiravir which has previously been approved for treatment of influenza, showed early efficacy against SARS-CoV-2 in human trials in China. The Chinese National Medical Products Association, in February 2020, approved it as antiviral treatment for SARS-CoV-2. Another antiviral drug, Remdesivir which has been used in the first case reported





Myth: Elderly people are specifically affected by corona virus.

Fact: It can affect people of all ages. Though, elderly people and those with pre-existing medical symptoms are more vulnerable to be severely affected.

Myth: Antibiotics are effective in treating corona virus

Fact: Antibiotics are effective against bacteria, and not viruses. Though, they can prevent against co-infection of bacteria.

Myth: Rinsing of nose with saline solution can be of help.

Fact: No. There is no such evidence.

Myth: Pets at home can spread corona virus.

Fact: There is no evidence that pet animals at home can be infected with novel 2019-CoV.

Myth: Eating garlic can help from 2019-nCoV.

Fact: Though garlic is known to have some antimicrobial properties but there is no such evidence that it can protect from the novel 2019-CoV.

Myth: Gargling can protect against corona virus.

Fact: No. Using mouthwash cannot protect against novel corona virus.

Myth: Pneumonia vaccines can prevent from novel corona virus.

Fact: No. Since the virus is novel and different, it cannot be treated with vaccines against pneumonia.

Myth: It is unsafe to receive a package or letter from China.

Fact: Yes, it is absolutely safe. Receiving packages is not unsafe because corona viruses are known not to survive for long on objects.

Myth: Meditating or drinking ginger tea can cure 2019-CoV.

Fact: There is no miracle cure for the novel corona virus. Its cure is yet to be discovered.

Myth: Sesame oil kills corona virus.

Fact: No, Sesame oil does not kill 2019-nCoV.

from the USA, is the only one drug to-date which might have real efficacy. The drug supposedly terminates the viral transcription at early stages.

Myths and Fact Check - Spread of E-Misinformation

Social media and other online sources have spread a lot of rumors amongst the highly health conscious people across the globe which pose to suggest various miracle cures for corona virus. Let's have a quick check on the myths and facts related to the deadly 2019-nCoV.

Strategic Preparedness and Future Projections

Corona virus is on the edge of spreading across the world. There have been reports of large clusters of cases outside Chinese boundaries. It has posed new global challenges with its widespread aggressiveness. Complicating matters, the unease and cost of its early detection, prevention and supportive therapies have alarmed the global public health agencies. Since the vaccines cannot be developed so early and manufacturers working on its vaccines cannot make them available to the public at least before a year. Meanwhile, when the virus is on a rapid spread, the best measure is to prevent and slow the spread of infection from symptomatic individuals. Strategic measures like social distancing and self isolation can be implemented community-wide to slowdown the aggressiveness of the pandemic. China has been practicing these strategies by land lockdown of Wuhan city,

immediately after the announcement of outbreak. Next in the list is Italy, where Codogno is being now called the "Wuhan of Italy" and currently is in lockdown.

The need of the hour is testing of the virus at early stages and at broader and global levels. A handful of laboratories and few specialized equipment cannot cope up with the current condition. We need rapid and cheaper diagnostic kits at everybody's doorsteps and vigilant public healthcare agencies. Since, there is a lack of standard methodology to evaluate the pandemic's existence and severity, superpowers such as the USA who are financially competent must take lead and create a task force to fast-track the development of new diagnostic kits.

Developing a widely affordable and accessible point-of care diagnostic kit requires significant budget, decisive health-driven execution, reliable scientific tools and protocols which would help in determining whom and when to test, how to interpret and how to attend to the infected, and cooperative nations. With this approach, we can not only control the current novel pandemic; it can also help in creating an infrastructure to deal with future epidemics

Dr. Jasmeet Kaur Chhabra is a Doctorate in Immunology and whenever she gets free time from her full-time job, she loves to read and write about imperative issues in healthcare.

QUARANTINED GATEWAYS FOR COVID-19

Written by Dr. Sarita Jaiswal

As on 26th February 2020, the outbreak of Corona Virus-19 which started in December 2019 in mainland China has spread over to 37 countries other than China (WHO). The total number of confirmed cases are 81109 (with 871 new cases). Out of these total cases, 78191 cases (412 new cases) are from China only and rest from other 37 countries. The total number of deaths so far are 2718 from China while 43 from rest of the world.

The risk assessment by WHO has classified COVID-19 into very high-

risk category within China and high-risk category outside China. As per CDC case definition, it causes lower respiratory issues with cough or dyspnea in those who are in close contact with lab confirmed case on a span of 14 days. The contact with such confirmed personnel with ≤ 6 feet for a prolonged time (without any PPE) can cause disease. The round shape of β Corona virus is like crown or halo around sun, single stranded RNA with associated spikes on outer surface. It has hACE 2 (human angiotensin convertase 2) similar to SARS-CoV. Considering its

analogy with SARS-CoV, it is likely to be killed by sunlight, temperature and humidity. The virus attacks lungs and not just throat. The virus is transmitted via droplet (during sneezing); direct contact; fomites and stools. It is zoonotic in nature and can possibly transmit during incubation period.

WHO declared COVID-19 outbreak a public health emergency of international concern (PHEIC) on 30 January 2020. Being signatory to International Health Regulations 2005, India declared travel restrictions and





activated its national action plan to put suspicious victims in quarantine and subsequently in isolation if required. Further Section 270 of Indian Penal Code (“an act likely to cause spread will lead to imprisonment upto 2 years, or fine, or both”) is being exercised for managing legal requirement of quarantine in place. Presently, the rough estimates of COVID-19 revealed that median age vulnerable to infection is around 59 years. Its incubation period is minimum 14 days and children with age < 15 years are less likely to get infected. The plausible reproduction Number is 2.2. The case fatality rate of COVID-19 is nearly 2% while MERS, SARS, Ebola, Smallpox, Swine Flu and seasonal flu have 34%, 10%, 50%, 40%, 4% and 0.01% respectively. However, 20% generally require ICU care in which mortality rate is 15% as there is significant impact on death rate due to comorbidity profile.

The laboratory culture based genetic test requires BSL 3 in which samples are throat and oral swabs. At present, no proven treatment is available. For special cases Drug Controller of India

The virus attacks lungs and not just throat. The virus is transmitted via droplet (during sneezing); direct contact; fomites and stools. It is zoonotic in nature and can possibly transmit during incubation period.

approved restricted use of Lopinavir, ritonavir under medical supervision. Moderna Therapeutics, a biotech-based company in Cambridge with help of Chinese researchers released vaccine against COVID-19 (SARS-CoV-2) and shipped it on 26th February 2020. Anti-viral drug Remdesivir is under trial.

The advance quarantine facility requires scalable interventions with active public participation. It requires resources and is also labor intensive. COVID-19 is at our gateways and ‘quarantine’ is primary and most important step to prevent its spread.

We are often confused between ‘quarantine’ vs. ‘isolation’. Quarantine

simply refers to separation and restriction of movement of normal looking asymptomatic yet suspicious to be infected individuals. However, isolation refers restricting movement of personnel with possible infection, exhibiting some symptoms in a physically separated medical facility. Both require similar disinfection and decontamination practices, however in latter case, protection of medical responders / care providers demands higher level of monitoring and surveillance. The provisioning of food, clothing, shelter, communication and competent medical care is common to both cases though in isolation, if someone dies, the proper disposal and



other religious practices / community sentiments may proceed as per specific standard operating procedures. The quarantine zone should be safe/hygienic, preferably away from resident communities, though equipped with all essential provisions. It also contains a special prayer place with all religious symbols collated at one place assigned for religious activities. The quarantine zone should divide into digitally monitored sleeping zones, play zone and eating zones.

Provision of standby ambulances for transferring personnel with symptoms or reporting discomfort should be present. Self-reporting comes through awareness about the problem, alleviation of myths and building up of trust between care providers and victims. This practice coupled with direct monitoring of personnel under quarantine referred as passive and active surveillance. The provision of vaccine and antibiotics / rapid diagnosis & time referral should be included. Social distancing needs supporting ecosystem.

It requires: (a) selection of geographical

area with barrier restriction i.e. possibly free from vegetation, wild animals and pests; (b) distancing of victims with deployed staff; (c) clear information exchange between health staff within quarantine zone and outside; (d) empathy and counseling of inmates and; (e) effective communication with public and other hierarchical signatories. The quarantine camp consists of a secluded area with water & wind proof shelters.

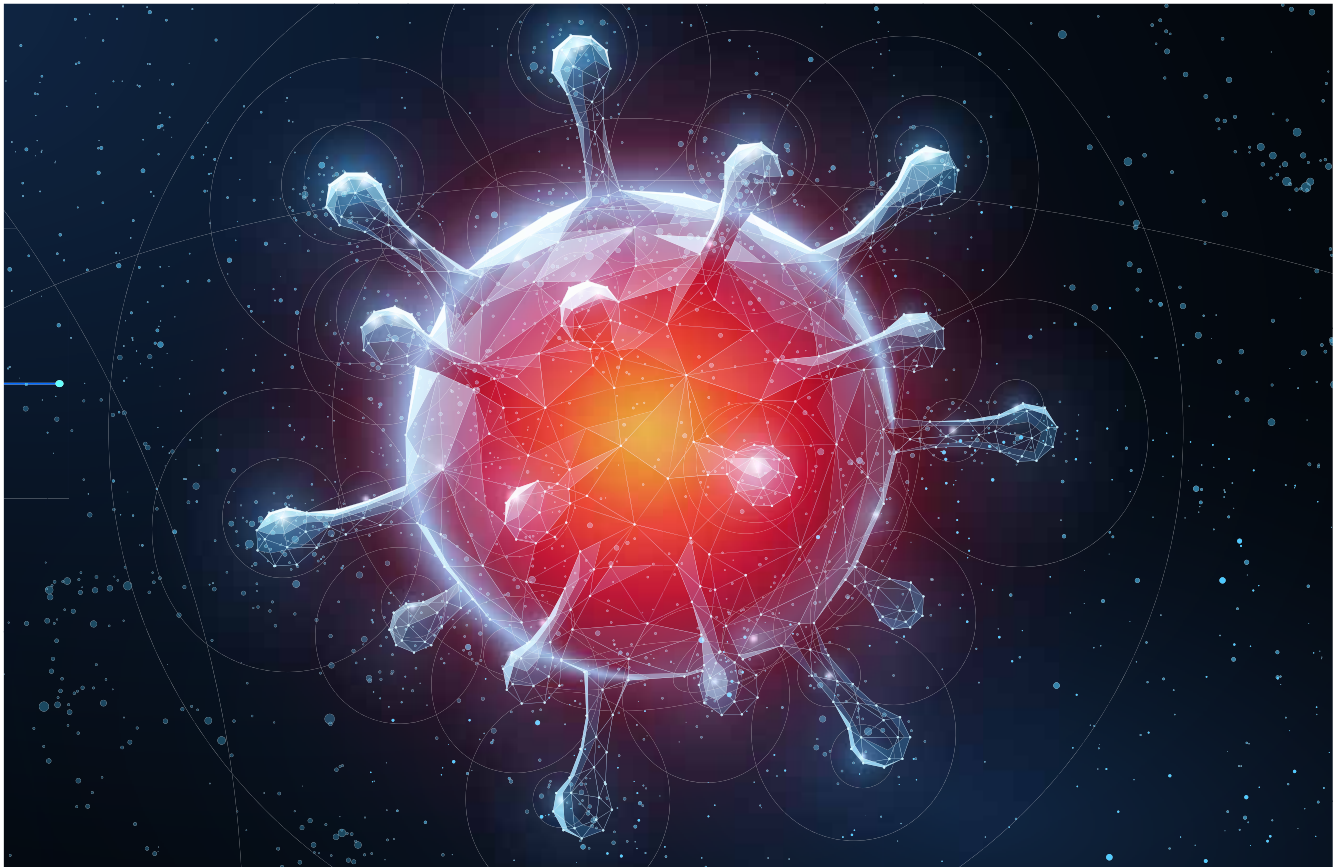
These shelters have ventilated zones (except airborne infection) with proper lighting inside living area and surroundings and impervious flooring (smooth surfaces, marble surfaces) so that it can be washed/disinfected easily. The principle of distancing (minimum 1m) is maintained for beddings. Clean linen, mattress and disposable pillows are provided with storage space for personal effects.

Adequate supply of appropriate PPE is required for health care workers, detainee and support staff on daily basis. At present in India, N95 masks and 3-ply masks are used. The 3 -ply mask has outer-leak proof polypropylene/ rayon

spun bond layer; middle: high-density nonwoven fabric filter melt-blown layer plus inner- water resistant soft spun bond layer. Designed with adjustable nose strip as well as flat or round elastic ear - piece, 3-ply mask only provides barrier protection.

N-95 single use mask blocks at least 95% of 0.3 micron test particles. User must change if respirator get damage or soiled. However, N95 masks do not protect against chemical vapors, gases, carbon monoxide; gasoline, asbestos, lead; and low oxygen environment. Personnel protective equipment should include goggles; hood; gloves with cuffed sleeves of an impervious gown; gum boots with protective toecaps & penetration-resistant recommended respiratory protection.

Among various disinfection agents, sterilis is optimally safer and effective. As per French standards, "Steam disinfection of surfaces" NF T72-110 is applicable standard. The steam disinfection was reported (in 2005) to be effective against SARS Coronavirus. SteriGEN system is able to generate



a mixture of stable HClO and other oxidants like hydroxyl anion, peroxide anion and oxonium ion.

It is safe for human and animal health. It is ecofriendly and used in aerosol disinfection. USFDA and European CE recognize it as one of the most effective alternatives to traditional chemical biocides. It is high level disinfectant and 70 times powerful than chlorine bleach. It can kill types of bacteria, viruses, fungi & spores, within a short contact time of 5 min. For mopping and washing 0.1% Sod hypochlorite & Cresol black is effective.

For disinfecting Linen and personal belongings boiling and soaking in 0.1 % sodium hypochlorite for 30 minutes followed by sun drying is effective. Similarly, 0.5% sodium hypochlorite treatment for 30 min can disinfect used masks, PPE and gloves. For cleaning toilets water, cresol black and sterisol or its equivalent disinfectant can be used. The effluent also needs treatment with 2% sodium hypochlorite for 30 min treatment. Special vacuum tanks should be affixed with mobile toilets for fecal

matter collection. Biomedical Waste Management Rules 2016 (modified), recommend non-urethane bags (red bags for gloves and yellow for rest of items) for waste.

The area also requires clean water for drinking, bathing and other amenities. The perimeter of the quarantine area should be well secured with deployed personnel, pathways should be well marked and lit; surroundings should have proper monitoring measures in place. Mobile QRT should be deployed at site and CCTV cameras to control complete perimeter.

Each and every safety aspect should be planned in advance with provision of back up measures. Cost estimation and provision of advance for this mitigation measure should be in place. In every aspect, preventive steps are less expensive than managing complete State after the outbreak.

Now the question is are we as country ready to manage this threat? The recent successful quarantine of first batch of personnel from Wuhan by Government

of India gives us hope and provides the example of such preparedness. However, we should not forget that COVID-19, spread rate is very high. Therefore, everyone needs to gear up to face this challenge ahead. Precaution, awareness and self-consciousness is necessary for such management.

General hygiene practices and sneezing etiquettes help to reduce the chances of spread. Self-quarantine for two weeks in case of suspected flu like symptoms and wear 3-layered mask if you are patient. N95 mask is required for health care workers and close contacts to reduce the chances of disease spread.

Dr. Sarita Jaiswal, an ex-research officer at University of Saskatchewan, Canada, is an accomplished Plant Scientist having 15+ years of R&D experience with specialization in cereal and pulse crop biochemistry and genomics. She has been awarded twice for the category of Young Scientist (Indian Society of Plant Physiology and amp; KK Nanda Foundation for Advancement of Plant Sciences).

EFFECTIVENESS OF CYBER LAWS IN INDIA

Written by Dhruv Singh

In this era, we talk about privacy and its concern on a daily basis. Cyber-crime refers to the crime in which a computer or network systems are the object of a crime or used as a tool for committing an offence. Cyber-criminals may use any means to gain access to personal information, trade secrets or for any other malicious purposes.

The basic educative question is what one should do when there is a cyber-attack, this could include financial fraud, cyber bullying or any other cyber-crime. Fuelled by internet and mobile penetration, we have seen rapid growth of cyber-crime in India, giving rise to many unsolved cases. In India, Community Emergency Response Team (CERT) is the agency which takes care of collection, analyses information on cyber-attacks, forecasts and alerts for cyber incidents. One could report the incident on their website.

“Aurora Generator Test”, an experimental cyber-attack conducted in 2007, during which the researchers found that by altering the software of a power generator remotely, they could cause the turbines to set fire and thus eventually cause serious damage to the generator. These types of examples are a relevant threat from cyber terrorists on the Industrial Control Systems (ICS) and Building Control Systems (BCS). The question arises what type of forensics could be done and how can these cyber-attacks be prevented from happening again in the future?

Fastest growing threat is cyber terrorism, not only to individuals or organizations, but to nations as a whole, we must ensure that the correct methods of prevention are being taken into considerations. As there are no easy answers to this, and depending on the severity of the cyber-attack, it could take weeks and even months to determine the answers to these two questions.



This is due to the lack of resources or lack of motivation on an individual or organizational level. The answers could be found via the means of conducting various, in depth penetration testing exercises. This involves both getting into recon on potential threats and managing current threats accordingly.

An effective way to address these risks is to create a culture of security. Security culture refers to the set of values in terms of cyber security, shared by everyone in an organization. This determines how one is expected to think about it. Building security culture right will develop a security conscious workforce, and promote the desired security behaviours one wants from staff.

A simple checklist which could have dos and don'ts which could help the organization build a security culture. As said culture eats strategy for breakfast, once implemented to the core, 80-90% of the attacks could be prevented.

It is a tenacious effort of government and lawmakers to ensure that technology

grows in a healthy manner and is used for legal and ethical business growth and not for committing crimes. Easier said than done, it takes a lot of effort to change the behaviour of human beings.

To start with the government and industry leaders should come into collaborations and start developing recognition and they should conduct events like Capture The Flag (CTF) activities and they should have problem statements on hackathon on cyber security.

Dhruv Singh is a self-professed 'massive geek' and renowned cyber security expert. Energetic, passionate, and charmingly nerd, has trained various institutions and defense organizations with a mission to empower them with cyber security. His passion to make cyber security accessible and interesting has led to develop a course on cyber security named Cyber4Hospital, available on Udemy with a vision to bring cyber index to India.



BUDGET 2020: WHAT THE HEALTHCARE SECTOR WAS EXPECTING FROM THE UNION BUDGET

Written by Dr. Rajeev Boudhankar

Whenever there is a discussion about Healthcare, the views expressed are mainly through the lens of the stake holder. Hence, we miss the big picture and our focus streams towards narrow goals.

So, before we express our expectations from the Union Health Budget 2020, let us look at some of the key facts covering the globe and India:

Key facts (Globe):

At least half of the world's population still do not have full coverage of essential health services.

About 100 million people are still being pushed into extreme poverty (defined as living on 1.90 USD or less

a day) because they have to pay for health care.

Over 930 million people (around 12% of the world's population) spend at least 10% of their household budgets to pay for health care.

All UN Member States, including India, have agreed to try to achieve universal health coverage (UHC) by 2030, as part of the Sustainable Development Goals.

Key facts (India):

In 2018-19, the government spending on healthcare in India was only slightly greater than 1% of the GDP; this is very low compared to government spending on healthcare at 7% to

12% of GDP in other developing countries. The expectation is positive steps to move the budget allocation and therefore increased government spending on healthcare.

While the Indian healthcare sector has grown at a healthy double-digit rate, challenges in access to quality and affordable healthcare persist in large parts of the country.

With less than 1 physician per 1000 population, India is well behind its peer countries. It needs an additional 3.6 million hospital beds to reach the recommended capacity.

Only about 27% of India's population is covered around any form of

health insurance and the out of pocket expenditure on health is 62.4% in India as compared to the world average of 18.2%.

The medical technology industry plays a crucial role throughout the healthcare lifecycle and has been instrumental in transforming healthcare ecosystems across the world. For India too, the MedTech industry offers the potential to address the healthcare issues by using a mix of existing as well as cutting-edge technologies.

Out-of-pocket (OOP) health expenses drove 55 million Indians--more than the population of South Korea, Spain or Kenya--into poverty in 2011-12, and of these, 38 million (69%) were impoverished by expenditure on medicines alone, according to calculations by the Public Health Foundation of India (PHFI), an advocacy, which were released on June 6, 2018, and based on the official Indian standard for poverty line--a monthly expenditure of Rs 816 in rural areas and Rs 1,000 in urban areas.

Part of the root cause is low public investment in health. According to WHO, India ranks 184th out of 191 countries in terms of percent-of-GDP spending on health. At around \$29 (PPP), Sri Lanka, China, and Thailand all invest three to four times more per capita. The low provision of pro-poor services leads to an undue reliance on out-of-pocket financing for health. Currently, 85.9% of private healthcare is financed out-of-pocket—only Pakistan, Bhutan, Myanmar and Bangladesh have higher rates in South Asia.

Healthcare inflation is about 15 to 17 % hence healthcare costs go up by 15% to 17% annually.

The Indian healthcare sector has the potential to be amongst the highest revenue and employment generator for the country. The ability of private healthcare providers to create five direct jobs plus many more indirect jobs per bed and two and half times multiplier on capital invested, should be considered as a positive by the policy makers.



Overview

The answer to India’s Healthcare woes is Universal Health Coverage (UHC):

UHC means that all individuals and communities receive the health services they need without suffering financial hardship. It includes the full spectrum of essential, quality health services, from health promotion to prevention, treatment, rehabilitation, and palliative care.

UHC enables everyone to access the services that address the most significant causes of disease and death, and ensures that the quality of those services is good enough to improve the health of the people who receive them.

Protecting people from the financial consequences of paying for health services out of their own pockets reduces the risk that people will be pushed into poverty because unexpected illness requires them to use up their life savings, sell assets, or borrow – destroying their futures and often those of their children.

Achieving UHC is one of the

targets the nations of the world set when adopting the Sustainable Development Goals in 2015. Countries that progress towards UHC will make progress towards the other health-related targets, and towards the other goals. Good health allows children to learn and adults to earn, helps people escape from poverty, and provides the basis for long-term economic development.

What UHC is not:

There are many things that are not included in the scope of UHC:

UHC does not mean free coverage for all possible health interventions, regardless of the cost, as no country can provide all services free of charge on a sustainable basis.

UHC is not just about health financing. It encompasses all components of the health system: health service delivery systems, the health workforce, health facilities and communications networks, health technologies, information systems, quality assurance mechanisms, and governance and legislation.

UHC is not only about ensuring a minimum package of health services, but also about ensuring a progressive expansion of coverage of health services and financial protection as more resources become available.

UHC is not only about individual treatment services, but also includes population-based services such as public health campaigns, adding fluoride to water, controlling mosquito breeding grounds, and so on.

UHC is comprised of much more than just health; taking steps towards UHC means steps towards equity, development priorities, and social inclusion and cohesion.

How can countries like India make progress towards UHC?

Many countries like India are already making progress towards UHC. All countries can take actions to move more rapidly towards it, or to maintain the gains they have already made. In countries where health services have traditionally been accessible and affordable, governments are finding it increasingly difficult to respond to the ever-growing health needs of the populations and the increasing costs

of health services.

Moving towards UHC requires strengthening health systems in all countries. Robust financing structures are key. When people have to pay most of the cost for health services out of their own pockets, the poor are often unable to obtain many of the services they need, and even the rich may be exposed to financial hardship in the event of severe or long-term illness. Pooling funds from compulsory funding sources (such as mandatory insurance contributions) can spread the financial risks of illness across a population.

Improving health service coverage and health outcomes depends on the availability, accessibility, and capacity of health workers to deliver quality people-centred integrated care. Investments in quality primary health care will be the cornerstone for achieving UHC around the world. Investing in the primary health care workforce is the most cost-effective way to ensure access to essential health care will improve. Good governance, sound systems of procurement and supply of medicines and health technologies and well-functioning health information systems are other critical elements.

Why is primary health care the soul of UHC?

Primary health care is an approach to health and wellbeing centred on the needs and circumstances of individuals, families and communities. It addresses comprehensive and interrelated physical, mental and social health and wellbeing.

It is about providing whole-person care for health needs throughout life, not just treating a set of specific diseases. Primary health care ensures people receive comprehensive care, ranging from promotion and prevention to treatment, rehabilitation and palliative care as close as feasible to people's everyday environment.

WHO has developed a cohesive definition of primary health care based on three components:

ensuring people's health problems are addressed through comprehensive promotive, protective, preventive, curative, rehabilitative, and palliative care throughout the life course, strategically prioritizing key system functions aimed at individuals and families and the population as the central elements of integrated service delivery across all levels of care;



systematically addressing the broader determinants of health (including social, economic, environmental, as well as people’s characteristics and behaviours) through evidence-informed public policies and actions across all sectors; and empowering individuals, families, and communities to optimize their health, as advocates for policies that promote and protect health and wellbeing, as co-developers of health and social services through their participation, and as self-carers and caregivers to others.

Primary health care is the most efficient and cost-effective way to achieve universal health coverage around the world.

To meet the health workforce requirements of the Sustainable Development Goals and universal health coverage targets, over 18 million additional health workers are needed by 2030. Gaps in the supply of and demand for health workers are concentrated in low- and lower-middle-income countries. The growing demand for health workers is projected to add an estimated 40 million health sector jobs to the global economy by 2030. Investments are needed from both public and private sectors in health worker education, as well as in the creation and filling of funded positions in the health sector and the health economy.

UHC emphasizes not only what services are covered, but also how they are funded, managed, and delivered. A fundamental shift in service delivery is needed such that services are integrated and focused on the needs of people and communities. This includes reorienting health services to ensure that care is provided in the most appropriate setting, with the right balance between out- and in-patient care and strengthening the coordination of care. Health services, including traditional and complementary medicine services, organized around the comprehensive needs and expectations of people and communities will help empower them to take a more active role in their health and health system.

Can UHC be measured?

Yes. Monitoring progress towards UHC should focus on 2 things:

The proportion of a population that can access essential quality health services. The proportion of the population that spends a large amount of household income on health.

Together with the World Bank, WHO has developed a framework to track the progress of UHC by monitoring both categories, taking into account both the overall level and the extent to which UHC is equitable, offering service coverage and financial protection to all people within a population, such as the poor or those living in remote rural areas.

WHO uses 16 essential health services in 4 categories as indicators of the level and equity of coverage in countries:

Reproductive, maternal, newborn and child health:

- family planning
- antenatal and delivery care
- full child immunization
- health-seeking behaviour for pneumonia

Infectious diseases:

- tuberculosis treatment
- HIV antiretroviral treatment

Hepatitis treatment:

- use of insecticide-treated bed nets for malaria prevention
- adequate sanitation

Noncommunicable diseases:

- prevention and treatment of raised blood pressure
- prevention and treatment of raised blood glucose
- cervical cancer screening
- tobacco (non-) smoking
- Service capacity and access
- basic hospital access
- health worker density
- access to essential medicines
- health security: compliance with the International Health Regulations

Each country is unique, and each country may focus on different areas, or develop their own ways of measuring progress towards UHC. But there is also value in a global approach that uses standardized measures that are internationally recognized so that they are comparable across borders and over time.

WHO has shown the way:

UHC is firmly based on the 1948 WHO Constitution, which declares health a fundamental human right and commits to ensuring the highest attainable level of health for all. On 25–26 October 2018, WHO in partnership with UNICEF and the Ministry of Health of Kazakhstan hosted the Global Conference on Primary Health Care, 40 years after the adoption of the historic Declaration of Alma-Ata. Ministers, health workers, academics, partners and civil society came together to recommit to primary health care as the cornerstone of UHC in the bold new Declaration of Astana. The Declaration aims to renew political commitment to primary health care from governments, non-governmental organizations, professional organizations, academia and global health and development organizations.

The Union Budget for Healthcare should be framed with this background:

With a majority in Lok Sabha, the Modi Government can amend the constitution to make health a fundamental human right (on the same grounds as the 1948 WHO Constitution) and commit to ensuring the highest attainable level of health for all. This can be made as a budget announcement which will be





historic step for India.

Priority sector status must be accorded to the healthcare industry.

A separate bureaucratic cadre christened as “Indian Healthcare Services” on lines like IAS should be established to ensure that Health gets the highest priority.

We need a multi-pronged approach from the government to strengthen and reform the healthcare sector in India. On the one hand, it involves improving the state of public healthcare by increasing budgetary allocation, establishing more Medical/Paramedical/Pharmacy/Nursing colleges and improving primary healthcare facilities. On the other hand, it involves measures to enable the private sector to spread its presence beyond the urban population. This will help in improving accessibility for secondary and tertiary care in tier 2/3 towns and rural areas. For the latter to happen, the government must offer major incentives and tax breaks to private healthcare organizations setting shop in non-urban areas. These incentives can include income tax breaks for

first five years of operations, help in procuring land, making medical equipment GST free for such hospitals and relaxation on service tax on hospital inputs. Similarly, establishing a mechanism to offer fund support or subsidization in treatment cost to private hospitals in smaller towns and rural areas can go a long way in bridging the accessibility gap. This will also help generate jobs and make quality healthcare more accessible.

Home and Ambulatory Healthcare should be recognized as a separate sub-sector of Healthcare as it forms the backbone of primary healthcare and addresses lack of adequate hospital beds especially for rural areas. This should also include increased tax incentives for preventive health checkups under 80D.

Allowing FDI in E-pharmacy sector and recognition of E-pharmacies under Drugs and Cosmetics Act is another impending reform.

The government’s flagship scheme Ayushman Bharat PMJAY, in its first year, has managed to empanel over 15,000 hospitals. Currently only 3.57 crore

families of the original 10.74 crore families have been issued golden cards, and this number is expected to go up significantly this year. The government will therefore need to substantially increase its previous year’s allocation of INR 6000 crore as it attempts to expand the scheme’s footprint this year and eventually merge it in the long run with other schemes such as ECHS, ESI, and CGHS.

The government must consider credit guarantee for hospitals under PMJAY and other Government insurance schemes, since payments take time to come to the hospital. The government should incentivize /give credit guarantee to lenders who are willing to fund the receivables.

Challenges across multiple dimensions that were disablers to the growth of indigenous medical devices manufacturing in India need to be addressed. These include aspects around the macroeconomic environment, the medical devices ecosystem and, those specific to the medical devices industry.

Unfavourable duty structure: An unfavourable duty structure in many

segments/sub-segments make imports cheaper than manufacturing in India.

Lack of comprehensive laws and lax enforcement mechanisms for IP protection: IP protection for novel technology is critical for the success of global medical devices players investing outside their home market. In the absence of enforceable IP laws, global players would lack confidence to invest in manufacturing assets, thus limiting India manufacturing.

(suppliers, raw material etc.) for medical device manufacturing.

Medical technology has the potential to do the same for healthcare by leapfrogging over the current infrastructural, skill based, geographical and affordability constraints. Medical Technology can bridge the distance between the care provider and the patient thereby helping patients in remote areas access specialist and specialized

could intervene include: Setting up an independent authority for medical devices and enabling faster grant of patents.

Supporting local demand of medical devices through public health and health insurance programs as well as by collaborating with the private sector through PPP models.

Providing relevant financial incentives for the industry.



Ease of doing business: India still lags behind most countries in terms of ease of doing business. Due to complex regulatory requirements, products currently require multiple agency approvals. This leads to time delays at multiple layers, at both the national and state levels.

Limited availability of skilled workforce and restrictive labor laws: Despite sufficient human capital, there are unfavourable labor laws and limited trained workforce in India to install operate, repair and service equipment.

Inadequate ecosystem support

equipment present in large cities far away. Technological advancements in the fields of health monitoring and diagnostics can help in detecting health issues early on thereby reducing overall cost of care and enhancing wellness levels of the society. Similarly, technological interventions are rapidly increasing the precision and efficacy of treatment modalities thereby improving clinical outcomes. However, to realize this opportunity at scale rather than as isolated, fragmented initiatives, both the government and the industry will need to make concerted efforts.

Some of the key areas where government

Supporting innovation in India by providing capital and infrastructure support to MedTech start-ups.

In addition, as the road map for medical devices manufacturing is charted, learning that created growth trajectories of other industries can be adopted:

Liberalization and opening up of markets policy reforms (ease of doing business).

Financial and non-financial incentives (in terms of import duty, export duty, SEZs). Designing comprehensive laws and a robust regulatory environment for high IP industries.

Government expenditure to initiate ecosystem development.

Government should also come up with medical innovation fund separately to boost health tech start-ups.

The Government must allocate funds for improving the school infrastructure to ensure hygienic and healthy school environment, improved meal experience, clean hand wash and sanitation facilities. The Government must focus on the convergence of drinking and potable water schemes of the Jal Shakti Ministry with the Mid-Day Meal Programme by earmarking the budget for the scheme.

The Government must make budgetary allocations for monitoring the growth and development of all the children in Primary and Upper Primary Schools and set up a parallel linkage with the National Health Mission in cases of referrals. We are also hopeful that the MDM Programme will be aligned with the parameters of POSHAN Abhiyan to address child malnutrition using various interventions.

Life saving equipment such as ventilators, BIPAP and CPAP, etc. have been placed under heavy taxes. Even something as basic as crutches and wheelchairs have been put under the 5% to 7.5% GST bracket. These are essentials and should not have been taxed. It is perplexing to see how the medical equipment spare parts are being taxed under the highest slot of 28% GST. This is highly debilitating for the healthcare industry. There should be a critical evaluation of the situation and that there should be serious thought given to make healthcare essential equipment tax free.

AI has the potential to solve many problems of Healthcare Delivery in the country. Access to large volumes of quality data is vital for the success of AI. More budget allocation towards R&D in medical device innovation and digitization of care delivery process through right investment in tools, infrastructure and training will help us to meet some of the challenges in the Healthcare Industry.

The government should accord due recognition to the emergency medical services (EMS) industry and recognise it as an independent sector within the healthcare industry. 90% of the EMS space is controlled by the government. The sector is in urgent need of impetus in the form of budgetary allocation of funds so that even the remotest parts of the country have access to timely quality medical care. There is a severe demand supply gap when it comes to the availability of ambulances in India with the ratio of ambulances per capita pegged at 1:146249. We need to move to a ratio of 1:60000 and this can only happen if the government incentivises the industry in the form of subsidies. The government should also invest in setting up skill centres for training paramedics and emergency medical technicians. While the government is already taking steps to improve road connectivity, we believe the government should look at increasing the accessibility of emergency medical services through station ambulance services on national highways and medical units on trains.

Globally there is acceptance of the growing significance of molecular genetics in diagnosis as well as clinical management of various cancers. The government should help create a regulatory environment extremely conducive for promoting research in the field of cancer genetics by creating a hub for cancer research. Quality research in cancer genetics will go a long way in making new therapies available to Indian patients at very affordable costs.

The Indian Pharmaceutical industry is a sunrise industry with a competitive advantage for India. We should leverage India's position by unleashing entrepreneurial spirit through policy stability and ecosystem.

There is an utter need to spread awareness amongst the masses to promote health insurance which has become a must considering the current healthcare cost in the country. Enhancing the tax rebate under Section 80D from the current value of Rs. 25,

000 to Rs. 1,50,000 can be a great move by the government. Under this year's budget, the government must waive off the GST charges which are currently 18% on health insurance premiums.

Another expectation in this year's budget is giving the consumers ability to pay level premiums to 5 years with multiple payment modes as available in other insurance industries like Life Insurance. The payment methods can be extended to monthly, quarterly, half-yearly, and limited pay in order to make the premium payment process convenient for the consumers. This will surely make Healthcare in India affordable and accessible.

Currently, the health insurance industry in India has a long gestation period and it takes a long time for the insurers to achieve a break-even. As per the industry experts, the limit of eight years for carry forward and set-off of business losses is not sufficient. This limit must be increased.

India is the second most populous country in the world. The death rate has declined but birth rates continue to be high in most of the states. Health care structure in the country is overburdened by increasing population. Family planning programs need to be (re)activated by the Government.

To boost Quality in Healthcare, the Government must incentivize organizations who have NABH Accreditation; it could be in terms of tax benefits, GST benefits, Local self governments tax benefits, etc.

Dr. Rajeev Boudhankar has over 30 years of healthcare experience in Hospitals & Health Systems Management. He was instrumental in restarting a tertiary care hospital and supported till its full operationalization after a major natural disaster. He has worked as a consultant in a major Hospital Management Consultancy Company and also as a core team member in setting up Public Health Program in association with an International Agency and State Government.

RESEARCH



YOGA CAN IMPROVE SPERM MOTILITY, SAYS CCMB-AIIMS STUDY

A collaborative study from the Centre for Cellular and Molecular Biology (CCMB), Hyderabad, and All India Institute of Medical Sciences (AIIMS), New Delhi, has now shown that the traditional practice of yoga has positive effects on the quality of sperm. The beneficial effects have been correlated with epigenetic changes in the sperm.

Yoga-based lifestyle interventions (YBLI) are increasingly being offered as an adjunct to modern medicine. This pilot study, published in the journal *Andrologia*, offers a first-of-its-kind analysis of the effect of YBLI in infertile men. In this study, after the practice of yoga, infertile men have demonstrated reduction in seminal oxidative stress with improvement in sperm motility, indicating its fertilizing potential.

Yoga practices in this study included

physical movements and postures (asanas), breathing techniques (pranayama), and meditation (dhyana) for 1 hour a day for 21 days. This led to improved sperm quality in the patients enrolled in the study.

Genetic system of organisms is heavily influenced and regulated by environmental factors. Unlike the DNA sequence, which an individual is born with, epigenetic changes are dynamic and reversible in response to the environmental influences. Unhealthy lifestyle and social habits are known to have adverse effects on the sperm, resulting in a decline in male reproductive health in recent years.

Using state-of-the-art DNA sequencing analysis, the study demonstrated a resetting of the sperm methylome (pattern of chemical changes called DNA

methylation) in the yoga practitioners. The methylome, known to directly control the expression of genes, in this case is found to be associated with changes at nearly 400 genes, including several genes that are known play a role in male fertility, spermatogenesis and embryo implantation.

“The genes identified using the epigenomic approach in this study will be useful candidates for further focused investigations. As this pilot study was carried out on a small number of individuals, a larger scale investigation and further research on the effects of YBLI on male infertility will be necessary”, says Dr. Rakesh Mishra, Director, CSIR-CCMB. Besides Dr. Mishra, the research team included Shilpa Bisht, Sofia Banu, Surabhi Srivastava, Rashmi U. Pathak, Rajeev Kumar and Rima Dada.

(Credits: India Science Wire)



WHY VIRTUAL EVENTS?

VIRTUAL EVENT as a SERVICE

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WEBINARS	22	87	76	20	

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DOES WORLD HEALTH ORGANISATION NEEDS INTROSPECTION?

PERSONA

THEME

TRENDS

WELL-BEING

ISSUES

RESEARCH

NEWSCOPE



Written by Nimisha Singh

World Health Day organized by the World Health Organization (WHO) is celebrated on 7th April each year. The day is celebrated to raise global awareness regarding a health topic. This year, the tagline for World Health Day was 'Support nurses and midwives.'

Nurses and midwives are the foot soldiers of patient care and especially in a pressing situation like COVID-19 pandemic, they are the ones who should be appreciated and taken care of by the world leaders. We all have seen pictures and videos of frontline nurses working tirelessly and facing unprecedented challenges such as PPE and equipment shortages in the present circumstances. Therefore, with this year's theme for World Health day, WHO aptly highlighted the current

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status of nursing around the world and provided recommendations on improving the workforce.

But, talking about recommendations by WHO, the question arises 'Do countries really consider WHO recommendations?' or is it the other way around - 'Did WHO really take the right step at the right time?' Well, all these questions really come down to 'Is the current multi-lateral health

system really working?' Looking at the current pandemic, it seems that we all have failed miserably, and it is time for us to change the global governance of public health.

The current global law for epidemic/pandemic response is International Health Regulations (IHR), it assists 196 countries to prevent, protect, control and respond to global public health crisis. IHR was revised in 2005

after the 2003 SARS epidemic. WHO coordinates IHR implementation by providing guidance, training and tools to countries for strengthening their capacities to detect, verify, report and respond to public health crisis.

IHR also includes measures to avoid unnecessary interference with international trade and travel in such situations. WHO has the power of declaring a public health situation as epidemic/pandemic based on the data received by its state members. But it has been observed that countries have infringed these regulations by not sharing data and reporting outbreak on time. Therefore, leaving WHO to bear the brunt of not declaring the situation as public health emergency of international concern (PHEIC) and pandemic on time such as in the case of Ebola or coronavirus outbreak.

The whole process of declaring a PHEIC/pandemic is very crucial as it affects the economic and social state of a country. Therefore, WHO has often been criticized of kowtowing to its donor countries and delaying such responses due to political pressure. It is also true that WHO does not publish

any document as to what all evidence and reports does it consider while declaration of PHEIC. This clearly shows WHO's lack of transparency in its recommendations and decisions.

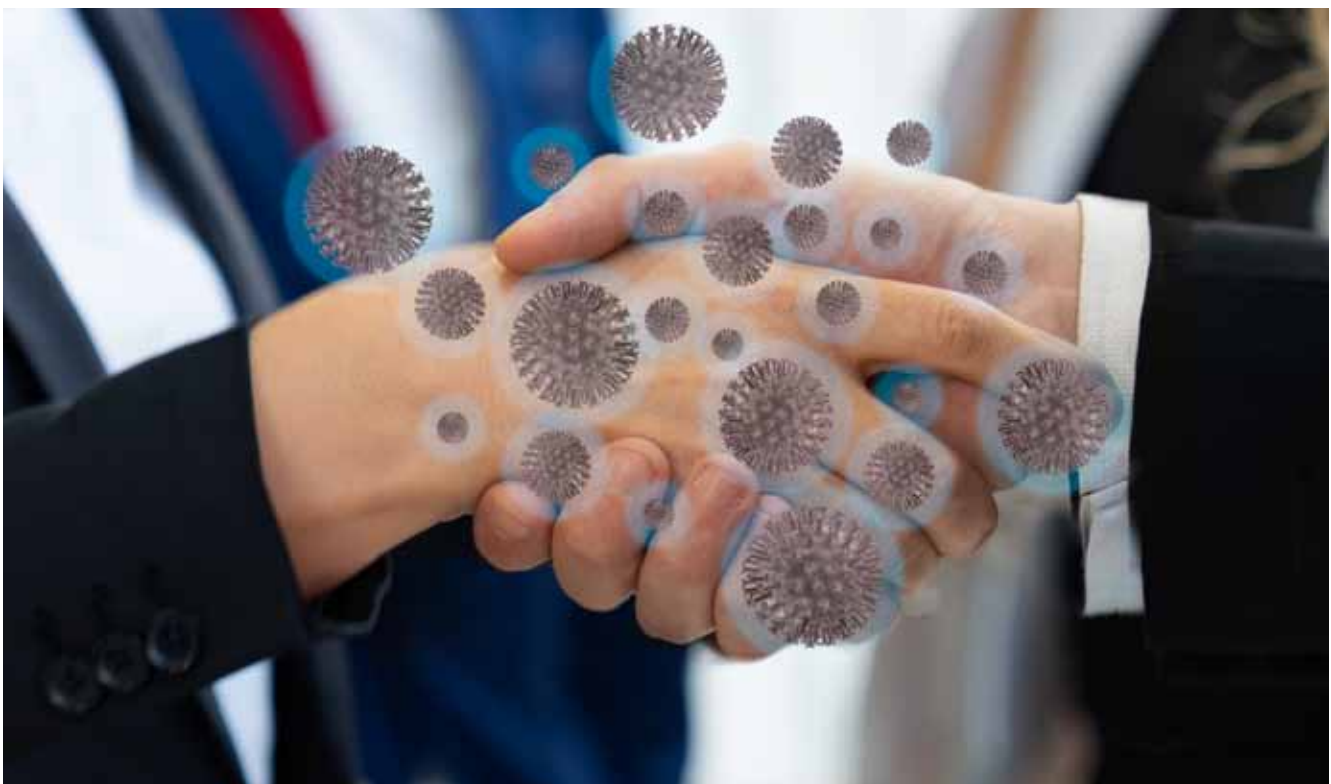
But, does labeling a situation by the WHO really trigger the countries to respond to these situations. WHO Director General Dr. Tedros Adhanom Ghebreyesus declared COVID-19 outbreak a PHEIC on 30th January 2020. However, countries did not prepare on time. World's top scorer at the Global Health Security Index, the US was also not fully ready for the pandemic, which is quite evident today.

The Global Health Security Index report is compiled by Johns Hopkins University, Nuclear Threat Initiative, and Economist Intelligence Unit which scores 195 countries on biological security and disease readiness. The report states that none of the countries are fully prepared for a pandemic as each country has important gaps to be addressed. Therefore, it is evident that the current multilateral system is not working, and we need to improvise it. It is important to create innovative pandemic response systems by all

countries. The countries should have a robust reporting structure and forgo individual sovereignty towards shared goal of controlling such pandemic.

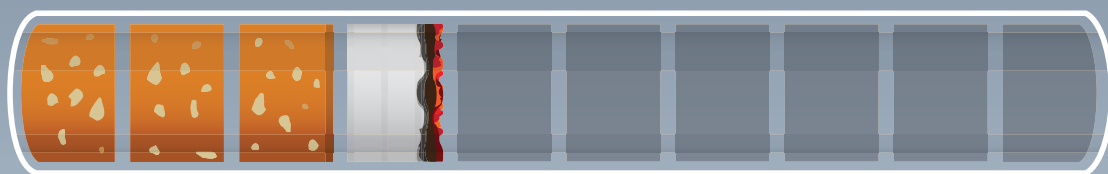
On the other hand, it is equally important to improve the power imbalance in the global governance of the public health by delegating more enforcement authority to WHO to enforce such global system. WHO should not only be restricted to coordination and rule setting. WHO also needs to improve its governance by increasing transparency, authority, monitoring and evaluation. WHO has done great work in the field of public health and we need to work together rather than blaming each other.

Nimisha Singh is a health care consultant with around 7 years of experience in healthcare delivery. She has MPH degree from Rutgers University, New Jersey, USA and Masters in Hospital Management from IIMR, Jaipur, India. Her interest is in public health, healthcare IT and innovation. She is editor of InnoHEALTH magazine and authored chapters in various books.



LOW LIFE!

STOP SMOKING



‘BURZYNSKI: CANCER IS SERIOUS BUSINESS’ IS A MUST WATCH

Written by Dr. Elsa Lycias Joel and Harry Sheridan

Any day when someone comes up with a hope to treat cancer in a better way or cure the disease, a handful cries foul. Bold claims of cancer cures, substantiated or unsubstantiated, can't be ignored or ridiculed or looked upon as a red flag by other researchers because there has never been a fool proof treatment or cure for this deadly disease so far. Our hopes must always be on the side of new breakthroughs in cancer treatment and regulating bodies should play their best cooperative part in facilitating the process from mice to man with caution but without prejudice. With our fingers crossed for a “Magic Bullet”, we must remember that drugs tested in cell cultures and even animal models

aren't found good enough in clinical trials for pharmacokinetics reasons. Apart from R&D on cancer, every individual can try optimism, shun carcinogens, do their bit and hope to live cancer free. 60 governments across the world observing cancer day for almost 2 decades haven't changed the health scenario drastically, have they? As reported by India Today on February 4, 2019, 9.6 million die from cancer every year and 70 per cent of cancer deaths occur in low-to-middle income countries. Data from Indian Council of Medical Research (ICMR) reveal that breast cancer, cervical cancer, oral cancer, and lung cancer together constitute 41 per cent of cancer burden. Objective behind world cancer day is about saving millions of preventable deaths

each year by raising awareness about cancer, and pressing governments and individuals across the world to take notice and act.

Consolidated efforts from all sections of the society along with the government will address certain challenges associated with cancer. But autonomous bodies like the FSSAI and the National Tobacco Control Cell (NTCC) at the Ministry of Health and Family Welfare (MoHFW) can play their part in time and on time in regulating what's available for consumption and what all have to be eliminated from the market without further ado.

We ought to celebrate days with an understanding of the objective behind.

Our country being the second largest consumer of tobacco in the world and with smoking taking the lives over one million people in India annually, we need to observe no tobacco day in an entirely different fashion from how it's being done. Cigarettes constitute the principal form of tobacco usage in virtually every market of the world and account for 85% of global tobacco consumption by volume and 93% by value. Tobacco is a major source of revenue to Governments in both the developed and emerging markets and cigarettes contribute the lion's share of such revenues.

Every time there is a loud cry about banning tobacco and closing down tobacco companies, our government displays their concern about small and marginal farmers, 400,000 of them who grow cigarette tobaccos and over 600,000 who grow non-cigarette tobaccos. The fact as we all know is farmer suicides have continued unabated since 1990s. Farmers are displaced, government schemes and assistance don't reach the neediest segment, loan waivers don't help small

farmers and alleviate their penury but governments think tobacco cultivation does the magic.

How ridiculous does this look as we observe world cancer day every other passing year! More so, the overall tax rate on all tobacco products in India is still very low compared to other middle-income countries. In essence, the overall concern shouldn't be about increasing tax rates but about banning tobacco.

More than half the snacks that have been taken off the shelves in US were of Indian make. The US FDA

reported that wafers, cookies and biscuits from one of India's biggest sweets and snacks manufacturer contain poisonous and adulterated content. They said that the products are "filthy, putrid or decomposed-otherwise unfit".

US stopped importing bhuja czar's snacks since 2015 when FDA detected pesticides in it. As the integrity of Indian food regulators came under the scanner, a big gun explained the discrepancy in a funny manner. He said that food safety standards differed from one country to another. Did he mean to say Indians do not mind eating

Every time there is a loud cry about banning tobacco and closing down tobacco companies, our government displays their concern about small and marginal farmers, 400,000 of them who grow cigarette tobaccos and over 600,000 who grow non-cigarette tobaccos.



pesticides! The two-minute noodle episode is still fresh in the minds of consumers. But for the food inspector at the Uttar Pradesh government's Food Safety and Drug Administration and his audacity, one-year ban of the two minute noodle pack wouldn't have happened. To a big cheese of the global giant, the crisis looked like an opportunity to emerge better but for those who had already consumed the 'Taste Bhi Health Bhi' snack containing lead beyond permissible limit it's an irreversible health crisis.

An Ayurvedic health supplement banned in Canada since 2005 for high amounts of lead and mercury is sold and bought in India as a nutritive jam.

Hydrogenated oils, canned products, refined sugar and many more cancerous foods preserved using sodium benzoate and sodium nitrite adorn the shelves of all shops throughout the country. It is no secret that these two preservatives cause hyper reactivity and gastric cancer. Have we ever come across brands being suspended in India! The two-minute noodle is again on the shelves and it depends on the aware/unaware, careful/careless, wise/unwise consumer to rely on tales of two test results or conscious reasoning.

In our country, World Cancer Day must address at least one of the below:

1. Poor consumer awareness
2. Poor vigilance and enforcement by

government agencies

3. India being a potential market for export rejects from other countries

India consistently ranks among the top three countries whose products are rejected for import by the regulator. Even if this doesn't ring a bell, the consumers must read between the lines of what a spokesperson of a multinational said on the violations that include mislabelling and products containing allergens. He said, "There is a possibility that the products referred to, which is meant for sale in India, are entering the US through parallel imports. Since the labelling requirements for India are different, it is not surprising that the products do not fulfil the FDA requirement include mislabelling and products containing allergens".

Colourless food might look unappetizing. So, the solution is to replace deadly cancerous dyes with natural ones extracted from plants. Banning synthetic dyes and promoting colourless healthy foods must go hand in hand. Should we await conclusive evidences that cancerous foods cause cancer? In addition to providing and regulating licenses, FSSAI can resort to monthly checks of random food products too. Packed and semi-processed food products with preservatives must be regularly scrutinized.

I think anything that comes in crinkly plastic wrapper is to be avoided because they contain shelf-stabilizing ever cancerous ingredients. How long do we intend to use microwave safe plastic food containers and cling wraps? Till cancer strike us or till researchers come out with convincing scientific evidence that any plastic when heated will release cancerous chemicals!

On one hand, research papers on Graviola (*Annona muricata*) and its various organs against various cancers are published by reputed journals and on the other hand we read that there is not enough reliable evidence that Graviola works as a treatment for cancer. Punjab being our country's breadbasket is also home to the highest rate of cancer in India. Not long ago

In addition to providing and regulating licenses, FSSAI can resort to monthly checks of random food products too.

Packed and semi-processed food products with preservatives must be regularly scrutinized.





did Union Agricultural Minister say it loud and clear that there is no evidence whatsoever about fertilizers being a cause of cancer and challenged the Punjab government to implement the Ayushman Bharat Scheme. The paradox of our times is that India boasts being a key contributor in global cancer research & development but does nothing with regard to cancer preventive measures.

“We can't solve problems by using the same kind of thinking we used when we created them”.

As we observe World Cancer Day, may we take a vow to make lifestyle changes, advocate everything that will promise a cancer-free world and rally together against any thing that ‘ups cancer risk’. Will vigilant food authorities take punitive action against those who indulge in manufacturing and selling substandard, adulterated and cancerous foods? Trust and faith in governments collapse even if one black sheep works hand in glove with those who make and sell harmful food products. Should FSSAI and CDSCO wait for some hero

somewhere to blow the whistle?

Disposable cups and plates with bisphenol A (BPA) are used for convenience sake in almost all occasions where food and drinks are served. In spite of knowing the cause and effect, we drink and eat from plastic wares with a tinge of guilt and extreme carelessness. Millions of tonnes of plastic waste discarded into the oceans and on earth poisons the planet and in turn everything on it. The more our fondness for use and throw products increase the more prone we become to cancer. Our laxity for cancer-prevention habits that we dismiss as “once awhile phenomenon” doesn’t guarantee against cancer.

Junk is rubbish/trash and food is “any nutritious substance that people or animals eat or drink or that plants absorb in order to maintain life and growth”. Its high time people get into their thick skull that there is nothing called “Junk Food”. It’s either junk to be trashed or food meant to be consumed. “I AM AND I WILL” must motivate food safety officers to remain true

to their conscience as they carry out their duties and responsibilities. They can also make sure health promotion campaigns are scaled up in response to the rise in life-style related cancers.

Incidentally, cancer prevention tips must be part of every school curriculum so that children are educated at a very early age to make wise choices.

Dr. Elsa Lycias Joel holds a doctorate in biotechnology and has worked with the new Indian Express as sub editor. She writes for quite a number of children's magazines, The Delhi Press, I Quote, Women Exclusive (WE), infinithoughts, couples' magazine and other national and regional dailies. She has authored a children's book named "Perfect Endings", signed by the former President of India Dr. APJ Kalam.

Harry Sheridan served as private secretary to former President Dr. APJ Abdul Kalam for around 24 years.

TAKING A TECHNOLOGY DETOUR TOWARDS CANCER CURE

Written by Dr. Raj Lehal

With technology boosting the options to treat high risk diseases, how do we choose the best option? In my opinion, we need to look at it holistically – the newer methods and how we can use the newest technologies to improve their effectiveness.

I will start with my specific area of expertise, targeted therapy. In simple terms, it is the right patients getting the right drug at the right time. When one gets cancer, there are many different proteins that get mutated or hyperactivated or inactivated. Targeted therapy helps in identifying the most accurate drug that will control these proteins and bring them to normal function.

For example, at Cellestia, we develop first-in-class targeted therapy drugs for NOTCH-driven cancers. NOTCH is one of the proteins that causes cancer, which in its required measures help in tissue development and normal proliferation of the cells. But when you have too much NOTCH it not only induces cancer, but also causes the cancer to spread to other organs, which we call Metastasis. By activating the NOTCH pathway, cancers become resistant to drugs.

Our approach is to develop an innovative anti-NOTCH drug. This is a targeted therapy.

Another innovative way of cancer cure is Immunotherapy, which is boosting your own immunity to fight cancer. The work done by pioneers in this field like Carl Junes, is inspiring. In simple terms, it is taking your own immune cells, genetically engineering them in a way that they can start attacking tumor cells.

But it's still not enough. You still need to combine immunotherapy with targeted therapy to have a beneficial and

sustainable outcome. And this is only one aspect of the treatment. We need every aspect to fall in place for effective cure.

Before we start treating the patients, we need to effectively and precisely diagnose these patients. We need to know what kind of protein is driving this disease. For instance, before we put any patient on anti-NOTCH therapy, we need to know if the patient has activated NOTCH in his/her tumor. You can do gene sequencing, protein-based analysis and RNA analysis. This is a very critical part of personalized medicine. This is where AI can play a big role.

Aiming for faster, effective solutions

At the diagnostic level, AI could replace the human eye. It could ease the process for pathologists to analyze a tissue biopsy – to analyze what protein causes what cancer – faster and efficiently.

AI can also play a role in digging out data from genome sequencing – identifying the DNA mutations and alterations.

AI can power drug discovery. The traditional way drug discovery includes screening of compounds and making them work on cancer cells. This takes years of effort and investments, which needs to be validated by further testing. But with AI, you can do virtual screening and reduce the investments. You can target a protein that is causing cancer and run a library of a million virtual compounds. Without even synthesizing them, AI can anticipate if the compound works on the protein or not. If it does, it will most likely even block its activity. You can thus minimize the number of tests, and save time and money.

AI can also help in managing data that is pivotal in drug discovery.

Affordability – a key outcome of decentralization of drug development

While these new technologies and methods bring in a spectrum of benefits, they also add huge costs to the healthcare system. AI based diagnosis, drug discovery, targeted therapy and immunotherapy are immensely expensive. How do you make it affordable and accessible for the masses, especially in countries without a system of healthcare policies?

This is where we need to look at decentralizing drug development and creating drugs for the local population. Right now, drug development is focused on the Western population. Everything we do is to meet the demands of bigger markets like the US, Canada and Europe. And all the clinical trials are done on the Caucasian population. Would this work as effectively, for the Indian population? One can't be sure, as we may have a different genetic makeup. There should be more clinical trials done locally, while keeping the global standards in these trials.

With rising healthcare costs, it's important for India to develop strategies and incentivize drug discovery and development, to provide affordable and innovative medicine for the local population. For instance, China has a large population like India, with a considerably large ageing population. They can't afford to import medicines worth millions of dollars. The Government has put this incentive in place for Chinese companies to develop drugs for the Chinese population. And they would develop drugs at five times lesser the cost as in the US. This is just one example of how we can look at reducing cost and bringing benefits to the society, while maintaining international standards in drug development.

A lot of good early stage drug discoveries are made by India CROs. There's demand for them from markets

There's an initiative in India called Indigen: they try to sequence the healthy population, just to understand our baseline and establish a reference point.

all over. But they do it just as a service. We are waiting for the day they will change their business models and say "we're going to do drug development locally for the local population". Of course, they will profit from creating expensive drugs for the global market. But if they can make affordable drugs locally, they will profit exponentially from the volume, as well as create avenues for effective treatments for our own societies. This is a huge market with great potential.

Imagine combining this with genomic data!

Currently with most of the clinical trials done on the Caucasian population do not serve as an accurate baseline for

Indians and other Asians populations. This is where we need to make tremendous progress. There's an initiative in India called Indigen: they try to sequence the healthy population, just to understand our baseline and establish a reference point. Based on these data, we can map out disease causing DNA alterations or mutations in Indian population. And this know-how will help fuel the development of next-generation personalized medicines. This knowledge gap in genomic sequencing is also a huge market opportunity, that is almost untapped.

The challenges lie in in the legalities and genomic data privacy. You need to understand the local laws... how and

what can you use this genomic data for, in an ethical manner. It's pivotal to obtain this data for innovative treatment options, but it's also important to strike a fine balance when it comes to the access to this data. A clear framework would help more innovators in the industry to follow this path.

It is certain that these steps can create a huge impact in the field of personalized medicine in cancer treatment. We just need to strike the right balance between, the methodologies, technology and access to data.

Dr. Raj Lehal is the Chief Scientific Officer with Cellestia Biotech AG. He is a known drug discovery professional with comprehensive knowledge of oncology and early stage drug development, Pharmacokinetics/ Pharmacodynamics profiling, ADME studies, In vivo and Xenograft studies. He has in-depth understanding of R&D trends in oncology, market analyses and strategic planning.

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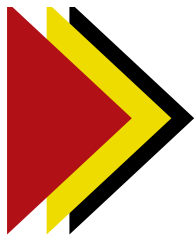
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LATEST NEWS IN HEALTHCARE!

GOVERNMENT TENDERS WORTH ABOUT ₹30,000 CRORE CANCELLED

Restrictive and discriminative tender practices prevent participation of domestic companies in government procurement, hurting 'Make in India' initiatives. The Department for Promotion of Industry and Internal Trade (DPIIT) from time to time has intervened to change conditions in those tenders in order to promote 'Made in India' goods. "Many of the restrictive and discriminative tender practices have been identified. Almost ₹30,000 crore (worth) of tenders have been cancelled because of discriminatory practices," DPIIT Secretary Guruprasad

Mohapatra said. The department is taking every step for effective implementation of public procurement order, 2017, to promote 'Made in India' products. The government issued the order on June 15, 2017, to promote manufacturing and production of goods and services in India and enhance income and employment in the country. Under the Public Procurement (Preference to Make in India) Order, it was envisaged that all central government departments, their attached or subordinate offices and autonomous bodies controlled by the

Government of India should ensure that purchase preference be given to domestic suppliers in government procurement. The secretary said government departments and public sector companies should give preference to local players. "The government has taken many initiatives like Make in India, ease of doing business, investor facilitation, FDI reforms, new infrastructure creation and various outreach programs to increase share of manufacturing in GDP and create 100 million jobs by 2024," said Mohapatra.

Source: www.livemint.com

GOVT OF TELANGANA AND MEDTECHCONNECT LAUNCH 'PROJECT TEJ' TO ACCELERATE INNOVATIONS

In a bid to accelerate and encourage aspiring entrepreneurs to test their innovative ideas in the field of medical technologies, the Telangana government and MedTechConnect, founded by Cyient and Xynteo's India2022 coalition, recently joined hands to launch a new initiative called Project Tej. With an endeavour to support the adoption of indigenous and cost-effective innovations in medical technologies, a Memorandum of Understanding was inked between Research and Innovation Circle of Hyderabad (RICH) and MedTechConnect. The primary focus of the project would be to launch test beds for large-scale clinical validation, usability assessment, and business model evaluation in real-world clinical settings for late-stage medical technologies. It also aims to provide structured mentoring, commercial access, and facilitate market access to validated technologies in public and private healthcare channels.



The project will accelerate cost-effective innovations in medical technologies in India's public health systems by bringing together an alliance of industry, hospitals, start-ups, and ecosystem builders in the medtech space. Project Tej, a programme managed by MedTechConnect, has the

support of more than 25 institutions across India. On behalf of RICH and MedTechConnect partners, Cyient and Xynteo have helped shape this initiative and are key partners in the project.

Source: www.health.economictimes.indiatimes.com

WHO SAYS CORONAVIRUS: COVID-19 IS NOW OFFICIALLY A PANDEMIC

The COVID-19 viral disease that has swept into at least 114 countries and killed more than 4,000 people is now officially a pandemic, the World Health Organization announced on March 12, 2020. "This is the first pandemic caused by coronavirus," WHO Director-General Tedros Adhanom Ghebreyesus declared at a briefing in Geneva. It's the first time the WHO has called an outbreak a pandemic since the H1N1 "swine flu" in 2009. Even as he raised the health emergency to its highest level, Tedros said hope remains that COVID-19 can be curtailed. And he urged countries to take action now to stop the disease. Eight countries including the US are now each reporting more than 1,000 cases of COVID-19, caused by the coronavirus that has infected nearly 120,000 people worldwide. The WHO is "deeply concerned, both by the alarming levels of spread and severity and by the alarming levels of inaction" by world leaders in response to the outbreak, Tedros said. "We have therefore made the assessment that COVID-19 can be characterized as a pandemic," he said. By dubbing COVID-19 a pandemic, the WHO is placing it in a different category than several recent deadly outbreaks, including the recent Ebola outbreak in the Democratic Republic of Congo, the Zika virus outbreak in 2016 and the 2014 Ebola outbreak in West Africa. All

three of those outbreaks were deemed to be international emergencies. In the last pandemic, the H1N1 influenza virus killed more than 18,000 people in more than 214 countries and territories, according to the WHO. In recent years, other estimates have put H1N1's toll even higher. Still, Tedros said that people should not fear the designation and that it should not be taken to mean that the fight against the virus is over. "Describing the situation as a pandemic does not change WHO's assessment of the threat posed by the virus," Tedros said. "It doesn't change what WHO is doing. And it doesn't change what countries should do." The WHO had declared the outbreak a global health emergency in January, as cases surged in China, where the novel coronavirus was first detected. In Italy, more than 630 people have died of COVID-19, and the total number of cases continues to rise sharply. The country now has 10,000 cases, second only to China. There are 9,000 cases in Iran and more than 7,700 in South Korea. Those four nations are all imposing drastic measures in an attempt to slow the spread of the COVID-19 illness, which has a higher fatality rate for elderly people and those with underlying health conditions. Those countries also have more than 90% of current cases, Tedros noted, adding that both China and South Korea have had success

in reining in their epidemics. Data from China, he said, showed that the number of new cases there peaked in late January and early February. "We cannot say this loudly enough, or clearly enough, or often enough: All countries can still change the course of this pandemic," Tedros said. However, the viral disease continues to spread around the globe. "In the Americas, Honduras, Jamaica and Panama, are all confirming coronavirus infections for the first time," NPR's Jason Beaubien reports. "Elsewhere, Mongolia and Cyprus are also now reporting cases." As the outbreak has ballooned, so has speculation that the WHO would declare it a pandemic. But Tedros said WHO experts had previously determined that the scale of the coronavirus' impact didn't warrant that description. And he noted that declaring the outbreak a pandemic would raise the risk of a public panic. It's now up to other countries to prove they can stop the disease, Tedros reiterated. "The challenge for many countries who are now dealing with large clusters or community transmission is not whether they can do the same," he said. "It's whether they will." "People, we're in this together — to do the right things with calm and protect the citizens of the world," Tedros said as he concluded his remarks. "It's doable."

Source: www.npr.org

CSIR-CDRI SCIENTIST BAGS SERB WOMEN EXCELLENCE AWARD

Dr. Niti Kumar, Senior Scientist from Division of Molecular Parasitology and Immunology, CSIR-Central Drug Research Institute (CDRI), Lucknow, has won the SERB Women Excellence Award for the year 2020. Dr. Niti Kumar received the Award from the President of India during National Science Day Celebrations on February 28, 2020, at Vigyan Bhawan. This is a huge recognition of her research group work on understanding the protein quality control machinery in human malaria parasite. The study could

well lead to finding an alternative drug for malaria intervention. Instituted by the Science and Engineering Research Board (SERB), Department of Science and Technology, Government of India (SERB-DST), the award is given to women scientists below 40 years of age who have received recognition from other national academies. The award constitutes a research grant of Rs 5 lakh per annum for 3 years. Dr. Niti Kumar has many awards and recognitions to her credit. Some of the prominent ones include: Innovative

Young Biotechnologist Award (DBT-IYBA, 2015); INSA Medal for Young Scientist (2010) by Indian National Science Academy; Ramalingaswami Fellowship (2013-2018); EMBO Post-Doctoral Fellowship (2010-2012); Alexander von Humboldt Fellow (2010); Max Planck Post-doctoral Fellowship at Max Planck Institute of Biochemistry (2009); and Marie Curie Early Stage Research Fellowship by European Union under 6th Framework Programme (2005-2006).

Source: India Science Wire

NITI AAYOG SOON TO CIRCULATE DRAFT MEDICAL DEVICES BILL FOR STAKEHOLDERS' REVIEW

To address the regulatory vacuum and concerns of patient safety in medical devices, NITI Aayog is likely to circulate a draft of the Medical Devices Bill for stakeholders' review to frame a separate Medical Devices Act much on the similar lines as Drugs Act. This according to experts will clear the ambiguity in terms of regulating drugs and devices separately as both have different shelf life and product life cycle in the context of efficacy, performance and patient safety. A stakeholder review meet took place in December 2019 and then in January 2020 with representatives from the domestic medical device industry and other stakeholders including some regulators to discuss on the need to regulate medical devices separately and having a regulatory division parallel to what the Union Health Ministry has in the form of Central Drugs Standard Control Organisation (CDSCO). The meet was aimed at having a predictable road map for the development of Indian medical device sector with the help of separate regulatory framework having effective and rationale medical device regulations as stipulated in the national health policy. Rajiv Nath, Forum Coordinator, Association of Indian Medical Device Industry (AiMed) explains, "There is a need for a separate regulatory framework to address the regulatory vacuum and concerns of patient safety in medical devices. However, the industry has been surprised with the reluctance of Union health ministry to initiate framing a separate Law or now sharing a clear viewpoint on the proposal for the new bill medical device bill. This lack of clarity is making the policy environment unpredictable and is being interpreted that possibly Union health ministry is not supporting a separate act for medical devices or in the form

that's being drafted by NITI Aayog. Priority is to have a separate Act. Then comes the question about who will regulate? Whether there would be a separate division under Union health ministry as is the case with CDSCO and Food Safety and Standards Authority of India (FSSAI) currently or CDSCO will be revamped with separate divisions for drugs and devices and separate team of competent regulatory experts as professionals." "Union health ministry has not been able to address the concerns of aggrieved Indian medical device industry who do not want their engineering products to be continued to be regulated as drugs when physically they are not," he added. An attempt to self-regulate the Indian medical device industry was initiated when Quality Council of India (QCI) introduced on March 15, 2016 the Indian Certification for Medical Devices Scheme (ICMED)- the first indigenously developed international class certification scheme for medical devices in India. ICMED was launched to

bring credibility for medical devices manufacturers in India to reduce time and cost-run for obtaining globally accepted certification thus eliminating malpractices of sub-standard or fraudulent certification or quality audits. It is also intended to help manufacturers get preference in public healthcare procurement scheme. ICMED is also aimed at enhancing patient safety and will serve as the much-needed product credential for manufacturers to build confidence among buyers and users. This move motivated the Union health ministry into introducing a revised Schedule M-III delinking quality management system (QMS) from pharma good manufacturing practices (GMP) and expedited drafting of new medical devices rules separate from drugs.

Source: www.pharmabiz.com

Compiled by:
Parthvee Jain, Editor,
InnoHEALTH Magazine

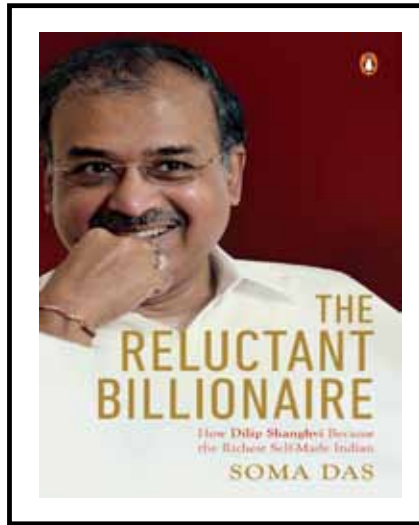
BOOK REVIEW

By Dhruv Singh

The book is the story of a very simple man named Dilip Shanghvi. His father was a medicine wholesale shop owner. Dilip was an assistant to his father in the shop. From there on, he got the idea of opening up his own pharma company.

Dilip being a commerce graduate, was very intrigued to learn how a business worked. He used to spot which are the slow-moving goods and returns and which are not and will give him an edge over the others. He always thought in terms of business growth, revenues, margins, business risk etc. His uncanny grasp on the numbers and ability to look at the big picture led to Sun Pharma's profitable growth.

What I especially liked was his business philosophy – he wanted to be in areas where the competition was less either due to the size of the market or due to the complexity involved. The reason was he continuously learned from



medical journals, publications, etc. and once had even hired a chemistry professor to teach him.

One of his favorite sayings was "Both God and Devil lie in the details". His super attention to detail, even in

the minutest of things, ensured Sun Pharma's success.

Being very humble, Dilip built from the scratches, and so he always valued relationships over money. There were instances depicting this. He has also initiated steps to steer Sun Pharma towards innovation aimed at rediscovering old molecules and creating highly specialized branded generics. It took 28 years for Sun Pharma to reach the \$1 billion revenue mark, in 2010, but a mere two more years to touch \$2 billion and another two to double it further to \$4 billion in 2014. It is now the fifth-largest generic drug maker in the world.

And yes the book aptly mentions him "self-made".

Dhruv Singh, avid reader & cybersecurity expert

PERSONA

THEME

TRENDS

WELL-BEING

ISSUES

RESEARCH

NEWSCOPE

Bridging innovations across continents

The delegation program has been postponed due to the continued concerns about COVID-19, as the health and safety of all is our priority.

We will be back with new dates in the coming weeks. We hope you are able to join us then.



Contact

Parthvee

+91 83830 70268

parthvee@innovatiocuris.com

icfhe.in/innobridge/2020-usa

IC InnovatorCLUB

A not-for-profit Initiative

About

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



@InnoHEALTH2017, Delhi, India

Benefits

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

Free access to theme based bimonthly club meetings

Upto 50% discount on conference /master class ticket prices

Complimentary InnoHEALTH magazine digital format yearly subscription

Free access to embassy meetings and foreign delegation visits

Exclusive perks with respect to B2B and B2G meetings

Membership details

The membership for the IC InnovatorCLUB is open for individuals, organisations and institutions. Enthusiasts can fill the form available at <http://bit.ly/ic-club-membership>. If the club management approves the application, a payment link will be sent to the individual/organisation. Post the payment process, the club administration will get in touch with you to brief you regarding the calendar of the club activities.

Typical club meeting includes tea, lunch and themed discussion on various topics and experience sharing desired by the club members.

If you are interested to launch IC InnovatorCLUB's local chapter in your city, feel free to contact us immediately.

Fee details

Benefits	Individual			Corporate/ institutional*
	Full membership	Virtual membership (For outstation members)	Walk-in	Full membership
Club meetings	5 meetings / year	1 physical meeting per year and other meetings can be viewed on YouTube	2500 INR / meeting	5 meetings / year
Conference / training ticket price discount	50% off	30% off	N A	50% off
Magazine yearly subscription (Digital)	Free	Free	Free copy of the quarter's magazine issue	Free
Access to embassy meetings	Yes	Yes	No	Yes
Access to delegation visits	Yes	Yes	No	Yes
Pricing**				
1 year	9,000 INR / 130 USD	1,500 INR / 20 USD	N A	20,000 INR / 300 USD
2 years	15,000 INR / 220 USD	2,500 INR / 35 USD	N A	35,500 INR / 500 USD
3 years	21,000 INR / 320 USD	3,500 INR / 75 USD	N A	50,000 INR / 700 USD

* The fee for corporate / institutional members is applicable for 3 members only. If more members desired to be registered from the corporate / institution, the fee can be adjusted accordingly.

** All prices mentioned above are inclusive of applicable taxes

Associated institutional members



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

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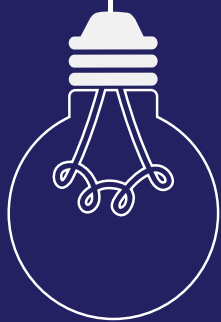
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 www.innovatiocuris.com

 info@innovatiocuris.com

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