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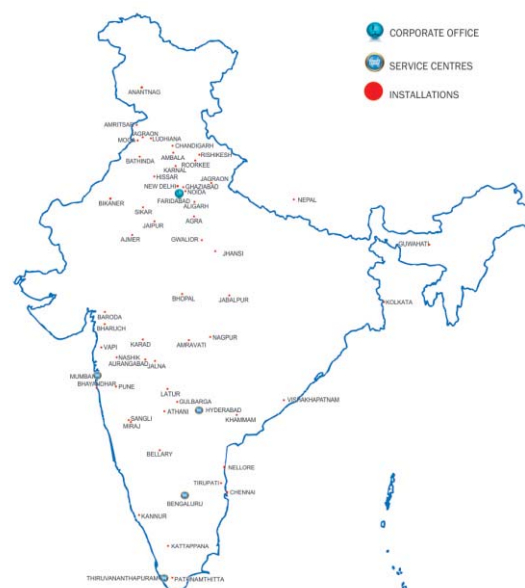


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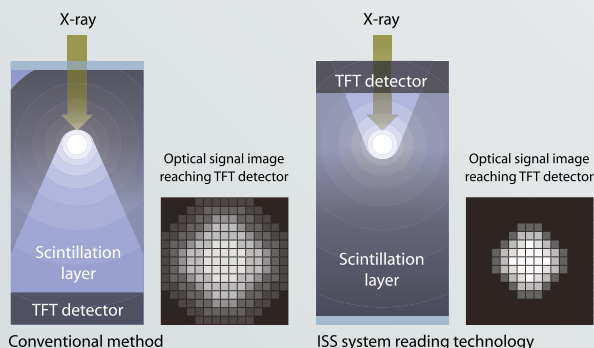


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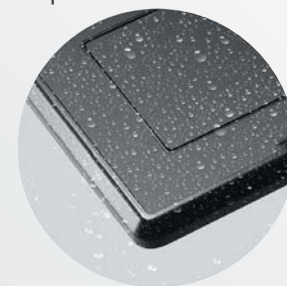


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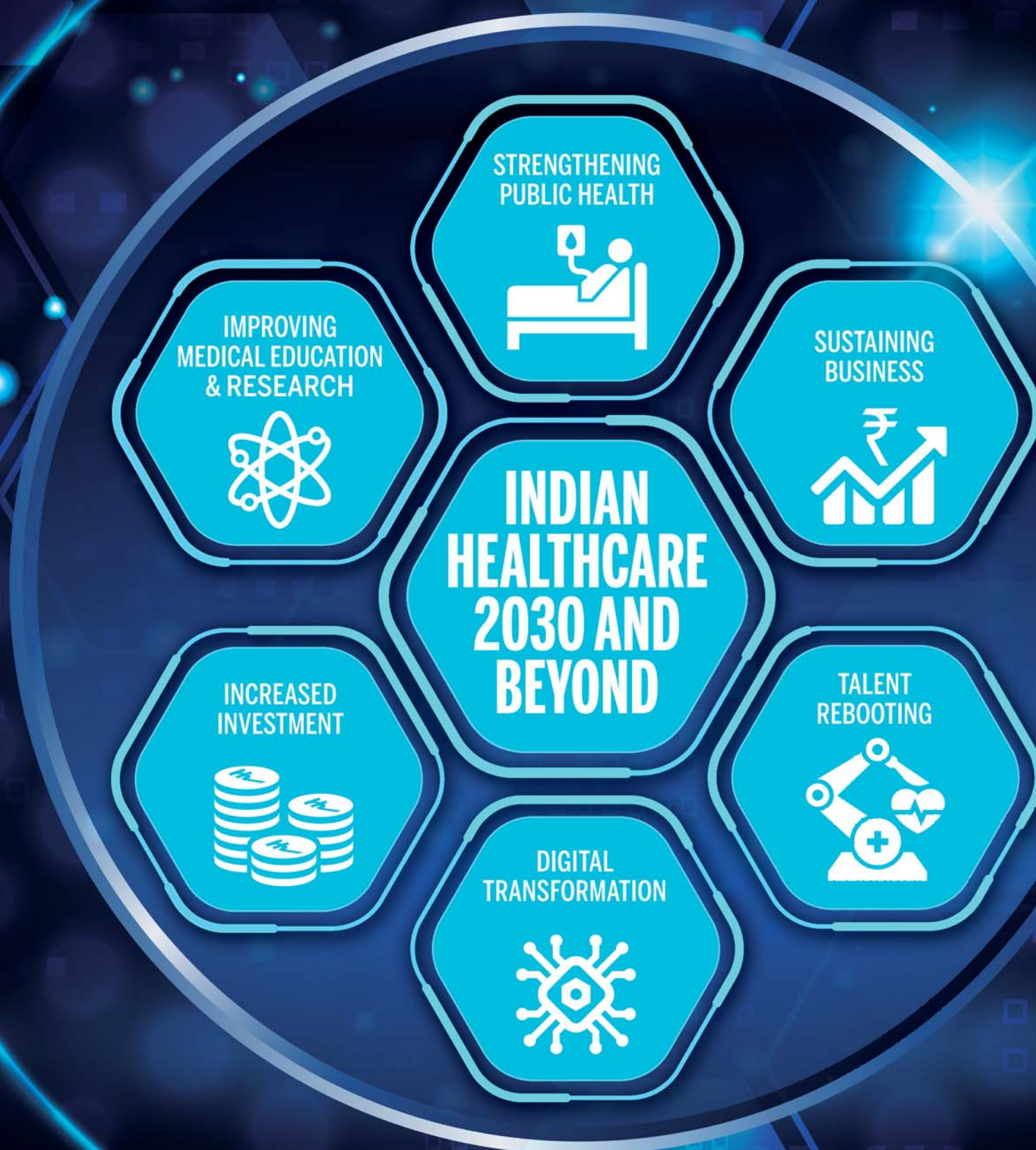




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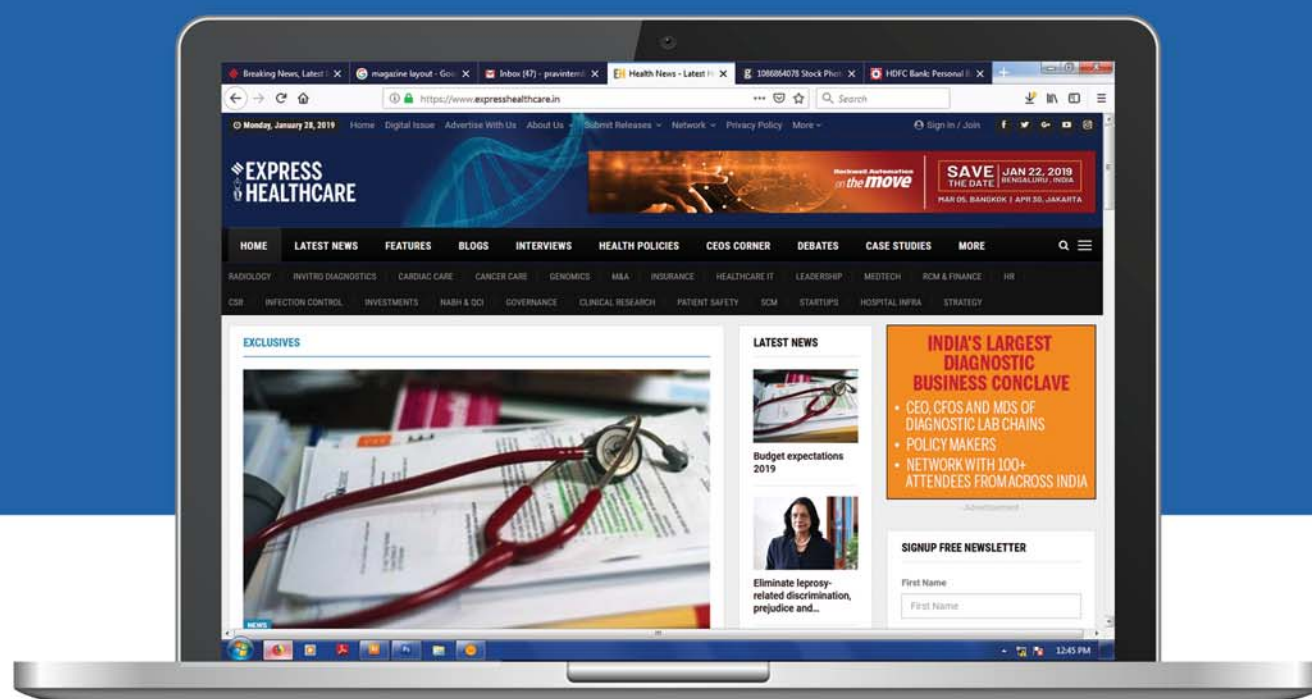
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# Will the 2020 ties see better health policies?

**A**s *Express Healthcare* marks its 20<sup>th</sup> Anniversary with the January 2020 edition, we also start the third decade of this millennium. It is heartening that the Vice President of India, M Venkaiah Naidu recently stressed the need to dedicate this decade, from 2020 to 2030, to make India healthier by promoting healthy lifestyle, improving healthcare facilities, making healthcare affordable and accessible to all.

Thus our anniversary edition takes a look at how the sector is gearing up to accomplish this huge responsibility across various facets. For example, the cover story section has stakeholders touch on how they are sustaining business by exploring partnerships and increasing investments. The need to invest in research, strengthen public health, reboot talent and improve medical education remain part of an unfinished agenda. Many hospitals will also invest further in digital transformation thus using more AI enabled solutions like clinical decision support systems.

A recent CRISIL report has good tidings for the hospital sector. Ironically, if the regulations caused strife in the last two years, the main fillip in the next two years is expected to come from the government itself, in the form of improved demand driven by enhanced coverage under Ayushman Bharat. While demonetisation and the ban on large cash transactions impacted occupancy, implementation of the Goods and Services Tax, price cap on medical implants, and increase in minimum wages for nurses and staff moderated profitability.

While these regulatory events in fiscals 2017 and 2018 had impacted revenue growth and profitability of private hospitals, the sector seems to have found a way around such speed breakers. With reworked package rates and rationalised costs, last fiscal's revenues saw some bounce back of revenue growth and operating profitability to -13 per cent and 15.3 per cent, respectively.

Further, the CRISIL report states that curtailment of capacity additions allowed for better asset turnaround and aided improvement in credit metrics - for instance, debt to EBITDA (earnings before interest, tax, depreciation, and amortisation) improved to 3.4 times in fiscal 2019 from 3.8 times in fiscal 2017.

Thus revenue and profitability of India's hospitals sector should continue to improve between fiscals 2020 and 2021, sustaining the recovery witnessed last fiscal.

If more corporate hospitals sign up for Ayushman Bharat, there will be deeper penetration into Tier-II cities. Hospital chains are likely to further alter healthcare delivery models to align with regulatory changes which will in turn also add to the improving margins. Other structural factors like increasing lifestyle diseases and medical tourism will continue to aid demand, says the CRISIL report.

The health sector will have to cope with changing disease patterns as India's demographic profile ages.



**Ironically, if the regulations caused strife in the last two years, the main fillip in the next two years is expected to come from the government itself, in the form of improved demand driven by enhanced coverage under Ayushman Bharat**

For instance, about 197 million persons, roughly one in seven Indians, suffered from mental disorders of varying severity in 2017. The contribution of mental disorders to the total disease burden has doubled in India from 1990 to 2017, indicating the need for implementing effective strategies to control this increasing burden. Mental disorders were the leading contributor in India to years lived with disability (YLDs), contributing 14.5 per cent of all YLDs in 2017.

These facts from the the first comprehensive estimates of disease burden due to mental disorders and their trends in every state of India from 1990 published in *The Lancet Psychiatry* by the India State-Level Disease Burden Initiative, should help India's health policy makers fine tune schemes like Ayushman Bharat so that the Health and Wellness Centres (HWCs) become the starting point to prevent, detect and support people with mental health conditions.

The study also has state level details which can help state governments devise appropriate strategies to detect and treat mental health conditions in a better manner. For instance, the study shows that the prevalence of childhood onset mental disorders such as idiopathic developmental intellectual disability, conduct disorders, and autism is higher in the northern states but is decreasing across India.

Another report published in *The Lancet Public Health* show that road injury was the leading cause of death in India among 15-39 year old males in 2017 and was the second leading cause for both sexes combined. If the estimated trends of road injury deaths up to 2017 were to continue, no state in India is likely to meet the SDG 2020 target of reducing the road injury deaths by half from 2015 to 2020 or even by 2030.

Is our health system capable of providing timely healthcare services for road injury victims? Do we have enough trauma care facilities? The solution calls for coordination between health policy makers as well as transportation officials to truly make a difference.

For the first time, policy makers have credible data to back their planning. Will the early years of this decade see revamped policies in response to this data? Policy makers should remember that this decade will be pivotal to ensuring India has a healthy population, to reap the promised demographic dividend.

For now, all eyes are on Finance Minister, Nirmala Sitharaman as she readies to present her second budget on February 1. Hopefully, Budget 2020 will allocate more funding for public health schemes like Ayushman Bharat as well as announce measures to ease the bottle necks for the private sector as well.

As we at *Express Healthcare* embark on our third decade tracking this vibrant and crucial sector, we thank our loyal readers for their support. Do write in with comments, suggestions on how we can help make Vice President Naidu's wish, to make India healthier this decade, a reality.

VIVEKA ROYCHOWDHURY *Editor*  
viveka.r@expressindia.com



## Gandhinagar to host IRIA 2020

Last year the event was held in Chandigarh, which saw over 200 eminent radiologists, diagnostics, imaging experts from across India and globally congregate

**THE 73RD** Annual Conference of the Indian Radiological and Imaging Association (IRIA) will be held in Gandhinagar from January 23 – 26, 2020. Last year the event was held in Chandigarh, which saw over 200 eminent radiologists, diagnostics, imaging experts from across India and globally congregate.

Panel discussions will be held on artificial intelligence in radiology; clinical, imaging and pathology approach to Breast symptoms; PCPNDT; Rising PSA-PSMA or mpMRI; apart from a series of discussions.

According to a June 2017 Orbis Research report, the global medical imaging market will grow at a CAGR of 4.95 per cent during the period 2017-2021. According to another agency, Global Industry Analysts (GIA), 3D medical imaging will reach \$3.4 billion by 2024. While the US will remain the largest market, RoW comprising Middle East and Africa, will have a CAGR of 10.7 per cent from 2017-2021, thanks to increased emphasis on health by these governments as well as a growing affluent middle class. MarketsandMarkets predicts that the global diagnostic imaging market is expected to reach approximately \$36.43 billion by 2021, at a CAGR of 6.6 per cent from 2016 to 2021.

The rising percentage of elderly patients presents unique challenges to the medical imaging community. Multi-factorial conditions like cancer call for superior imaging techniques and technologies. In a bid to differentiate and offer a superior product with more benefits to the user community, imaging equipment are designing their equipment with the radiologist in mind.

The diagnostic imaging equipment market in India, according to a Mordor Intelligence report, is expected to reach \$ 2.06 billion by the end of 2020, with MRI, PET, SPECT and CT technologies set to dominate the market. While North America currently dominates the market with nearly 20 per cent of its GDP spent on healthcare, the

Asia-Pacific market is expected to grow at a faster rate owing to the rapidly aging population and increase in the chronic disease

population in this region. It is expected to overtake Europe due to the increasing technological advancements and growing

awareness among the population. Expensive procedures and equipment, side effects of diagnostic imaging procedures, and

saturation of developed markets are some of the factors limiting the growth of the medical imaging market.





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# Roche displays its latest technologies at IDF 2019

In India, Roche is mainly looking at launching India specific products and also engaging in partnerships that will earn them market leadership By **Raelene Kambli**



A panel discussion on future technologies in diabetes management was conducted by Roche Diabetes at IDF 2019

According to the International Federation of Diabetes, in the last few years African countries (156 per cent) and East Asia (84 per cent) countries have had the maximum jump in the number of people living with diabetes. India is one of the top countries with the maximum rise. According to the IDF, India is home to approx 77 million people living with diabetes. Experts are of the opinion that curbing diabetes is getting wayward. The need of the hour is to build diagnostics and treatment strategies that can facilitate healthcare providers and patients to



Leading diabetes medtech players displayed their latest technologies at IDF 2019



manage diabetes and avoid complications associated with the condition. Therefore, this year's IDF conclave in Busan, South Korea focussed on designing effective strategies and technologies to diabetes management.

The IDF 2019 offered a global platform to discuss a broad range of diabetes issues, from latest scientific advances to cutting-edge information on education, diabetes care, advocacy and awareness. Participants include physicians, scientists, nurses, educators and other health-care professionals, as well as government representatives from various countries, policy makers, people with diabetes and patient groups, IDF members and media.

Over 12,000 delegates from 180 countries were present at the IDF this year. Most people present at the conclave spoke about technologies that could help detect diabetes early and assist patients in daily managing the disease. Many diabetes management apps were reviewed and several research papers were presented.

Major equipment players showcased their latest technologies at the exhibition. Companies such as MSD, Roche Diabetes, Abbott, Boehringer Ingelheim and Eli Lilly etc., exhibited their latest innovations in diabetes management. Roche displayed its ACCU-CHEK® SugarView, Accu Chek® Solo, RocheDiabetes Care platform and Eversense products.

On the sidelines, Roche Diabetes also conducted a panel discussion and a session that discussed future needs and technologies for diabetes management. Some of these technologies were also on display at the exhibition. The panellists for the discussion were Dr Rolf Hinzmann (Head of Global Medical and Scientific Affairs Glucose Monitoring and Science); Dr Julia Mader (Associate Professor of Medicine, Division of Endocrinology and Diabetology, Medical University of Graz, Austria) and Tommy Kim (Head of Roche Diabetes Care, Korea).

Dr Hinzmann spoke about



Some innovative diabetes management equipment on display

## FACT FILE

- ▶ Approximately 463 million adults (20-79 years) are living with diabetes; by 2045 this will rise to 700 million
- ▶ The proportion of people with type 2 diabetes is increasing in most countries
- ▶ 79 per cent of adults with diabetes were living in low - and middle-income countries
- ▶ The greatest number of people with diabetes were between 40 and 59 years of age
- ▶ One in two (232 million) people with diabetes were undiagnosed
- ▶ Diabetes caused 4.2 million deaths
- ▶ Diabetes caused at least \$760 billion in health expenditure in 2019 – 10 per cent of total spending on adults
- ▶ More than 1.1 million children and adolescents are living with type 1 diabetes
- ▶ More than 20 million live births (one in six births) are affected by diabetes during pregnancy
- ▶ 374 million people are at increased risk of developing type 2 diabetes

## ROCHE'S TECHNOLOGY PLATFORM AT IDF 2019

1. Their ACCU-CHEK® SugarView which is developed for people with type 2 diabetes and not on insulin or sulfonylureas is currently undergoing a pre-launch preview in India. This application is also available in Nigeria, Mexico, Philippines and Pakistan.
2. Roche's Accu Chek® Solo micropump system was also on display at the exhibition. The insulin pump therapy system focusses on a targeted diabetes management. The product was officially launched in 2018 and is currently available in many countries but yet to be launched in the most affected countries of the world- India and China.
3. RocheDiabetes Care platform launched in March 2019 is currently, the platform is available in Philippines, Spain, Portugal, France and Brazil.
4. Eversense Continuous Glucose Monitoring System offers a long-term continuous glucose monitor for long-term management of diabetes. The product is the brainchild of the US based medical technology company Senseonics that has extended the distribution agreement of Eversense with Roche Diabetes Care till 2021. Under terms of the extended agreement, Roche is playing its role as Senseonics exclusive distributor in Europe, the Middle East and Africa, excluding Scandinavia and Israel. In addition, the agreement has been expanded to provide Roche with exclusive distribution rights in 17 additional countries, including Brazil, Russia, India and China, as well as select markets in Asia Pacific and Latin American regions.

the growing need to focus on effective strategies for diabetes management. He also spoke about the growing mar-

ket for blood glucose monitoring systems, Continuous glucose monitoring (CGM) systems and insulin delivery

systems market. Further on, he highlighted certain prerequisites for developing diabetes apps that can ensure ef-

fective medical outcomes. He also spoke about Roche's holistic approach to diabetes management that involves providing an integrated personalised service for patients, caregivers and healthcare providers. He said that iPDM has some clear benefits. It is economical sound medical concept with short and long term benefits for both patients and providers. "Roche's Diabetes Care's open ecosystem is a powerful enabler of iPDM and we are committed to build and deliver the best value to our customers and our partners", said Dr Hinzmann. Speaking about data security and patient privacy, he pointed out that the company has kept data security and privacy as a top priority and has developed its solutions maintaining international standards.

Dr Julia Mader (Associate Professor of Medicine, Division of Endocrinology and Diabetology, Medical University of Graz, Austria) gave an overview of the significance of iPDM from a patient perspective. Tommy Kim (Head of Roche Diabetes Care, Korea) spoke about Roche's strategy for the Korean market and how the company is looking at partnerships for further expansions of their services.

## ROCHE DIABETES MARKET STRATEGY

### How important is the Indian healthcare market for Roche?

India is home to approx. 77 million people grappling with diabetes, so we have the opportunity to demonstrate our commitment to provide true relief to people with diabetes, which is our purpose at Roche. Globally for Roche Diabetes Care, India is among the top 10 markets.

### What is Roche diabetes's India market share?

We are large players in the niche BGM category. However our communication policies do not allow disclosure of market share.

### Tell us about Roche's Indian specific plans for 2020 and beyond? Any new products to be launched?

2020 is a very exciting year for us at Roche Diabetes Care, India. Working on our strategy of Integrated Personalised Diabetes Management (IPDM) we will introduce several solutions of a combined physical and digital nature which will allow HCPs and people with diabetes gain better control of the condition.

### Roche is also doing a pilot project in India. Can you share more details on the same.

We have conducted a pre-launch preview for one of our digital offerings in Q1'19 for HCPs captured HCP feedback and user experience. The next step is to gather real world evidence. Once that is done, we will be ready to communicate our findings.

### What kind of partnership does Roche have in the diabetes management system space?

Under the brand Accu-Chek® and in collaboration with partners, Roche Diabetes Care creates value by providing integrated solutions to monitor glucose levels, deliver insulin and track as well as contextualise relevant data points for a successful therapy. By establishing a leading open ecosystem, connected devices, digital solutions, we will enable optimal personalised diabetes management and thus improve therapy outcomes. Since 2017, mySugr with its world-leading mobile diabetes management app and services is part of Roche Diabetes Care.

On October 30, 2018, RDC India announced its cooperation with the digital health company Wellthy

Therapeutics to offer users of the Accu-Chek Active system an innovative artificial intelligence-based digital diabetes coaching solution. Being a leader in diabetes management solutions worldwide, Roche expanded its integrated diabetes management offering through the collaboration with Wellthy Therapeutics. The joint offering of the two companies will encompass the trusted Accu-Chek Active blood glucose meter and the Wellthy Care app to new users. The bundle was launched in the South and West Zones of India.

We believe with the new technological interventions like connected devices and applications like mySugr, and Wellthy, healthcare professionals will not only be able to monitor progress but also take informed decisions to further improve control in diabetes.

### How does Roche Diabetes work with start-ups?

Our philosophy revolves around the patient. The patient is at the centre of our strategy. There are too many things to address around the patient today for any one company to do alone and hence partnerships with like minded industry partners, start-ups or otherwise, will be crucial as well to bring about the change.

Roche Diabetes is currently focussing on the Asian market by introducing some

of their latest technologies and has some country specific plans to expand their market

share. In India, it is mainly looking at launching India specific products and also en-

gaging in partnerships that will earn them a market leadership. (Read below: Roche

Diabetes's India market strategy).

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# TISS, School of Health Systems Studies organise “Clairvoyance” in Mumbai

The theme of the conference was “An ode to health: charting the course, navigating the future”

**SCHOOL OF** Health Systems Studies, Tata Institute of Social Sciences (TISS), Mumbai recently organised a hugely successful 22nd national health conference titled “Clairvoyance” on December 7-8, 2019 at its convention centre.

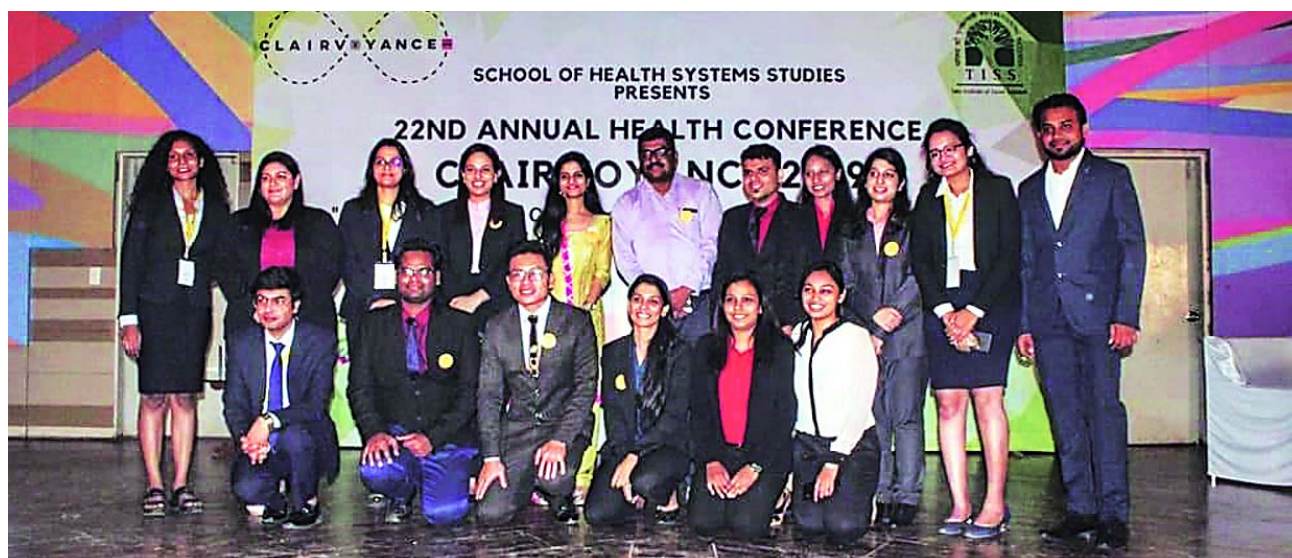
While the previous versions of the conference had a great response, this one was an even bigger draw. More than 650 delegates from around the globe participated with a healthy professional to student ratio of 2:3. Noted specialists in the field from different parts of the country shared their expertise and presented insights into the global health scenario.

This year the theme of the conference was “An ode to health: charting the course, navigating the future.” Through this ode to health the conference focussed to lay out a plan or course which helped to build diverse frameworks and to ignite inspiration for system-wide success. This revolutionary paradigm acted as a definitive guide to navigate the future.

The conference was designed to discuss and develop effective and efficient approaches to meet the demands of patients and to utilise recent advancements and research for better healthcare.

The scientific, practitioner, administrator and professional-oriented and educational sessions were presented to highlight technological advancements, operational efficiency, innovations and build up the creative skills, with discussions on the numerous challenges faced for the overall benefit of public health.

The first day of the conference started with a mesmerising cultural performance by the students of School of Disability Studies, TISS. Prof Shalini Bharat, Director, TISS and Prof Anil Kumar, Dean,



School of Health Systems Studies, TISS addressed the August gathering by their words of wisdom.

The chief guest of the event was Dr Nitin Madan Kulkarni, Secretary, Department of Health, Medical Education and Family Welfare, Govt of Jharkhand. The keynote talk on “Leadership in Healthcare” was delivered by Prof Anupam Sibal, Group Medical Director, Apollo Hospitals Group. Leading the talks on the theme of the conference were Dr Prashanta Tripathy, Dr JN Srivastava, Dr Viduthalai Virumbi Balagurusamy, Mohammad Ameer, Dr Aquinas Edassery, Dr Evita Fernandez, Prof KS James, Prof (Dr) PM Bhujang and Nagendra Kumar to name a few.

The session on “Technology in healthcare: the tipping point” discussed the challenges of data integration, adaptation to new technology and the patient’s involvement in their own treatment. This session cogitate upon the most promising technologies like AI, IoMT, virtual reality, Blockchain and chat-bots among others to streamline healthcare procedures and systems. The session

“UHC for India: myth or reality” discussed the key facets of India’s healthcare sector, analysed the reasons underlying its inability to meet UHC goals at present, and proposed solutions to fill health delivery gaps in a more efficient, transparent, equitable and sustainable way. It also discussed that how with the introduction of Ayushman Bharat, the UHC dream has the potential to become the cornerstone of the country’s healthcare system.

The panel discussions by the eminent dignitaries of healthcare paved a way to open newer opportunities of inquisitiveness. In the discussion on “Health services operations: a see-saw game between innovation and efficiency” various optimisation models were highlighted to deal with the inefficiency and the bottlenecks in the healthcare system. In the session “climate change: changing weather, withering health”, a horror story by the moderator Neeta Ganguly posed a frightening question in front of the panelists i.e. how the human-made health stressors, are threatening the human health and wellbeing in numerous ways. This session helped in connecting

our understanding of how climate is changing with an understanding of how those changes may affect population health and further help in making informed decisions about mitigating the amount of future climate change, suggest priorities for protecting public health, and help identify research needs.

On the second day of the conference the panel discussion of “Health legislations and policies: fingers crossed” addressed need for a contemporary framework which will appropriately use modern legal tools for complex health challenges. Prof (Dr) PM Bhujang, moderator for the session opened the discussion to how health sector is seen through the legislative lens with the new legislation and policies like the NMC bill, Ayushman Bharat, National Health Policy, Clinical Establishment Act, Mental Healthcare Act, National Food Security Act and so forth. The panel discussion on “Human Resources Management: a herculean task” discussed current approaches in human resources which suggest number of weaknesses including a reactive, ad hoc atti-

tude towards problems of human resources; hiring shortages; higher turnover and brain drain; increased burn-outs; workforce migration; quality training and unaddressed inclusion of diversity. It highlighted to navigate the ways out by deploying right tools and how to be the partners to practitioners.

Various competitions including paper presentation (theme: social determinants of health), poster competition (theme: antibiotics resistance), essay writing (theme: gender, sexuality and mental health), business model (theme: value based healthcare), quiz competition and extempore competition witnessed an active participation from students from different management, public health, medical and social sciences institutions.

The guest of honour for the event Dr (Lt General Retd) Manomoy Ganguly delivered the Valedictory session followed by the vote of thanks by student coordinators.

The conference was spearheaded by the Clairvoyance Committee-2019 under the able stewardship of Dr Feroz Iqbal, the faculty coordinator.

# Insurers, private hospitals need to formulate policy to address concerns of all stakeholders in India: Report

Currently, there are disparities in pricing of surgical procedures by private healthcare facilities



**T**he Insurance Regulatory Development Authority of India (IRDAI), insurance companies and private hospitals should come together to formulate a policy that addresses the concerns of all the stakeholders and does not impact the quality of surgical treatment in India, says GlobalData.

Recently, insurers and third-party administrators (TPAs) in India came together

to standardise the prices of common surgical procedures such as angioplasty, kidney transplantation, cataract and hernia with a view to ultimately help both patients and insurance companies.

The company's report, 'Access Instruments – General Surgery Market Analysis and Forecast Model', reveals that the number of surgical procedures in India is expected to grow at a compound annual

growth rate of 11.85 per cent for the period 2019-2028.

Rohit Anand, Medical Devices Analyst, GlobalData, comments: "A majority of the public sector and few private insurers have standardised the prices of most of the common surgical procedures by setting up a preferred partner network of hospitals. However, a large number of private hospitals are yet to join these networks as they believe that this

will impact their business growth and sustainability. On the other hand, insurance companies blame private hospitals of arbitrary pricing."

Currently, there are disparities in the pricing of surgical procedures by private healthcare facilities. A common procedure cost in India varies a lot depending on the type of hospital, treatment, doctor and location.

Progressive hike in the

cost of surgical procedures by private sector hospitals will continue to put a burden on policyholders and patients have to bear more out-of-pocket expenses despite having insurance.

Anand concludes: "A customer-centric policy will encourage a large part of the Indian population to buy health insurance and this will in turn benefit both patients and insurers."



# Bariatric surgeries in India to grow at CAGR of 12.2 per cent between 2019 and 2028: Report

Reduced physical activity, unbalanced diet, diseases such as hypothyroidism, insulin resistance and polycystic ovary syndrome are some factors contributing to obesity

**THE PREVALENT** cases of obesity in India are set to increase from 40 million in 2019 to 74 million in 2028. Against this backdrop, the number of bariatric surgeries in India is expected to grow at a compound annual growth rate of 12.2 per cent during the period, according to GlobalData.

GlobalData's research reveals that the rise in the number of bariatric surgeries indicates increasing prevalence of obesity and associated condi-

The number of bariatric surgeries in India is expected to grow at a compound annual growth rate of 12.2 per cent during the period, according to GlobalData



tions such as diabetes and heart diseases, and rising awareness of the condition and treatments among medical practitioners as well as general public.

The company's report, 'Bariatric Surgery Devices - General Surgery Market

Analysis and Forecast Model', reveals that sleeve gastrectomy is the most common and preferred bariatric surgical procedure in India followed by Roux-en-Y Gastric Bypass (RYGB).

Pratibha Thammanabhatla, Medical Devices Analyst, GlobalData, comments: "Obesity is

rising to frightening levels in India and it is high time for healthcare agencies to educate individuals to take necessary steps to prevent and manage obesity as this will have an impact on the physical and emotional well-being."

Reduced physical activity,

unbalanced diet, and diseases such as hypothyroidism, insulin resistance and polycystic ovary syndrome are some of the factors contributing to obesity.

Thammanabhatla concludes: "Creating awareness and increasing access to bariatric surgeries in rural ar-

reas, introducing newer methods of bariatric surgeries with less post-surgical side effects and reducing the cost of bariatric surgeries is expected to increase the number of surgeries, which in turn will reduce obesity prevalence in India."





The year 2019 has been a difficult phase for India's healthcare sector. The sector experienced some headwinds, with regulators bringing in stringent policy interventions such as price cap for med devices and conducted surprise raids for quality checks etc. We also saw some private healthcare businesses struggled to stay afloat as organisations battled to balance cost and profitability. The investment scenario in healthcare was also affected.

Nevertheless, the good news is that industry analysts, health economists, investment experts and the government all seem to foresee a promising future in the next decade. The healthcare market is estimated to reach \$ 372 billion by 2022, states the IBEF report.

Moreover, the Ministry of Health & Family Welfare is planning to further enhance its healthcare budget to 2.5% of GDP by 2025. The Indian Government has also developed a Sustainable Development Goals (SDG) targeted to be achieved by 2030. This is an attempt to ensure health, end poverty and ensure prosperity and peace for the people. As part of this agenda, one of the SDGs focusses strongly on health. It aims to promote the healthy living and well-being for people of all age groups by eradicating all forms of malnutrition and achieving universal access to safe drinking water, hygiene and sanitation.

On the private healthcare front, analysts anticipate a surge in investments. The rising adoption of digital technologies, automation and more will be the key drivers for growth.

Express Healthcare 20th anniversary special issue 'Healthcare 2030 and beyond' looks at various aspects that will enable India progress on the world health map. It will cover trends shaping the future healthcare landscape to attain sustainable health systems; emerging technologies; new age healthcare and medical education news, new research requirements, environmental health issues, integration of healthcare services; health financing, economics and insurance; patient-based care and empowering the patient and new models of care.

# Surfing the health data deluge with CDSS

Though there is general consensus on the benefits of clinical decision support systems (CDSS), cost, implementation glitches and divided opinion among clinicians remain painpoints

By **Viveka Roychowdhury**

**W**orld over, technology has changed the way medicine is practised. As a health IT tool, powered by artificial intelligence (AI), clinical decision support systems (CDSS), a broad term covering software used to help healthcare professionals make accurate decisions, have become the standard in most large healthcare institutions. In India, the Digital India push has seen more healthcare facilities adopt basic features like electronic medical/health records (EMR/EHRs).

Though the top management of many healthcare facilities agree on the benefits of CDSS, cost remains a major drawback. As Joy Chakraborty, Chief Operating Officer, PD Hinduja Hospital, Mumbai puts it, "One of the main reasons for failure of complete acceptance and proliferation of CDSS in our country is that the costs are quite prohibitive." Currently costs range from approximately Rs50 lakh plus for the software, plus license costs on a user-to-user basis.

But he agrees that "as our country moves towards a culture of defensive medicine to counter the increase in medical tort cases, it may be a good time to invest in CDSS. This easy access to best practices and guidelines will ensure they are followed and the treatment given to patients will not be challenged easily."



CDSS reduces the burden on the clinical staff and hence helps to tackle information overload by delivering clear and crisp 'information' instead of just 'data'

**Joy Chakraborty**

Chief Operating Officer, PD Hinduja Hospital, Mumbai



The day-to-day paper required for all clinical documentation is considered to be costlier than EMR and its server. EMR and the associated logistics requires one-time installation and data can be stored easily.

**Dr Shilpa Tatake**

Chief Operating Officer, Jupiter Hospital Thane



Increasing engagement of stakeholders in the design, implementation and use of CDSS has been one of the important expectations from end users

**Dr Gaurav Mahindra**

Associate General Manager, Medical Strategy and Operations Group, Fortis Healthcare

## A long term bet

The sector has seen steady support from investors. According to a Mercom Capital Group report on global venture capital (VC) funding in 2019, CDSS with \$138 million was the sixth top funded categories in Q3 2019. The category had nine transactions in the quarter. The report tracks global VC funding and includes VC, private equity, and corporate VC.

For comparison, the top funded category was telemedicine (\$651 million), followed by mHealth apps (\$391 million), analytics (\$201 million), mobile wireless (\$173 million), healthcare service booking (\$151 million). Practice management solutions trailed at the seventh position with \$119 million.

The funding trend across the first nine months of FY 2019 (See graphic, *Top-funded digital health/healthcare IT*) reveals a similar trend, with CDSS at sixth position with \$425 million in funding.

According to Reports and Data, the global CDSS market was valued at \$488.2 million in 2018 and is expected to reach \$1.17 billion by 2026, at a CAGR of 11.4 per cent.

## What the regulators say

As the implementation of CDSS spreads across the globe and finds applications in more scenarios, regulatory agencies are paying more attention to the sector. In the US Food and Drug Administration Safety



and Innovation Act (FDASIA) Health IT Report of 2014, the term 'clinical decision support' or 'CDS' is described as a variety of tools including, but not limited to: computerised alerts and reminders for providers and patients; clinical guidelines; condition-specific order sets; focussed patient data reports and summaries; documentation templates; diagnostic support; and contextually relevant reference information.

On September 27, 2019 the US FDA released a draft guidance on CDS software to provide clarity on the scope of FDA's oversight of clinical decision support software intended for health care professionals, patients, or caregivers.

In India, the Digital India push has spawned similar sector specific initiatives. The Ministry of Health & Family Welfare sector has recently released the draft National Digital Health Blueprint and in December 2016, the notification of the Electronic Health Record (EHR) Standards (Version 2016) for India. This regulatory push is expected to increase the use of such CDSS tools in hospitals, both public and private, across India.

#### CDSS in public health

Given the geographical spread of the country, there is a huge difference in standards of healthcare delivery in India's public health sphere. This is where standardised care guidelines, which are the backbone of CDSS, can make a huge difference to clinical outcomes.

Thus, there are moves to implement some facets of CDSS in public health initiatives. The government has invited suggestions on the draft digital health blueprint from stakeholders and Elsevier is one of the companies to share its recommendations to the government with an overall recommendation to use more AI-enabled solutions to address challenges in India. And secondly, to move from being in-patient, hospital-focussed to community, outpatient focussed, with an emphasis on curative treatment to

prevention.

As John Danaher, President Clinical Solutions, Elsevier puts it, "The core (need) is to standardise the delivery of care to ensure that care delivered is

safe, clinically effective and of the highest quality. Our content and software helps clinicians, nurses, home health (ASHA) workers make more accurate diagnoses at the point-of-care.

And ensures that the right medication is given once a diagnosis is made. It makes sure that (when that patient is admitted), that patient's care is coordinated during the entire hospi-

talisation, be it for diabetes, hypertension, etc."

Giving more details, Shankar Kaul, MD, Elsevier Health Solutions, India and South East Asia says, "When it



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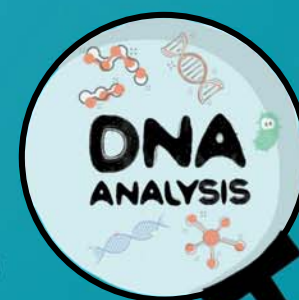
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comes to clinical decision support, we are working with the government bodies like Niti Aayog as well as NGOs like the Piramal Group to make sure we are providing the right solutions, tailored to the needs of the population, like primary screening for certain diseases. We are at advanced stages of trying to prototype some of these products and customise these products in India. This can complement the work being done by Niti Aayog and Ayushman Bharat."

Emphasising the two pronged challenge, Kaul says, "One part is the access to care, to ensure that the vulnerable sections of population who were not getting treatment are getting treatment. The second part is that the treatment they get should be quality treatment. That's an area that the National Health Authority (NHA) will have to pay attention to. There are many robust and affordable ways of doing it and that is what we are doing."

Citing an example, Danaher and Kaul talk about how ASHA workers and ANMs, equipped with hand held devices, can be used for primary screening of some of the major issues facing India. For instance, improvement of maternal and child health indices has been a focus area of the government. These hand held devices loaded with maternal and child care guidelines could provide a standard level of care to the communities they serve. At the same time, they could also begin capturing data about the patients in a particular community which could help government officials plan resources accordingly. Once detected, the patients can be taken through evidence based care and can be treated at the health and wellness centres of public hospitals as required.

The CDSS provider should also ensure that the content is tailored to the country/community's needs, which means that the content is available in local languages and can be used with local clinical guidelines. Kaul also says that such devices can be used in areas with



Elsevier is very focused on how the company can help India address the need to train more doctors and nurses who can go into the community and provide care

## John Danaher

President Clinical Solutions, Elsevier



As we move into CDS, having localised solutions is going to be very important. We have to ensure that our CDS are not just safe, effective and of the highest quality but most importantly, are relevant for the local market. Our strategy going forward will be to rely on local opinion leaders

## Shankar Kaul

Managing Director, Elsevier Health Solutions, India and South East Asia

intermittent or no connectivity and can be easily utilised by people who are not very skilled in healthcare like the ASHA workers and ANMs, right up to healthcare providers themselves.

Danaher stressed that Elsevier is very focussed on how the company can help India address the need to train more doctors and nurses who can go into the community and provide care.

"We believe there is a significant need for technologies to help ASHA workers, who are on the front line, (they are) the last mile delivery (who) are a very big focus for the government. That's an area that was broken and can be fixed with AI-enabled solutions", says Kaul.

Start ups have chosen selected niches to offer clinical decision support solutions. One example of an AI-based clinical decision solution is NIRAMAI's radiation-free, non-invasive, non-touch, breast cancer screening solution for hospitals and diagnostic centers. The pro-

lution is accurate, affordable, privacy-aware and can be used for women of all ages, including women under 45 years. As the solution is portable, it is also amenable for screening camps in rural areas and corporate health camps.

The core technology in NIRAMAI, called Thermalytix, uses a high-resolution thermal sensing device and cloud-hosted AI-based solution for analysing thermal images. The innovative machine learning techniques used in NIRAMAI's solution have led to nine US granted patents. NIRAMAI's technology detects breast cancer at a much earlier stage than traditional methods or self-examination. Early and timely diagnosis is key to improving clinical outcomes especially in cancer.

Dr Geetha Manjunath, CEO & CTO, NIRAMAI believes that "NIRAMAI's automated clinical decision solution which addresses a key issue in women's health, has the potential to drastically reduce deaths due to breast cancer globally. The pro-

gressive innovation in this industry coupled with the government's support is sure to accelerate healthcare penetration and enhance the value for patients."

## Reducing medical errors

At a larger level, be it public health, private clinics, corporate or public hospitals, the case for CDSS in India seems clear. Crowded public hospitals and waiting rooms of private clinics underline the paucity of medical personnel and facilities and a high patient load. This is the perfect setting for medical errors.

Prashant Mishra, Managing Director, BMJ India cites an article published in *The BMJ*, according to which the average time that India's neighbourhood doctors spend with patients is a negligible two minutes whereas the same time for doctors in the US is 18 minutes. Such a short consultation length is likely to adversely affect patient care and the workload and stress of the consulting physician.

Medical errors are not

confined to India. Another study from *The BMJ* observed that if medical errors were a disease, it would be the third largest killer in the US. While there hasn't been an equivalent study for India, Mishra refers to a study conducted in 2013 by Harvard University which estimates that 5.2 million injuries occur across India each year (out of the 43 million globally) due to medical errors and adverse events.

Mishra thus makes the case that "a CDS tool that provides quick, evidence-based answers becomes imperative. By arming providers with trusted resources, it is less likely that unreliable information will be used in clinical decision-making thus leaving the clinicians with more quality time for the patients."

## Customised yet standardised

Technology providers have long realised that a cookie cutter CDSS are not useful beyond a certain point. Solutions and content that work in another market may not work in India, simply because each country has its own challenges.

Agreeing with this, Kaul says, "As we move into CDS, having localised solutions is going to be very important. We have to ensure that our CDS are not just safe, effective and of the highest quality but most importantly, are relevant for the local market."

Thus their strategy going forward will be to rely on local opinion leaders who may or may not utilise guidelines which come from the (other countries and associations) UK, US or any other bodies/ country. "They want guidelines that are relevant to the societies, the associations that they belong to. So making sure that there is local buy in from key opinion leaders for this information is going to be very important," explains Kaul.

But Danaher also reasons that there are similarities between countries which could be leveraged. "I've had the benefit of working in South East Asia during my career as a



caregiver/physician, in hospitals in the under-served areas of Karachi, Pakistan in hospitals and in the slums. So I am familiar with the environment of delivering care to under-served populations as well as those that have access to care. Some of the challenges are similar in India."

Mishra of BMJ India also understands the importance of local guidelines in ensuring consistency of care. Thus in 2020, BMJ India will be enabling organisations to add local information for users (such as local guidelines, prescribing formularies and protocols), and link them to relevant topics in their CDSS product. This will ensure that healthcare professionals have all the information they need in one place, asserts Mishra.

### Navigating towards a glitch-free CDSS

There is broad consensus among medical personnel about the worth of CDSS but implementation challenges remain, even in bigger corporate chain hospitals.

For instance, a delay in implementing EMRs at Fortis has been an impediment towards adopting CDSS to its full potential, says Dr Gaurav Mahindra, Associate General Manager, Medical Strategy and Operations Group, Fortis Healthcare. In his opinion, "A CDSS is an important facilitator for clinicians, nurses and medical staff in a rapidly evolving health and healthcare set up. As a pan-India network, Fortis Healthcare recognises the immense benefits and potential offered by such a health IT system."

Thus delays in deeper implementation are not for want of clinicians' buy in.

Hinduja Hospital, Mumbai has not opted for a CDSS in a structured manner but according to Chakraborty, the hospital staff has easy access to publications, keys and reference material on their intranet and in their library. He concurs that "CDSS reduces the burden on the clinical staff and hence helps to tackle information

overload by delivering clear and crisp 'information' instead of just 'data'.

### Converting the cynics

Besides the cost of CDSS, Chakraborty refers to several other challenges. He highlights

the lack of interoperability with reporting and EHR software, validity of the information and a lack of accepted evaluation standards as the top two concerns. It can also be time-consuming to use.

Importantly, clinicians

perceive CDSS as a threat to their clinical judgment. There is also 'alert fatigue' among clinicians. "Although there are several benefits for the use of CDSS, these (issues) need to be resolved effectively before CDSS can convert the cynics,"

says Chakraborty.

Dr Shilpa Tatake, COO, Jupiter Hospital, Thane, Mumbai too concurs that the initial adaptation to EMR was challenging, as there were technical errors due to download speed, saving errors, etc. Timely





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entries and roll over of information leading to lack of assessment in system were also issues.

Dr Mahindra of Fortis Hospitals rationalises the challenges as those to be expected with any support system. "CDSS may be considered as an extension of business intelligence (BI), as it enables decision making for the user. Considering the enormity of medical facts that need to be known, the quantum of medical literature getting updated continuously and emergence of Evidence Based Medicine, receiving relevant information through CDSS enables taking timely decision."

However, as a means of knowledge management, Dr Mahindra points out that any support system is likely to face considerable challenges, namely managing such a system requires both clinical and IT expertise. Secondly, the capability to handle huge volume of ever-increasing data from various sources/ departments and keeping pace with it.

Staff in charge of implementing a CDSS also have to ensure that there is zero/ minimum down time and data loss. They also have to devise a standard format to handle and integrate different data types in a single framework. The absence of healthcare domain certifications/ accreditations for selecting the right product is another challenge to implementation of CDSS, concludes Dr Mahindra.

Chakraborty perhaps reflects the tug of war in many hospitals when he refers to the "divided opinion" regarding adoption of CDSS. "The more techno-savvy younger staff is eager to adopt but at the same time they are wary regarding the authenticity of information and the time consuming aspect. The older generation on the other hand still struggle with using the solutions and when they do, they find the CDSS too prescriptive along with an added component of a 'threat' to their clinical judgment."

## Benefits of CDSS

Listing the benefits to the nurs-



CDSS does not replace physician judgment. Rather it provides a richer set of relevant clinical information, drawn from the most current research, allowing the provider to make more timely, informed and higher quality care decisions

## Prashant Mishra

Managing Director,  
BMJ India



Today, AI is already becoming an intrinsic part of many clinical decisions made by medical professionals. For example, NIRAMAI's automated clinical decision solution which addresses a key issue in women's health, has the potential to drastically reduce deaths due to breast cancer globally

## Dr Geetha Manjunath

Ceo & Cto, Niramai

ing functions, Dr Tatake of Jupiter Hospitals says CDSS brought in easy documentation, and therefore saves time. It also avoids duplication of data entry, while legibility and authenticity is maintained. CDSS minimises errors and manipulation, decreases file work and incidences of document misplacement, ensures accuracy and completeness in documentation, is user friendly and results in uniformity in documentation. Doctors get real time accessibility from anywhere anytime, can form a timely plan of treatment and can also perform a retrospective evaluation.

Dr Mahindra too says that in spite of challenges, medical staff at Fortis have largely been enthused with the possibility of BI facilitating informed decisions, thereby reducing errors and improving patient care.

Hospitals today have made CDSS training part of normal duties. At Jupiter Thane, new joiner nurses receive an orientation to EMRs during their induction, as well as continual departmental training along with

buddy, according to Dr Tatake. Doctors can access comprehensive data of a patient including the haemodynamic parameters, pathology and radiology reports including the films are readily available for decision making through EMR.

The paucity of medical personnel combined with the high patient load leads to high chances of medical errors. Has CDSS addressed this issue without compromising on clinical care? Agreeing Chakraborty of Hinduja Hospitals says, "That this is especially true in smaller set ups or in rural and remote locations and even in healthcare organisations in tier III cities where this imbalance of healthcare personnel is more pronounced and the access to regular medical updates or specialist opinion is inadequate. It is in these types of locations wherein CDSS can help reduce chances of medical errors greatly influence patient outcomes."

However, in hindsight, Dr Mahindra raises an important issue, commenting that "in-

creasing engagement of stakeholders in the design, implementation and use of CDSS has been one of the important expectations from end users." Would the CDSS implementation story been smooth if solution providers had engaged with end users from the design stage?

## CDSS as a service enabler

Even with these benefits, CDSS champions must fight for their share of a hospital's investment budget, because gains might not be so evident and might take some time to be evident. And with shrinking profit margins, this is not an easy task

As Mahindra of Fortis explains, "One of the greatest challenges in the adoption of such a system is the limited ability to prepare and justify a financial business case. It remains difficult to demonstrate the return on investment especially against many intangible benefits accrued towards patient care. However, CDSS must be viewed as not just a technological feature but also

as a service enabler that helps clinicians and patients make informed decisions about choice of treatment offered."

The perception that CDSS will add to the cost of treatment without adding value can be countered by citing studies which have proved the value of CDSS. Dr Mahindra refers to a study which indicates implementing CDSS for sepsis management in an in-patient setting was instrumental in reducing length of stay, resulting in savings for patient as well as for the institution.

Chakraborty too feels that with a clear guideline to be followed, the chance of correct diagnosis is increased and a crisp treatment plan can be made which will of course avoid any unnecessary costs ensuring the cost of treatment is kept under control.

Dr Tatake offers another perspective, pointing out that the day-to-day paper required for all clinical documentation is considered to be costlier than EMR and its server. EMR and the associated logistics requires one-time installation and data can be stored easily.

Refuting the perception that CDSS is a high cost, Mishra points out that on the contrary, CDSS systems can reduce care costs by eliminating duplicate and unnecessary investigations. Clinicians use CDSS to diagnose and improve care by eliminating unnecessary testing, enhancing patient safety and avoiding potentially dangerous and costly complications. Thus he reasons, using a CDSS can lower costs and increase efficiency.

## A step-by-step process

Implementing a CDSS is not an overnight operation and today organisations do have options at every step of the process. As hospitals and clinical practitioners are at different stages of the digitisation journey, there are ways to cope with the challenge of interoperability of existing digital systems like EHR as they implement a CDSS.

Chakraborty concurs that while a holistic system wherein



the CDSS is completely integrated with the patient electronic health record is an ideal set up. That said, this is not a mandatory requirement for use of the CDSS.

As he explains, "When the organisation is still in the process of adoption of EMR, web or phone based apps allow an easy access to get information required by the doctors for clinical decisions. These solutions allow for selection of treatment based on symptoms, investigation results, etc. with checklist based protocols which need to input basic information into the system. This system can be eventually integrated with the EMR as the organisation use of the EMR matures."

Dr Tatake of Jupiter Hospital, Thane, Mumbai believes that hospitals can address the challenge of inter-operability of existing digital systems like EHRs with a newly adopted CDSS by identifying the requirements and then merging it with CDSS. They can also schedule need based and time based updations. Maintaining an openness and readiness to adapt to newer technology advances is also important.

### End user push back

In the initial phases of implementation, clinicians, especially at senior levels, tended to view the use of CDSS as an erosion of their decision-making responsibilities. There were also concerns that the use of such systems might reduce the decision taking ability of medical students and clinicians.

But these concerns seem to have been addressed in time. As Dr Mahindra rationalises, "CDSS must be viewed as a facilitator for improved patient care and decision making, not intending to replace clinician judgment. It is not a substitute for the skills acquired by clinicians through years of rigorous training and practice. Instead, it is an opportunity to support clinicians with artificial intelligence as digitisation of health data takes place. As a health IT system, it should assist medical staff in managing complex

Top-Funded Digital Health / Healthcare IT Categories in 9M 2019
Telemedicine: \$1.5B
Analytics: \$1.3B
mHealth Apps: \$1B
Healthcare Service Booking: \$487M
Mobile Wireless: \$437M
Clinical Decision Support: \$425M

Source: Mercom Capital Group

cases and voluminous data towards timely and informed decisions."

Chakraborty says this 'real' threat as perceived by several clinicians especially the older generation can be tackled. "It is upto the developers of the CDSS to emphasise on the benefits of the system like avoiding information overload by curating of data into relevant bytes, by ensuring authenticity of the data. Also the CDSS teams need to emphasise and assure doctors that eventually all CDSS does is to give the guidelines - the 'support', the eventual decision making will always be a skill set of the clinicians. The CDSS developers should also support continuing profession development (CPDs) where medical updates are given to doctors to help them hone these skills."

Mishra emphasises that CDSS is a point of care to aid clinicians in decision making, it gives best possible option and not a decision in itself. The penultimate decision still lies with the doctor.

### Supporting the clinician

Giving an insight into the thought process behind designing CDSS tools Mishra of BMJ India explains, "CDSS tool providers are very careful to indicate that CDS does not, in any way, trump the decision-making of the doctor or other clinicians. Instead, it is a tool that provides quick access to additional or relevant information and research

on evidence-based care that leverages this information within the EHR. Using the right information can help tailor care to individual patients based on their current health status and medical history."

Thus he says, "CDS does not replace physician judgment. Rather it provides a richer set of relevant clinical information, drawn from the most current research, allowing the provider to make more timely, informed and higher quality care decisions."

Dr Mahindra points out that one of the means of improving patient care through adoption use of CDSS is its ability to amalgamate patient's medical history, lab and test results, and evidence-based guidelines for best care practices, thereby reducing errors. These tools have proven to be/ have the potential in addressing errors by focussing more on the preventive aspects of patient safety, namely computerised alerts and reminders to care providers and patients, eliminating drug interactions and drug duplication, tracking allergies, proactively managing cases by suggesting clinical guidelines/ pathways/ protocols, and providing condition-specific order sets, providing focussed patient data reports and summaries as well as documentation templates. These tools could help in reduction of errors and adverse events, promotion of best practices for quality and safety and rapid response to emergencies.

### Future of CDSS

CDSS solution providers have tried to address the various challenges. On the pricing front, Mishra explains that the pricing varies depending upon the way the CDSS is accessed, i.e, stand-alone basis including the app version or the CDSS being integrated within the EHR/EMR systems and the level of integration required. The pricing will also depend upon the number of FTEs or the number of beds and the number of locations. On a standalone basis BMJ India does have individual and institutional subscription price for our customers and users.

However understanding the "price sensitivities and the paying capacity of the customers in India" he says BMJ India has "appropriate country level discounts applicable to create an opportunity for our customers to afford our CDS and deliver improved clinical and patient outcomes."

Dr Mahindra too gives suggestions on other features which may increase adoption saying, "CDSS content and capabilities need to be reliable and shareable for it to be easily accepted and adopted across health care organisations and health IT systems. Other features which may increase adoption could be optimal user interfaces and ease of usability, learning from each other's implementation experience, devising strategies towards increasing CDSS adoption in real-world scenarios that consider change management and people management as essential requirements, explication of the value proposition offered by such a system, continuous improvement and improvisations based on feedback from clinicians and patients, designing actual workflow patterns for clinician/ nursing use and benchmarking of systems for validation and comparisons.

CDSS could also be considered as a resource to help address the shortage of medical colleges and therefore medical personnel in the country. A case study by three doctors from PGIMER Chandigarh shows

how vital the need for efficient and authoritative decision-support is for postgraduates making the transition from the classroom into clinical environments. The study highlighted that unlike traditional textbooks, each topic within the solution used at PGIMER was broken down into various sections. The bite-sized components made it very easy to access, read and digest the information. Doctors can then drill down further and read the relevant information in depth. The inclusion of evidence grades was particularly valuable to assess the quality of the information presented. The case study concluded that such content could aid in resource constrained setting for faster access to clinical information.

Signing off, Chakraborty says, "CDSS will never be able to replace the human component of medical professionals; however with the help of CDSS the clinicians can function more efficiently thus allowing to cover a larger group in a shorter period. Also with the help of CDSS qualified medical personnel can make decisions for their patient's treatment circumventing the need of another specialist. This will be of great help in rural areas and tier III cities where the shortage of medical personnel is more prevalent."

Dr Mahindra believes that CDSS has the potential to emerge as one of the most significant manifestation of artificial intelligence (AI) impacting healthcare and health IT. "A CDSS tool which can use an algorithm on data and suggest best practices would be able to enhance the efficiency of medical staff."

Thus the verdict on CDSS seems clear. However solutions providers will need to listen more closely to their users and ensure their products reflect actual clinical needs and business realities. CDSS will have to be a partnership to towards a common goal of safer, more efficient and affordable clinical outcomes, as well as add to the health facility's bottomline, in all settings.

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# Indian healthcare: The needs and demands

For the next decade, healthcare providers and experts recommend a system that focusses on continuous improvement and sustainability of businesses in the long run

By **Akanki Sharma**

India's healthcare scenario seems to be at crossroads, where there are some positive achievements on the health indicator, but suffers some serious shortcomings in care delivery. The country has been successful in eradicating polio, reducing epidemics caused by tropical diseases and controlled HIV to a large extent. However, it still faces a huge economic burden due to NCDs, struggles to balance accessibility, affordability and quality and is unable to hike public health budgets.

In order to strengthen healthcare delivery and improve business prospects, policy makers, healthcare providers, business leaders, technology providers and pharma companies will need to devise strategies that transforms a spark into a sustainable fire. Here are insights from healthcare leaders that can lead India towards a healthy tomorrow.

## The current scenario

Amidst the efforts going on, there are several challenges in the current state of healthcare in India, according to Dr Raviganesh Venkataraman, CEO, Cloudnine Group of Hospitals. Some of these include inadequate reach of basic healthcare services, shortage of medical personnel, quality assurance, inadequate outlay for health and most importantly insufficient impetus to research. Since the magnitude of these challenges is significant, these cannot be resolved by the government alone. The key is to get the private sector to participate, while the government continues to invest and enable, he further says.

He suggested that use of de-



When we have limited resources and limited supply of skilled caregivers, it is necessary to find ways to use technology to maximise their throughput without sacrificing on quality and outcomes

**Raviganesh Venkataraman**  
CEO, Cloudnine Group of Hospitals



There needs to be a system where we can focus on skilling and upgrade medical workforce skills in the needed geographies. Here, the private sector can play a vital role in the skill development of doctors, nurses and health workers

**Dr Ashutosh Raghuvanshi**  
MD and CEO,  
Fortis Healthcare



The high cost of healthcare and out-of-pocket expenditure force families to sell their assets, pushing nearly 60 million people every year into poverty. To maximise benefits, it may be wise to establish a link among various health initiatives announced in the budget and also with related programmes like the National Health Mission

**Dr Naresh Trehan**  
Chairman and Managing Director, Medanta -- The Medcity

cision support systems and technology is critical to solve issues. "When we have limited resources and limited supply of skilled caregivers, it is necessary to find ways to use technology to maximise their throughput without sacrificing on quality and outcomes. Technology can play a big part in this, it is the best way to

achieve the vision of a connected healthcare ecosystem. Medical devices in hospitals/clinics, mobile care applications, wearables and sensors are all different forms of technology that are transforming this ecosystem. Along with technology, by adding an analytics layer to this, caregivers can provide a much better

analysis of the condition and recommendations to the patient," Venkataraman points out

Dr Ashutosh Raghuvanshi, MD and CEO, Fortis Healthcare shares, "On one hand, we face an ever-increasing need for quality and accessible healthcare, the double burden of communicable and non-com-

municable diseases (NCDs), inadequate healthcare infrastructure and lack of skilled resources that add to the burden of providing quality care to the patient; on the other, our doctors are globally recognised, and India is the chosen destination for international patients with often incurable disease conditions, who find the right



medical solutions in India. With the launch of Ayushman Bharat — PMJAY in 2018 (world's largest government healthcare scheme), 50 crore marginalised beneficiaries have an opportunity to get access to hospital care. Additionally, healthcare in India, particularly the hospital and medtech space is set for growth and innovation through FDI and PE funds."

In his opinion, the biggest challenge the healthcare sector is facing currently is the shortage of skilled medical workforce. He informed, "There is one government doctor for every 10,189 people in India, whereas the WHO recommendation is 1:1000. Although, six states in India like Delhi, Kerala, Karnataka, Tamil Nadu, Punjab and Goa have more doctors than the WHO norm, it is a highly imbalanced picture and most of them are unwilling to move to Bihar or Uttar Pradesh (UP), the states that suffer from an acute shortage of doctors. There needs to be a system where we can focus on skilling and upgrading medical workforce skills in the needed geographies. Here, the private sector can play a vital role in the skill development of doctors, nurses and health workers."

Just like Venkataraman and Raghuvanshi, Dr Naresh Trehan, CMD, Medanta — The Medcity, had a view that even though the Government of India is trying hard to provide better healthcare to its citizens, they are deprived of the access. "Despite the government's efforts, majority of our people remain deprived of access to healthcare, especially at the secondary and tertiary levels. In addition to this, there are challenges of affordability, accountability and the dual burden of communicable and non-communicable diseases. Across the healthcare spectrum, lack of infrastructure access, skilled professionals, quality, patient awareness and use of health insurance are lacunas," he lamented.

For a healthy India, he

suggested, "We need preventive and/or promotive health: prevention, early detection and treatment. A strong primary healthcare system will lead to a healthier India while helping us manage the country's

health better."

Dr Ramakanta Panda, Cardiovascular Thoracic Surgeon and Vice Chairman, Asian Heart Institute, had a view that the current state of healthcare in India is a triple A crisis of ac-

cess, affordability and apathy. "Given that we are not a developed nation, access to healthcare is a major issue in India. We must attract the best talent into the profession, who are apprehensive because violence

against healthcare professionals is creating 'fear.' This, and lack of availability of medicines and healthcare services, aggravates the access problem," he said.

He further added, "In terms



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 <b>COPAS</b> <small>DIVISION</small> Cardiology	 <b>Hygea</b> <small>DIVISION</small> Tuberculosis & Others	 <b>Rinon</b> <small>DIVISION</small> Nephrology

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of affordability, healthcare is a calamity that throws an afflicted family into the jaws of poverty. About 55 million Indians were dragged into poverty in a single year due to patient-care costs, according to a study by the Public Health Foundation of India (PHFI). Government spending on public health is just one per cent of GDP in India. How to spend scarce tax rupees on healthcare must be considered carefully. World over, the trend is towards healthcare management, focussing on patient education and prevention."

According to Dr Panda, the current biggest challenge India's public and private healthcare sector is facing is revolutionising medical education. "A student pursuing medicine has to study for over five years to get an MBBS degree, then another three years for a post-graduate and a further three years for a super-speciality like cardiology, neurosurgery, etc. This alone does not suffice and they have to spend few years to gain experience. To add to this, most medical education in the country is controlled by private medical colleges charging over a crore rupees for an MBBS seat or more than Rs 2-3 crores for post-graduate seats. We have to ensure that medical education is affordable. Apart from that, the government must also allow private hospitals to train young doctors in super-specialities," he asserts.

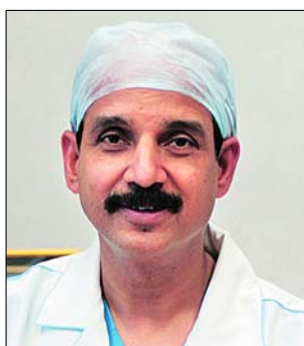
Raising the biggest issue that afflicts both patients and providers, Sumit Goel, Partner – Healthcare Advisory, KPMG India, speaks about the trust deficit between patients and healthcare service providers. "Studies estimate that only two in five patients believed that hospitals acted in their best interest," he notified. He further speaks about the reasons for which hospitals struggle to stay afloat. "NCDs require possibly long-term care to be provided in out-of-hospital settings such as at clinics/patients' home or at any place of patient's convenience. However, the sector, in its current form, is designed for



Apart from clinical decision support tools, digital tools can make clinical expertise available either remotely or through expertise embedded in medical equipment

## Sumit Goel

Partner – Healthcare Advisory, KPMG India



We must attract the best talent into the profession, who are apprehensive because violence against healthcare professionals is creating 'fear.' This, and lack of availability of medicines and healthcare services, aggravates the access problem

## Dr Ramakanta Panda

Vice Chairman & Cardio Vascular Thoracic surgeon, Asian eart Institute

hospitalised care. Insurance providers, be it government or insurance companies, are taking steps to fix prices of healthcare services, which are putting margin pressure on private healthcare providers. These providers are still to realign their cost structures to effectively respond to these challenges," he states.

## Policymaking – A cause of concern?

Policymaking is certainly one of the most important aspects for providing effective health services. Venkataraman says, "The problem in India is fundamentally of supply than demand. Policymaking has to largely focus on encouraging capacity creation in the supply side. Price will be an outcome of the balance between demand and supply. While price controls, especially on the essentials may be required, the key to solving this from a long term is to focus on creating supply. The supply problem is not just restricted to capacity, but also to access. So, both need to be addressed."

As per Goel, certain

industry practices in the healthcare value chain had inflated the prices to levels which were a cause of serious concern from a patient's affordability perspective. Hence, regulatory price controls were introduced, which in turn impacted profit margins of the private healthcare sector. While the need is appreciated, the controls should not lead to healthcare providers becoming financially distressed, especially when hospital infrastructural inadequacy is a serious issue in itself.

The best outcomes can be achieved if any policy is framed through a consultative approach with inputs from all stakeholders, suggested Dr Raghuvanshi. He said, "In 2019, the government has notified all medical devices under medicines, and not under a separate Act. There are caps on the prices of cardiac stents and orthopaedic knee implants. It is always viable to have a roadmap for a comprehensive policy formulation in consultation with the hospital sector and other stakeholders. In addition, with 80 per cent import dependence on medical

devices, we need to have a rational approach to ensure quality products for the best patient outcomes."

## Strengthening public health

The Government of India has introduced several programmes to provide better care to its citizens. Ayushman Bharat - PMJAY, the non-communicable diseases programme, the communicable diseases programmes on tuberculosis (TB), malaria, HIV and the National Tobacco Control Programme, the Pulse Polio campaign or the national immunisation programme, have done commendable work. However, more needs to be done.

Dr Raghuvanshi points out, "Healthcare and social security in general can no longer be the responsibility of a single department or ministry. Clean water and air, without which good health is not possible, depend on cropping practices, industrial regulation, pollution control, environmental protection and law enforcement. It's not a single policy, but intercon-

nected, multi-pronged thinking that is needed. In addition, India is now in the midst of a significant economic slowdown, and investments have slowed down considerably. In such a scenario, policies about cost-cutting cannot be the only answer. If hospitals are to survive, the government must encourage medical tourism in a big way. Policies pertaining to social security - that include care of expectant mothers and children, unemployment allowance, disability payments, old age security, skills training and re-skilling, housing and healthcare, are all linked."

In Dr Trehan's view, the industry and government must collaborate to come up with efficacious solutions. "To achieve sizeable gains, it is important for the government and industry to develop partnerships with a focus on improving coverage and providing access to quality healthcare services to the people. For instance, in view of the current TB burden in India, a lot needs to be done if we want to eliminate it by 2025. India has the highest burden of both TB and



multi-drug-resistant TB with a huge number of cases that are not notified or remain undiagnosed. Active tuberculosis patients need assessment of their nutritional status at diagnosis and throughout the treatment. The government's decision to allocate Rs 600 crore for providing nutritional support to all tuberculosis patients would mean better cure and higher treatment completion rates and overall better performance status. Further, the move to open one medical college for every three parliamentary constituencies will help in addressing the challenges related to availability of healthcare professionals in hospitals, improve access to healthcare and bridge the demand-supply gap," he said.

Drawing attention towards the rising cost of healthcare, Dr Trehan also said, "The high cost of healthcare and out-of-pocket expenditure force families to sell their assets, pushing nearly 60 million people every year into poverty. To maximise benefits, it may be wise to establish a link among various health initiatives announced in the budget and also with related programmes like the National Health Mission. Clarity is also needed on what services will be provided by the government health facilities, for which conditions patients will have to use private parties and what mechanisms are available. There is a need for uniformly pricing systems for various health interventions, including diagnostics and medicines and ensuring transparency. A continuum of care systems also needs to be established by linking hospitals with health centres and with the community. Community engagement is thus crucial in planning and implementation of the programme. They must also ensure that health and wellness centres and primary health centres are responsive to the needs of the community."

Dr Panda further pointed out on the manifesto of the Budget 2019 which stated that close to 10 lakh patients have

benefitted from free medical treatment via Ayushman Bharat, which would have otherwise cost them Rs 3,000 crore. He also said that lakhs of poor and middle-class people are also benefitting from reduction in the prices of essential medicines, cardiac stents and knee implants, and availability of medicines at affordable prices through Pradhan Mantri Jan Aushadhi Kendras. "By 2030, the government has expressed commitment to work towards a distress-free health care and a functional and comprehensive wellness system for all. This is a lofty goal and we must support the government in whatever way possible," he emphasised.

#### Access to quality medicines

It is often said that quality, safety and efficacy of a medicine is a must. In keeping with this, Goel, said, "There are two

fraction of the cost."

Dr Panda told that an estimated 469 million people in India do not have regular access to essential medicines, according to the WHO. Easy availability of essential drugs is critical for India's healthcare system. Indians are the sixth biggest out-of-pocket (OOP) health spenders in the low-middle income group of 50 nations, as per a May 2017 IndiaSpend report. "Around 70 per cent of the overall household expenditure on health is on medicines; which is an important factor contributing to poverty," he said.

Venkataraman added, "On one hand, healthcare is largely financed through out-of-pocket payments and on the other, access to the right doctors, facilities, treatment and medication in a timely manner is limited to a few metro cities, and thus, large parts of the country lack this access. India has a reach and access issue for most prod-

ucts. The starting point of solving this will come from the acceptance of the fact that pharma is a business and not a charity. We need the government and the pharma companies to work hand-in-hand and arrive at a model that resolves the commercial and the social objective."

He also expressed his concern saying, "As the population ages and more people begin to need medical and social care, this dual problem is poised to assume mammoth proportions in the next 20 years, unless we take significant measures to address it now with bold measures in policy and implementation. On the policy side, the Indian government has made a bold commitment to achieve Universal Health Coverage (UHC) through Ayushman Bharat, which aims to provide affordable healthcare to the entire population and reduce their expenses on healthcare."

Amidst various issues Pradhanmantri Bhartiya Janaushadhi Pariyojana (PM-BJP) has come up as a relief for many who are dependent on generics and can't afford branded medicines. In this regard, Raghuvanshi said, "The presence of a large number of generic drug manufacturers in India means that essential drugs should be widely available across India. The Government of India has, through its Jan Aushadhi scheme, made a large-scale effort to make medicines available at affordable prices at pharmacies across the country. However, accessibility remains an overall challenge which needs to be tackled at various fronts. Primary healthcare centres need to be strengthened, incentives need to be given to generic medicine

ical record, for instance, is playing a crucial role in optimising patient care by ensuring continuity and aiding information sharing across caregivers (hospital, diagnostic lab, pharmacy, etc). It replicates existing processes digitally with different degrees of automation, reasonable process optimisation and operational management information system (MIS), which otherwise is labour-intensive and prone to human error," emphasised Dr Trehan.

He also mentioned the significance of telemedicine, which, according to him, is of immense benefit to patients in remote locations. "Offering convenience, it helps them to gain access to doctors without physical travel. This aids better management of chronic diseases and consistent post-operative monitoring. Wearable technology is aiding seamless and accurate health monitoring. For example, the advent of wearable devices supported by mobile technology, can now allow a doctor to monitor a patient's vitals remotely. This technology has in-built patient monitoring devices which provide information on heart rhythm, blood pressure, breathing patterns and blood glucose level," he informed.

Raghuvanshi is also in favour of technology. He replies, "Technology is transforming the healthcare sector in India. It can improve our long-term health by tackling a number of issues. It has already helped us to develop improved medicines and drug dosage combinations, screen patients better, detect diseases early, perform complex surgical interventions, etc. AI is a major technological breakthrough for the medical space. It allows for the creation of a personalised environment for both patients as well as healthcare providers. Many healthcare experts anticipate that operationalising AI will result in a 10 to 15 per cent increase in productivity over the next two years."

Mentioning further innovations, he said that big data is

## India is currently experiencing a digital revolution. Healthcare too is witnessing a digital transformation. Leveraging digital technologies can certainly strengthen healthcare delivery in India

intertwined issues — one is how to ensure that best quality medicines are produced and that the integrity of the drug is maintained during the distribution process; second, how it can be ensured that quality medicines are affordable, so that they can be accessed when needed. The first issue requires strengthening of quality standards and their strict implementation so that there are no two different quality of drugs — one for the developed regulated market, and the other, for the Indian market. To address the second issue, it is important to make quality generic drugs available to patients. Government and some startups have taken steps in this direction by opening a chain of retail pharmacies which dispense only quality generic drugs at a

fraction of the cost."

He also expressed his concern saying, "As the population ages and more people begin to need medical and social care, this dual problem is poised to assume mammoth proportions in the next 20 years, unless we take significant measures to address it now with bold measures in policy and implementation. On the policy side, the Indian government has made a bold commitment to achieve Universal Health Coverage (UHC) through Ayushman

manufacturers, pharmacists and supply chains. Public-private partnerships can provide some solutions on this issue. The role of the national regulator needs to be redefined to that of a facilitator. Technology and start-up incubators can play an important role here by creating new platforms for medicine supply and distribution."

#### Digital tools

India is currently experiencing a digital revolution. Healthcare too is witnessing a digital transformation. Leveraging digital technologies can certainly strengthen healthcare delivery in India, opine these experts. "Digital technologies are driving greater efficiency in healthcare delivery. Electronic Medical Record (EMR), the digital version of physical med-

another area which will allow for preventive care. "It will also allow for analytical solutions which will give insight into treatment viability, drug utilisation and self-care programmes, specific to chronic conditions. Blockchain will bring healthcare efficiencies by providing transparency in process, eliminating intermediaries wherever possible, providing a guard against counterfeit drugs and reducing unnecessary healthcare costs," he added.

Getting a little deeper into technology, Venkataraman said, "Rapid developments in mobile technologies, cloud computing, digital imaging, machine learning and 3-D printing have paved the way for breakthroughs in the development and adoption of healthcare technologies – from telemedicine to nanotechnology, lab-grown 3-D organs to internet of things and electronic health records to AI. Besides, the use of data to build India-centric research (most of the research in the medical field is largely based on the Caucasian samples) is possible only through digitalisation."

The importance of digital tools in healthcare is significant, as referred by Goel. He said, "Apart from clinical decision support tools, digital tools can make clinical expertise available either remotely or through expertise embedded in medical equipment. The examples include digital pathology, tele-radiology, point of care diagnostic devices, tele-consultation, etc. The second issue is to keep millions of frontline health workers updated about the latest knowledge and skills, where e-learning academies and virtual classrooms can be of great help. Thirdly, these can help in enhancing the quality and effectiveness of care being delivered on the ground by paramedic staff like Accredited Social Health Activist (ASHA) workers through the use of appropriate apps on e-pads/mobile phones."

#### Ayushman Bharat and partnerships

Public-private partnership can

be one of the solutions to resolve the problems that Indian healthcare faces. Venkataraman had a view that private-public partnership is the only way to solve India's healthcare problem. The starting point for this, as in any partnership, has to be mutual trust and a recognition that the solution has to be a win-win for both.

According to him, there is a global crisis in healthcare. "The World Health Organization (WHO) estimates that one billion people lack access to basic care, and a further 100 million are pushed into poverty trying to access it. There is a strong need for social entrepreneurship in healthcare. For success in

radical shift as it reaches out to the poorest and the most vulnerable families, covering complex treatments, hospital stay costs, surgeries and procedures (in both public and private hospitals). "So far, 8,000 private hospitals have joined the programme but bigger, multi-specialty hospitals are yet to step in to empanel. Private hospitals are still in the process of reviewing the viability of the rates of the different packages that have been offered under the scheme. The National Health Authority (NHA) has been requested to review these rates as they are far short of even basic rates for quality and don't cover even the direct costs of the surgeries. We

healthcare sector will see a more matured digital base and effective policy intervention will streamline processes within the system as well as ensure quality access.

"There is an opportunity for India to skip a full generation and transform healthcare and healthcare delivery using digital technology. Healthcare can learn so many things from new-age businesses and transform India. We can and I am sure will choose this path and chart a track completely different from what the rest of the world has seen," Venkataraman stressed.

Goel expects that in 2020, policy interventions aimed to make healthcare more afford-

ment administration) — many such transitions have been carried out in countries like the UK, Sweden, Singapore — which could lead to better efficiency, quality and patient satisfaction.

Dr Trehan, adds, "In an overarching sense, I see virtual reality, big data, internet of things (IoT), telehealth, robotics and genomics as areas which will define healthcare and exponentially impact its delivery to the masses.

Raghuvanshi brought into limelight the safety of healthcare providers for 2020. He said, "The Centre is ready with a draft Bill which makes assault of healthcare professionals a criminal offence with an imprisonment of up to five years and fine extending up to Rs 5 lakh. After numerous incidents of violence against doctors, the government has framed this important Bill which should become a law soon. The government is also considering lifting price curbs on new generation of stents more than two years after its directive on capping medical devices. A newly-constituted committee, headed by the Indian Council of Medical Research (ICMR), is reviewing if all drug-eluting stents (DES) are the same or whether a new category needs to be added. There is also a plan to base identification of patients on Aadhaar cards for maintaining health records. It also envisages a combination of health services access facilities through the India Health portal, My Health app and other social media platforms. These are all significant policy developments with respect to healthcare in India."

Change is an inevitable fact of life. With the hope that the new decade will bring in the much needed positive change in Indian healthcare, the government, industry leaders, healthcare experts, doctors and other stakeholders have set their goals for the future. The only question that arises is that how soon will these efforts bear fruit?

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**Public-private partnership can be one of the solutions to resolve the problems that Indian healthcare faces. In the next decade, India's healthcare sector will see a more matured digital base and effective policy intervention will streamline processes within the system as well as ensure quality access**

healthcare, we need to turn the problem around from treatment to prevention. To bring a change, work has to be done at the community level. We need to look beyond the narrow roles of the state, business and patients to draw on our collective strength; social entrepreneurship may just hold the key," he predicted.

Speaking along the same line, Dr Trehan said that Ayushman Bharat can exercise a transformative impact if implemented in an effective and coordinated manner. "It is important for the government and industry to develop partnerships with a focus on improving coverage and providing access to quality healthcare services to people. A continuum of care systems also needs to be established by linking hospitals with health centres and with the community," he opined.

According to Raghuvanshi, Ayushman Bharat scheme is a

will do our best to support in every way we can and look at different means of contributing or participating, such as offering skill training or education programmes," he informed.

When asked about the government's strategic plan to purchase services from the private sector, Dr Panda remarked, "This is a welcome move. The biggest service that can be purchased from private hospitals is to train young doctors and paramedical staff. This is a simple solution to the crisis of poor doctor-patient ratio in India. It would open up thousands of medical seats at no extra cost to the government, by allowing large private hospitals to train and award graduate and post-graduate degrees."

#### Key trends/policy interventions/innovations for healthcare 2020

In the next decade, India's

able will have the largest impact. The interventions include: scaling of already launched Ayushman Bharat, renewed effort by insurance companies to fix the pricing of healthcare services and expanding the coverage of Ayushman Bharat to include the middle class and senior citizens.

He elaborated that some policy interventions which could be triggered in 2020 to change the way healthcare systems are organised to enhance quality, accountability, patient satisfaction and efficiency in care delivery should include: quality measurement and improvement with public reporting of outcomes; interventions to support provider consolidation using strategic purchasing as a lever; corporatisation of public hospitals (creation of legal structures such as trust, state enterprise, etc which can separate these from govern-



# Availability of better medical devices can revamp the Indian healthcare system

**Nikhilesh Tiwari, Founder and Director, ColMed** recommends changes that can help improve the medical devices sector

Medical devices and equipment form a significantly essential part of healthcare delivery. Constant innovation and technological advancement in the field of medical devices is crucial to ensure the goal of universal healthcare. Medical devices are essential for accurate and timely diagnosis, safe and effective prevention, quality treatment as well as rehabilitation. World Health Organisation recognises that the achievement of health-related development goals is dependent on proper manufacturing, regulation, planning, assessment, acquisition, management and use of quality medical devices.

The medical devices sector consist of a wide array of tools and equipment that help clinical practitioners deliver quality healthcare effectively and save crucial lives. Medical Devices consists of diagnostics imaging, IV diagnostics, consumables, patient aids, equipment and instruments, ortho and prosthetics, dental products and other devices such as patient monitors, oxygenators, ECG etc. Each one of these categories is crucial to quality healthcare delivery. The Indian medical devices market is expected to grow to \$50 billion by 2025. India is currently the fourth largest medical devices market in Asia after Japan, China and South Korea.

## Medical devices and their role in improving healthcare outcomes

Constant improvement and technological advancement in the field of medical devices and equipment has helped doctors improve clinical outcomes and



quality of healthcare delivery. Increase use of digital technology is driving a new revolution in the medical devices sector with greater focus on improving delivery, user experience and bringing down healthcare costs. Here is a breakdown of areas where constant innovation in medical devices industry is helping India achieve better health outcomes:

### Diagnosis in real time and at point of care

Thanks to innovation and technological advancement, real time diagnostic tools have emerged as an important element in fighting infectious diseases. Classical detection methods such as culture and immunoassays offer accurate results but the time taken in obtaining results is often crucial time lost in treatment. Rapid detection tools are expected to play a significant role in ensuring better treatment of communicable diseases such as TB. Overall, improvement in technology has also improved the accuracy of screening. Portable/point-of-care devices are another important category that have made it

possible to improve diagnostic mechanisms at the primary healthcare level, providing care at home has resulted in improved health outcomes and patient satisfaction. Point-of-care testing allows the patient to get his diagnosis in a doctor's clinic, at a health camp, an ambulance or even at home as these are portable devices that can be easily transported and offer a reliable alternative to laboratory testing in places where hospitals and labs are in short supply. It also improves the access to quality healthcare in underserved and remote regions, while also making it possible for patients to avail treatment outside traditional healthcare facilities.

### Reducing healthcare costs

Technological advancements in the devices and equipment sector also plays a significant role in reducing healthcare costs which is critical to make healthcare services more affordable to the masses in India. New age surgical equipment have enabled doctors to treat highly complex and critical cases, and reduce the length of extended hospital

stays. For example, advancements in laproscopic surgery have increasingly made it possible to perform procedures such as angiography, stenting and spine surgery easily with improved outcomes and reduced length of hospital stays. This has tremendously helped in lowering costs of treatment.

Similarly, with the onset of the era of remote monitoring and devices to help better manage chronic diseases, the overall healthcare costs are bound to come down over a period of time.

### Remote patient monitoring and chronic disease management

Remote monitoring is the new buzzword in the medical devices sector. With rise in incidence of chronic diseases and an increasingly ageing population, there has been a rise in demand for medical devices and tools that can monitor patients continuously, more effectively and reduce the need to visit clinics and hospitals. A growing interest in IoT-driven healthcare services and wearable medical devices is an emerging trend of our times. Using cloud based platforms these devices can alert doctors of important changes in vital signs in a patient.

These advancements in health screening devices have enabled patients to monitor their health conditions at home, reducing the need for hospital visits and bringing down the pressure on the overburdened healthcare centres.

### Boosting local manufacturing: Need of the hour

While technological ad-

vancements in the devices sector are expected to play a critical role in improving healthcare outcomes, it is important that appropriate measures are initiated to ensure greater affordability and accessibility. In a nutshell, improving the ecosystem governing the sector is the need of the hour. This includes improving regulatory mechanisms, quality testing as well as incentivising innovation in the sector. Also important is the need to create a more congenial tax environment. GST on medical devices currently stands at 12 per cent. On the other hand, customs duty is low. This tax policy negatively impacts indigenous production and supports imports, which is counter intuitive to the Make in India initiative. Notably, imports constitute 75 per cent of the industry sales of medical devices in the country while local manufacturers mostly produce products in the lower end of the value chain. The government must consider revising its tax policy for devices to lower the GST while increasing the customs duty to help local manufacturers gain a larger share of the market. This will also help them manufacture products at more affordable costs.

The 'Make in India' initiative presents a platform for the sector to revisit the operating model, identify key imperatives for growth and explore possibilities for creating a step change in the medical devices sector. This in turn, allows Indian manufactures to provide affordable options for crucial equipment such as CT scans, catheters, dialysis equipment and many more.

# Assessing power backup needs in a hospital

**Palash Nandy**, CEO, Numeric, outlines how not only efficient use of energy but also power reliability and continuous availability is crucial for efficient functioning of healthcare

The healthcare sector is flourishing across the world with India in particular reaping the benefits of an increasingly health-conscious population, highly qualified doctors and more. The country has also become one of the leading destinations for high-end diagnostic services with tremendous capital investment for advanced diagnostic facilities. This high growth also demands a highly-efficient power back-up infrastructure, one that can fuel the ambitions of the rising sector.

## One solution does not fit all

Interestingly, this is one of the key sectors that need customised solutions due to its varied infrastructure which includes complex medical equipments, lifesaving machines, data center that is a store house of patient's data etc. Therefore, a single UPS solution does not fit the bill.

In a typical medical facility, there are different aspects of the usage of power. On one side there is the infrastructure both on the power side and digital infrastructure. Then, there is the medical equipment. On the other hand, there are emergency services in terms of evacuation, etc., and then finally, there is a requirement of data storage in medical facilities. There are two main problems that exist everywhere - Issue of the quality of the power and the issue of the continuity of power.

Healthcare facilities need a complete power protection (power quality and continuity) solution that will maximise uptime, a large and efficient service team to support throughout its lifecycle and enhance overall efficiency, reduce power consumption and optimise availability which are our core strengths.

## Challenges faced

The availability of continuous, quality power is crucial for the optimal performance of critical applications in the healthcare industry. Power continuity is critical especially when medical devices are in use.

From life-monitoring systems to diagnostic imaging units, everything in a hospital requires a constant stream of substantial electricity. Hospitals spend exorbitant amounts of money designing fail-safe systems, yet experience crisis when they face power disruptions.

Imagine a power fluctuation in the middle of a CT scan; even milliseconds can have far-reaching implications. Or a natural disaster that interrupts the functioning of life-saving equipment. This can have a lasting and at times fatal impact not only on the patient but can also damage the reputation of the medicos and the hospital.

Another key challenge is the lack of knowledge on what capacity and type of UPS will best meet the needs of their hospital. Hospital owners or decision makers might not possess adequate knowledge or have access to information to refer to make an informed decision.

## Understanding the needs

We at Numeric understand the varied needs of the healthcare industry; therefore, we have divided the healthcare installation into four different parts as there can't be one solution for all those parts. Depending on the equipment's need, we have got solutions which will be either Single Phase or Three Phase UPS.

There are needs of the infrastructure itself whether it is electrical or digital. Then there is also a specific product for data storage applications.



Many of the healthcare institutes are setting up micro data centres within the institutes itself for which they need a specific Rack-Mounted UPS that goes into these micro data centres. Hence, we have specific solutions for four different applications within any healthcare facility.

Let's take the data storage application in healthcare facilities. Today many big healthcare institutions have local data centres and with the advent of micro data centres (a typical rack with servers, UPS, PDUs all inside one), the need for having such local MDCs are on the rise. So, to address this need, healthcare institutions need a high-density UPS, a single rack where you can go up to 10KVA, but this must be in 2U format. This is a specific application for microdata centres within the hospitals.

On the other hand, equipments require both continuity of supply as well as the quality of supply and within the quality of supply, the voltage poses a major challenge. Numeric has Servo Stabilizer which is specifically for that application. This can withstand the variation of the voltage from the electric supply and then be able to pass on to the equipment voltage which is extremely stable which allows the equipment to do its job well.

In order to support the functioning of critical life-sav-

ing equipment, healthcare facilities need to be prepared to withstand temporary and extended outages. Even a seemingly short power outage of a few minutes can compromise the health of individual patients and cause heavy damage to sensitive medical equipment and IT systems.

In addition, hospitals run a range of medical equipment that cannot be operated without energy, and that require uninterrupted energy to function at an optimum level. These include medical refrigerators, sterilisers, lamps, cookers, suction machines for deliveries, incubators, microscopes, centrifuges, mixers, X-Ray viewers, etc.

On the infrastructure side, which includes managing the lights, and power, there the sensitivity level is not of high quality. You have specific products that have an emphasis on the power available than the sensitivity of the power. Standby power is required for all essential electrical systems (EESs), which include evacuation/emergency lighting, HVAC systems for patient care and operating rooms, critical process equipment (such as medical imaging devices) and fire suppression equipment to aid response teams in the event of an emergency.

Further, healthcare IT systems require back-up power systems to support full functionality in the case of an extended power outage.

In some applications, it is very important that you have an in-built transformer inside the UPS because of the sensitive nature of the final equipment to which it will supply power. So, we have UPS with inbuilt transformers. Therefore, instead of having one solution across all the applications, divide and define the different

needs of the different applications and have a solution specifically meant for that.

Also, as hospitals grow their bouquet of offerings, the power management system initially planned and set up may not suit the growing spectrum of services. The demands of new, technologically advanced equipment in addition to existing infrastructure, adds pressure to the existing power set up. With rapid advancement in technology and IoT-enabled systems, there is an opportunity for these hospitals to retrofit or upgrade their existing system to create more efficient and robust energy management.

For a healthcare facility, it is not only efficient use of energy that is important but power reliability and continuous availability that is crucial for their efficient functioning.

As a quality healthcare provider, while you focus on offering quality service to your customers, it is also essential to pay attention to the periodic maintenance of your power backup systems. It will be wise to get into a tailor-made package suitable to your need to ensure maximum uptime.

Healthcare delivery in India is now on the brink of massive change across all stages-prevention, diagnosis, and treatment. From digital imaging to security systems to robotic surgery systems, advancements are rapid.

But to enable these technologies to function to their highest capacity, healthcare facilities not only need a rock-solid physical infrastructure to back up their assets, but an efficient power back-up partner who understands the challenges of the industry to offer unparalleled support both in terms of product offerings and efficient service.



# Preventive approach: Key to tackling NCDs

Non communicable diseases have unquestionably become a healthcare priority in India. The pattern of NCDs in rural India looks largely similar to that in urban India

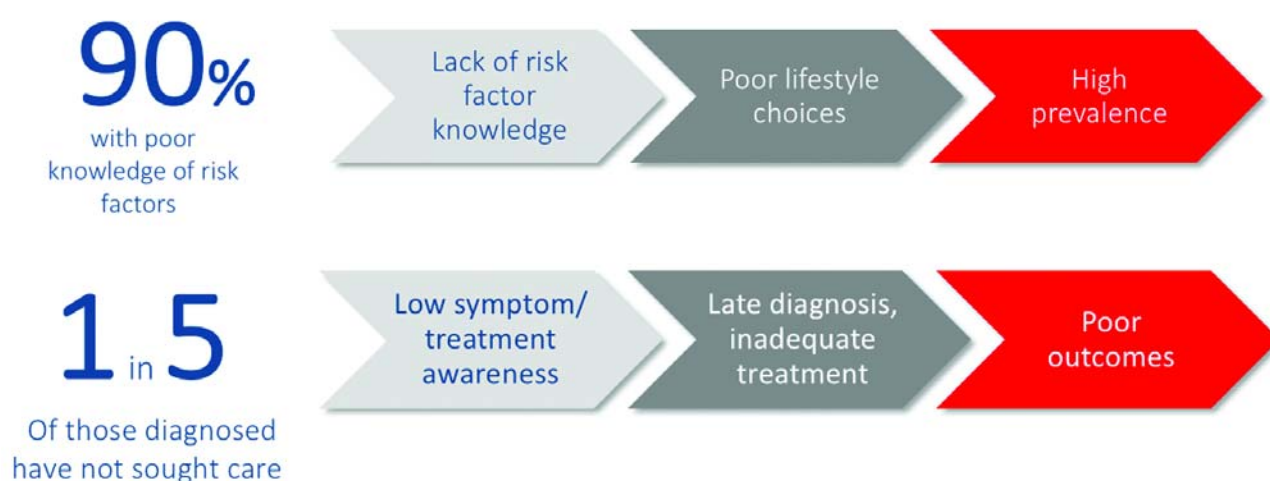
The disease pattern in India, particularly rural India, has undergone a significant shift over the last 15 years. Whilst previous health efforts focussed primarily on addressing communicable diseases, according to the Global Status Report on NCDs (2014) 62 per cent of deaths in India were due to non communicable diseases.

Non communicable diseases (NCDs) have unquestionably become a healthcare priority in India. The pattern of NCDs in rural India looks largely similar to that in urban India. High blood pressure, the biggest metabolic risk factor for death worldwide, now affects one in five adults in rural India, while diabetes affects about one in 20 adults.

With this significant shift in the health profile of rural India, there is a need, now more than ever, to focus on taking a preventive approach to tackling non-communicable diseases (NCDs). In fact, a study conducted by Ambuja Cement Foundation (ACF) across 101 villages and 1440 respondents (Control and interventions villages), highlighted the fact that 90 per cent of respondents had poor knowledge of risk factors of NCDs – which contributed to poor lifestyle choices and resulted in high prevalence of disease.

Additionally, the study showed that one in five of those diagnosed with NCD, had not sought care which led to inadequate treatment and poor outcomes.

By identifying high risk groups and conducting focussed education and awareness interventions, we can help rural communities make the necessary lifestyle changes to curb the onset of NCDs in the future.



## A multi-pronged approach

With a variety of inroads into rural communities, ACF has been educating groups of engaged community members, who currently work closely with ACF on various other programme interventions, on the risk factors of NCDs and the necessary lifestyle changes to curb them.

By leveraging the already strong relationships they have with these groups, they have been able to influence behaviour change in a stronger way. Education and awareness activities target a variety of community groups, including women, farmers, adolescents and the broader community. They cover topics like awareness building and finding the root cause of NCD to lifestyle changes being implemented and addiction control.

Self Help Groups - Self Help Groups are an association of community women. Providing health interventions to women in SHGs provides an easy connect with the community. By focussing on nutritional practices and right food for the family, ACF has been able to influence women who primarily

cook food for their family. With high fat, salt and sugar intake being key lifestyle contributors to these diseases, ACF's brigade of Sakhi's (community health workers) have been conducting nutrition awareness by facilitating cooking demonstrations, reduced intake of deep fried foods, and reduction of processed foods which are widely advertised in rural communities. Additionally they are actively promoting an increase in physical activity and advocating a reduction in alcohol and tobacco consumption. In Chandrapur, most women in villages have started taking morning walks in groups, Bhatapara has kick-started yoga classes, and in Bathinda, an open gym has been established all through community efforts.

Farmer Groups - ACF works extensively in agricultural livelihoods and provides inputs to different farmer groups to help them increase their profitability. ACF health team also creates awareness to these farmers about NCD awareness, with a primary focus on diabetes and hypertension.

Adolescents in schools -

Adolescents are showing high incidences of overweight and obesity which is a major risk factor for NCD. Age standardised prevalence of obesity has increased in India by 22 per cent in recent years. Adolescents also have shown an obsession with fast and junk food available nearby school and colleges which presents a major risk. Every ACF location has an Adolescent Health Education Programme being run in schools, called as APEKSHA (an adolescent peer educator module) which primarily focusses on sexual and reproductive health. By tapping into this existing programme, ACF has been able to educate and reach adolescents with preventive health messages.

Reaching Household - ACF reaches households through Sakhis and evaluate adult population over 30 years of age with a questionnaire based risk assessment on NCD. These are probable high risk which can be prevented with lifestyle modifications. Risk assessment questionnaire assesses on risk factors and also helps to create awareness.

Community in general - The broader community is targeted through various mass events, rallies, poster exhibitions, and wall paintings, screen camps with various health messages towards preventive and promotive health. In fact, across many locations, ACF team members tied up with local health systems to create a community drive for early identification of NCD and lifestyle modification.

## Scaling interventions

Current NCD interventions by ACF are conducted across seven locations and include 125 villages, 34055 households, and a total of 1,57,857 (of which 61,243 are adults above 30 years) in which 13 per cent diabetes and 24 per cent hypertension prevalence was observed. To date, 15,586 people (28 per cent of population) have already been identified as high risk and screening continues regularly.

There are further plans to scale in the future. By working in collaboration with Harvard TN Chan School of Public Health, ACF has formed a tripartite agreement between

ACF, Harvard (HSPH) and the District Health Department of Bathinda to conduct an action research study on NCD in 12 villages of Bathinda district in Punjab. The study is being done in a stepped wedge manner, targeting over the age of 30 population for a duration of two years. The purpose of the study is to collect accurate data and document evidence based practice to identify the difference made on NCDs pre and post interventions, using interventions and control groups within the 12 selected villages at different intervals. The collected data will range from their demographics characteristics, medical diagnos-

## NCDs pose a significant economic threat to rural India. NCDs not only affect health, but also productivity and economic growth.

tics and medical history to addiction patterns and treatment taken. Field observations will be conducted on a regular basis to reinforce and ensure the importance of measurement precision and standardised data collection methodology.

Additionally, by tying up with mDiabetes, ACF will generate and circulate information to community members on mobile phones with pre-recorded messages on diabetes

prevention, nutrition, lifestyle modifications.

A partnership with Cipla Foundation and Chest Research Foundation as technical support, will see ACF expand its NCD interventions into chronic obstructive pulmonary disease (COPD) and asthma. For the next two years, it will expand the scope of its work to include respiratory conditions. ACF will perform various tests in clinics set up by ACF that

are now owned by the community servicing over 7,000 households of 48 villages of the district. The drive will be led by the Sakhis, who will also initiate community mobilisation, thereby creating awareness about risk factors, like indoor pollution and nutrition.

### The economic impact of NCDs

NCDs pose a significant economic threat to rural India.

NCDs not only affect health, but also productivity and economic growth. The probability of dying during the most productive years (ages 30-70) from NCDs is a staggering 26 per cent. As such, India stands to lose \$4.58 trillion before 2030 due to NCDs. There is a need for more stakeholders to collaborate and work together to encourage lifestyle and behaviour changes among rural communities, to curb the frightening trend towards NCD growth among these vulnerable populations. ACF will continue to make efforts to attempt to create pilots around important health issues with cost effective models to address for rural India.



For any queries, call 022-67440002 or email at [healthcare@expressindia.com](mailto:healthcare@expressindia.com).



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## INTERVIEW

# “We are trying to address rare disorders”

Recently, Bengaluru-based Vikram Hospital opened a state-of-the-art ‘Center of Excellence’ for Huntington Disease. In the coming time, the hospital is also planning to open up new exclusive clinics for various other rare disorders to fill the void of care in the health sector.

**Dr Prashanth LK**, Consultant Movement Disorders Specialist, Vikram Hospital, Bengaluru gives more details on the hospital’s plan in an interaction with **Usha Sharma**

**Tell us how big is the rare disease market in India? And in the last 10 years, how many rare diseases have been found in India?**

According to definition, a rare movement disorder is one whose prevalence is less than 50 per 100,000 population. They are ‘rare’ only by terminology and account for more than 7000 medical disorders. Hence overall, they constitute about 6-8 per cent of population. Keeping this in picture, India constitutes 1/5<sup>th</sup> of this global scenario. Many of these disorders require dedicated healthcare services and some of them have dramatic medical care. Because of rarity of these disorders, most of these are usually misdiagnosed and do not get proper interventions.

**Recently, Vikram Hospital has opened a state-of-the-art center of excellence for Huntington’s disease, tell us about the objective behind making an investment?**

Huntington’s disease comes under the category of rare movement disorders. More prevalent disorders like Parkinson’s Disease, Alzheimer’s, dementia, diabetes are well recognised leading to general population awareness, special clinics and government policies follow with them. This is lacking in rare movement disorders. We are trying to address this void in healthcare by creating niche clinics for specialised disorders which require team efforts for management. These clinics



There is paucity of team care for rare movement disorders. We are aiming to have a uniformity in standards of care for these disorders

will create awareness in public, support to the families and finally getting required support from government and insurance companies for supporting them.

**Huntington disease (HD) is one amongst the rare disease portfolio, how chronic it is?**

Huntington’s disease is a progressive neurodegenerative disorder, which over a period of time affects a person’s normal functions, leading to complete dependency. People affected with huntington disease have symptoms related to behaviors, cognition and movements, hence has a significant burden on family and caregivers. Other major issue is that Huntington’s disease is usually noted during the most productive years of a person (40-60 years), affecting the family and workplace equations. The life expectancy after the clinical onset of symptoms varies from 10-25+ years. These people require exclusive team care involving movement disorders specialists, psychiatrists, and psychologists.

**In India, how many such centres are available and how does each centre co-ordinate to generate data?**

Currently in India, there is paucity of team care for these disorders. Most of the Huntington’s disease patients are either seen in a neurology clinic, psychiatric clinic or in few instances

'Movement Disorders Clinic'.

As of now probably there is no such team approach exclusively for Huntington's disease in India. We have now created a specialised 'Huntington's Disease Clinic' under our 'Center for Parkinson's Disease and Movement disorders', which can cater to this specific disease groups. Our Huntington's Disease clinic involves movement disorders specialist, psychiatrist, psychologist, and therapist. With this, we are aiming to have a uniformity in standards of care for these families and this will lead to high end qualitative data. This data can give a better glimpse of situation in India, which is lacking till now.

#### Tell us about the available treatment methods for HD and the steps initiated by researchers?

Huntington's disease is currently on a cusp, wherein it's moving from a stage of no treatment till 1990s to symptomatic treatments around the millennium to currently possible disease modifying therapies within next decade. Off late, various therapies targeting gene dysfunction has shown promising results in recently published medical literature.

#### What are the diagnosis methods for HD and is it possible to detect during prenatal testing?

**Our Huntington's Disease clinic involves movement disorders specialist, psychiatrist, psychologist, and therapist. With this, we are aiming to have a uniformity in standards of care for these families and this will lead to high end qualitative data. This data can give a better glimpse of situation in India**

Huntington's disease is diagnosed by a blood test, wherein they look for specific repetitive pattern in a gene called as 'CAG repeats'. This test can confirm the diagnosis of Huntington's disease (i.e., people with more than 40 CAG repeats). CAG is genetic coding sequencing, which keeps on repeating in Huntington's disease subjects leading to abnormal function of the gene and accumulation of end product called as "Huntingtin". As a general rule, having a higher number of CAG repeats is associated with an earlier onset and faster course of the disease. A common observation is that earlier the symptoms appear, faster the disease progresses. This CAG repeat test can be conducted during pregnancy. These tests are conducted during the first three months of pregnancy using foetal biosamples (blood, amniotic fluid). This will help the parents to decide on further plans.

**How expensive is the**

#### treatment? Does patient get any assistance from insurance or government schemes?

Currently treatment for Huntington's disease is symptomatic. It means, the treatment is directed towards the patient's problems like, behavioral, movement disorders, cognitive etc. Most of the insurance plans do not cover genetic disorders and hence Huntington's disease is not covered under the insurance schemes. Also being a rare disorder, the government policies are not directed towards Huntington's disease, nor do they get required support.

#### Tell us about the key problems faced by the patients and relatives of HD and how challenging it is for medical practitioner to ensure patient adherence?

Huntington's disease symptoms are well noted before clinical diagnosis can

be considered. Most of these people initially start with behavioural issues like depression, aggression, maladjustment in work/family leading to various social issues. By the time classical motor symptoms are noted, most of them would have various social issues burdened up. Neither the family members nor friends can pick up these early symptoms (except in whom the family history is well known and acknowledged) leading to more burden. Many patients do have suicidal tendencies and some end up committing suicide too! As most of these symptoms are commonly noted between the age group of 30-60, it leads to dramatic burden on patient, family and relatives. Even after diagnosis, there is a requirement of team approach not only for the patient but also for family members to cope and adapt to care. Given that the person becomes completely

dependent over the span of 10-25 years, it further adds a humongous burden on the family.

#### Will the hospital management be considering opening up a dedicated center for other rare disease profiles as well?

Vikram Hospital, Bengaluru is working towards providing niche care for high end specialities wherein either disease modification therapies are present or those which require symptomatic therapies to improve quality of life. Our Institute of Neurosciences has branched out successfully into specialised areas of Parkinson's disease, epilepsy, multiple sclerosis etc. We were the first hospital to launch apomorphine pump therapies for Parkinson's disease in India. Currently, we are trying to address rare disorders as they require specialised care. Huntington's disease clinic is our first initiative into rare movement disorders section. We do hope that with this we will bring a dramatic change to patients and their families. We are also looking to catapult this thought process into research fields. We are hoping to start new exclusive clinics for various rare disorders and fill the void of care in these health sectors.

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## INTERVIEW

# E-learning can help bridge a major gap in continuing medical education for doctors

India's medical education system lacks outcomes based learning (OBL) experiences for students. According to some experts, OBL has the potential for dramatic and even revolutionary changes in medical education. However, it carries with it significant challenges. Here is a company that functions on an OBL model and intends to sensitise healthcare providers in India with its benefits. **Hans Albert Lewis**, Founder and CEO, DocMode explains more in conversation with **Raelene Kambli**



## What is the significance of outcome based learning for medical professionals?

In simple terms, outcome-based learning (OBL) is reverse engineering. This style of learning is based on having an end goal in mind, or what the learner is expected to deliver.

Outcome based learning (OBE) approach is need based, specifies outcomes and levels of outcomes, which shifts focus from teaching to learning.

## How does Docmode fit into this space?

As our tagline goes, "DocMode – From Learning to Practice", we are a global platform for outcome based learning (OBL). We understand the need for constant learning among all individuals in healthcare which is a field that is evolving every single day. We have partnerships and associations with leading medical schools/ universities and medical associations like ICO, Cleveland Clinic, Royal College of Physicians of Edinburgh, Indian Dental Association, FOGSI, to name a few. Our partners help to create, review and launch courses which range from diagnosis and treatment guidelines, to industry practices, learners are also encouraged to interact with the faculty via discussions boards thus helping them to better clinical acumen in their

daily medical practice. Our vision is to become an integral part of the healthcare professionals daily routine with essential resources for their learning and practice

## Do you think India's medical education system needs an overhaul?

In 2018, MCI changed the syllabus after almost 21 years. This recent announcement to shift undergraduate MBBS syllabus from knowledge-based to an outcome-based course with a focus on attitude, ethics, and communication (AETCOM) is a good move towards value-based education.

But as we all know, medical developments are evolving on a daily basis, right from the discovery of new drugs and molecules, to technological advancements towards diagnosis and treatment. The present medical education syllabus is stuffed with a lot of knowledge components, in medical education terms. The medical education system needs to have a mechanism of giving and receiving feedback. We have to see what the newly formed National Medical Commission (NMC) which has been brought in to replace Medical Council of India in as law through the Parliament will do.

## What are the changes that the newly constructed 33 member body of NMC should

**consider?**

Though already quite a lot of changes have been implemented at the undergraduate level with the introduction of outcome-based AETCOM syllabus, NMC now needs to redefine the educational system at post graduate and CME level. Offer opportunities for doctors and PG students to learn via different mediums like:

**E-learning** – Provide incentives for learners to join unbiased e-learning courses. This will help learners to gain insights about the latest developments in that segment. Learn from industry key opinion leaders, participate in discussion forms with them, etc. Opportunities like these should be made a part of the educational system and credit should be offered to learners if they submit certificates.

**Mentor and educator** – Practising doctors should be motivated to become mentors for undergraduate students and PG students as well. With feedback systems, both educator and learner stand to benefit from the engagement.

Further, submission of clinical research abstracts to publications should be encouraged as this will help to create an environment of evidence-based medicine and further lead to an evolution towards outcome-based education.

**How can India develop a national programme for outcomes-based medical education and research?**

As mentioned in the new programme for outcome-based undergraduate medical education is been implemented across India, we hope this success paves way for PG and CMEs.

Here are some thoughts on how we can initiate taking steps towards OBE:

**Documentation** – One of the key elements of practising evidence-based medicine is the initiation of documentation. This further helps in developing better outcome-based learning for both the educator and the learner.

**Involve public and private HCPs in education** – Involve HCPs from public and

private hospitals and primary healthcare centres towards the development of syllabus, invite them for industry lectures.

**Compulsory research** – Investigations of disease and epidemic should be a part of the syllabus, as this helps learners to analyse data, understand the life cycle of disease, understand new evolutions, and how to treat them. Further, this becomes a learning material for other learners and HCPs for future reference.

**What are medical schools required to do to include outcomes-based learning?**

As highlighted above, MCI has already initiated the implementation of new outcome-based learning syllabus for undergraduates. MCI and hospitals should actively encourage learners to join unbiased learning courses online. E-learning can help to bridge a major gap in continuing medical education for doctors, as this offers self-paced learning, so learners can focus on their practice and undergo training

simultaneously. In addition to this, they can participate in discussions with international faculty and industry KOLs to get insights on new developments. It is high time we recognise different mediums of learning, as medicine and technology are evolving at a faster pace.

**Share examples of effectiveness of outcomes-based learning in healthcare?**

Though there are a lot of case studies which highlight how outcome-based learning helped to identify disease patterns and establish new guidelines for future use case scenarios, here is one case study, which is very close to me. This exactly helps us to understand how OBE can become a game-changer in medical learning.

**Hyperthyroidism disorder** – Thyroid diseases are common in India and the country faces a significant burden of this disease. This condition is different from other diseases in terms of diagnosis, accessibility of medical treatment and visibility of swelling. To combat this problem, the Indian Thyroid Society launched CME

courses to train primary healthcare practitioners, specialists, and medical professionals to understand thyroid disease, diagnose this condition and treat it. The society also conducted surveys across India in 2015 to identify prevalence of this condition. Further, the society along with scientific publications launched guidelines to treat hypothyroidism. These guidelines now have become base to diagnosis and treat hypothyroidism, it also emphasises all adults after the age of 35, should undergo tests and these should be repeated every five years. This use case scenario highlights that if 100 people are suspected to have hypothyroidism, maybe 25 to 30 per cent are being detected, diagnosed and treated. The rest 60 to 70 per cent are still not aware of it. But now with guidelines in place, doctors are able to manage hyperthyroidism in India. We have also observed such case studies for professional learning impacting in awareness of both chronic and acute diseases among the general public.

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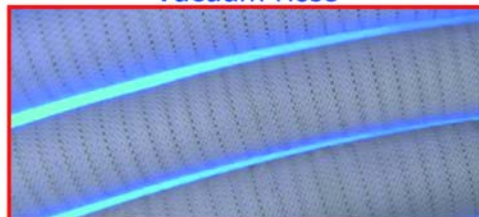
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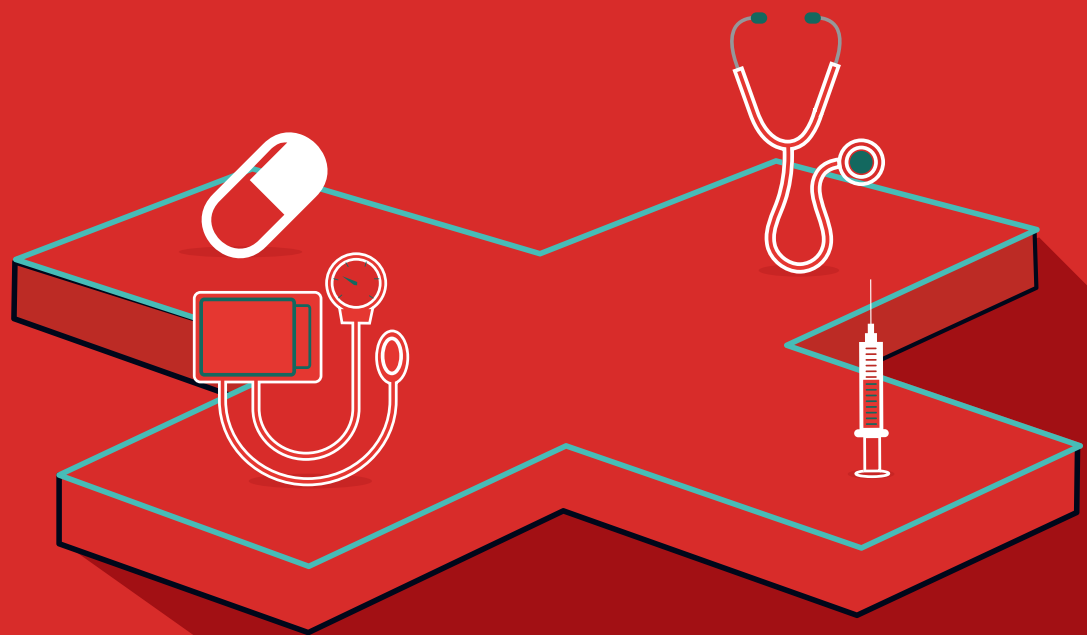
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## TRADE AND TRENDS

# Knowing your genes solves the puzzle of life

**Chandni Luthra**, Co-Founder, FutureMed highlights how genetic tests can help identify health risks, choose course of treatments and assess the response to them

Are the medicines prescribed to treat your illness causing more harm than help, do you want correct early diagnosis for better treatment. Not able to lose those extra kilos to keep obesity and heart problems at bay? Confused about which supplements to take? Still figuring out how to tackle such issues? Fear not as help is already here. Your DNA holds the answer to the above questions.

DNA is the basic building block of the human body containing all the information necessary to make you, run you and repair you. No two people, except for identical twins, are genetically identical. These variations lead to different processes in our body and affect how our body responds to different macro-nutrients, vitamins and minerals, exercise and certain medications. Genetic tests may be used to identify increased risks of health problems, to choose treatments, or to assess response to treatments. Early diagnosis through clinical genomics can help to identify risk of certain types of cancer and cardiovascular diseases. This means that your genes can determine all the answers necessary for achieving a healthy body and truly knowing yourself and what works for you in terms of nutrition as well as the medications needed to treat certain conditions. For example, specific variations in gene MTHFR lead to high homocysteine levels and low metabolism of folate in the body. Individuals with these specific mutations need supplements because their body cannot convert folate to methyl folate, resulting in higher homocysteine levels, which in turn leads to atherosclerotic vascular diseases or thrombosis.

Unlocking the secrets of one's genetic code used to be expensive and confined to very few laboratories world-wide,



but advancement in next generation sequencing (NGS) and genotyping technologies have brought the costs down and has enabled the business of DNA to help medical professionals make recommendations for a person's food intake, dosage of medications to avoid adverse drug reactions as well as providing all the information a person needs for proactive and preventive health planning. The aim is to move from one-size fits all approach to something that is highly personalised and as such completely changes how people perceive

their overall health and well-being.

These genetic tests are as common as pathology tests in the US and many countries in Europe. But in India the genetic testing market is still in the nascent stage. According to ICMR, the addressable market for these tests is 500,000 people but actually should be in millions. Any person can take the test. The younger the better as the test provides all the information that can help you to play to your genetic strengths or sidestep some of your inherited challenges.

Innovation is a driving change in the healthcare industry in India. Your genes are not your destiny but can certainly determine the health of your future. To this end I believe that there is a gap in the market for personalised wellness solutions including bespoke skin products, as well as nutrition and fitness programmes because if you can tailor your clothes and shoes, why can't you tailor your wellness solutions. Therefore apart from the tests Futuremed is also the first company in India to offer nutritional supplements that

will be customised according to an individual's DNA.

Traditionally, nutrition management has focussed on a stop-n-go strategy wherein individuals consume mega doses of a particular macro-nutrient for a short period of time. However such an approach poses a risk of toxicity and is ineffective when it comes to maintenance of the body's internal environment to fortify cellular protection, repair and regeneration and to support the renewal process.

Sometimes the Recommended Daily Allowance (RDA) defined as the non-toxic dose that should be consumed on a daily basis to maintain healthy plasma concentration of nutrients and is not enough because genetic variations may predispose an individual to have decreased level of macro-nutrients. Such individuals require a more personalised approach to nutrition management.

Futuremed as a company with their highly skilled team of molecular biologists, bioinformaticians, accompanied by a scientific data driven approach and state of the art laboratory is helping in creating awareness among clinicians and wellness experts to offer smart and efficient solutions to individuals. The company is providing genetic tests not only in the wellness space of nutrition, weight loss, fitness and skin but is also helping people determine their risk for developing diseases ranging from cancer, neuro to cardiovascular and various other conditions. In addition tests are also offered in the field of pharmacogenetics / precision medicine and autoimmune diseases. The aim is to make inroads in this nascent market with the target of making these tests accessible and affordable for all thus making genetic screening a routine part of health care in India.

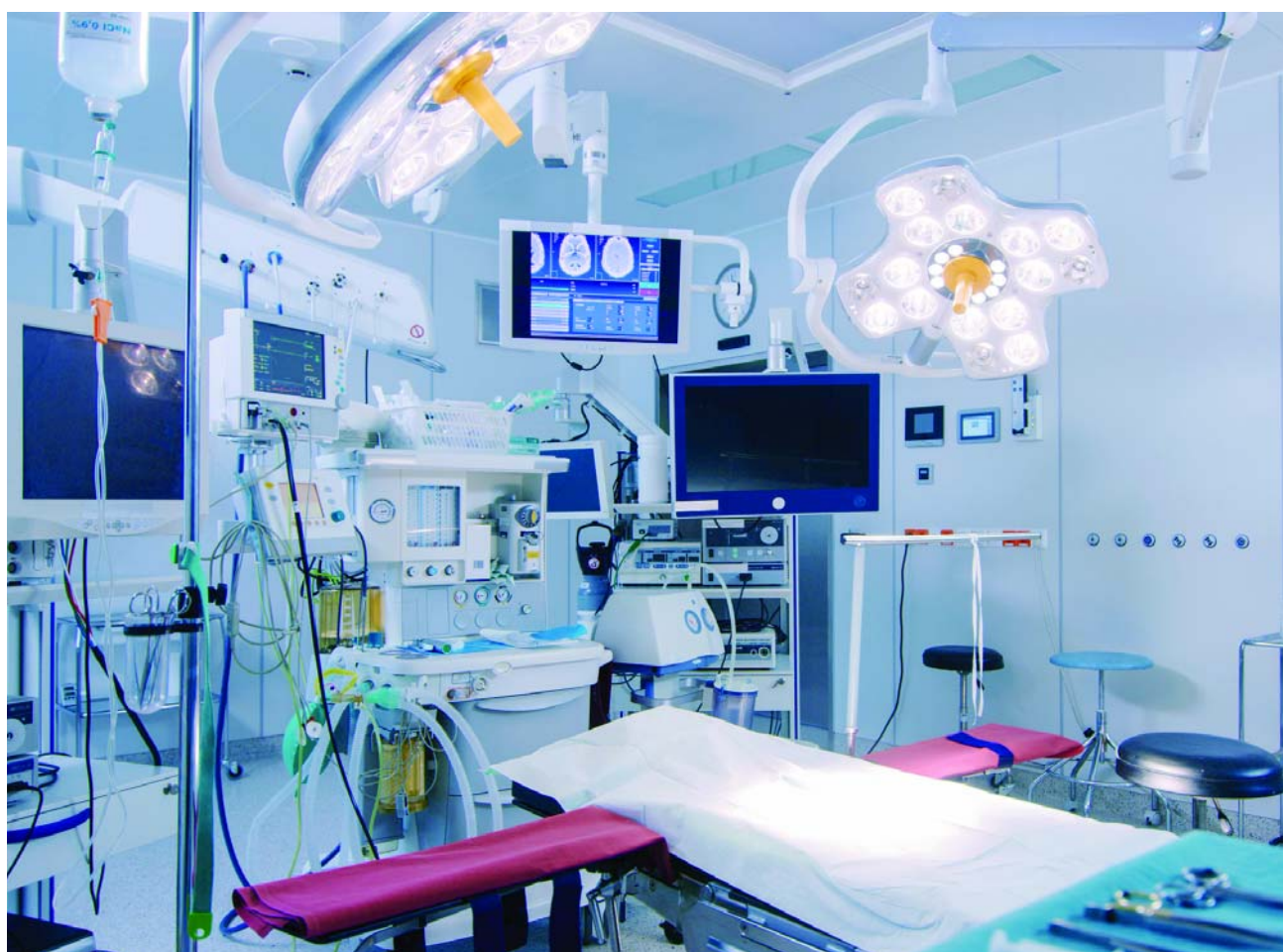
# High demand for cancer treatment, screening and patient care devices in Mumbai: Medikabazaar survey

Spike in demand primarily across Andheri (W), Parel and Sion, according to the 2019 survey mapping the demand for medical devices in the region

**IN KEEPING** with its efforts to carry out extensive research of the requirements of the current healthcare market, Medikabazaar, India's largest online B2B platform for medical supplies, recently conducted a survey on the Top Medical Devices by demand for the Mumbai region in 2019. It aimed to shed light on the rising demand for various types of medical devices based on an increasing number of ailments and the need to enhance healthcare processes and treatments.

According to the survey, devices for cancer treatment and screening, as well as patient care devices, were in high demand this year. These included hyperthermia pumps (HIPEC), blood recirculation system (Combat BRS - HIVEC), patient monitor (Lidco haemodynamic monitor), surgical care (Zimmer DVT) and breast screening device (Braster Pro), amongst others. Of the devices in higher demand due to lack of availability, Combat BRS (HIVEC), Insulin temperature shield (Vivi Cap-1), Neurosurgery micro-scissors (Charmant) and Braster Pro topped the list. A spike in the demand for these devices was noted majorly across Andheri (W), Parel and Sion.

Some of the reasons behind the increased demand were the rising number of genitourinary cancers in males, a high prevalence of diabetes and the need for maintaining the potency of insulin on-the-go. Additionally, the demand was also driven by neurosurgeons requiring tools that enable greater precision in surgeries, and a need for painless and radiation-free alternatives to traditional mammography for the safe and early



detection of breast cancer. In terms of orders being made by various medical establishments in Mumbai, HIVEC accounts for 30 per cent, HIPEC and Vivi Cap for 20 per cent each, and the remaining 30 per cent of orders are divided between the other devices. Sharing his insights on the survey and the demand for advanced medical devices, Vivek Tiwari, Founder and CEO, Medikabazaar, said, "At Medikabazaar, we are getting orders from well-established medical facilities in Mumbai. A larger

number of these orders are from small healthcare establishments from the suburbs and greater metropolitan regions including Thane, Navi Mumbai, and Panvel. Through our survey, we want to share greater insights into the need and availability of state-of-the-art medical products at an affordable price in the region."

He further added, "By 2020, we expect to see a significant rise in orders across the city. This will also be driven by increased awareness about inno-

vative products within the medical industry, which can help healthcare providers improve medical outcomes and reduce costs. Equipped with these key insights, we will continue to strengthen our supply and distribution channels to cater to the increasing demand."

Since its inception, Medikabazaar has established itself as a frontrunner in the online distribution of advanced medical tools and supplies, facilitating this at a large scale for healthcare providers pan-India, while

helping them to greatly minimise procurement costs. In 2020, factors such as the rise in non-communicable diseases, an expected increase in spending on Ayushman Bharat and the inclusion of day care procedures in insurance are likely to fuel this demand further. The recent proposal by Niti Aayog for a separate regulatory body for medical devices is also expected to play a key role in propelling Medikabazaar's efforts towards quality healthcare delivery across the country.



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# Anaesthesia market trend

**Pradeesh CB**, National Product Manager-Critical Care and Anaesthesia, BPL Medical Technologies elucidates on the evolution of the anaesthesia market and how the market is moving towards a fully integrated system

**ANAESTHESIA MACHINES** are used inside operating rooms to facilitate administration of anaesthesia to patients who undergo a surgical procedure. Anaesthesia machines do many functions such as supply compressed gases, measure flow of gases, add vapours in known concentrations, deliver the gas mixture to patient via a breathing system, mechanical ventilation, scavenge waste, monitor patient parameters with safety alarms.

It is evident that the market is moving towards a fully integrated system. Most of the hospitals are upgrading their old basic anaesthesia delivery system to anaesthesia workstations with comprehensive

patient monitoring system. Modern anaesthesia machines use advanced electronics, software and technology to offer extensive capabilities for ventilation, monitoring, inhaled agent delivery, low-flow anaesthesia, closed-loop anaesthesia, electronic record keeping etc. These developments have really helped clinicians deliver safe anaesthesia to their patients.

Two gas or three gas systems with dual cascaded tubes along with a fully integrated ventilator which supports control and support ventilation mode is still the highest selling product. Many vendors are improving this segment by adding better features such as integrated EtCO<sub>2</sub> and gas



measurements, dual flow sensing for better ventilation control, electronic flow measurements, bigger screen for accommodating more patient parameters, low and minimal flow application.

More and more users are showing interest in electronic flow control which is with bet-

ter accuracy especially for low and minimal flow anaesthesia applications. With electronic flow control, the consumption also can be monitored. This helps in saving gases and costly agents. Integrated anaesthesia gas module combined with patient monitor having depth of anaesthesia and muscle relaxation monitoring, brain function monitoring etc. are commonly seen on such high end anaesthesia workstations.

Digital fresh gas control with closed loop system along with electronic delivery of anaesthetic agents will be the future. Connectivity solutions are available with many players so that hospitals can have paperless OR. Currently this

type of solution is available at a premium price point.

MRI compatible anaesthesia machines are becoming more popular and sometimes are also treated as statutory requirement inside MRI room. Now a days most of the new purchase of MRI equipment is packaged with MRI compatible anaesthesia machine, MRI compatible patient monitor, MRI compatible pumps, laryngoscopes, suction etc.

For small setups portable anaesthesia machines are also available in the market. The advantages are it occupies less space, light weight, easy to transport, can be easily mounted on rails, table top versions are also available, lower in price.

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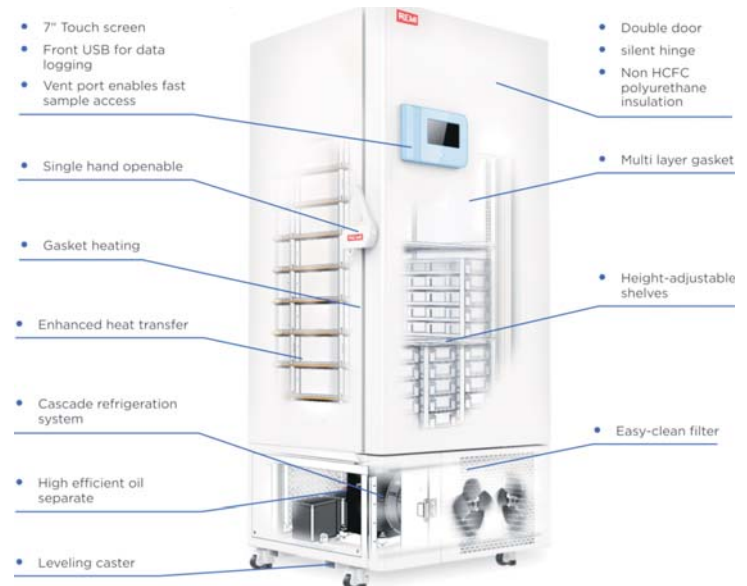
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## ULT Freezer -86°C



## ULT Freezer -86°C



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Nominal Capacity (Litres)	490	650
Inner door	4	
Shelves	3	
Controller type	Microprocessor, Touch Screen Display	
Minimal temperature (OC)	-86	
Screen Password	Yes	
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# AIR Technology Coils - transformative way forward for MR

The coils are 38 per cent lighter than traditional coils plus the anterior array coil has the industry's highest channel count

“**FLEXIBILITY OR** nothing” was the inspiration that guided GE Healthcare engineers as they set out to completely rethink traditional MR coils. There was no doubt there were limitations with the existing technology. Elements had to be placed a certain way within the coils, and coils were typically heavy, inflexible and bulky. The goal was to develop coils that were light, versatile and more comfortable to patients and simultaneously furnish more clinical information to the technologists.

Rethinking coils was no easy task. After two dedicated research projects, engineers created the innovative technologies which are at the heart of GE Healthcare’s revolutionary AIR Technology Coil Suite. Incorporating a miniaturised module of electronics and a flexible loop of linked resonators, these coils are at least 38 per cent lighter than traditional coils plus the anterior array coil has the industry’s highest channel count. They’re also flexible and wrap closely around the patient like a blanket for incredible comfort and image quality. The result was simply and significantly better.

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Clinical excellence: Consistent, versatile, consistently superior image quality.

Workflow efficiency: Break-through freedom in coil posi-

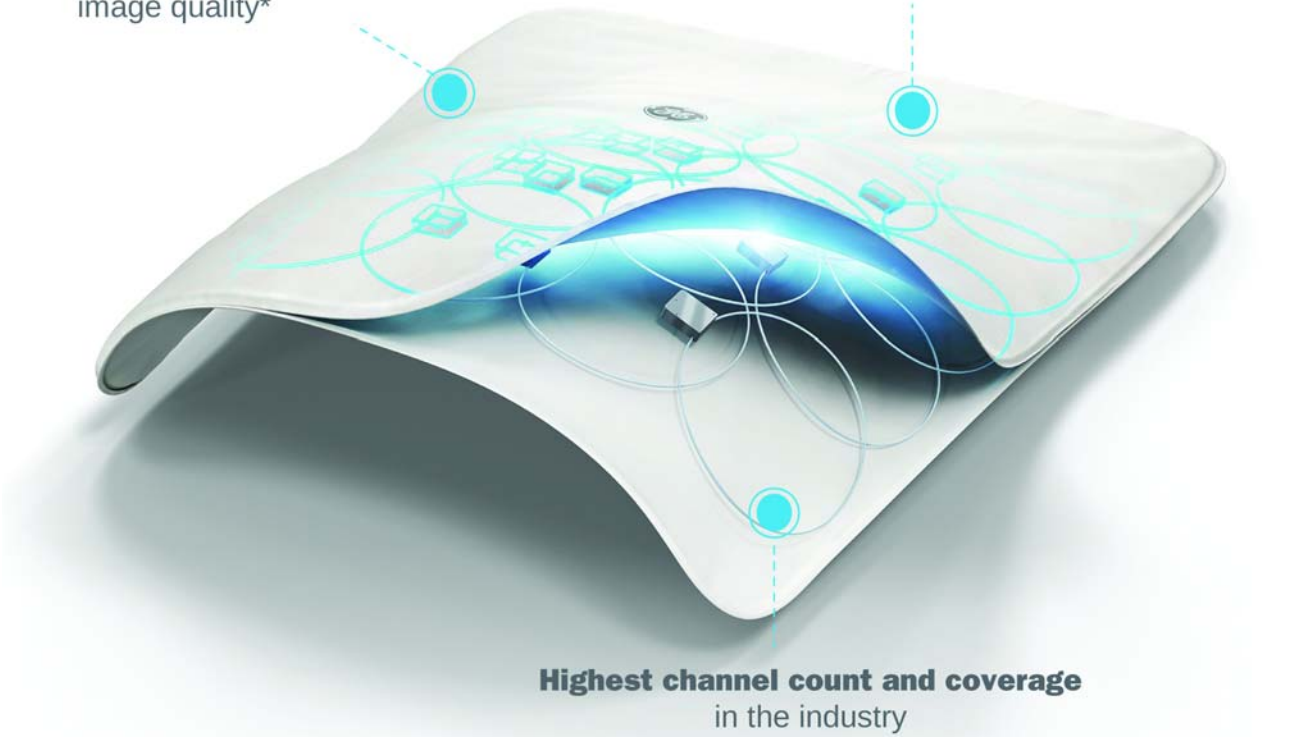
tioning with 360-degree coverage, intelligent productivity improvements

AIR is more than a name . It’s a completely new way of thinking. A symbol for how we approach both the form and the function of MR. From coils

to workflow to image quality, we deconstruct everything down to its most fundamental, simplified version and improve it. Each new innovation builds off of this core philosophy, increasing the value of the greater AIR ecosystem.

≥ 60% lighter design without compromising image quality\*

Highly flexible to fit varied sizes, shapes and ages



Highest channel count and coverage in the industry







Working together to understand your needs and challenges drives valuable outcomes that positively impact you and your patients future.

Canon Medicals vision and commitment to improving life for all, lies at the heart of everything we do. By partnering to focus on what matters, together we can deliver intelligent, high quality solutions.

With Canon Medical, true innovation is **made possible**.

Innovate. Illuminate. Initiate.



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**BPL** Medical  
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## Penlon Prima 465

Reliable Critical Care Solution

- ◆ The Prima 465, a high end & dynamic anesthesia system from Penlon, which proves to be an ideal solution for today's busy Operating Rooms
- ◆ It comes with 8 Advanced Ventilation modes, for detailed monitoring and control. A 12.1' TFT touchscreen with a single easy-to-use workstation focused on clinician benefits

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