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EXPRESS HEALTHCARE

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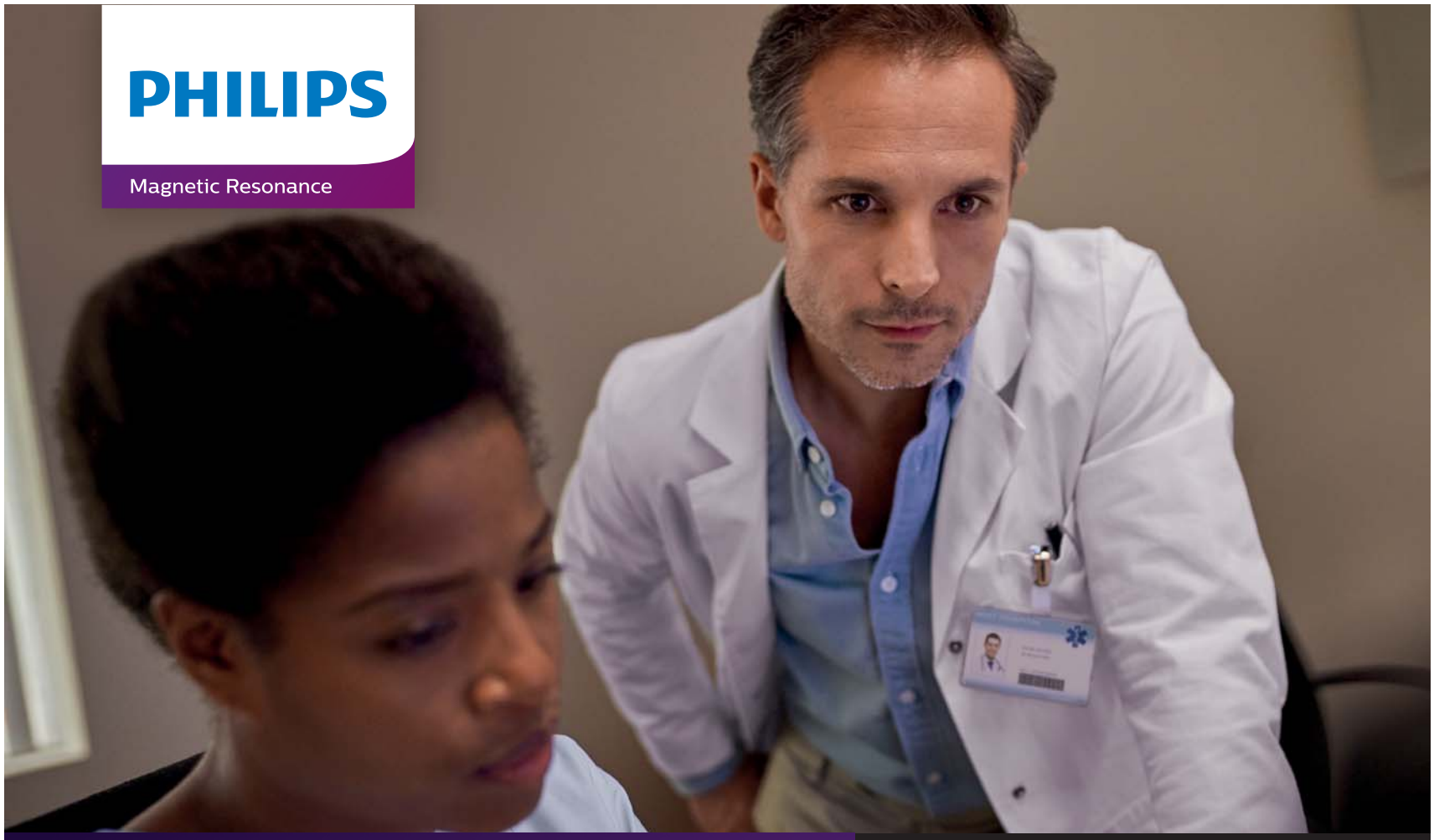

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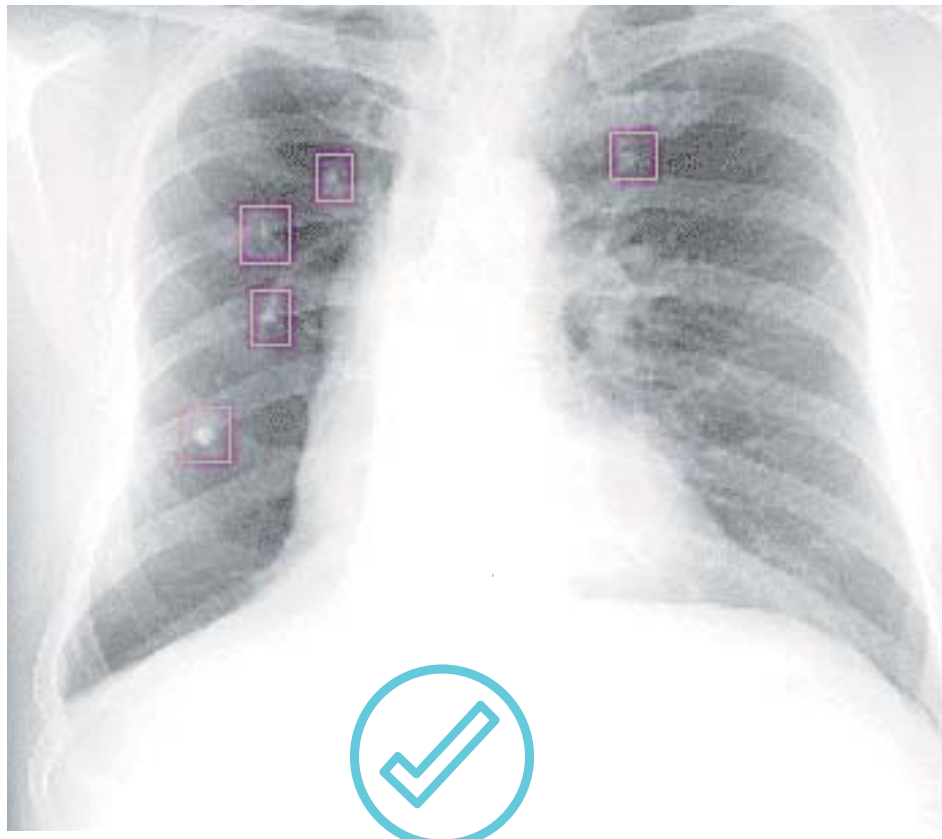

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A road map for India's med device sector

As the US-China trade war intensifies, the US-India stalemate on medical devices could see some resolution. The tricky part will be to balance Prime Minister Modi's Make in India dream with President Trump's demands to further open up India's market.

The price caps on med devices had become a sore point between the two nations but policy makers in India are showing agility when justified. The Ayushman Bharat (AB) scheme which completes a year this September is being tweaked. Corporate hospitals will be pleased to know that rates for certain medical packages are being revised upwards. Additionally, the package for implants will not be a lumpsum, but divided between the cost of the implant and surgery. This step could benefit both patients who now have the choice of better implants as well as manufacturers of higher-end implants.

Similarly, media reports suggest that India could consider applying trade margins on heart stents and knee implants at the first point of sale (price to stockist), instead of imposing it on the landed prices, as was planned earlier.

But we should be cautious of bending too much. India's imports from the US for high-end med devices and technology are increasing. As per the United States Census Bureau, imports of med devices and equipment from the US into India have shown a steady increase from $751 million in 2016 to $856 million in 2018, and are estimated to be $882 million in 2019.

This represents a lion's share of India's total imports of med devices and equipment which was $5000 million in 2018 and is expected to be $ 5500 million in 2019. Perhaps this explains why the American Chamber of Commerce in India (AMCHAM–India) is the only association of Indian subsidiaries of overseas med tech players represented in the Medical Devices Technical Advisory Group (MDTAG).

It is only to be expected that AMCHAM-India will have its own mandate. It's medical technology working group, made up of representatives of the local subsidiaries of US med tech and pharma companies aims to '... to foster partnership with government and trade bodies, and promote policies that ensure sustainable access to the latest, highest quality medical technologies by healthcare professionals and their patients in India. Thereby to promote commercial dialogues which would foster innovation and technological advancement in India ...'

India can be a hub for frugal innovation in med devices, as well as a manufacturing powerhouse for both domestic and global markets

Policy makers therefore need to move faster on reducing India's dependence on med device/tech imports. Following the template of the telecom and electronics sectors, the Niti Aayog is reportedly drawing up a strategic road map for med devices, similar to the incentive package that gives sizable capital subsidies for the electronics business which helped boost local production of cell phones in the country.

This can still be a win-win game. How can MNC medical device players ensure that they can access India as a market for their med tech products, while serving India's need as well? A 2016 report by Deloitte and NATHEALTH has some suggestions.

Firstly, med device companies should develop India as a manufacturing hub, for both domestic demand and international markets.

Secondly, they should undertake frugal innovation or India-based innovation in combination with indigenous manufacturing, collaborating across the Make in India and Innovate in India schemes.

Thirdly, the report suggests that both MNCs and Indian companies need to revisit their operating models for India. Low to medium technology products that have a precedence of manufacturing in India can be produced in large quantities to cater to the under-penetrated domestic markets.

Partnerships between Indian companies and MNCs would improve cost efficiencies and reduce time to market. Partnerships with healthcare delivery players would enable innovative business models.

Additionally, MNCs need to view manufacturing in India as a risk diversification strategy, as approximately 30 per cent of incremental demand for medical devices would come from India.

At $3, India has the lowest per capita spend on medical devices among BRIC countries. This is compared to $7 in China, $21 in Brazil and $42 in Russia. Every med device company, both Indian and MNC, is chasing this massive under–penetration of med devices in India as a significant growth opportunity.

Let us hope that Commerce Minister Piyush Goyal can use this lever at the next trade talks with the US this September.

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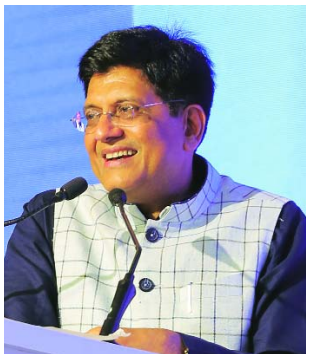
‘Health Meets Hope’ at OPPI Health Dialogue 2019

The event saw the release of research papers ‘Role of Healthcare Financing in improving access to state-of-the-art treatments’, a PwC-OPPI study and ‘Leapfrogging India’s Health Outcomes’, a BCG-OPPI study

The Organisation of Pharmaceutical Producers of India (OPPI) recently organised Health Dialogue 2019 in Delhi with the mission ‘Health Meets Hope’. The event focussed on the convergence of regulations, financing, technology and advanced pharma science to realise the true healthcare potential for patients across the country. It witnessed policy makers, regulators, global experts, patient groups and members of the healthcare and pharmaceutical industry coming together to discuss the need for building an inclusive healthcare ecosystem, with patient well-being at the core. A nationwide digital campaign, 'Refreshing Research', across pharma colleges in the country to highlight the role of science and research in improving patient lives, was also announced on the occasion.



Piyush Goyal, Minister of Commerce & Industry, speaking at OPPI's Health Dialogue 2019

A panel discussion on the need to balance innovation and access to healthcare in India

Speaking at the event, Kanchana TK, Director General, OPPI, said, “Refreshing Research, OPPI’s digital campaign aims at engaging young minds, thus enabling them to be ambassadors for science and research.”

Beginning with the National Institute of Pharmaceutical Education and Research (NIPERs), under the aegis of the Department of Pharmaceuticals, Ministry of Chemicals and Fertilizers, 'Refreshing Research' proposes to initiate an inter-collegiate competition among pharma colleges across the country. The contest will encourage participants to come up with innovation/incremental innovation in various areas like women’s health; public health – AMR and vaccines, mental health; supply chain management and sustainability in the pharma industry. An online jury, along with broader participation from the student community, who can publicly vote for their favourites, will award scores to participants. The final scores will have winners emerging with their winning ideas.

A Vaidheesh, President, OPPI and Managing Director - India and Vice President – South Asia, Glaxo SmithKline Pharmaceuticals, said, “India’s public health system is taking steps in the right direction, with the introduction of Ayushman Bharat and most individual states having health coverage in place. With the end objective of providing solutions to healthcare coverage for all, the PwC-OPPI study titled ‘Role of Healthcare Financing in improving access to state-of-the-art treatments’ illustrates the mechanism of market-based model for financing treatment of serious conditions like lung cancer. This small step, we believe, will be the beginning of solutioning healthcare coverage for serious ailments in providing a multiple stakeholder innovative financing model.”

On the role of technology in impacting health outcomes, he elaborated, “A technology-enabled path to achieve better health outcomes could have significant economic benefit to the country. The BCG-OPPI report titled, ‘Leapfrogging India’s Health Outcomes’ clearly outlines the need for government and private sector to come together and create a new ecosystem that factors the convergence of healthcare and technology towards implementation of healthcare initiatives. With the government’s intent to increase healthcare spend to five to six per cent of GDP, it calls for multi-stakeholder participation in all areas of patient care. The time to unlock the healthcare potential for citizens in India has arrived and the next few years are critical as they will put India on the leapfrogging trajectory of enhanced health.”

Andre Muste, Regional VP - APAC, Merck Biopharma, brought out an important aspect of healthcare. He talked about women’s health and emphasised, "If we have more women who are healthy, our economy will be better." Further, speaking on research, he said, “Researched innovative pharma products is the need of the hour. People in India need to get better researched medicines.”

Adding to it Dr YK Gupta, Principal Advisor (Projects), Translational Health Science And Technology Institute (THSTI), said, “Assuring quality of a medicine is the joint responsibility of the government, regulator, pharma industry and the stakeholders.”

Lara Bezerra, MD, Roche India, claimed that India has enough potential to leapfrog healthcare. However, one of the important concerns of the pharma industry is drug prices. It was raised by Dr Vinod K Paul, Member, Niti Aayog, who said, "When it comes to price control, government of India is striving to be stable, so that it does not disturb the expectations of the industry."

Also present at the occasion was Masukh L Mandaviya, Union Minister of State for Shipping and Union Minister of State for Chemical and Fertilizers who felicitated the awardees for their contributions to the ipharma and healthcare sector. The awards are as below:

Lifetime Achievement Award

Dr Sarada Menon, Founder and Advisor, Schizophrenia Research Foundation (SCARF), for her tireless dedication towards improving mental health in India. Posthumous DG Shah, Founder, Indian Pharmaceutical Alliance, for his long-standing contribution to the pharmaceutical industry in India.

Special Recognition

Dr Gagandeep Kang, Executive Director, Translational Health Science and Technology Institute (THSTI), for her unparalleled work in studying the transmission, development and prevention of enteric infections and their sequelae in children in India.

Dr YK Gupta, Principal Advisor (Projects), THSTI, for his tireless efforts in building an innovation-driven pharmaceutical ecosystem in India.

Access Champions 2019

Dr A Seema from Centre for Materials for Electronics Technology (C-MET) was recognised for her contribution towards improving women’s health.

Geeta Verma from Shakardahra Health sub-centre in Jhanjeli block of Mandi was recognised for her work in child health.

Mritunjay Kumar Tiwary, Project Head and Trustee, Akhand Jyoti Eye Hospitals was felicitated for his commitment towards improving healthcare access in India.

OPPI Scientist Awards 2019

Dr Gajendra Pal Singh Raghava, Head -- Computational Biology, Indraprastha Institute of Information Technology, won the ‘scientist of the year’ award.

Dr Nirmala Jagadish, Staff Scientist, Cancer Research Programme (CRP), National Institute of Immunology, bagged the ‘woman scientist of the year’ award.

Dr Sandip B Bharate, Principal Scientist, Medicinal Chemistry Division, CSIR - Indian Institute of Integrative Medicine, was recognised as the ‘young scientist of the year’.

Later in the day, celebrated Indian Olympic Boxer Mary Kom also participated in the summit. Highlighting the importance of staying healthy and fit, she said, "Staying healthy and fit is critical not just for sports, but for living itself. ”

(With inputs from Akanki Sharma)

Latest Innovations in Immunoassay Testing

THE GLOBAL immunoassay analyzer market is majorly driven by an increasing prevalence of different infectious, immunological or metabolic diseases, increasing demand of advanced diagnostic devices and recent trends of automation and integration which together have led to the introduction of innovative products in this market.

The global immunoassay analyzers market is growing at a healthy CAGR of 15.6% during the forecast period of 2017-2023.

Chemiluminescent immunoassay (CLIA) technology permits analytical procedures with lower analyte detection limits than other immunoassay methods. In other words, CLIA is able to determine the presence of antibodies at extremely low concentrations. Mindray is having Wide range of CLIA Analyzers. Mindray has recently launched CL-900i one of the world's smallest, fully automated Chemiluminescence immunoassay analyzers and integrates a large capacity and fast assay speed into a compact model. It achieves a perfect balance between size and immunoassay testing performance. With enhanced enzymatic Chemiluminescence, patented technology and Mindray quality heritage, the system guarantees the robust consistence with the higher end analyzer.

CL-900i is a simple-to-use Chemiluminescence analyzer with a throughput of 180 tests per hour. Though in a small benchtop package, it has a large onboard capacity of 15 reagents and 50 samples, and supports non-stop refill of samples, reagents and consumables during testing. By integrating the reliable CLIA technology with latest electrical and software improvement, CL-900i enables easy operation and brings confident diagnosis faster than ever.

The system combines continuous-access, random-access, and STAT processing with a broad testing menu, allowing medium- and Low-volume clinical laboratories to process a variety of immunodiagnostic tests.

CL-900i is designed for both quantitative and qualitative in vitro assay determinations for a broad range of applications; the test menu includes Tumour markers, Cardiac markers, Fertility panel, Diabetes Panel, Anaemia panel, Bone Metabolism parameters and thyroid markers. Other unique Features of the system includes, Precise 3 phase magnetic separation with consistent performance, environmental friendly solid-liquid waste separation, continuous loading of samples, reagents and consumables with Intelligent Inventory Management, Non-touch vortexer mixing, Enhanced washing for sensitive assays, Auto dilution facility & flexible positions for STAT & priority.

With Intelligent Sample workflow & High system reliability CL-900i/CL-960i is a robust & compact Immunoassay Analyzers which highly suits for Medium & low volume clinical laboratories.

AUTOMATED WORKFLOW
A new norm for pathlabs

Pathlabs in the future will be strongly backed by automation and digital technologies that will enable pathology to become more efficient and scalable

Automated workflows have been regarded as important tools for clinical laboratories to achieve efficiency, accuracy, standardisation, quality and patient data safety. For a variety of reasons, however, many Indian laboratories in the past have been slow to adopt these technologies as a broad strategy. Nevertheless, with an increasing demand for higher levels of performance, the need for automated workflows are becoming more and more essential. Moreover, with increasing clearance by the US Food and Drug Administration and other regulatory agencies in Europe, automated workflows are slowly but steadily becoming a new norm in clinical laboratory practice, ensuring diagnostic accuracy and improved result turnaround time (TAT). When automated workflows are integrated with digital information systems these technologies work wonders for a laboratory, inform experts.

"We have been using automated workflows and have witnessed a considerable difference in capacity and efficiency. We conduct over 25000 tests on a daily basis including routine as well as specialised tests, with routine tests obviously forming a larger chunk. Given the sheer volumes of tests conducted, higher throughput becomes critical. We use the automated workflows for primarily routine clinical chemistry tests followed by specialised chemistry," shares Dr Ajay Phadke, Centre Head, SRL Dr Avinash Phadke Labs.

Dr Arjun Dang, CEO, DR Dangs Lab explaining how automated workflows are used at their lab says, "Each step in the sample life cycle from collection to dispatch of reports is automated in our laboratory thus, assuring testing of the highest quality. Checks are introduced in the automated workflow so as to ensure the highest diagnostic accuracy and reliability of services provided. Few of these automation tools include use of pneumatic chutes for timely transfer of biological specimens to the lab for analysis, FDA approved/CE marked automated platforms and use of a robust Laboratory Information Management System (LIMS) to effectively manage samples and associated data. We have high throughput, state-of-the art, integrated and modular clinical chemistry and immunochemistry analysers those are interphased to LIMS for direct electronic transcription of test results, hence eliminating even slightest chance of errors due to manual intervention. The samples are bi-directionally barcoded through LIMS, a major component of automation, where in the bar-coded information on the collection tubes can be accurately read by analysers. These barcodes are generated at the time of registration or sample collection itself where in tests are punched along with demographic details. The overall goal is to improve patient care through accuracy and consistency in laboratory analyses."

Sharing a perspective from the technology provider point of view, Dr Shravan Subramanyam, Managing Director, Roche Diagnostics India and Neighbouring Markets apprises, "Lab technicians manage an increasing number of samples to continue to provide high-quality results in increasingly shorter span of time. With such time constraints added to finite lab spaces, enhancing lab infrastructure play an important role in managing people productivity in the lab and turnaround times for patients' test results. To enable a transformation in labs that address these evolving needs, it is important to factor in solutions that enhance operating style, space and quality management. Imagine a lab processing all samples manually on different analysers, tracking sample flow across the floor of the lab and ensuring that all required tests to be performed on the same sample are effectively managed. With timelines and quality standards to meet, especially within the available lab space, this could be a herculean task. In this setting, an automated system that has integrated analysers of different disciplines, enable lab operators to drop samples at one workstation for the workflow to take up the process from thereon, almost independently. Here we are discussing the integration of Serum Work Area, coagulation, urinalysis, haematology and molecular systems – together, with work stations!"

Further citing an example of an automated workflow solution (Serum Work Area Solutions) from Roche explains, "The au-

tomated Serum Work Area Solutions provide an interface that is designed to deliver test results to physicians and patients across a number of therapeutic areas, in a simplified and efficient manner. It also enhances operator experience, towards streamlining processes and thereby minimise hands-on time and maximise productivity through automation. The biochemistry and immunoassay testing space has witnessed significant development since the introduction of Serum Work Area (SWA) by Roche for the very first time in the market in 2002. Through the integration of the Clinical Chemistry and Immunoassay analytical modules as part of the SWA solution, labs have moved away from separating the samples to be performed separately on clinical chemistry analysers and immunoassay analysers towards a single supply unit for both chemistry and immunoassays."

Improving business prospects

While most of these automated workflow solutions aim to improve overall throughput, it eventually creates a positive impact on the business too.

Speaking about a specific automation workflow solution used at his lab, Dr Phadke informs, "The primary benefit of these SWA Automated Solutions- driven modules is the throughput rate that helps achieve shorter turnaround times. For e.g. with an hourly throughput rate of 2000 samples, Cobas 8000, a system we use at our lab can generate results for electrolytes in 15-20 seconds whereas turnaround time for other clinical chemistry tests has been reduced to 5-15 minutes. Another important benefit of these modules is the capability to run multiple tests on a single platform with a single parent sample. This eliminates the need to segregate the sample thereby minimising the room for manual error and further improving accuracy. The larger pack size of testing kits also helps to achieve faster turnaround while reducing costs. These modules require single handlers, which are easy to maintain and don't require frequent calibrations. The machines do not take too much space, further aiding organised functioning. These attributes have a substantial impact on cost of conducting these tests, especially routine tests, where prices are highly competitive."

Similarly, Dr Dang records some specific areas where these solutions add value to their laboratories.

Saving time: From sample collection to transferring those to the laboratory via pneumatic chutes, to automated critical callout for emergency lab values, thus empowering physicians to take timely decisions.

Accuracy of results: The seamless automation at each step including analysis and data transfer through LIMS in line with process excellence and efficiency. Direct aspiration from bi-directional barcoded primary collection tubes mitigates any risk of secondary labelling errors. The electronic data transfer from these modular analyser to the LIMS ensure no transcription error, whatsoever.

Space management: The compact desktop or floor random access models occupy minimal footprints and with abundant options of modular analysis equipment, combining clinical chemistry and immunoassays space management is increasingly better compared to the past decade.

Team empowerment: A single-trained technician can operate multiple analysers and better outputs are achieved and with state-of-the-art track systems human intervention has been drastically reduced

Increased efficiency: Significant improvements in workflow and efficiency; multiple analytes can be estimated from a single sample resulting in efficient sample management; shorter TAT allows early diagnosis/treatment options. The bar-coded containers can be directly loaded on to the analysers without the need for human workforce required to aliquot.

Adding to this, Dr Subramanyam chips in, "Integrating and consolidation of different workstreams diagnostic areas within a single lab space comes with clear organisational and technical benefits. From allowing to define larger, more complex and accurate auto-validation criteria to providing the laboratory personnel a view into a broader picture of the patient's results, integration and automation can help detect potential errors and identify critical patient test situations that need timely communication to the clinicians. Such integration may work for labs that operate on very high workloads. It is thereby important for labs to identify their current and future needs for a customised solution that addresses their specific requirements, especially in the light of quality and maintenance protocols that need to be followed."

While quality, standardisation and efficiencies are the ultimate objectives of automated workflow solutions, maintaining those improvements is also an important element to be considered. How do automated workflow solutions maintain consistency? What happens if automation fails?

How do laboratories prepare themselves to handle such situations?

Handling automation failure

As per some experts, automated workflow solutions are robust and have enough firewalls to avoid system failures. "These systems have an automated alarm system in event of any breakdowns. There are multiple alarms and each signifies a particular issue. There are remedies given for every issue which are mostly manageable by the in-house staff. We rope in the customer support centre in case we need help in resolving the issue. As a back-up, we have spare machines that can be used in case of breakdowns, thereby ensuring turnaround time of reports is not impacted," informs Dr Phadke.

Dr Subramanyam adds, "With an increasing number of patients and increasing diagnostic sample workloads, a manual system can quickly become complex and difficult to manage. Automated systems, if modular by design, can be scaled up by adding a variety of modules to handle more and more samples. Thus, the advantages of automation are maintained. If an automation system fails, there are ways to keep the laboratory operational. In modular automation, if one module fails, it can be masked while other modules continue to work. All modules failing at one time is highly unlikely and labs generally have backup systems."

> As per some experts, automated workflow solutions are robust and have enough firewalls to avoid system failures

Explaining how laboratories can build a fail-proof system within, Dr Dang cites, "In case of a breakdown, we have an identical automated system to run the parameters. Also, quick intervention by the support /service team greatly helps to get the equipment running within a few hours. Highly unlikely but in a situation where both fail, manual processes shall be initiated right from test request registration to analysis and entry into the LIMS which may lead to a much higher than committed TAT. In such cases, the stringent checks are introduced for all processes and human interventions thus curtailing any potential source of error."

Future prospects

Although automated workflow solutions so far have been proved to be extremely beneficial to laboratories, its true potential should be measured by successful patient outcomes. "The benefits of automated workflows definitely get extended to patients by way of higher accuracy and faster turnaround. These technologies require lesser manpower and reduce manual errors, thereby reducing the need for repeat tests. More importantly, these technologies aid large set-ups like ours, helping us achieve economies of scale. The cost-benefit that we receive can be passed on to customers by offering affordable rates on routine tests," says Dr Phadke. Similarly, Subramanyam says that Roche believes in 'Doing now what patients need next.'

"Especially in a complex and evolving market like India, with its out-of-pocket spends model, this could not be any more relevant. Our innovation is aimed at addressing the future needs of people and patients. All our technologies in India stand the test of 'innovation' and 'patient benefit'. From a scale perspective, approximately, every minute 475 diagnostic tests are performed on Roche Diagnostics systems in India! This, I believe provides us with a robust foundation to build diagnostic capabilities in India, for today and the future needs of people and patients. I specifically would like to call out on the need for India to enhance preventive healthcare reach in India, so 'people' do not have to become 'patients' at least in those disease areas where it is possible. This can impact allocation of healthcare spends and hospital bedtime to those patients that crucially need it and provide people and the system the benefit of economies arising out of this model," he sums up.

Going forward, Dr Dang sums up saying that with healthcare diagnostics at crossroads the 'lab in a chip' concept has gained a lot of attention. Wearables and artificial intelligence have been predicted to play a major role in labs of the future where healthcare is going to be integrated providing maximum convenience to both diagnosed patients, as well as those opting to get preventive checks.

As rightly pointed out by Dr Dang, labs in the future will be strongly backed by automation and digital technologies that will enable pathology into becoming more efficient and more scalable field in medical sciences.

INTERVIEW

Ayushman Bharat needs to be driven by technology disruption or innovations

Ayushman Bharat Mission's implementing agency National Health Authority (NHA) has entered into a partnership with NATHEALTH. **Dr Sudarshan Ballal**, President, NATHEALTH talk about how this collaboration will enable the fulfillment of Ayushman Bharat goals, in an exclusive interaction with **Sanjiv Das**

Tell us more about the NHA - NATHEALTH tie-up and how it would help boost the Ayushman Bharat scheme?
The world's largest government-run health insurance scheme *Pradhan Mantri Jan Arogya Yojana* (PM-JAY) under Ayushman Bharat Mission is completing a year of its successful implementation with positive outcomes in September this year. Realising the critical role of technology disruptions, *Ayushman Bharat* Mission's implementing agency National Health Authority (NHA) has entered into a partnership with NATHEALTH to enable a seamless pathway that streamlines all innovations ensuring that it scales and increases the efficacy of PM-JAY service delivery. The healthcare sector is now decoding the potential of new technologies, solutions, delivery system and medical supply chain among others. Innovations would finally empower people with quality, access and affordability. The government has realised the urgent need to take the lead in encouraging and driving innovations. With this partnership, we are preparing to take the scheme to the next level. And for this, the scheme needs to be driven by technology disruption or innovations.

The collaboration provides an industry interface for testing innovations; providing mentorship and creating channels for facilitating support required for scaling these innovations. This is expected to bolster NHA's effectiveness in implementing its innovation strategy, which is aligned with its vision of 'Health for All'. Health startups have been driving innovations in the country and these innovators would help to shape the future of healthcare. For better outcomes, the industry needs to provide mentorship and market support to them.

> The NHA-NATHEALTH collaboration provides an industry interface for testing innovations; providing mentorship and creating channels for facilitating support required for scaling these innovations. This is expected to bolster NHA's effectiveness in implementing its innovation strategy, which is aligned with its vision of 'Health for All'

What type of inputs will NATHEALTH provide to NHA and various state governments?
For NHA and various state governments, we have identified focus areas and inputs will be based on specific requirements. Value-based healthcare, efficient management of population health, better insurance administration, adoption of digital health, data analytics and operational excellence for service delivery of healthcare schemes have emerged key areas to drive the growth of the sector. Our inputs will be based on these key areas.

What goals did NATHEALTH chalk out to make Ayushman Bharat a success?
First of all, NATHEALTH, being a multi-stakeholder healthcare body, ensured engagement of all stakeholders to move forward in a collaborative spirit to achieve set goals under the *Ayushman Bharat*. Building a strong delivery network, with wide participation by the private sector, was very critical for successful implementation of the scheme and NATHEALTH moved ahead in this spirit with NHA towards the fulfillment of *Ayushman Bhara*t goals.

Is NATHEALTH going to facilitate more tie-ups with the government for the Ayushman Bharat scheme?
We remain open to the possibility.

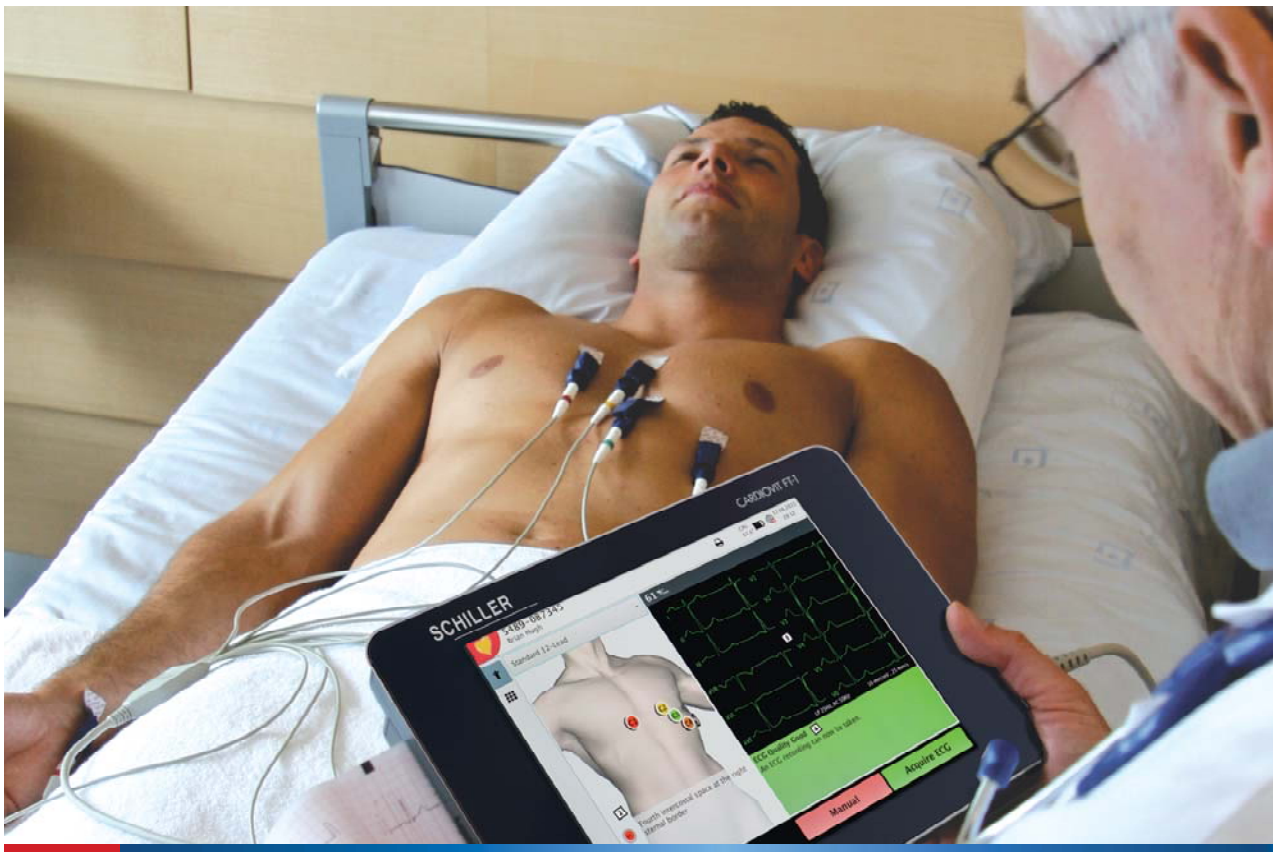
NATHEALTH also partnered with NASSCOM to ensure better delivery in healthcare. How will the partnership promote technology-enabled healthcare products and solutions for the Indian market?
NATHEALTH and NASSCOM have come together to innovate and create scalable models for healthcare delivery. The partnership is with NASSCOM's Centre of Excellence for the Internet of Things (CoE IoT). The aim is to enable the sector to deploy emerging technologies, to ensure better delivery of healthcare. This will be possible if health startups can leverage access to capital, mentorship, industry partnerships, and technology support. The collaboration would go a long way to create a robust ecosystem for the healthcare sector and innovation would provide new momentum in terms of clinical outcomes, transparency, patient safety, supply-chain management and standardisation of population health services with the help of new technologies. Through this collaboration, NATHEALTH and CoE have identified some areas of collaboration, which would promote efficient, accessible and easily available technology-enabled products and solutions for the citizens of India. The initiative will be supported by our members, networks, and brand. NATHEALTH aims to provide support to innovation through co-creation programme with specialised focus on IoT, AI, Robotics, AR/VR, Blockchain technologies that have a positive impact.

sanjiv.das@expressindia.com

Expanding IHCI for blood pressure control

IHCI complements the National Programme for Prevention and Control of Diabetes, Cardiovascular Disease and Stroke (NPCDCS) of Ministry of Health and Family Welfare (MoHF&W), Government of India

By Akanki Sharma



THE INDIAN Council of Medical Research (ICMR), in collaboration with the World Health Organisation (WHO) and the Ministry of Health and Family Welfare (MoH&FW), recently announced a nationwide expansion of their programme India Hypertension Control Initiative (IHCI). Launched in November 2017, IHCI has enrolled more than three lakh patients with high blood pressure in the government health facilities in 25 selected districts of Punjab, Madhya Pradesh, Kerala, Telangana and Maharashtra. The programme will now expand to 100 districts across India covering all the states. It will accelerate the implementation of quality hypertension treatment for over 15 crore people over the next four years and prevent deaths from heart attack, stroke and kidney failure.

IHCI complements the National Programme for Prevention and Control of Diabetes, Cardiovascular Disease and Stroke (NPCDCS) of Ministry of Health and Family Welfare, Government of India. In this regard, state nodal officers (NPCDCS) from 26 states and two union territories were present at the IHCI national-level scale up consultative meeting that was held in the premises of the Indian Council of Medical Research (ICMR), Delhi.

On the occasion, Dr Balram Bhargava, Secretary, Department of Health Research and Director General, ICMR, said, "The Government of India has adopted a national action plan for the prevention and control of non-communicable diseases and has set a target for a 25 per cent reduction in high blood pressure by 2025. With approximately 20 crore adult patients having hypertension in India, more support from all quarters will be needed to help the government

achieve this target. IHCI is a model initiative towards that. Prevention and treatment of hypertension is far safer for patients than expensive interventions like bypass surgery and dialysis."

He added, "Everyone above the age of 30 years should get BP measured once a year and adopt a healthy lifestyle very early in life."

Heart attack and stroke are the leading causes of death globally. Hypertension is the most common reason for sudden heart attack or stroke. In India, one in four adults have high blood pressure. Among people with high blood pressure, only half have been diagnosed and only one in 10 have blood pressure under control. As a result, a large number of people develop heart attacks, strokes and kidney failure during the productive years of their life.

Also addressing the audience, Dr Chinmoyee Das, DADG (NCD), MoHF&W, said, "Uncontrolled hypertension is a major attributable factor for cardiovascular diseases, cerebrovascular diseases and chronic kidney diseases. The diagnosis is simple and its treatment can be initiated at primary-care level with adequate training."

Dr Henk Bekedam, WHO Representative to India, said, "Hypertension is a silent killer. Its treatment is simple, effective, easily available and needs to be continued lifelong. The World Health Organisation has prioritised Universal Health Coverage and the India Hypertension Control Initiative serves as an excellent example of a free programme that improves the health of the Indian people."

The five states

Telangana

The state had implemented IHCI in November 2018 in 10 districts, where 51,081 patients registered and the average control rate was 53 per cent, informed Dr Raviteja, State Nodal Officer – NCD. He emphasised, "We need to focus on improving control rate, which can be done by using two-stack system and home visits by Accredited Social Health Activists (ASHAs) and Auxiliary Nursing Midwifery (ANMs)."

However, the state faced some challenges too, he said. "Overburdened health staff in multiple programmes, lack of professional digital blood pressure (BP) apparatus at all levels and involving the private sector in the programme activities and reporting, among others, are a few pain points that need to be addressed in Telangana," he pointed out

Kerala

On April 7, 2018, Kerala implemented the IHCI programme in four districts — Thiruvananthapuram, Thrissur, Kannur and Wayanad, notified Dr Bipin Gopal, State Nodal Officer – NCD, Kerala. "Within the year, a total of 121,429 patients registered for the programme and 38 per cent achieved control. Nearly, one-third did not achieve the control, while one-fourth were lost to follow up," he added.

The challenges faced by the state included: availability of digital blood pressure (BP) apparatus in few facilities only and scepticism among doctors about readings; therapeutic inertia, wherein doctors do not always follow protocols, especially for patients with borderline elevated blood pressure and coverage among tribal population in Wayanad.

To improve the programme further, Dr Gopal suggested strengthening of population based screening (PBS) and opportunistic screening to increase coverage, expansion into the private sector, integration of NPCDCS and IHMI indicators for simplified documentation and reporting systems, and designated staff for NCD in all facilities for better availability in terms of document evaluation and reporting.

Maharashtra

Dr Nikhil Patil, who is the State Programme Manager for NCD, Maharashtra, informed that IHCI was implemented there in November 2018 and more than 61,000 patients registered for it. As a result of the execution of the programme, drug requirements were estimated and procurements were initiated to ensure availability for at least 90 days. Also, a state-level review of nodal officers and district NCD cell staff was conducted this year in the months of March, April and May. In addition, trans-fat component was included in the Maharashtra Obesity and Diabetes Task Force and opportunistic screening was improved due to the orientation of staff redesigning patient flow and availability of BP monitors.

Some of the initiatives taken by the state government involved: constituted Hypertension Policy Task Force for finalisation of Standard Treatment Protocol in a consensus workshop, inclusion of HT Protocol drugs in Essential Drug List (EDL), regular review of IHMI along with NPCDCS and (iv) approved expansion of IHMI in phased manner in Thane, Palghar, Ratnagiri, Nagpur, Chandrapur, Gondia, Pune and Nashik for the financial year 2019-20.

Identifying the challenges, Dr Patil said, "Delay in procurement of protocol drugs is a challenge, along with down referral and treatment continuation of HT patient at HWCs due to drug availability and vaccines of CHOs. Apart from it, availability of adequate functional BP monitors at health facilities is another major challenge."

"Forecasting and timely procurement of drugs so as to avoid gaps in drug availability, community engagement for raising awareness about NCD and importance of treatment continuation, and helping patients to remain on treatment through involvement of society/family will lead to better performance of the programme," he concluded.

Madhya Pradesh

To enlighten the audience on the application of the IHCI programme in the state, Dr Saurav Purohit, State NCD Officer notified that the project was implemented on April 7, 2018 in three districts, namely Bhopal, Chhindwara and Ratlam, with a total of 33,662 people registering for it. He further said, "Out of 167 health facilities in the state, 93 per cent are implementing IHCI."

Speaking about blood pressure control, he told the audience, "Among 15,161 patients registered in 2018, 26 per cent achieved control, nearly half were lost to follow up and the control was highest in Ratlam due to one high-performing facility." He also highlighted that drug supply chain was streamlined to improve the availability of protocol drugs for more than three months in all the IHCI districts, along with the use of professional digital blood pressure monitors and state-specific protocol in all 51 districts through HWCs.

"Medicine distribution from the same NCD clinic for a month and posting of 60 trainee nurses from three nursing colleges at 21 facilities has also been done," he added.

The pain points include lack of dedicated/designated paramedical staff at facility, lack of professional digital BP monitor availability and streamlining patient flow management according to each health facility, amid others.

For improving the programme, Dr Purohit suggested more dedicated manpower is needed. Also, according to him, linking of PBS and IHCI-HWCs can be helpful in primary case settings and use of IT platform will help in addressing the defaulters, inter-health facility transfer, effective supervision and ease of reporting.

Punjab

With the implementation of the IHCI programme in the state on January 1, 2018, Punjab was the first state to introduce IHMI, informed Gurinder Bir Singh, State Nodal Officer, NPCDCS. He further stated, "Drug supply was streamlined to ensure that drugs for six to nine months were available and staff nurses were recruited to fill vacant positions."

Counting the key achievements, he notified that the state has a streamlined medicine procurement and distribution – weekly medicine stock update through SMS. Six, three, six, three and one staff nurses have been recruited in Bathinda, Mansa, Gurdaspur, Hoshiyarpur and Pathankot, respectively; and a total of 41 HWCs are implementing IHCI. Apart from it, proposal of ASHA incentive in PIP, involvement of RMOs and ESI hospitals are a few other accomplishments for the state.

According to Singh, the problems faced while implementing IHCI included limited ANM support for PBS, lack of adequate human resources for opportunistic screening in high-volume facilities and poor follow ups due to low awareness. Also, while there was a requirement of 47 counsellors, only 13 were available."

Amid some of the things that the state now looks forward to are, utilisation of rural dispensaries, line listing of hypertensives by ASHAs and monitoring and review at every level in terms of coverage and governance.

akanki.sharma@expressindia.com

INTERVIEW

By 2030, we want to treat one in five cancer patients in India

Lara Yumi Tsuji Bezerra, Managing Director, Roche India came to India with close to 24 years of pharma experience, across sales, marketing and general management in Janssen Cillag, Wyeth Biopharma and Bayer. A year into her India stint, she was re-designated as the Chief Purpose Officer, as she led a transformation of the company from being a commercial to a value-based organisation. She tells **Viveka Roychowdhury** how the company is strategising to go from getting one in 50 cancer patients treated to one in five by 2030

There is a huge opportunity in India because right now, healthcare is the focus of the government and the private sector. The question is, the challenges that we have right now were created by a health system that we had in the past; that will not be the health system of the future

You came to India in October 2017 as the Managing Director of Roche India. Why did you say, on your LinkedIn blog, that your India posting would be your biggest challenge in life, even bigger than your last posting in Venezuela? What made you say that? Do you still think that?

Yes, I did say that and I do think so today as well.

Why? Is India such a tough place?

Not because it's tough. But we believe it's urgent to deliver medical solutions right now – even as we develop innovations for the future. We are passionate about transforming patients' lives in India and what we want to do is give back to the patients. So we have to see that patients have both: access to healthcare and go beyond, to help develop the healthcare ecosystem.

So the challenge is that today we have people who are reimbursed (for health expenses), we have some people who have access to healthcare. But, even if we do everything super well, and our work pays off, there are probably 700 million people who do not have access to healthcare (*1).

India has 1500 oncologists for 1.3 billion people. China with 1.4 billion people has 25,000 oncologists. The US with 330 million people has 11,000 oncologists. Brazil with 220 million people has 2000 oncologists (*2).

So, the challenge here is that, if we need to make a difference in India and benefit patients, we not only have to work with these problems but also go beyond. So how do we increase the capabilities and capacities of these oncologists? As health is a state subject, how can we help in different states? And this is our strategy. We do not look only where we can sell our drugs. We also look at how can we collaborate with an external stakeholder, develop the ecosystem as well as develop the capabilities of these oncologists. What if we use the primary health centres to diagnose cancer and the secondary health centres to treat cancer? There are so many things that we can do. This is the challenge.

There is a huge opportunity in India because right now, healthcare is the focus of the government and the private sector. The question is, the challenges that we have right now were created by a health system that we had in the past; that will not be the health system of the future.

If we look to work with these challenges, we might solve them but we will not create the health system that is needed for the future. So we acknowledge the challenges that we have now but also look at what the health system would be in the next few years. Because by that time, India will be the third biggest economy in the world. We will be able to allocate resources to healthcare. And, when we are going in this direction, how can we think about building the ecosystem in a way that it is ready when we arrive there? We need to adapt and change to standards of care that are much better than what we have today.

If we go (ahead) thinking about universal healthcare, both public and private sector should work together to develop technology for better healthcare for patients, the best value and outcomes for patients. So that when we arrive there, the technology is almost ready for us, and we need to just adapt it to what we need.

If we think about technology to solve today's challenges, then we will have to change it fundamentally later on. This is my challenge here.

What is Roche's strategy for India? Could you give some examples of how Roche's global tagline, *Doing Now, What Patients Need Next* plays out in India?

The global purpose of Roche is *Doing Now, What Patients Need Next*. In 2018, we reflected on how we can translate it into a plan for India. Our Vision 2030 is that we inspire people to transform healthcare in India, and care for every patient's life through innovative and sustainable solutions. We do that with both, short-term and long-term strategies.

In the short term, we look at how we can help patients benefit from our medicines in existing healthcare ecosystems like ESIC, CGHS, State schemes, etc.

At the same time, we work for the long term with people who would like to help us in improving the healthcare landscape. We strongly believe that we need to increase the capacities of the oncologists to impact more patients at a faster pace.

Our strategy is state-centric, it is a learning-based approach that leverages the states' diversity, since state governments are primarily responsible for healthcare delivery and systems. Our strategy is structured to respond to state capabilities and needs. Our approach is to broaden and expand access to our innovative therapies, and increase the number of patients' lives we can touch and positively impact. We have more or less 27 launches in the next few years. So unless the health system is adequate, not all patients would be able to get the benefit.

Our state cluster is based on a 'Grow, Build and Invest' model which helps enhance existing levels of healthcare access and supports better penetration for innovative healthcare solutions. The ultimate objective is to help all states evolve, maximising patient outcomes across India.

We have also partnered with other pharma companies to increase patient access to cancer therapy. For example, last February, Roche Pharma India and Cipla entered into an agreement under which Cipla will promote and distribute tocilizumab (Actemra) and Syndyma, the second brand of Roche's cancer therapy, bevacizumab (Avastin) in India.

Where does India fit into Roche's global strategy in terms of revenue share?

Roche is going through a transformation globally to focus more on patients and trying to see how can we get our medicines to patients faster.

With one of the strongest pipelines in the industry, we will have 27 launches in the next few years, we are aiming at approx. 13 line extensions and 14 novel molecules in multiple indications addressing the unmet medical needs.

We will continue our efforts to serve more patients in India by foraying into rare diseases as well. A step in this direction was the recent launch of Hemlibra for Haemophilia A patients this year. We will also explore bringing in treatment options for spinal muscular atrophy (SMA), Huntington disease, neuromyelitis optica (NMO) and neuromyelitis optica spectrum disorders (NMOSD).

With support from both Basel and the regulators here in India, we are bringing all our new innovations to serve the patients.

You will be completing two years in India this October. What has struck you about your stint here, which is different from other countries, which defines the country for you?

The diversity of thought in India is something that defines the country for me. The moment we decentralised the model and put each state in charge to self-organise, we saw great outcomes. Many people used to be only in sales but now they have to develop their own strategies and self-organise.

It took us three to four months to self-organise, but the teams were highly motivated and started to make their plans. Their capability and speed amazed us. And this is India, if you trust and believe, and give space to people to show their capabilities, to not be afraid or limited by targets, they just unleash a potential that you could not imagine. Both intellectually and from the heart. The objective becomes to help society and as many patients as possible.

This is something completely unique to India. Different states might have different approaches. But, when there is a common intention to help patients, all of this gets together and something much bigger happens. This is the principle of diversity. If you have a diverse group and you start to have conflict, and as a leader you are not able to get them to work together, then you fail in a big way. But if you can make a diverse group work together, then beautiful things happen. And what is the difference between these two outcomes? The common intention, goal, purpose.

I've noticed that whenever we have different ideas, conflicting ideas, when we ask, what can we do for the patients, how can we make this work and then suddenly, everything aligns and we go for it.

Collaboration is something that the Indians believe that they do not have but they do have it. I'll explain with an anecdote. I remember discussing with a doctor about how we can collaborate with more doctors, in parallel with their work on Ayushman Bharat, the National Health Mission etc. to make it better.

And he said, "You know, Lara, I do not want to disappoint you but here in India, we are not used to collaboration. I'll tell you why. My neighbour and I were good friends. When we were growing up, he had better grades than me. My mother told me to focus on my studies, forget your friend and you have to be better than him. I focussed on getting more than him. This is how we Indians have grown up. To compete rather than collaborate."

I told him I heard what he was saying. And went on to tell him what we were doing in some states to help patients. If an oncologist can train someone in a primary care centre and the diagnosis is made there, we can try to have an infusion centre there. We can try to give home care, then we can have much more patients treated. This is what we want to do.

The same doctor got excited and said, "If you can do that here as well, I will bring 20 doctors together and we can sit together and we help out." That's when I reminded him that he had said Indians could never collaborate!

So India is a country where everyone will collaborate to help patients. The point is, there is competitiveness, but when it is for a good cause, all Indians will stop everything that they are doing and they collaborate. The collaboration comes with a common purpose. This is what is extraordinary in India.

India is a country where everyone will collaborate to help patients. The point is, there is competitiveness, but when it is for a good cause, all Indians will stop everything that they are doing and they collaborate. The collaboration comes with a common purpose. This is what is extraordinary in India

A lot of pharma companies have been uneasy about patents, the data protection laws and strive to protect information about their products which could be used by generic players. What is Roche's view on this?
We have to see data in a much bigger perspective. For you to make decisions for the best patient outcomes, general data has to be shared. There has to be a right data sharing policy.

For example, as a patient, I am going to different places, I have different treatments during my lifetime. With my authorisation/consent, I let it be shared at every step. If I go to a doctor when I am 30 years old and someone asks for my primary and other data, then I can share it with a fingerprint. And the doctor can then make a personalised healthcare plan for me. And if this data can also have information about the health schemes I am eligible for like ESIC or CGHS of Ayushman Bharat, the doctor can also tell me what is the standard of care and funding I can avail.

So data has to be used and collected in the right way with proper consents but if we are able to share this, then the government can put in place the right policies and take the right decisions for the different parts of India. Therefore, the purpose of the data has to be very clear. The best patient outcome has to be the purpose of all we do.

Could you tell us something about Roche India's The Blue Tree programme? How many patients are benefiting from this programme and what is the kind of support offered to cancer patients and their families during the treatment journey, from diagnosis till completion of therapy? How do patients sign up for this programme?
In 2015, in order to tackle the range of barriers to accessing cancer care, Roche India developed 'The Blue Tree' programme which is run by a third party. This initiative was tailored to address the multiple hurdles that patients experience during the course of their treatment. Through a single platform, the programme mirrors the patient journey and enables patients to overcome these access hurdles – primarily diagnosis, affordability and adherence.

It provides multiple services including diagnostic support, guidance on funding, reimbursement, documentation assistance, disease information, medicine support, medicine delivery at home and even home infusions. Today, The Blue Tree has supported more than 4,900 patients, partnered with more than 900 doctors and increased its reach to about 590 treatment centres across India. The length of treatment and medical eligibility of the patient is decided by the treating physician as per the medical standards in India. Once enrolled, the programme coordinator is in touch with the patient and helps the patient access the various services available through the programme.

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viveka.r@expressindia.com

INTERVIEW

Ayurveda has a good brand recall in India

AyuRythm is one amongst the other five startup companies who were selected for HCG-Anthill's Lumos programme. Its objective is to bring Ayurveda to mainstream and design wellness solutions that offer post operative care, disease management and more. **Ramanath Padmanabhan**, Co-Founder and Director AyuRythm talks in detail with **Usha Sharma**

Tell us about your company and it focus area in healthcare?
Our tag line is 'Personalised Holistic Wellness' which is also integrative (which means western medicine combined with traditional medicine for better patient outcomes). Our initial focus will be on holistic wellness solutions using Ayurvedic principles targeting early adopters (believers), active wellness seekers as well as beginners who want to initiate Ayurveda as a way of life. In future, we see our wellness solution to be integrated into mainstream post operative care, disease management and preventive wellness solutions.

Tell us about your key innovations/products/ services and its USP?
Consumers have moved beyond physical fitness and are looking for holistic wellness solutions. Any wellness solution involves assess, analyse and recommend work flow. Such personal wellness tools for physical wellness are well developed (apple watch, fitbit and other solutions). However, no such tool exists

> People are looking online for tools which can measure their current state vs ideal state using scientifically validated methods and give them step by step recommendations

for holistic wellness. In fact, assessment tools for ayurvedic holistic wellness using pulse and image diagnostic methods to make such analysis repeatable and scalable is one of our key innovations. We combine pulse and image diagnostics with prakruthi questionnaire to assess aperson's constitution and recommend better lifestyle. Our solution recommends step by step simple lifestyle methods to achieve holistic wellness goals.

Additionally, today, consumers are looking for naturally healthy products and food supplements, rejuvenation and alternate relaxation therapy experiences. Hence, it is our goal to become a one stop solution for such consumers by connecting with a larger ecosystem personalised to their taste. For beginners interested in ayurvedic holistic lifestyle, we want to be the first place for them to look for authentic and scientifically validated information. Lastly, we see our solution working with all types of personal devices from entry level smartphones to high end smartphones and smart watches. Hence, our solution is accessible and used by all.

What are the biggest opportunities and obstacles you see for your innovation in the Indian healthcare scenario?
Ayurveda has a good brand recall in India. Latest market report by PwC says that 78 per cent of Indian household uses at least one ayurveda product. Current Indian market is at $12 billion, growing at 16 per cent CAGR. The market is fragmented largely barring large FMCG players like Patanjali, Dabur or Unilever. There is propensity of consumers to spend top dollars for spa, wellness and naturopathy treatment services. In terms of consumers, holistic wellness is an often searched key word on Google. People are looking online for tools which can measure their current state vs ideal state using scientifically validated methods and give them step by step recommendations. This is a need gap and a huge opportunity that AyuRythm sees and I want to carve a niche for itself in. In healthcare, talent is a huge issue. Getting talent who understand ayurveda and technology is an additional challenge. Clinical validation comes next. In general early stage funding in healthcare is quite hard and it is even more harder to get funded on technologies that require clinical validation. However we have been fortunate to receive a lot of interest from investors from India and abroad. Research grants are possible, but this is largely done by the state and union government. However, it is not possible for accredited startups to directly apply for research grants. Working with academic institution is an option but academic research may be aligned to startups interest to scale fast. Last, but not the least, many investors do not understand healthcare space and there is dearth of funding at early stages.

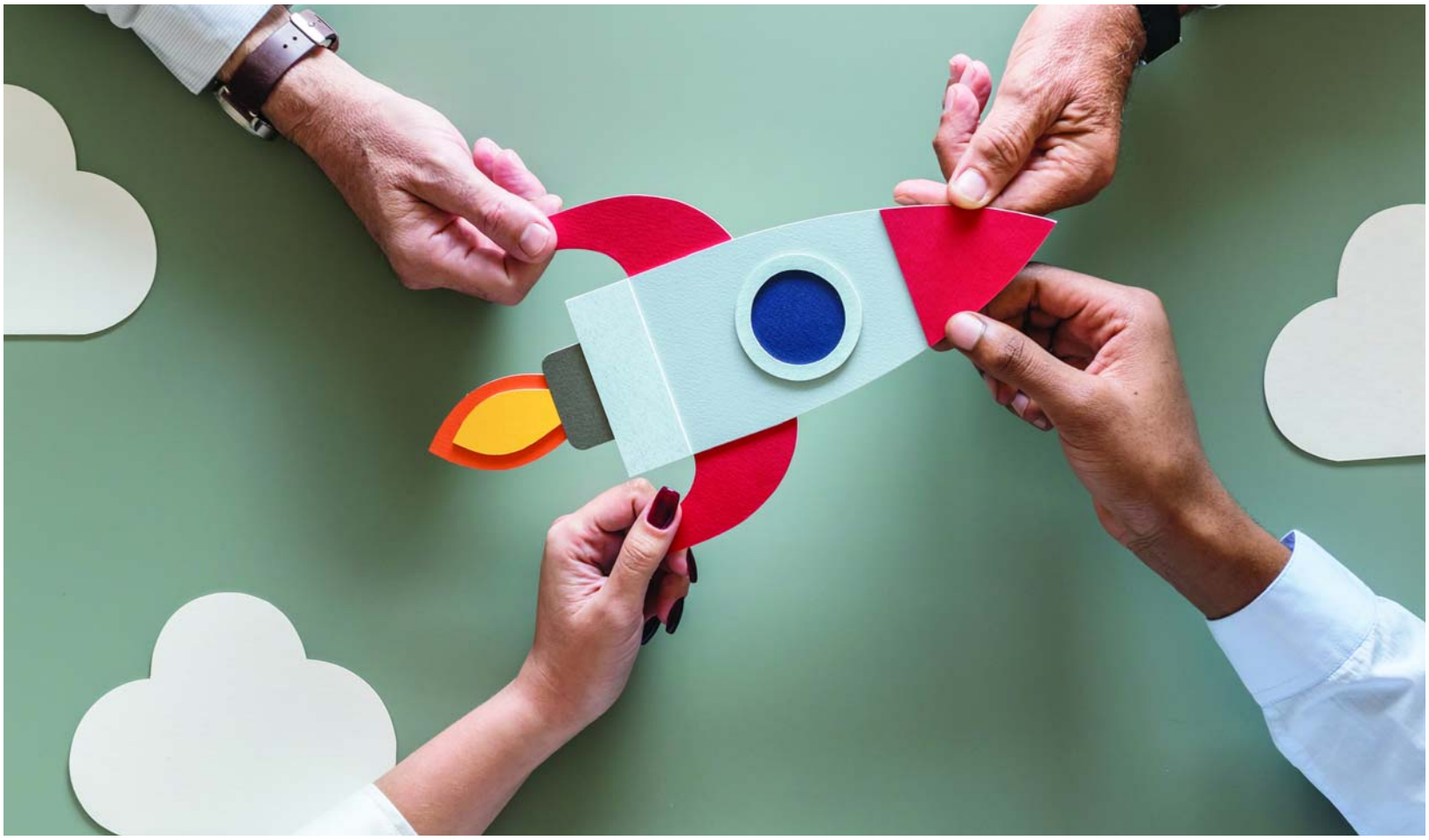
Your company is part of HCG-Anthill Lumos programme, tell us about your expectations and how this programme will help you to achieve your objective?
To us HCG-Anthill Lumos programme is a match made in heaven. Lumos is one-of-a-kind programme which totally focusses on healthcare space and brings in business, market, technology, clinical and regulatory support under one roof. Graduating from this programme will help us to scale with speed. HCG's clinical research capability and good clinical research management practices are well recognised in the industry and trusted by over 2000 customers world wide including world's premier research institutes, pharmaceutical companies and medical device companies. In addition, HCG has a dedicated Ayurveda department and has a vision to integrate traditional medicine with western medicine for better patient outcomes. Working with HCG to validate and fine tune our technology will help us to scale with speed in future. In addition, HCG services more than 70,000 new patients annually which will be a market opportunity for us once validation is successful.

Anthill has connects with larger world wide ecosystems consisting of VC/angel investors who have deep interests in the healthcare space. Anthill has also business connects with FMCG, pharma and holistic wellness ecosystem which would help us convert our product into better business opportunity quickly.

u.sharma@expressindia.com

Lumos Health: Redefining healthcare practice

Lumos Health, a market access programme launched by Anthill Ventures and HealthCare Global Enterprises (HCG) for health start-ups, is enabling an innovation ecosystem in India's life sciences sector to usher new paradigms in patient care



Usha Sharma

ANTHILL VENTURES, an investment and speed scaling platform for early growth stage startups, in partnership with HealthCare Global Enterprises (HCG), the provider of cancer care in India, is powering Lumos Health, a market access programme focussed on scaling technology start-ups in healthcare and life sciences.

The programme which is focussed on scouting startups in the verticals of oncology, fertility, genomics, bioinformatics and research and diagnostics, recently shortlisted six start-ups from a total of 120 applications across 10 countries to offer its support. The selected companies are Alixir, AyuRythm, BiMedis, C-Test Medicals, Kronikare and RayBaby.

Reportedly, these six selected startups have the potential to enhance the healthcare and life sciences innovation ecosystem in India. The entrepreneurs have developed solutions using key technologies such as image-based pathology, mobile health, artificial intelligence (AI), early detection of cancers, easy wound assessments. If leveraged effectively, these solutions can help usher newer efficiencies in healthcare. And, an endeavour like Lumos is trying to achieve just that. The 12-month programme launched late last year is designed to help start-ups focussed on emerging technologies in healthcare and life sciences, accelerate their business growth by providing them support and mentorship. Lumos Health will help selected startups to raise investments, provide assistance with mentoring and regulatory approvals, increase their customer base and generate more revenues.

But, how did this initiative come into existence?

A strategic tie up

Anjali Ajaikumar, Program Director, Lumos Health & Vice President – Strategy & Quality, HCG Enterprise explains, "Lumos was the result of a fortuitous meet between HCG and Anthill Ventures. Though the meeting was a chance/coincidental, what followed was the aligning of like-minded organisations looking to create a space for entrepreneurs to speed with scale."

Prasad Vanga, Founder and CEO, Anthill Ventures says, "Lumos is the fruit of my discussion with Anjali when we met at the sidelines of a conference in Switzerland."

Ajaikumar states, "Together, we hope that individual strengths which we bring to the table as diverse verticals in a growing market will help us make a difference. Anthill, with its wide global network and experience in the world of VCs is the other side of the coin to HCG, which will help to bring in global clinical outreach, clinical and technical expertise and clinical numbers. This makes this partnership a robust, wholesome one, both for the start-ups and us."

Anthill Ventures is known for constituting global speed scaling ecosystem for start-ups and enables them with an extensive global network of Venture Capital firms, Private Equity firms, Family Offices, and Luminaries in the technology industry. Its ability is to invest, rapidly scale early-stage companies, subsequently enabling them to raise funds within 12 to 18 months. Similarly, HCG is known for

its pioneered introduction and adoption of several technologies in the country and is amongst the first to introduce high-intensity flattening filter free mode radiotherapy, stereotactic radiosurgery and robotic radiosurgery, in the treatment of cancer in India.

Thus, the strategic partnership between HCG and Anthill, will enable start-ups to enhance their product and offer them the opportunity to scale up with the help of 30+ partner companies in both local and global networks, within the Lumos programme.

A lofty vision

For both companies, the partnership aims to create a difference in the quality of health and patient care.

Commenting on the objective and vision behind launching the Lumos platform, Anjali Ajaikumar says, "The founding vision of platform is that we collaborate to work together in order to help start-ups speed with scale. With this vision, both HCG and Anthill want to ensure that entrepreneurs with ideas that benefit healthcare are given the right assistance and guidance to grow their company quickly. At HCG, we help in many different aspects of the clinical processes to ensure that the start-ups meet all requirements, creating a mindset change in the end-users about the benefits and impact of the product on outcomes, which is also an essential part for the growth of the company."

Dr BS Ajaikumar, Chairman and CEO, HCG Enterprise explains, "Today technology has become a crucial part of healthcare. There is an advent of various innovations to bring about better outcomes in healthcare, particularly in fields like cancer, diabetes and other wellness programmes. HCG is looking at being at the forefront of bringing new disruptive technologies. To encourage this, we have partnered with Anthill to give an opportunity to the young minds of India and across the globe to come up with their proposals. I sincerely hope that our shared enthusiasm and passion for working in the healthcare segment will result in a grand success for everyone involved."

Vanga informs, "With the shared vision of bringing innovation to healthcare and the combined knowledge of scaling technology businesses in this sector, Anthill Ventures and HCG decided to partner with each other."

Selecting the deserving ones

Anjali Ajaikumar explains the selection process and informs, "Each startup is rigorously vetted to ensure that their potential, scope and applicability are on point to the vision of the Lumos Programme. This year, we had over 120 applications from across the globe. And have closed with six of the start-ups. We hope that each of these six start ups is going to be quite successful in their respective fields."

All the six start ups have been chosen for their capabilities to bring in solutions suitable for the healthcare, life sciences and innovation ecosystem in India.

The innovative startups can be scaled up to a level where they can expand their footprints globally and deliver better healthcare solutions.

However, they too need a culture where innovation can be assisted.

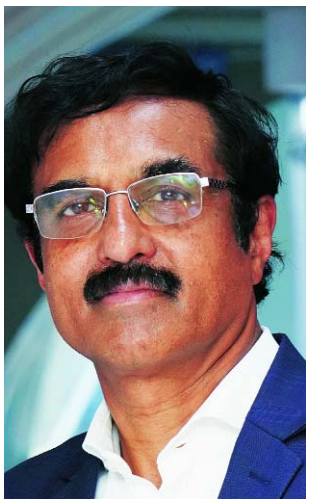
And, this is where the Lumos Health programme comes in.

Commenting on how it can help startups achieve accelerated growth, Ramanath Padmanabhan, Co-Founder and Director, AyuRythm, one of the start up company selected by Lumos Health, states, "HCG-Anthill Lumos programme is a match made in heaven. Lumos is a one-of-its-kind programme which totally focusses on healthcare space and brings in business, market, technology, clinical and regulatory support under one roof. Graduating from this programme will help us to scale with speed."

Dr Zahra Hussaini, CEO and Director, C Test Medicals, a start-up selected by Lumos Health says, "Funding is a major obstacle for us. If the project is well-funded, we can reach out to farthest areas and have mobile vans which can visit these villages. Reaching out to people is a difficult task. However, it is only with the help of the right organisations and channels that we can go out in a big way, which we need to do. To create an awareness in a country like India would take immense effort and support from the government. To be able to reach far flung areas of the country, we need the government's help. With large marketing teams, we will be able to raise awareness through TV, radio, billboards. Screening the message in the cinema halls, like there is for the dangers of smoking, could go a long way into raising the necessary concerns."

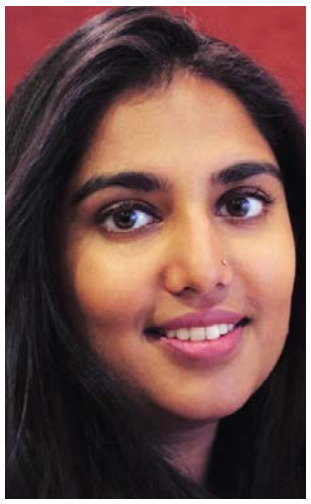
Commenting on receiving support from Lumos Platform, Dr Hussaini says, "With help from Lumos Health, we want to set up hundreds of centres in rural and interior areas where people are vulnerable due to the lack of treatment. We want to reach those who cannot come to us. We also expect to increase our sales, reach out to doctors through their network, expand the market for our furnished product through sales, marketing and promotion and createan awareness through their expertise, resources and affiliated chain of hospitals."

Thus, the chosen startups are very *gungho* about the endeavour and expect to reap a lot of benefits due to their inclusion in this prograame.



There is an advent of various innovations to bring about better outcomes in healthcare

Dr BS Ajaikumar, Chairman and CEO, HCG Enterprise



Each startup is vetted to ensure that their potential and applicability are on point to the vision of the programme

Anjali Ajaikumar, Program Director, Lumos Health & Vice President – Strategy & Quality, HCG Enterprise

Lumos works with innovative health-tech startups in co-creating disruptive technology for the majority of the world

Prasad Vanga, Founder and CEO, Anthill Ventures

THE SELECTED SIX STARTUPS

- **Alixir (HQ: Australia)** aims to replace the reliance on radiologists with an Artificial Intelligence (AI) system that scans digital mammographs and detects breast cancer. The AI system provides an instant report with 96% sensitivity and 95% specificity. Accuracy achieved through usage of 'gold standard data' i.e. biopsies and diagnoses from surgeons. Alixir brings in value for Radiologists, Patients, Doctors, caregivers and the entire hospital system

- **AyuRythm (HQ: India)** is the world's first application that can detect the age-old and renowned Naadi Pariksha (Pulse diagnosis), via a smartphone camera which integrates pulse detection technology and Ayurveda. It then uses Artificial Intelligence (AI) algorithm to recommend proactive solutions for the underlying causes and treatments of the ailments and stress-related issues. AyuRythm brings value for Ayurvedic and alternate medicine users, as well as enthusiasts interested in natural fitness.

- **BiMedis (HQ: Ukraine)** is an international medical equipment trading platform where medical devices buyers, sellers and service providers from all over the world can come together and communicate and close their deals in a professional environment. Unlike some of the marketplace aggregators BiMedis doesn't charge a sales commission instead runs on ad revenue. BiMedis adds value for equipment manufacturers, hospitals, clinics, doctors and other service providers.

- **C-Test Medicals (HQ: India)** designs and manufacturers a 'Sampling' tool which collects cells from the tissue in very painless fashion without any bleeding, needles, sutures and anti-biotics. It is the first in the market to provide a sampling tool to collect cells from 3rd layer of epidermis (to detect oral cancers at an early stage). C-Test adds value for Hospitals, Clinics, Dentists, ENTs, Nurses, Government programs and service providers in rural areas who don't have access to healthcare facilities.

- **Kronikare (HQ: Singapore)** offers a mobile application along with a hardware device that uses computer vision, thermal imaging and laser for Wound & Tissue Analysis, Detecting Complication and Preventive Care. It is one of the few companies to use Machine learning and Artificial Intelligence (AI) to understand tissue damage, assess wounds and predict complication against traditional manual inspection & caregivers' guess work. Kronikare offers value for hospitals, caregivers, patients with quicker and accurate assessments of chronic wounds

- **Raybaby (HQ: US)** is a non-wearable sleep and breathing monitor, choosing breathing as one of the most important vital signs to track. It combines radar sensor with Artificial Intelligence (AI) powered platform to create intelligent and accurate baby monitor. It's incredibly child-friendly design fits easily in a child's nursery. Raybaby provides value for parents, childcare centers, caregivers, baby

Preparing for a tech-driven future in healthcare

Now, an interesting fact to note is that of the six selected start ups, three of them are backed by AI platforms. What does this indicate?

Anjali Ajaikumar explains, "Three of our startups RayBaby, KroniKcare and Alixer are backed by AI-based platform. We believe that the future of healthcare is in technology and AI, machine learning will play a pivotal role in this. AI would work best with robust prospective and retrospective data, which is what HCG can bring to the table for these startups, making it a game-changer. Using this data at lightning speed to aid in decision making, such as modalities of treatment, speedier diagnostics would mean better patient care with greater outcomes. The benefits also extend to the doctors helping them to prioritise on care delivery, personalised medicine, genome sequencing for predictions, drug reactions etc."

Sanchi Poovaya, COO, Raybaby, says, "The increase in the use of smart technologies in healthcare and health management segment coupled with our unique non-contact-based technology opens up the market for us." Her innovation is a non-wearable sleep and breathing monitoring device.

Collaborating for progress

Health-tech startups need to navigate through a complex regulatory mechanism, which is a daunting task. Partnering with successful private entities such as Anthill Ventures and HCG through Lumos Health can be beneficial in the long run where the government can maximise the impact of its schemes such as Startup India.

Expressing his willingness to partner with government Vanga says, "Lumos works with innovative health-tech startups in co-creating disruptive technology for the majority of the world, transfer technology from our portfolio start-ups from advanced economies to emerging economies like India is a distinct reality and we're thrilled to enable this vision. Lumos Health is open for collaboration with the government (local and foreign), health-tech enterprises, investors, hospitals and other enablers in this space."

Vanga informs, "In the health-tech start-up space, the gestation period of a start-up is much longer than some of the other industries and the government's initiative of setting up dedicated funding and grant institutes like BIRAC are well received. However, the start-up ecosystem has centered around three big cities Bengaluru, Mumbai and Delhi, and a few tier 1 cities. For a pan-India government scheme, the policy needs to be equitable for the masses, efficient in RoI and effective in the implementation and has more scope for improvement."

Thus, Lumos Health seems to be an interesting and promising programme, both in its intent and design. Hopefully, it will provide more impetus towards the creation of an ecosystem in India's healthcare wherein innovation can thrive and serve unmet medical needs.

u.sharma@expressindia.com

RADIOLOGY AND IMAGING CONCLAVE 2019









THE PATHWAY TO PROGRESS








Radiology and Imaging conclave 2019

- Inauguration ceremony
- Welcome address by Express Healthcare
- Keynote address
- Technological revolutions in imaging over the years
- Panel discussion: Radiology education: Can we do better?
- Panel discussion: Recognising women in radiology
- Panel discussion: Future of Indian medical imaging: 5 meaningful innovations for 2024
- Beyond radiology profession

Express Medical Imaging Awards

Second edition of Radiology and Imaging Conclave held in Delhi

Around 100 top radiologists, academic professionals and technology experts from across the country attended the two-day conference

The second edition of *Express Healthcare's* Radiology and Imaging Conclave was successfully held in the national capital in the second week of July. Around 100 top radiologists, academic professionals and technology experts from across the country attended the two-day conference. Similar to last year, this year's conference also focussed on opportunities, challenges, social issues and concepts which will be relevant in he next five years. Hence, the theme was aptly set as Rad 2024.

The event started on an auspicious note with a lamp lightening ceremony followed by a welcome address delivered by Prathiba Raju, Special Correspondent- Express Healthcare and Express Diagnostics. "The conference is our endeavour to nurture a long-lasting dialogue within the radiology community and aims to delve into the understanding of future challenges and opportunities in the radiology sector", she stated. She spoke about how the annual conference further focusses on disseminating information and knowledge that could help radiologists overcome challenges and tap opportunities.

Further welcoming the guests, Dr Bhavin Jankharia, Chief Radiologist - Picture This by Jankharia, talked about how Express Healthcare's Radiology and Imaging Conclave can help the radiology community discuss relevant issues and bring about positive changes. He said, "I can not stress enough on just how relevant such meetings are-there is somebody out there who can pick up on the information provided on these platforms, can be empowered from the discussions that are held here. We can influence the industry and I strongly believe, we can make a difference." He then spoke about the concept behind every session and how the topics for panel discussions were carefully chosen so that they can address the issues that impact the radiology sector in current times. Explaining the theme of the conclave, Rad 2024, Dr Jankharia spoke on the need for the radiology community to be future-ready, "We need to understand where we are going five years from now so that we can prepare to stay current and relevant", he maintained.

Prathiba Raju, Special Correspondent- Express Healthcare and Express Diagnostics

Radiology Education: Can we do better?

Radiology is one of the most sought after specialities in the Indian medical field and yet there is a significant gap between what the students are taught and what are the requirements from an industry which undergoes a constant transformation, with new technological advancements happening every now and then. The first panel of Express Healthcare's Radiology and Imaging Conclave addressed this issue along with several other factors that need revaluation when it comes to Radiology Education in India. Moderated by Dr Akshay Baheti, Assistant Professor, Department of Radiology, Tata Memorial Centre, the panel comprised of celebrated academicians and professionals from the industry: Dr Bhavin Jankharia, Chief Radiologist, Picture This by Jankharia; Dr Malini Lawande, Consultant, Innovision Imaging and Nanavati Superspeciality Hospital; Dr Yatish Agarwal, Dean, University School of Medicine and Paramedics Health Sciences, Guru Gobind Singh Indraprastha University and Professor Radiodiagnosis, Safdarjung Hospital; Dr Zainab Vora, Senior Resident, AIIMS; and Dr Jinita Majithia, Senior Resident, Breach Candy Hospital.

The discussion, which witnessed enthusiastic participation not only from the panellists but from the audience members as well, chiefly discussed what the present curriculum for radiology education in India lacks and what steps can be taken to do justice to this speciality. One of the first points of contention that were pointed out is the outdated nature of the examinations. "The exams are still about darkroom radiology," Dr Baheti as he manoeuvred the discussion towards the fact that the exam pattern in radiology still lies in the "dark ages". He asked the residents on the panel about their exam experiences, and if they feel that the exam pattern has been designed in such a way that it encourages students to cram a certain part of their syllabus. "For the 'historical darkroom' exams, we mostly mug up books which have been passed down to us from our seniors- these are no longer available in book stores! Even for practical exams, we are compelled to focus on things which have no relevance in the current times," said Dr Vora. On this, Dr Agarwal agreed and said that indeed there is a need for course-makers to re-evaluate how exams are conducted and what is asked in them. The panel reached at a consensus that even advance papers are not touching upon the latest technology, and rather deal with outdated topics like spectroscopy.

L-R Dr Akshay Baheti, Dr Zainab Vora, Dr Yatish Agarwal, Dr Malini Lawande, Dr Jinita Majithia and Dr Bhavin Jankharia

"Students will study the most for what is asked the most," said Dr Baheti, "for example, in the American Board, the MCQs are formed in such a way that they include a patient's clinical history, talk about the various symptoms that the patient has, and are practically very clinical intensive. Such questions encourage students to be proactive learners." This shifted the debate to the topic of what question pattern is the most suitable for the MCQ generation- the good old essay based on long answers or MCQs or both? "What is the purpose that these long answer questions solve?

Personally, I feel that to write a good theory paper, you only need to know how to write a good answer, even if you do not have sufficient knowledge of what you are writing. On the other hand, MCQs when smartly put can really test a student's knowledge of concepts and practical problems. Perhaps a combination of both the types of questions could work out the best for us," said Dr Majithia. Speaking on the need for practical exams to be updated, an audience member said, "We are no longer like the radiology of the old days, we are more like pathology now. We cannot have an exam that is so short. We work on workstations; we examine on films. There is a strong relationship between the two. So if taking out the workstation would make me helpless, how can I ask the candidate to perform?" The need to incorporate the latest technological developments like AI and practical aspects like ethics, scientific research and writing, soft skills, etc in the educational format for radiology was also acknowledged.Another observation that was made was that radiology education and exams do not focus on treatment enough, rather, the stress is solely on imaging. Even as professionals, radiologists need to be involved in a patient's treatment process as well and not just making reports on tests done. To combat this issue and the others, the panel concluded that the exams should be standardisation across universities and colleges. They discussed how this standardisation can be executed and which body will look after it. Presenting an alternative view, Dr Agarwal stated that it is the view of the board of governors at MCI that universities should now be given the responsibility of curriculum making. Next was discussed the relevance of having a working academic schedule, how it could better help the academic authorities in an institution to plan and execute lectures and how it would help lecturers to balance teaching with their usual work commitments. Also, recording these lectures and using multimedia tools like YouTube could help residents keep up with these lectures. Another way the potency of lectures can be increased is by including a lot of case studies. "In our institute, we residents cite case studies, discuss them and the consultants then review them, pointing out the mistakes that we make.

This results in a very wholesome learning experience as we learn from our mistakes and get great insights. Such sessions can then be followed by supplementary talks," said Dr Majithia.

The panel then further discussed how radiology syllabi can be modified so that it boosts critical/logical thinking, curiosity, critical orientation, and the knack for knowledge implementation in the new generation of students. "Radiology students need to be encouraged to interact with professionals from other specialities. That will help them learn where and how their radiology investigation will help in a patient's treatment," pointed out Dr Lawande. The session ended with panellists discussing how radiology learning can be made more interesting for students, and how their learning experience can be maximised.

KEY HIGHLIGHTS

- The education system in Indian radiology is outdated. There is a need to incorporate recent advances and practical aspects of radiology education and examination system.
- Standardisation is the way forward. MCI being taken over by the Board of Education is a positive step in this direction.
- Radiologists need to be more clinically oriented.
- We have to move beyond the lecture system. We should have sessions during reporting so that students can have practical knowledge.
- Doing away with essays in bad, we are stopping new concepts from flowing in. Educators need to inculcate the joy for learning among students.
- Critical thinking and curiosity among students, clinical orientation and implementation by educators and students are extremely crucial for effective education in radiology

Recognising Women in Radiology

Workplaces can be substantially more challenging if you are a woman, and the field of radiology is no different. Although women make up for a significant number of radiologists in India, multiple factors contribute to form a work environment which is not very conducive to their growth. As a result, only a few lady radiologists manage to make it to the top of their organisations. The second panel discussion of Express Healthcare's Radiology and Imaging Conclave 2019 dealt with the sensitive topic of gender bias in radiology and what steps can be taken to overcome it.

(L-R) Dr Nandini Bahri; Dr Sneh Bhargav; Dr Bhagyam Raghavan; Dr Ashu Seth Bhalla; Dr Rochita Venkatraman and Dr Bhagyam Raghavan

The panel was blessed with the presence of Dr Sneh Bhargav, Former Director and Professor- Emeritus, AIIMS, who became the first woman to head AIIMS when she took up its reins in 1984. Other panellists included Dr Ashu Seth Bhalla, Department of Radiodiagnosis, AIIMS; Dr Rochita Venkatraman, Director Clinical Radiology, Apollo Hospitals, Chennai; and , Dr Bhagyam Raghavan, Senior Consultant Radiologist, Apollo Speciality Hospital. The discussion was moderated by Dr Nandini Bahri, professor of Radiology, MP Shah Hospital.

The entire hall sat in awed silence as Dr Bahri requested Dr Bhargav to recount her exceptional journey as one of the earliest lady radiologists of the country and the challenges that came with it.

"This is a man's world, yes, but that does not mean that we women can not survive in it. We survive, and we even outclass men when it is required," replied Dr Bhargav. On her appointment as AIIMS director, Dr Bhargav shared that despite the fact that all her competitors for the post were men, she was recognised and chosen to head India's most prestigious medical institute. "It is important for women to learn the art of selling yourself. It is a tough world, and acknowledgement comes with difficulty. Learn to stand up for yourself despite all odds, don't let your talent and potential be overlooked. Self-promotion is an art that must be learned by all women," versed Dr Bhargav. The discussion then shifted to how brotherhood among male colleagues impacts their female counterparts. Panellists argued that men in the industry must understand that just because women cannot participate in certain 'after hours' bonding activities, that should not mean that promotional opportunities for them are compromised upon.

Dr Chakraborty insisted that it is important for women to learn to fight for this disparity. The panellists also acknowledged that lady radiologists need to group-up and form a sisterhood which supports and mentors its members. On the other hand, lady radiologists can encourage their male counterparts to be more supportive by proactively communicating with them, by engaging them in their work. For example, Dr Venkatraman describes, "If a case has been referred to me, I make sure to follow it up with my surgeon. I talk to him about the challenges that he is facing in the case, what does he need from me and this encourages my male colleagues to send me more referrals. Lady radiologists need to become more confident and work on their professional communication."

The panel then contemplated on the challenges that lady radiologists face in academia. Dr Bhalla said, "It is not that there are not enough women in academia; the problem is with the fact that very few of them get to reach the top positions in academic institutions. The only way we can overcome this is by mentorship- women who have acquired a certain level of power need to empower other women with potential." She also raised a question on the fairness of elections that are conducted by professional radiology bodies and stated that biased elections hamper the chances of talented individuals to reach influential places. "Professional bodies like IRIA need to have women on board so that concerns related to our gender can be addressed in all fairness." Everyone on the panel reached a consensus on the fact that affirmative action has to be provided by the government for cases when women are removed from certain specialities because of their temporary absence due to maternal commitments. Also, flexible working hours can be helpful for women to better manage their work-life balance- and mentors and employers need to understand this. After an audience member pointed out that there is a need for reservation to allow women to grow, the panel agreed that indeed, reservation in professional bodies could address the issue of fair representation of women radiologists.

Also, the reservation should be proportional to the percentage of the total number of women in radiology. Lastly, they also discussed how women radiologists are often limited to doing only breast scans and how this limits their scope of learning and growth. On the way forward, Dr Venkatraman reiterated the need for women radiologists to actively communicate with their male counterparts, especially with their clinical colleagues. Management, she said, takes note of people who make the effort to communicate and bring together professionals from different specialities.

KEY HIGHLIGHTS

Dr Sneh Bhargav, the first woman radiologist in India, shared experiences from her six and a half decade long career as a radiologist and about her tenure as the first female Director of AIIMS Delhi.

- Fraternisation among men should not hinder the chances of promotion for their women colleagues.
- Moreover, women should not lose out of because of this hindrance- it is important that they fight and resist such an occurrence.
- Lady radiologists should engage with surgeons and physicians, constantly upgrade themselves, push themselves and network diligently.
- One huge way women can be promoted in academic radiology is by mentorship - empowered women need to empower other women.
- Elections in professional bodies can be unfair to meritorious professionals.
- More than reservation, we need to focus on affirmative actions that encourage women to join and grow in the field of radiology. Also, removing women from significant positions after a prolonged absence due to maternity leave is wrong.

Future of Indian medical imaging: 5 meaningful innovations for 2024

(L-R) Dr Bhavin Jankharia, Uday Patil, Neeraja Sharma, Minelli Dennis, Sushant Kinra, Anupam Agarwal, Ritu Kapoor and Chandrashekhar Sibal

What technological advancements are going to influence the radiology sector in future? How are they going to impact the way radiology is pursued as a profession? Will they fulfill the complicated medical needs of patients in a country like India? These were some of the pertinent questions which were addressed and discussed in a panel discussion during Express Healthcare's Radiology and Imaging Conclave.

The panel, moderated by Dr Bhavin Jankharia, Chief Radiologist, Picture This by Jankharia, comprised of leading radiologists and heads of leading medical technology manufacturers: Uday Patil, Head of Radiology, Aster DM Healthcare; Minelli Dennis, Marketing and Communications Manager, Carestream, Sushant Kinra, MD, Carestream Health India; Chandrashekhar Sibal, EVP and Head Medical Division, Fujifilm India; Anupam Agarwal, MD Consort and India Representative, Neusoft Medical; Neeraja Sharma, Head Marketing, Philips Healthcare and Ritu Kapoor, Marketing Manager, Fujifilm.

The discussion started with the question, "What exciting innovations can be emancipated for the industry in the upcoming five years, especially from the technology point of view?" The question was also extended to the company representatives and they were asked to speak about their own plans for the next five years. "We are looking to transform ourselves as a solutions providing company. Early detection is the key to success- this is what we believe. We are going to do a lot of screening programmes and breast cancer, lung cancer, colon cancer and TB are the four core areas that we are focussing on. Chiefly, we are on the path of becoming an IT company with complete focus on Artificial Intelligence which can provide answers to radiologists and the public at large," explained Sibal.

On Philips' strategy for the next five years, Sharma stated, "Not only are we focussing on solutions where diagnosis, patient-centric care is emphasised upon, but also on solutions where we partner with customers and help them grow- we will focus on what kind of infrastructure they need, etc. Patient experience will always remain our core focus, of course."

The discussion then shifted its focus to AI. Anticipating a huge amount of automation for regular tasks in radiology, Dr Patil talked about how AI is going to empower doctors to do better diagnosis, cut down on minor errors. "It will help radiologists in spending more time on activities that provide value and guide outcomes," he said. Next, focus being more on the software part of upcoming technology than on hardware, Kinra said, "The potential disruption in the healthcare sector is going to be more in the terms of workflow, automation, using AI, gaining deep learning, etc. Incremental improvements is what we are going away from. I believe that is what the need of the hour is. The focus will

KEY HIGHLIGHTS

Early detection is the key to success, therefore most innovations in this field will focus on preventive screening.

- Less hardware and more software focus products will be developed in future which will be backed by AI
- Incremental improvements will be done to increase better efficiencies in imaging techniques
- Hardware innovation has slowed down, it is the age of software enhancements
- Potential disruption lies in the application of technologies such as AI, automation, etc., that enhances clinical decisions, applications and more
- Innovations lie in democratisation of high end radiology services in future

be on effective utilisation of an asset." He further opined that India is going to be a segmented market when it comes to these innovations and there is an opportunity to 'mirror' the changes that are happening in the west.

During the course of the discussion, Agrawal announced that Neusoft will be rolling out a newly developed system of 16 slides in the beginning of 2020. The new system, he added, has been designed specifically for the new market and will cost less than one crore rupees. The panel then discussed that should innovation mean better accessibility of radiology services for an average Indian patient, and on this Viveka Roychowdhary, Editor, Express Healthcare pointed out that the government, through various schemes, is dedicated to move from high quality- low volume model to the reverse and so equipment makers will have to innovate with this in mind. She also stressed on the need for technical innovations to be seen as a long term investment. Agreeing, Dr Patil stated that the next big thing that could happen in the imaging is that we will have access to the technology that we posses now, at a fraction of a price.

The panellists also discussed government's Make In India's initiative and how imaging companies are adopting to it, the potential of public private partnership in the sector to boost innovation and what its implementation can be.

The discussion then concluded as the panellists reached consensus on the fact that the biggest purpose of innovation is to make healthcare more affordable to the public at large- an MRI can now be done at significantly reduced costs than what it used to cost a decade before, and that is the result of innovation. Any innovation in the area of artificial intelligence will serve this purpose only.

> We are going to do a lot of screening programmes and breast cancer, lung cancer, colon cancer and TB are the four core areas that we are focussing on. Chiefly, we are on the path of becoming an IT company with complete focus on Artificial Intelligence

Technological revolutions in imaging over the years

Speaking about the technical advancements that marked Artificial Intelligence in the field of radiology, Sudhir KN, CT Business Manager, Siemens Healthineers, held the audience's attention as he gave a presentation on how medical technology has undergone transformation over the years.Sudhir talked at length about Artificial Intelligence and how it has revolutionised medical technology, specifically in imaging.

Using a pictorial representation, he discussed the way MRI and CT scans have changed over time. The presentation showcased a cinematic rendering image of a brain which was taken by Siemen's Seven Tesla MRI. "Over the years, we have been able to achieve the clarity and the quality that these images posses by not only upgrading our hardware but also by enhancing our AI setup," he stated.

Presenting another image of a brain's MRI, Sudhir mentioned a BBC news programme on brain wiring which generated a worldwide interest in artificial intelligence-based reconstruction, "We are now able to catch images which look exactly like how a body part is depicted in an anatomy textbook, thanks to the advancement in AI which enable us to take cinematically rendering or photo-realistic images."

Sudhir KN, CT Business Manager, Siemens Healthineers

On the significance of deep machine learning, a subset of AI, Sudhir mentioned how it helps vendors in doing advanced research work and in reconstruction.

"Deep learning is a much evolved, better technique that can be used to image reconstruction and also for general artificial intelligence," he said. He also talked about a smart X-Ray tube system that is being developed in Germany which contours or models a patient using a camera, feeds the data to the computer system and then the X-Ray tube positions itself according to whatever part needs to be X-Rayed, without any intervention.

He concluded his presentation talking about the various exciting technologies which will come up in the near future, promising to revolutionise not only the radiology field but healthcare at large.

Beyond radiology profession

(L-R) Dr Bhavin Jankharia, Jwala Srikala, Durga Prasad, Varisht Hingorani, Anagha Kale Joshi, Rochant Pant; Hemant Morparia and Sudhir Patwardhan

The panel discussion on 'Talents beyond radiology' focussed on how some leading radiologists from India have pursued various other professional talents such as music, classical dancing, painting, scrabble championships, table tennis and more, while they continue their radiology practice and having excelled in both fields. Radiologists Jwala Srikala, classical dancer; Durga Prasad a Veena player; Varisht Hingorani a scrabble champion, Anagha Kale Joshi a table tennis player; Rochant Pant a guitarist; Hemant Morparia a cartoonist; Sudhir Patwardhan a painter have achieved national reputes and are very successful in following their passions. In this panel discussion these talented radiologists talked about how they pursued their passions outside the radiology field despite all odds. They also discussed on how these talents have helped them in amplifying their radiology practice and maintain an equilibrium of mind and body.

The session was moderated by Dr Bhavin Jankharia, Chief Radiologist, Picture This. The discussion raised various queries from the audience on the battles these radiologists face while striking a balance between radiology practice and their profession talents.

At first, Dr Jankharia gave a brief description of each panelists' achievements and then requested them to speak about their proud moments.

The panellists shared their experiences and talked about their proudest moments as artists and how they balanced honing their skills in both roles. Speaking about the need for people to follow their passions Dr Rochan Pant, Interventional Radiology and Guitarist said, "If you have a passion you have no choice". Talking about how radiology has helped him in his scrabble tournament, Consultant Radiology and National Scrabble Champion, Dr Varisht Hingorani, shared, "Radiology helped in scrabble because a lot of medical words come very easily." Next, these experts went on to talk about the relation and advantages in pursuing their passions. "Both are visual mediums. Being a doctor gives you a privileged access to the lives of people - it deepens your understanding as an artist," Dr Sudhir Patwardhan, Radiologist and Painter, cheerfully said. Similarly, Dr Durga Prasad, Veena player being extremely passionate about the subject said, "Emotion-fullness and emotional freedom- music helped me focus better on my studies and my profession." "Radiology is the perfect medical branch for me and table tennis is the perfect sport for me- both involve quick thinking and reactions:, added, Dr Anagha Kale Joshi, Radiologist and Table tennis player.

The panellists further spoke on how each of these professions compliment each other. Dr Hemant Morparia, Interventional Radiologist and Cartoonist astutely said, "Radiology is about tissue diagnosis, cartooning is about issue diagnosis. Therefore, each of these professions have a similarity and therefore, compliment each other."

"You have to learn to react very, very fast when you dance, that has definitely made me more efficient as a radiologist. Moreover, it has given me an raw intuition that helps me out as I analyse the images" expressed, Dr Jwala Srikala, Interventional Radiologist and Classical dancer.

While the panelists continued speaking about how each of their talents inspires them to be better radiologist, Express Healthcare's journalists asked them whether they ever planned to quit radiology having achieved great acclaim in their artistic talents. Also, while radiology is also a profession of human service, had they ever faced this dilemma of choosing between duty and fame. Replying to the same, Dr Srikaka, agreed that she had many times face the devil and the deep but has manage to fight within and overcome this challenge.

At the end, all the panellists encouraged other radiologists present at the conference to reunite with their passions and excel in radiology too.

KEY HIGHLIGHTS

- Both are visual mediums. Being a doctor gives you a privileged access to the lives of people - it deepens your understanding as an artist
- Radiology gives sense of complexity, which helps disseminate art forms
- Pursuing an art-form teaches you the skill of practicing
- They discussed how taking up their hobbies required a lot of sacrifice, but also instilled a sense of freedom and content- you just have to learn to go the extra mile

EXPRESS MEDICAL IMAGING AWARDS 2019

Category: Best Diagnostic Centre (Single City) 2-10 Years Old
Winner: Sadbhav Imaging Centre

Category: Best Diagnostic Centre (Single City) 11-20 Years
Winner: Vital Imaging Centre

Category: Best Diagnostic Centre (Single City) > 20 Years Old
Winner: SUYOG-MEHSANA, SUVIDHH-UDAIPUR

Category: Best Radiology Chain (< 5 Years Old) - More Than 1 City
Winner: Healthmap Diagnostics

Category: Best Radiology Chain 20 years old more than 1 city
Winner: Nidan Group of Companies

Category: Best Radiology Department (Individual Hospital Pvt/Govt)
Winner 1: Nanavati Super Speciality Hospital
Winner 2: Sri Ramachandra Medical College & Research Institute, Sri Ramachandra Institute of Higher Education & Research

Category: Best Artificial Intelligence Company
Winner: DeepTek.AI

Category: Best promising radiologist 35-40 years of age
Winner 1: Dr Ganesh, Sanap
Winner2 : Dr Dhananjaya KVN

Category : Best Radiology Administrator Private
Winner 1: Dr Kajal Kumari
Winner 2: Dr Avinash Nanivadekar

Category: Best Radiology Entrepreneur
Winner: Dr Hemant Patel

Category: Best Radiology Teacher 2019
Winner 1: Dr Deepak Patkar
Winner 2: Dr Venkata Sai

Express Healthcare in association with the Radiology Foundation organised the second edition of The Radiology and Imaging Conclave on July 12-13, at Radisson Blu Plaza, Delhi Airport. It aimed to bring the entire radiology fraternity on one platform to discuss advancements in radiology. Express Medical Imaging Awards 2019 was one of the key highlights of the two-day conference .

The awards evening began with a welcome address by Viveka Roychowdhury, Editor, Express Healthcare, Express Pharma, Express Diagnostics. Setting the context for the evening, she outlined the vision of the awards to recognise torch-bearers and game changers in the radiology and imaging fraternity for their outstanding contributions. She explained that these awards is not only about honouring the current leaders but also about encouraging aspiring radiologists. She also thanked the jury members — Dr Bhavin Jankharia, Chief Radiologist, Picture This by Jankharia, Dr Bharat Aggarwal, Director, Max Hospital, Dr K Mohanan, President, IRIA and Dr Sanjeev Mani, Founder and Chief Radiologist, Dr Mani's Clinic for their help in choosing the deserving winners for the awards. She thanked Dr Jankharia and his organisation Radiology Foundation (REF) for partnering with *Express Healthcare* for RAD 2024. She also thanked the other partners and delegates for supporting this endeavour.

Following her address, Roychowdhury gave away the awards to the winners along with Dr Jankharia and Dr Mani. The winners of the Express Medical Imaging Awards 2019 are as follows:

Dr Hemant Patel collects awards in three categories: Best Diagnostic Centre (Single City) 2-10 Years Old Award: Sadbhav Imaging Centre; Best Diagnostic Centre (Single City) > 20 Years Old Award, SUYOG-MEHSANA, SUVIDHH-UDAIPUR; and Best Radiology Entrepreneur Award

EXPRESS MEDICAL IMAGING AWARDS 2019

Vital Imaging Centre gets **Best Diagnostic Centre (Single City) 11-20 Years Award**

DeepTek.AI gets Best Artificial Intelligence Company Award

Healthmap Diagnostics gets **Best Radiology Chain (< 5 Years Old) - More Than 1 City Award**

Best promising radiologist 35-40 years of age Award goes to Dr Ganesh, Sanap and Dr Dhananjaya KVN

Nidan Group of Companies gets **Best Radiology Chain 20 years old more than 1 city Award**

Dr Kajal Kumari and Dr Avinash Nanivadekar get Best Radiology Administrator Private Award

Nanavati Super Speciality Hospital wins **Best Radiology Department (Individual Hospital Pvt/Govt) Award**

Sri Ramachandra Medical College bags Best Radiology Department (Individual Hospital Pvt/Govt) Award

Dr Deepak Patkar and Dr Venkata Sai get Best Radiology Teacher 2019 Award. (*The awards were collected by their peers on their behalf)*

AGENDA DAY 2 — 13 July 2019

Radiology and Imaging Conclave 2019

Yoga session

Evolution of Fujifilm

Panel discussion: How can radiologists stay relevant in the current day and age?

AI in ultrasound by Sonoscape

Panel discussion: Artificial intelligence in radiology: Where are we today?

New-age solutions from Neusoft

Panel discussion: Understanding management essentials

Yoga Session

Evolution of Fujifilm

Chandrashekhar Sibal, EVP and Head Medical Division, Fujifilm, India provided a brief history and evolution of the Fujifilm since its inception. Sibal spoke on how Fujifilm's film sales comprised about 75 per cent of its revenue, the company was at its peak when digital cameras flooded the market and the company went into a crisis. During the crisis the company diversified into different business segments and not only survived but thrived.

Sibal stated that Fujifilm today is a $23 billion company with over 80000 thousand employees worldwide, with 400 hundred employees in India. In 1983, Fujifilm started the first digital radiograph and since then it has grown by leaps and bounds when it comes to image processing, virtual grid technologies and other technologies that have come to the fore with different dynamic ranges and showcase soft tissues and bony structures differently. He also informed that a lot of work has been done on X-ray images and elaborated on how Fujifilm is going to work on CT, MR and other images.

He informed that Fujifilm's business in India began in December 2007 with four employees continuously innovating, creating new technologies and new products that inspire and excite people everywhere. Now, with five offices in India, Fujifilm's goal is to leverage the potential and expand its horizons.

Chandrashekhar Sibal, EVP and Head Medical Division, Fujifilm, India

He further added that Fujifilm has a vast portfolio of products to choose from which includes mammography machines, endoscopy systems, digital radiography systems, retrofit detectors, mobile X-ray machines, local X-ray machines, healthcare IT synapse, tri-chemistry analysers etc. With more than 30,000 thousand systems installed in India, the company's focus is on AI and IT. The company also has a Make in India initiative to bring products that are required by Indians.

He also mentioned the new businesses in India like public private partnerships through which about 100-200 systems have been installed in partnership in most states, in collaboration with the government. He informed that Fujifilm has acquired 94 per cent institutional sales in the public health sector and the company is looking at expansion in Maharashtra, MP, Chattisgarh and Odisha.

Sibal went on to mention how Fujifilm has developed a platform for AI where new applications are being developed, with a brain centre in Tokyo. He even stated that once the film business starts declining AI will be the next film for the company. This would provide a bigger revenue in the next five years.

He also stated that Fujifilm's synapse system is considered to be the best PACS systems in the world. It is the most robust system with over 5000 installations worldwide with more than 50 installations in India.

He also gave information on the CSR initiatives by the company such as breast cancer awareness activities, Pinkathon and AMOLED tap programme for breast cancer in Delhi. The company has also published a book on mammography, launched in the Indian market with Indian cases. The company is are also going to be a part of end TB programme with the help of X-ray and AI solutions. He concluded the session by informing that the company is investing heavily into a lot of equipment and solutions for early detection of cancer.

How can radiologists stay relevant in the current day and age?

The first panel discussion on the second day of Radiology and Imaging Conclave was on the topic, 'How can radiologists stay relevant in the current day and age?'

Harsh Mahajan, Chief Radiologist, Mahajan Imaging, moderated the panel, which had Dr Bhavin Jankharia, Chief Radiologist, Picture This by Jankharia; Dr Bharat Aggarwal, Director, Max Hospital; Dr Raju Sharma, Prof of Radiology, AIIMS and Dr Inder Talwar, HOD Radiology, Bombay Hospital as the panelists.

(L-R) Harsh Mahajan, Chief Radiologist, Mahajan Imaging; Dr Inder Talwar, HOD Radiology, Bombay Hospital; Dr Raju Sharma, Prof of Radiology, AIIMS; Dr Bharat Aggarwal, Director, Max Hospital; and Dr Bhavin Jankharia, Chief Radiologist, Picture This by Jankharia

Mahajan started off by explaining what the future holds for radiologists and how artificial intelligence can have an impact on radiologists. Later, the panelists discussed about the role played by the radiologists in the healthcare sector. They allayed fears of being replaced by newer AI-driven technology and recommended measures that can be taken to make the practice future proof. The discussion also addressed issues on how to remain relevant in today's world and the changes needed in the way radiologists practise today.

Dr Jankharia elaborated on who what radiologists should aspire to be in the healthcare delivery system. He mentioned that radiologists should be more than just good image readers and need to interact more with patients and treating doctors to improve outcomes.

Dr Aggarwal stated that the biggest challenge in the radiology sector is to bring the young generation of radiologists on a common platform and ensure that they are following ethics properly.

Dr Sharma mentioned that the standard of training are very different across the country and there is lack of uniformity of standards. He emphasised that proper time should be invested to mentor the students to empower the radiology fraternity.

Dr Sharma further emphasised on the need for new students to be exposed to sub-specialisations so that they can have a wholesome clinical educational experience. The need to understand about the importance of 'human touch' in radiology was also discussed during the panel.

Need for organ-based sub-specialisations and sufficient clinical rounds to sustain progress and gain 360^{o} growth in radiology was also mentioned during the panel discussion.

The panelists also agreed that radiologists should undertake six-months rotation training in general medicine before going in for radiology.

Dr Jankharia opined that new comers should set aside their fear of doing anything which could create a problem and agreed that six-months to one-year training in general medicine will indeed instil confidence among the newcomers. The panelists agreed to take bold steps in order to forge a path toward progress.

Mahajan requested *Express Healthcare* to come out with a paper on the issues of the current curriculum in radiology. He also spoke on how the how new curriculum can be designed with help from NITI Aayog and MoH&FW to bring in a real change for new radiologists.

Further, discussions were also addressed the trust deficit among patients, a bigger challenge for today's radiologists. They all agreed that innovation and training, a more hands-on approach will be the future for new radiologists.

KEY HIGHLIGHTS

- Panelists discussed the role played by radiologists in healthcare, addressed the fear of being replaced by newer AI-driven technology and recommended measures that can be taken to make the practice future proof
- New students need to be exposed to sub-specialisations so that they can have a wholesome clinical educational experience. Also, they need to understand the importance of 'human touch' in radiology
- There is no uniformity in the standard of training across the country; radiology fraternity needs to approach the government so that these changes can be made to curriculum and internship patterns
- Radiologists need to do organ-based sub-specialisations and sufficient clinical rounds to sustain their progress and gain 360o growth
- We are facing a trust deficit at the patients' end. An average patient doesn't trust the healthcare system. That makes it even more important for radiologists to be involved with a patient's diagnosis at a personal level

AI in ultrsound by Sonoscape

Gaurav Mangol, Head Marketing, Sonoscape addressed the audiences at Radiology and Imaging Conclave 2019 and spoke on how Sonoscape's AI embedded products make workflow and accuracy much easier and reliable for the healthcare sector.

Mangol spoke on Wizplus, an AI platform, when integrated into their systems, enhances speed and accuracy, as well as reduce work time at the push of a button. The ultrasound images that are obtained are of high quality which identifies the structures and provides accurate measurements of clinical images.

Gaurav Mangol, Head Marketing, Sonoscape

He informed how their S-fetus, with the touch of a button, identifies, structures and automatically provides measurements, which helps reduce the key strokes by 80 per cent. Scanning time is reduced by about 90 per cent for each measurement taken with 95 per cent accuracy. Manually it takes forty seconds with 23 keystrokes, with S-fetus it just takes three seconds with the press of a button and one key stroke.

He further added how Auto Plus, an intelligence system provides autophase, auto IMT, pulse wave which comes automatically with the touch of one button. Autophase in 3D and 4D with the click of a button removes artefacts and provides clear images. Auto colour resizes the boxes and saves a lot of work time. With the press of a button, the pulse wave spectrum gets optimised automatically. There is auto ejection friction for cardiology and abc follicle for gynaecology.

He provided insights into the full range of ultrasound transducers (single crystal transducers) with premium segment technology and how it provides better clarity, better signal-to-noise ratio, suppression of side loop artefacts and good contrast image in their equpiment.

He concluded by explaining that the full range of ultrasound transducers for radiology, OBG, intra operative transducers, DE probes, urology, volume probes, biopsy probes, equipment for all kinds of applications in radiology, OBG, small pots and vascular, paediatrics OBG, cardiology are available for the customers.

New-age solutions from Neusoft

Anupam Agarwal, MD Consort and India Representative, Neusoft Medical spoke to the audience about his company's offerings. Stating that Neusoft is the Microsoft of China, Agarwal informed how Neusoft provides software services to over 200 MNCs, is operational in 110 countries and has associations with over 9000 institutions with training centres in China and the US, as well as R&D centres in Shanghai, Shenyang, and Guangzhou.

Agarwal took the audience through the evolution of the company and informed how they had developed the first scientific CT scanner in 1994 and rolled out a CT scanner in 1997, in China. Today, Neusoft sells about 30000 thousand equipment globally and employs about 8000 people across the globe. For medical purposes there are about 2000 employees globally.

Anupam Agarwal, MD Consort and India Representative, Neusoft Medical

He mentioned that in 2011, Neusoft sold its first CT scanner and MRI in the US. Today, they have setup a global CT trading centre Cleveland. He also spoke about how Neusoft in 2016 developed a 128-slice CT scanner, and in 2018 a PET CT and MR with TI and DSA.

He elaborated on the range of CT scanners that Neusoft has to offer such as the 16-slice, 64-slice, and 128-slice with dual energy scanners. The latest is the 256-slice new MR with AI, nuclear medicine with linear accelerators and PET CT with 64-slice, all types of digital radiography, mammography, IVD products, ultrasound, complete radiology and a mobile CT scanner with a generator for disaster management and rural areas. Their mobile CT scanner has been a success in China. Neusoft is also looking at cost-effective solutions for their mobile CT scanner in India. He also mentioned about the cloud-based services that Neusoft offers with its range of products.

He spoke about the certifications of all products that Neusoft has to offer and informed that all products are CE FDA, QVC, ISO, US FDA approved and international standards are maintained.

AI in radiology: Where are we today?

(L-R) Dr Vidur Mahajan, Dr Amit Kharat, Dr Vasanth Venugopal, Dr Milind Gune, Dr Namita Sinha and Dr Balaji Ganeshan

Dr Mahajan began the panel discussion on 'Artificial intelligence in radiology: Where are we today?' by asking the panelists about the differences between radiomics, deep learning, machine learning and AI. He also briefed the audience about image acquisition and image post processing in radiology.

While putting forth his views on radiomics, Dr Ganeshan elaborated on its features and quantifiable characteristics. He mentioned that radiomix has more handcrafted features and patterns on the images. Radiomics tries to emulate what a radiologist does but provides objectivity to it, independent of your background, experience, and education. The idea is to bring objectiveness, repeatability, reproducibility and so on.

According to Dr Ganeshan, AI has a black box approach where it is able to provide an answer but not able to establish from where the success came in. He also mentioned about the pros and cons to all these methodologies.

The panellists deliberated on deep learning, different aspects of image processing and quantification. They all agreed to the fact that radiomics and AI, when combined, can be a win-win situation in the radiology sector.

Sinha gave an update on how Columbia Asia Hospitals are implementing Qure.ai algorithm to interpret radiology images. She informed that work on the specific algorithm started in 2016, and concluded in 2017. The hospital has worked on how the algorithm can on nine different abnormalities using the technique and the results were satisfying. According to her, the hospital is already in the process of launching this technique where AI will help simplify the work process.

Sinha further mentioned that the algorithm is touted to become an excellent audit tool for X rays and has performed phenomenally well.

Gune mentioned that AI will be an add-on advantage for radiologists. A tool without human intervention is the future of radiology where radiologists will be able to prioritise three-four X-rays and the remaining X-rays can be looked into later.

He cited the example wherein around the globe two billion chest X-rays are developed per annum and elaborated how AI will play an important role in streamlining its reading.

Dr Kharat spoke on ways to deal with the ground realities and mentioned that when good data is available to train algorithms, the sector will surge ahead.

He urged start-up companies to invest immensely to help allocate data. He mentioned that this is the year of innovation for the sector. He also said that there is a need to look for a long-term perspective and may be in a decade or so once the product matures, it can be used in practice.

Dr Vasanth Venugopal elucidated on the need to curate AI algorithms, controll test settings, on payment modules and how companies can sustain themselves. The panellists agreed to that data needs to be anonymised to help the radiology sector become much more smarter and agile. They also recommended that one should also look for solutions to archive images intelligently.

KEY HIGHLIGHTS

- Even though there is a lot of hype around AI, the radiology sector is at crossroads where it is concerned. The applications of AI are evolving but the fundamental aspects of AI may have reached a dead end. However, there is still hope.
- Radiomics is high throughput extraction of quantitative imaging features or texture from imaging to decode tissue pathology and creating a high dimensional data set for feature extraction. It tries to emulate what a radiologist does, and puts those requirements in everyday practice.
- In future, AI is going to learn from radiologists. It will be radiologists who will be the biggest data support for AI feeds
- It is important to note that the concept of one size fits all, cannot be applied in radiology and AI, radiomics etc.
- There is a need for laws related to ownership of patient/medical data. This is crucial to protect the increasing misuse of medical data

Understanding management essentials

(L-R) Dr Avinash Nanivadekar, Dr Harsh Mahajan, Dr Sona A Pungavkar, Dr Namita Sinha, Vivek Gupta, Dr Ajay Thakkar and Dr Bharat Aggarwal

Radiology is not unique when it comes to doctors turning entrepreneurs. However, operational and financial aspects of setting up a diagnostic centre can be different from other medical fields as technological investments are pretty high. Therefore, the last panel discussion of *Express Healthcare's* Radiology and Imaging Conclave 2019 addressed the management essentials of the radiology business.

Moderated by Dr Bharat Aggarwal, Director, Max Hospital, the panel also saw participation from Dr Ajay Thakkar, Chairman and Managing Director, Jupiter Hospitals; Vivek Gupta, Partner and National Head, KPMG; Dr Harsh Mahajan - Chief Radiologist, Mahajan Imaging; Dr Avinash Nanivadekar, Director - Radiology, Ruby Hall; Dr Namita Sinha, Consultant, Columbia Asia Hospitals; and Dr Sona A Pungavkar, Consultant Radiologist.

The panel discussion addressed crucial questions such as 'What is the state of business awareness among radiologists in general?', 'Do they understand the financial part of it sufficiently?' etc. "Doctors, or corporates for that matter, have been fairly sharp when it comes to having sound business acumen. They have been able to extract relevant connotations of value from financial investors. They have expanded impressively over the years. India is a very unique market. Compared to the West, pricing here has been on the lower levels. In this atmosphere, an individual should be very careful about investments and their ROI since radiology is a very capital intensive field," said Gupta.

He further added, "You need to be very cognizant about what is the cost being incurred by an investment, and what is the revenue that you are able to generate. Each centre, each machinary that you invest in should be individually sustainable." Agreeing with Dr Aggarwal that often doctors do not take into evaluation the cost of real estate in cases where a centre is setup in a personal property, Gupta remarked, "Often doctors take a leap of faith, hoping that sufficient patient turn-up may tend to any additional, invisible costs that have been incurred. Doctors need to take into account every minute cost generating factor."

On being asked about his journey of setting up one of the most successful diagnostic chains in northern India, Dr Mahajan said, "Starting out was a bit overwhelming- I know nothing about finance. But with time you learn, your vision evolves. You learn that from team-work, learning to listen to people who are experts in their fields. The problem is that we are technology hungry, you always want to be upgrading, and that is where we fall in trouble."

In sync with Dr Mahajan about listening to experts on subjects that one is not comfortable with, Dr Thakkar quipped, "When I faced my first financial crisis, I decided that I will not trust three people- I, Me and Myself." An entrepreneur should carefully evaluate the safety margin that financial experts build for them, and they should be fine", he added.

On facing financial or growth challenges, Dr Pungavkar said that one of the biggest challenges that she faced, and still faces, is that she is unsure of how to set up a properly functioning operational system. She noted that often, more than anything, fresh entrepreneurs need mentorship and seasoned entrepreneurs could fill in those shoes.

The discussion ended with the conclusion that entrepreneurs should strive to keep evolving themselves and adhere to advice given to them by financial experts. As Dr Thakkar says, "We are doctors, we should know everything about our field. It is not required of us to be experts on finances, and we can safely leave that responsibility on the shoulders of those who are experts in it."

KEY HIGHLIGHTS

- The discussion addressed the challenges that radiologists face when they start an entrepreneurial venture
- Radiologists need to have business acumen, should understand the financial attributes of a business. They need to be wary of investments and their ROI since radiology is a very capital intensive field
- Machines should be individually sustainable and doctors should take into calculation even minute investments
- It is important to keep evolving, to keep changing. Rather than just expanding the existing business, it is important to delve into newer technologies.
- There is a need to create more efficiency without compromising quality- optimising may be the key to strike a balance between the two

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INTERVIEW

Spine apparatus is a 'high-speed elevator' for getting calcium ions into the dendrites

Weizmann Institute of Science recently conducted a study on how healthy nerve cell communication depends on calcium ions. The study led by **Dr Eduard Korkotian** from the group of Prof Menahem Segal of the Weizmann Institute's Neurobiology Department can be instrumental in future research to focus on testing drugs that would keep the calcium reserves topped up and might also help the nerve cells to form new connections. Dr Korkotian in an interview with **Raelene Kambli** explains in detail about the research

What is the significance of calcium ions in the working of our nervous system? How does calcium affect nerve impulses?
Healthy nerve cell communication depends on calcium ions. First, by combining mathematical modelling with lab experiments, we found that brain plasticity centres on the synapses between nerve cells — with the dendritic spines on one side — known as 'post-synaptic' as this is where signals are picked up. On the pre-synaptic side, nerve cell extensions are known as axons fire off those signals. The dendritic spines consist of two parts, and each part can change independently. The 'head' of a spine can expand and contract; the 'neck' can lengthen and shorten. And in around 30 per cent of the necks, something additional was discovered: an organelle called spine apparatus. Previous research had shown that this organelle contains the protein synaptopodin – which regulates the amount of calcium released for synaptic plasticity.

The ion levels are dynamic: By regulating the oscillations of calcium in the dendritic spines, the spine apparatus affects the strength of the connections between nerve cells. In our research, we found calcium channels resident in spines that have openings pointed toward the spine's head and which act as one-way valves to usher calcium ions into the apparatus. Other channels let calcium ions out in the other direction and this action then activates the production and delivery of proteins into the heads of the spines. This positive feedback mechanism ultimately strengthens synaptic connections.

What is the significance of the calcium ions being at the right place at the right time? Tell us about your new research on this subject?
The calcium ion channels in the spine apparatus are – by default – closed; we found that the calcium ions need to get to exactly the right spot to pry them open. To understand this in detail we worked with the group of Prof David Holcman of the École Normale Supérieure, Paris, to create a computerised model of the spine apparatus. We found that a single calcium ion in this spot is sufficient to activate the mechanism that opens the channel, thus increasing the probability that calcium ions will get into the dendritic spine heads where they can strengthen the nerves' connections.

We also found that the spine apparatus is a 'high-speed elevator' for getting calcium ions into the dendrites – just one or two milliseconds, in contrast to 15 milliseconds or more – and the amounts that can be passed from one side to the other are around ten times higher, as well than any seen before. This is crucial for learning, memory and plasticity.

> The research in our lab is completely basic – that is we are looking at a phenomenon that occurs inside the dendritic spine

Research shows that dendritic spines change throughout our lifetime. What is the impact of these changes on our nervous system and especially on older people?
Yes, research in recent years has shown that dendritic spines change throughout our lifetime: growing or shrinking, appearing and disappearing. This is known as plasticity and it is linked to our brain's ability to learn new things or forget old ones. We do know that in Alzheimer's and other neurodegenerative diseases, the spines disappear. A cell loses the ability to communicate with other cells – even those with which it had previously kept in close contact. Once the calcium reserves are depleted, the entire synapse dries up and disappears. To truly understand the impact, however, we need to put these findings in the context of larger networks of neurons in the brain, as well as the impact of synapse depletion on the neurons, themselves.

Weizmann Institute researchers have discovered a unique mechanism for regulating these changes. Can you tell us more about the research and its findings?
The network of synapses enables each cell to communicate with thousands of others but just as some memories become stronger while others fade away, the connections between some individual nerve cells can improve with time while others may wither. And all of this, as noted above, relies not just on the proper storage and release of calcium ions, but on calcium ion regulation in the spinal apparatus which, through its oscillations, regulates levels in a dynamic manner. This work, as well as new research in collaboration with Prof Menahem Segal, revealed a molecule called Synaptopodin (SP), which our findings have implicated in calcium depletion in the spines.

How will this study positively impact future treatment mechanisms for neurodegenerative diseases?
The research in our lab is completely basic – that is we are looking at a phenomenon that occurs inside the dendritic spine. But we can speculate about future research that might have clinical application, which could, for example, focus on testing drugs that would keep the calcium reserves topped up. That way, the nerve cell could be prevented from degenerating, and it might even be given the opportunity to form new connections. In Segal's research, published in the *Journal of Neuroscience*, mice that were genetically engineered to lack SP had fewer symptoms of an Alzheimer's like disorder – including fewer signs of plaque in the brain – than the control mice.

raelene.kambli@expressindia.com

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Strengthening India's public health system through technological interventions

Nupur Bahl, Programme Head, Reliance Foundation and **Pompy Sridhar**, Director-India, MSD (Merck) for Mothers, recommends empowering healthcare providers with tech-enabled tools to take timely decisions helping improve health outcomes

Maternal and child health are two of the most critical indicators of the healthcare status of any country. In India, the turn of the millennium saw some significant efforts to improve both these areas, but those efforts have not had the desired impact. According to UNICEF, globally, about 800 women die every day of preventable causes related to pregnancy and childbirth, and 20 per cent of these women are from India. India still accounts for 26 per cent of all neonatal deaths and 17 per cent of maternal deaths in the world. [1]

Nupur Bahl, Programme Head, Reliance Foundation

The Government of India had introduced the Janani Suraksha Yojana in 2005 with the objective of reducing maternal and neonatal mortality by promoting institutional delivery among poor pregnant women. The scheme, which integrates cash assistance with delivery and post-delivery care, has contributed to a phenomenal rise in institutional deliveries.[2] However, there was no significant reduction in India's maternal and child mortality rates. This was because healthcare infrastructure in many districts; high patient to provider ratios; inadequate or irregular measures to strengthen the capacity of healthcare workers; inadequate supplies and equipment at healthcare facilities and so on.

As a step towards addressing this situation, the Union Health Ministry, in 2017, announced the launch of LaQshya — a programme aimed at improving the quality of care for pregnant women in labour rooms, maternity operation theatres, obstetrics intensive care units and high dependency units. It was a step in the right direction. But there's yet another significant and unfortunate cause of maternal deaths that needs attention —the problem of delays improving maternal and neonatal outcomes through improved healthcare facilities should continue to be one of the top priorities for the government.

Delay: A major area of concern

There could be instances when a woman in labour is unable to reach a health facility in time owing to traffic conditions or the unavailability of a vehicle or ambulance. There could also be delay during the transfer from a lower health facility to a higher one. It is critical that, treatment and care be initiated immediately and be continued uninterrupted throughout the duration of treatment and stay at a healthcare facility. Delays at this stage are hard to excuse and yet they do occur for many reasons such as uncertainty in making decisions or managing complications; lack of emergency preparedness; lack of equipment or medical supplies; lack of adequately trained staff; and weak referral systems between healthcare facilities. Many of India's public health system facilities are short-staffed. This puts a lot of pressure on the existing set of nurses, physicians, doctors and other personnel and contributes to delay. This, together with certain other factors, accounts for a sizeable percentage of maternal deaths that occur at health facilities. Much of this can, however, be addressed with the right technological interventions.

Equipping understaffed and overburdened healthcare providers with decision-support tools is critical

Digitisation enables medical facilities to save electronic health records or patient health records on portable wireless devices such as tablets and set up long-distance e-consultations with doctors. Digital interventions can significantly improve the recording of vitals like Foetal Heart Rate — a critical part of high-quality care to ensure good neonatal outcomes. They can also enable on-demand support from a network of mobile-connected medical facilities or referral hospitals through a remote call centre. By using data from digitised checklists and case sheets populated by individual healthcare service providers, the remote support centre can assist medical facilities in making informed decisions.

Pompy Sridhar, Director-India, MSD (Merck) for Mothers

Digital processes can notify a hospital of incoming referrals and save precious time in the process. Technology can also help healthcare providers with relevant alerts and tips and make procedures easier.

Digitisation is, however, only a tool. Its effectiveness depends greatly on the people using it. The quality and the outcomes of healthcare can only be improved when technologies and processes are used by well-trained and efficient professionals. Capacity strengthening of India's public healthcare providers is thus of critical importance. Digital technology has a role to play even here, in the form of 'gamified' learning programmes and on-demand content support.

Ingraining technology in the government's health programmes will improve outcomes

Using technology to drive capacity-building and high-quality service delivery will have a measurable impact on maternal and newborn mortality. For too long, the health discourse in India has been focussed on improving access to care, without enough emphasis on provision of high-quality, timely and respectful care. Over the years, there have been many pilot projects in different regions, aimed at improving certain aspects of India's public health system, but what we really need are technology-based solutions that can be implemented on a nationwide scale for maximum impact.

Governments of Rajasthan and Madhya Pradesh are working with philanthropic and private sector organisations and public health experts like ASMAN (Alliance for Saving Mothers and Newborn) on solutions that have potential to be upscaled. There are many examples of how technology can introduce and improve evidence-based best practices to reduce maternal and neonatal deaths at public health facilities. Going forward, such solutions can be made even more effective by incorporating technologies like virtual reality and artificial intelligence.

A modernised, technology-enabled public health system will not only improve outcomes, but also enable better governance, transparency and accountability. And that's something the country truly needs.

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5 STEPS TOWARD ECO FRIENDLY GREEN HOSPITAL

Introduction

Hospitals do offer services 24 hours a day, 365 days a year & in the process of treating patients, they use a lot of water and energy and generate a lot of waste from medical products, protective drapes and packaging. Though most hospitals have started taking initiatives to reduce their carbon footprint, more can be done. Starting a sustainability program not only reduces waste by recycling materials and saving energy, but it also helps protect our communities.

Mr Tarun Katiyar
Founder - Director

Considering the above facts, Hospaccx team helps you in planning and designing your hospital. This is macroficial study of 5 Steps towards Eco Friendly Green Hospital if you want to get into more detail you can contact info@hhbc.in

Here are five ways that hospitals can better use their resources:

1. Green Team Establishment

One of the first thing a hospital should do before implementing a sustainability program is to create a team tasked with leading the overall initiative. The team might focus on increasing the amount and type of recycling practiced at the hospital; sorting waste streams to minimize the hospital's contribution to landfills; and increasing awareness of how employees can positively impact the environment. The team should be both empowered and supported by leadership to execute initiatives but also be held to specific goals.

2. Document Destruction & Management

Document destruction services: Most of the hospitals do recycle some paper, leaving patient documents in recycling bins could put sensitive patient information at risk. It is always advisable for hospitals to hire a vendor who will securely collect, shred/destroy documents and recycle the materials according to HIPAA regulations. VHA suppliers specializing in document destruction services have helped hospitals protect sensitive patient information, saving millions of trees and more than 1.25 million cubic yards of landfill space per year.

Document management services: Streamlining printing and copying processes can reduce costs, while improving productivity. Implementing a print-on-demand process reduces the amount of paper used each year. Replacing single-function devices like printers and copiers with multifunction systems substantially reduces energy use. Remanufacturing and recycling office equipment diverts electronic waste from landfills.

3. Medical Equipment Management

Medical device reprocessing: Hospitals discard everything from surgical gowns and towels to laparoscopic ports after a single use. In operating rooms, items that are never used are thrown away in order to maintain a sterile environment and prevent infections. Proper reprocessing and sterilization of medical devices allows hospitals to reduce the amount of waste entering landfills. Reprocessed devices can cost half as much as new devices, which improves the hospital's bottom line without sacrificing clinical quality.

Capital equipment re-selling and recycling: Hospitals can generate revenue by selling surplus equipment for reuse throughout the world. There are companies that will re-sell these items via live auction, and medical equipment that is not purchased can be recycled. By re-selling or recycling capital assets, hospitals can generate revenue and reduce their waste impact on the environment.

4. Computer hardware disposal

Disposal services encompass the retirement, redeployment, remarketing and environmentally responsible recycling of personal computers, workstations, servers, network equipment and associated peripherals. This not only helps break down used equipment to rare earth minerals so they can be reused, but also helps reduce the demand on finite resources and lowers the need to continue to exploit areas that have the minerals. Safe disposal of technology assets provides additional assurance of patient privacy.

5. Green Hospital Certification

Under the standards developed by the Green Hospital Initiative, in conjunction with other organizations and Green Councils. These hospitals have not only achieved regulatory compliance, but have gone above and beyond in the areas of waste management, energy and water use reduction, pollution prevention and other sustainable practices.

LEED certification

Having a building LEED (Leadership in Energy and Environmental Design) certified will help:

- Lower operating costs
- Conserve energy, water and other resources
- Provide a healthier environment for occupants
- Qualify for money-saving incentives, such as tax rebates and zoning allowances.

In addition, LEED design encourages the use of natural light and healing gardens, since research has shown a link between nature and stress reduction and the improvement of an overall sense of well-being.

Green Hospital promotes the following:

- Sustainable building materials
- Products free of mercury, latex, PVC, and DEHP
- Energy and water conservation
- Tools and resources for environmentally preferable purchasing
- Greener cleaners
- Integrated pest management
- Waste Reduction and Recycling
- Green Electronics
- Managing pharmaceuticals
- Environmentally Preferable Medical Waste Treatment and Disposal
- Safer alternatives to PBDEs: products in health care settings
- Nutritious, Sustainable Foods and Food Systems

Conclusion

The Hospital is considered as Green Hospital which has taken the initiative to do the one or more of the following: choose an environmentally friendly site, utilizes sustainable and efficient designs, uses green building materials and products, thinks green during construction and keeps the greening process going. A Green Hospital is constructed around a facility that recycles, reuses materials, reduces waste, and produces cleaner air.

Are you looking for the Steps towards Eco Friendly Green Hospital? We can help you in same. Below are the healthcare design services that we offer:-

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INTERVIEW

Maintaining a healthy supply chain a must

Manoj Ahlawat, AVP-Supply Chain Management, Max Hospital, talks about the scope and challenges on healthcare supply chain management

How important is it to have a systematic supply chain management in private hospitals and how does it help in operational functioning?
Healthcare supply chain management involves obtaining resources, managing supplies and delivering goods and services to patients or HCPs (healthcare practitioners). Healthcare supply chain management is unique because each stakeholder has their own interests to protect. Doctors may want to use a specific product because they were trained with it, whereas hospital executives aim to purchase the most affordable quality items. Also, as we all know healthcare industry is very critical with respect to product availability where the patients' life is at stake, all critical life-saving products should be available all the time without any delay for which a systematic approach is a must. The vast scope of information system and SCM relationships can result in solving the purpose effectively.

Do you think automation and data analytics will enhance the supply chain management?
For every industry, data-driven supply chain has a productive, competitive and efficient impact on decisions. Data analysis can definitely lead the supply chain industry which ultimately can improve the volume of sales, improve brand strategy, marketing methods or campaigns and much more. But all this can be done only if we know how to extract accurate and relevant data and analyse it. This data can be used extensively in supply chain for planning, product launches to replenishment planning, scheduling of resources and assets, landed cost, transportation analysis, demand planning, vendor analysis, PO analysis, SKU rationalisation, etc. Definitely, if we have a systematic approach which can reduce the manual dependency, it will help increase the overall productivity.

What are the advantages of having a clinically integrated supply chain?
A clinically integrated supply chain is the collaboration of supply chain professionals, clinicians and senior leadership to make more informed product choices that support quality outcomes while reducing waste and lowering costs. Primary objectives of clinical integration are standardising products and reducing product variation. By engaging clinicians, especially in standardisation efforts, a hospital can create a formulary that not only lowers costs, but also meets clinical needs. In addition to the cost benefits, there's less time required to manage suppliers and products. Ordering similar products from more than one supplier adds unnecessary hard and soft costs. But standardisation can reduce the number of supplier relationships, purchase orders and other paperwork, as well as shortening the time to stock products.

Can online-based medical supplies procurement have the capability to create or make a radical shift from complex offline supply chain systems to an efficient and transparent online platform? Reasons?
Online-based supply chain management uses an analytical approach to improve the supply chain. Its benefits may include the reduction of waste and shipping delays. Past data, such as sales reports or other financial reports, are used to understand past trends and create future forecasts for inventory. Forecasting inventory based on past trends helps you to reduce overheads, since you have a better idea of how much inventory you will need and when. Unlike the offline supply chain system, online-based system can be faster and effective, also the data can be safely procured and available at one touch.

> Data analysis can definitely lead the supply chain industry which ultimately can improve the volume of sales, improve brand strategy, marketing methods or campaigns and much more. But all these can be done only if we know how to extract accurate and relevant data and analyse it

Do hospitals get access to the huge product catalogue, brand choice and price in online purchases? If yes, how? If no, why?
Yes, lot of online medical product purchase platforms have come and are trending. Online portals provide the electronic means for medical equipment manufacturers to communicate online with their customers while supporting the purchasing process and post-market surveillance. Its main advantage is the fast, reliable and up-to-date retrieval of information while eliminating all unrelated content. The portal accepts end-user requests and generates a list of results containing text descriptions of devices, links to manufacturer web pages and online catalogues for access to more detailed information. That means, vast information is available to the user at one touch and is getting exposed to multiple brands.

How is technology transforming supply chains? How are they helping to build new digital logistics models to bring in new efficiencies and improved customer experience?
It's imperative for companies to continually innovate and streamline their supply chain and software likely provides the greatest advantage. The right service supply chain technology enables a company to create greater visibility within the supply chain, gain more control over inventory, reduce operating costs and ultimately, outpace the competition. Radio frequency identification (RFID) chips, barcodes and scanners are vital pieces of equipment that can provide innumerable benefits to your business. For example, RFID chips or barcodes can be placed on every product, which gives the company a way to easily track inventory. Paired with RFID technology, cloud-based computerised shipping and tracking further simplify the supply process and can dramatically reduce shipping errors. Such SCM technologies make it easy to reduce the time spent on shipping, receiving, tracking and compiling order data.

What are the most-daunting barriers and challenges you face as a supply chain manager in the healthcare segment and how do you overcome it?
Supply chain managers have seen increasing challenges to create and keep efficient and effective supply chain methods. Few of the major challenges include customer service, cost control, planning and risk management and supplier/partner relationship management. Moreover, customers' expectations nowadays are more demanding than ever. Companies have responded with global networks, product innovation and market expansions. This means that companies now rely on supply chain managers to optimise their value chains in order to stay competitive. In order to achieve this goal, we have to keep ourselves updated with the latest technologies.

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Founded in 1998, Neusoft Medical is the support organisation for National Digital Imaging Research Center. Software development is a core competency of Neusoft. Neusoft's leadership in software development has led to Neusoft Medical becoming China's uncontested market leader in medical equipment and service. Neusoft Medical has expanded its leadership with the establishment of international subsidiaries in the United States of America, United Arab Emirates, Peru, Russia, Brazil and Vietnam.

Medical Equipment includes a wide portfolio, including CT, MRI, X-ray, ultrasound, PET (Positron Emission Tomography), Linear Accelerator, and IVD(In Vitro Diagnostic Products). Currently, Neusoft Medical's products have been exported to over 100 countries and regions around the world, serving more than 9,000 renowned customers.

Neusoft Medical has established cooperation with Education and Science Research Institutes including the Institute of Physics and Mathematics of Chinese Academy of Sciences, North-eastern University (China), Eindhoven University

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Contact details:
Anupam Agarwal
Director
Consort Overseas Pte. Ltd.
1,La Place, Shahnajaf Road,
Lucknow-226001(U.P.)
INDIA
Tele/fax- 0522-2201082
mobile no- 08052722229/
09415798949
email:anupam@consort.net.in
consort_overseas@yahoo.co.in

Compressed-SENSE MRI -- A Disruptive Innovation in Speed

Rupsa Bhattacharjee, MRI Application Specialist, Philips India, Gurgaon and **Indrajit Saha**, Lead Clinical Scientist -- Diagnostic Imaging, Philips India, Gurgaon emphasises on innovations that Philips has brought to MRI technology with Compressed-SENSE methodology

ALL OVER the world for the past few years diagnostic imaging equipment, including MRI, experienced a plethora of innovations into the direction of better precision diagnosis dedicated to improve more lives. Philips being one of the major players in developing novel solutions for MR Imaging, has aligned its goals into three major categories dedicated towards improving patient-care -- the focus is to provide comfortable MRI scanning experience to the patient and to speed up the MR examinations time significantly to reduce the scan duration while improving the diagnostic confidence for the radiologists.

Since its introduction, MRI has been challenged by the need of 'speed'. Today, the demand to shorten MRI examinations without impeding image quality has become even more relevant. Because, an increase in different chronic and challenging conditions have led to a growing use of MRI -- this has created a need for the paradigm shift in productivity by accelerating the MRI examination duration. Philips is always in the forefront of novel innovations to accelerate MRI scan – with the introduction of SENSE parallel imaging methodology in 1999, Philips pioneered multiple MRI scan acceleration methods over the years with recent introduction of Compressed-SENSE methodology at 1.5T and 3.0T Philips MRI systems.

Philips Compressed-SENSE combines the strengths of SENSE parallel imaging and compressed-sensing by exploiting the multi-element receiver coil sensitivity variation and using variable density incoherently under-sampled data. This novel Compressed-SENSE solution overcomes the limitations of conventional compressed-sensing methods (e.g., low SNR and blurred images) and generates fast sharp 2D and 3D images with higher SNR -- Compressed-SENSE is equipped to deliver speed without sacrificing image quality.

Compressed-SENSE is suitable for all anatomies (brain, spine, MSK, body, cardiac etc.) with capabilities to perform 2D and 3D acquisitions and thus making it an ideal solution for about 88 per cent of routine clinical exams. It can be applied to commonly used contrast sequences including T1, T2, FLAIR, MRA etc. as well as quantitative MR methods. It supports different acquisition techniques such as mDIXON, FFE, TFE, SE, TSE (in combination with pre-pulses like fat suppression, REST slabs etc.). In addition, Compressed-SENSE has a very efficient and robust reconstruction algorithm that produces the final diagnostic images very fast with lower memory imprints.

Philips unique Compressed-SENSE enables acceleration by up to 50 per cent with virtually equivalent image quality while compared with routine scanning using parallel-imaging methods. Moreover, Compressed-SENSE enables the reduction of breath hold times and helps patients with compromised vascular compliance to complete their examinations with less challenges. This method also reduces the time spent in the MR for the patient – highly beneficial for scanning paediatric as well as uncooperative patients. In addition, Compressed-SENSE has the potential to tremendously increase the number of patient scans performed per day at the hospital or diagnostic centre and lower down the patient waiting time.

Philips' Compressed-SENSE is the ideal solution to increase productivity and speed of MR examinations with increased precision or diagnostic confidence while enhancing the patient experience and comfort.

Impact of technology on threats to global public health : Burden of non-communicable diseases

Clinivantagre MyLife solutions can be used to combat with rising burden of NCDs by focussing on chronic care management programmes to these lifestyle diseases

MULTIPLE HEALTH challenges are currently challenging the global health state and impacting many of the economies in developing nations. The outbreaks of vaccine-preventable diseases like measles and diphtheria or increasing reports of drug-resistant pathogens, growing rates of obesity and physical inactivity to health has become a threat to global health.

Non-communicable diseases (NCDs) are the global leading cause of morbidity and mortality and disproportionately affect more in developing nations. Mobile technologies are enabling new ways for NCDs management by providing powerful tools to both doctors and patients for effective prevention and treatment. As the common risk factors of NCDs are related to human behaviour; Clinivantagre MyLife solutions can be used to combat with the rising burden of NCDs by focussing on chronic care management (CCM) programmes to these lifestyle diseases. Technology can provide effective NCDs management in developing countries—which have a lot of issues in their healthcare systems.

Companies like Clinivantage can help governments successfully implement the World Health Organisation's new 5-year strategic plan – the 13th General Programme of Work. This plan focusses on a triple billion target: ensuring one billion more people benefit from access to universal health coverage, one billion more people are protected from health emergencies and one billion more people enjoy better health and well-being. Reaching this goal will require addressing the threats to health from a variety of angles, including leveraging new technology, devices, standardised protocols and near real time information to create a decision support system.

The prominence of non-communicable diseases like diabetes, cancer and heart plagues the national health system. These diseases are collectively responsible for over 70 per cent of all deaths worldwide, or 41 million people. This includes 15 million people dying prematurely, aged between 30 and 69. Over 85 per cent of these premature deaths are in low- and middle-income countries. The rise of these diseases has been driven by four major risk factors: tobacco use, physical inactivity, alcohol use and unhealthy diets - all are behaviour related. WHO will work with governments to help them meet these global targets, governments have to start focussing on leveraging technology that can help make a meaningful impact on reducing non-communicable diseases, which are more lifestyle focussed and require behavioural changes.

Technology is improving the public health landscape, with mobile devices, telehealth setups, health information exchanges and more have made strides in helping both patients and providers. Increased ownership of these tools means that a majority of the country potentially has round-the-clock access to mobile applications to provide users need-to-know information at their fingertips and public health entities need to take advantage of this technology proliferation. Governments with Clinivantage solutions can focus on scaling up digital health and combating NCDs – Digital and specifically Clinivantage MyLife solutions have the potential to play a key role in transforming citizens lives for the better. Government can provide a powerful opportunity to extend and change how we access health services, as they can bring them to people in remote areas and can make universal access to health care for all a reality – across the globe.

Clinivantage MyLife Mobile supports countries and governments by providing technical expertise to integrate mobile health interventions in their national health systems and sustainably scale at the national level. Central tools in this are the mHealth applications, hospital integrated national health stack and practise management solutions, which consolidate all relevant information and background necessary: on set up and running programmes, deliver a desired health impact at scale, and integrate mHealth with digital and non-digital health services – presenting it in the form of plug-and-play, ready-to-use options for governments.

"Governments have to focus on assessments for anxiety, depression, addiction, cognitive ability along with early identification of four major NCDs - cardiovascular diseases, diabetes, chronic respiratory diseases and cancers" says Nilesh Jain, Founder Clinivantage. He further explains "It is very difficult to effectively deploy treatment plans for long term chronic conditions, if behavioural health issues are not understood and addressed at a population level". - For example, a diabetic with anxiety or depression is not likely to manage the long term chronic care protocol and follow through plans for blood glucose level checks, change in diet or exercise plans or even show up to appointments.

Key factor to improve NCD is integration of behavioural health into the primary care process. "Most often proper assessments of mental health conditions aren't done and these conditions can significantly impact a patient's physical health status, this calls for an immediate need to integrate behavioural health assessments into primary care, current mobile technology can play a major role in achieving this at a mass scale."

Governments can implement WHO recommended set of low-cost interventions to improve access to basic healthcare interventions via the latest medical technology solutions. This includes management and distribution of essential medicines; deployment of affordable medical protocols required for early detection. This implementation helps with timely treatment of NCDs across four key criteria: (a) public health impact at large; (b) cost-effective technology solutions across clinical and non-clinical processes; (c) low cost of implementation by leveraging technology - process, tools and devices; and (d) feasibility of scaling up, particularly in resource constrained environments for developing nations.

Clinivantage solution deployment can improve efficacy of standard treatment guidelines and plans to treat and prevent NCDs, this will result in improved clinical management of patients. Improved availability and access of basic health technologies to diagnose and treat NCDs will positively impact the clinical management of NCDs across all the primary health care centres and improve patient outcomes.

Public health organisations are not prepared and do not have the technology, skills and resources, to deal with the growing issue of NCD management. The solutions developed for infectious diseases do not work for NCDs; and the enormous shift in disease patterns and the necessary response will force us to think differently on adoptions of technology and use of protocols. Non-communicable diseases are front and centre of the discourse around national health. Non-communicable diseases radically disrupts the future of national health and most of the governments don't have the right latest technological competencies from connected devices, to cloud computing and AI solutions to deal with it. NCD's are not just disruptive because of the epidemiological damage that they cause, but are equally disruptive in terms of the political, economic, technological, societal and health systems responses needed to make a sustained difference for the nation.

"NCD prevention and control should be seen as an urgent need of the nation and solutions must be integrated with existing initiatives leveraging the latest innovations in technology providing an opportunity to renew, reinforce and enhance commitments to reduce the nation's overall burden on the healthcare infrastructure " adds Jain.

Primus Super Speciality Hospital, New Delhi installs Carestream's DRX Ascend System to enhance patient care

DRX Ascend is step towards institutions mission to continuously work to improve quality of care, service provided, to enhance patient care

PRIMUS SUPER Speciality Hospital, New Delhi installed a floor mounted Carestream DRX Ascend System at its Radiodiagnosis department.

Primus Hospital is a state-of-the-art multispeciality hospital located in the heart of India's capital. The installation of the Carestream DRX Ascend is a step towards the institutions mission to continuously work to improve the quality of care and the service they provide, to enhance patient care.

"Carestream has been our imaging partner of choice for many years now. The company's

imaging systems are extremely reliable and intuitively easy to use, which enhances our productivity. Both our staff and patients benefit because Carestream's imaging systems offer excellent image quality at a reduced dose", said Ram Kumar, Biomedical Manager, Primus Hospital.

At Primus Hospital the Carestream DRX-Ascend system captures over 2,500 imaging exams a month and is equipped with two Carestream DRX Detectors, designed for high-resolution imaging. In addition to the DRX Ascend, Primus also installed two Carestream DryView Laser Imagers, a Carestream DirectView CR Classic System and a Carestream Mobile kit to digitise their existing Mobile X-ray unit.

"Primus Super Speciality Hospital is a leader in providing high quality healthcare and we at Carestream are proud to be associated with them. We are happy to work together with their staff and support their commitment to deliver excellent patient care", said Edwin Pinto, General Manager- XRS Solutions, Carestream Health India.

PRODUCTS

Save Gas, Time and Money

Dual Flow Meter

The OxyM Blender with integrated flow meters specifically designed for use in the NICU.

The 0-15 LPM flow meter on the left can be used to connect to a resuscitator, nCPAP, BC-PAP. The flow meter on the right, which can be fixed in 0-15, 0-3.5 or 0-1.0 LPM, can be used to connect an infant nasal cannula.

Bleed Turn ON/OFF

The OxyM Blenders unique features is the bleed knob can be turned ON/ OFF by pushing the knob. It is saving time and reduces frustration, because there are no parts to disconnect and misplace and the OxyM Blender is always ready to use.

nice 5010 High/Low Flow Blender

Versatile dual range blender. Ideal for equipment needing flows from 120 lpm, yet also capable of increased accuracy even at a low flow range.

nice 5005 Low Flow Blender

Perfect for NICU and newborn nursery or for a flow of 30 lpm or less. Increased accuracy at even the lowest flow range.

Applications:

OxyM Medical Air/O2 Blenders combine compressed medical air and oxygen to deliver blended pressurised gas at a precise oxygen concentration (FiO2) firm by the user.

All device equipped with a unique gas bleed ON/OFF switch to increase accuracy when needed, conserve gas, save money and time.

These blenders are suitable for respiratory applications including routine therapy, ventilator gas supply, bubble CPAP, SiPAP, nCPAP resuscitator and critically-limited NICU procedures.

nice Neotech offer different models with multiple outlet ports that deliver the same highly accurate selected FiO2. Most models can be customised to include the flow meter attachment with a variety of flow rates available.

The blenders contain an audible alarm which warns the user if either of the gas sources changes by more than 20 PSI from the other.

Air and Oxygen blenders require a bleed for good accuracy at low flow range less than 15 lpm. The bleed ON a blender is activated by the knob which is placed on the right port. This facility avoids the blended gas being into the air when the blender is not in use.

Unique Features

- nice 5005 and nice 5010 have gas savings ON/OFF bleed feature
- Available in very low to high flow capability
- Suited to speciality and general needs
- Mounting solutions for all situations
- All blenders are equipped with an audible alarm

Air Oxygen Blender for Infant 'T' Piece Resuscitator & Humidifier to provide continuous supply of Air and Oxygen Blender gas for Bubble CPAP and T-Piece Resuscitator.

Optimise Lung Protection and Breathing Support

nice 5060

Continuous positive airway pressure (CPAP) supports infant breathing by providing respiratory support throughout the respiratory cycle. OxyPAP maintains the infant's functional residual capacity by helping to prevent airway closure. CPAP promotes gas exchange in the alveoli, which acts to enhance airway patency, improve lung volume recruitment and maintain infant energy reserves, without the complications associated with endotracheal intubation.

Optimal humidity (37°c, 44mg/L) with CPAP is vital to support an infant's breathing and protect its developing lungs.

Optimal humidity protects the lungs to optimise outcomes for the infant by minimising airway drying, improving secretion clearance, reduce airway constriction.

Features:

Safe and reliable:

The unique bubble CPAP generators provides consistent and accurate delivery of CPAP. The reusable pressure manifold with pressure relief valve for infant safety. The manometer is provided to ensure the delivery of accurate PEEP. Variable PEEP probe to adjustment setting of PEEP. Servo control humidifier with temperature indication with heater wire for optimal humidity of delivered gas.

Easy to use

Easy to adjust the PEEP setting on the bubble CPAP generator. Easy to set modes of humidifier easy to fix the nasal prong with the neonates.

Optimum humidification

The bubble CPAP system provides respiratory support with body temperature, pressure saturated gas to the infant. Optimal humidity promotes mucociliary clearance and reduces the work of breathing.

Infant nasal prongs

Contoured nasal prongs made from non reactive silicone along with a unique cannula body provides stability during therapy. The integrated pressure monitoring line allows the monitoring of nasal prong pressure without having lines near the infant's face. Offered in seven different sizes, it can be used on a wide range of patients from premature to new born baby.

Bubble generator

Bubble generator provides a convenient means to apply positive airway pressure, freeing the clinician to focus on patient care, not the device. This design delivers accuracy and stability throughout the course of therapy. The ergonomic design allows airways pressure to be easily set without the cumbersome time consuming tasks normally associated with bubble devices.

Water feeding port allows water to be added or removed by disconnecting the expiratory circuit. Minimum and maximum lines clearly visible in highly transparent jar.

Servo Control Respiratory Humidifier

nice 8050

Adult Care

Capable of operating in either invasive or non invasive control mode with flow detection.

It can be used for invasive ventilation, non invasive ventilation and oxygen therapy.

Infant Care

Capable of operating in either invasive and non invasive control mode with flow detection.

It can be used for invasive ventilation, infant bubble CPAP, resuscitation and oxygen therapy.

Nice 8010

Respiratory Humidifier
Adult Care

Capable of operating in non invasive control mode with low, medium and high temperature setting.

It can be used for invasive ventilation, non invasive ventilation and oxygen therapy.

Infant Care

Capable of operating in non invasive control mode with low, medium and high temperature setting.

It can be used for infant resuscitation and oxygen therapy.

Humidifier, T-Piece Resuscitator and Blender provides a warmed and humidified flow of air-oxygen mixture to the infant respiratory care range of product illustrates the breathe of respiratory therapies patients may require when in need of respiratory assistance.

nice 8020

- Reusable paediatric/neonatal humidification chamber
- Autoclavable low compressible volume humidifying chamber.
- Chamber compressible volume for high, flow 360ml.
- Maximum water capacity 230ml.
- 360 degrees viewable water line for ease to monitor the water level from all angles.
- Highly durable intended for multiple usages.
- Withstands prolonged exposures to high temperature and repeated sterilisation.
- Water fill port for refilling water during operation.
- Bio-compatible material minimises risk on patient with safer material.

nice 8030

- Reusable adult humidification chamber
- Autoclavable humidifying chamber with peak flow bypass.
- Chamber compressible volume for high flow 700ml.
- Maximum water capacity280ml.
- 360 degrees viewable water line for ease to monitor the water level from all angles.
- Highly durable intended for multiple usages.
- Withstands prolonged exposures to high temperature and repeated sterilisation.
- Water fill port for refilling water during operation.
- Bio-compatible material minimises risk on patient with safer material.
- Humidifier and resuscitator

T-Piece resuscitation with optimal humidity (heated and humidified gas) can be delivered with the nice 5020 Horn- puff Infant Resuscitator and nice 8050 Humidifier System.

The nice 5020 Horn-puff is a manually operated gas-powered resuscitator designed to provide controlled peak inspiratory pressure (PIP) and consistent positive end expiratory pressure (PEEP).

Features:

Designed for use in hospital environment wherever medical gas is being supplied to patients, nice 8050 and nice 8010 heated wire humidifier incorporates latest technology that provides physiological level of humidity at body temperature.

The nice 8050 features dual servo control feedback system, incorporates to constant monitoring and control chamber and proximal temperatures in the airway line. As a result high temperature gasses cannot exist anywhere in the system. When using a heated wire breathing system from nice

8050, ventilated gas continues to warm during delivery. Rain-out and waste are reduced, while the need for circuit change is minimised.

Comprehensive audible and visual alarm constantly protects against potential problems. The nice 8050 will alert at variations of set temperature vs actual.

The design of nice 8050 and 8010 makes it the ideal humidification system for adult ventilator, infant ventilator, infant resuscitator and oxygen therapy for adult, paediatric and neonatal care.

The nice 8050 and nice 8010 accommodates both high and low flow ventilation therapies, as well as heated and non heated wire breathing system.

Two types of humidification chamber to use the therapy to meet the patient particular needs.

Adult Chamber - for Adult Respiratory Application

Infant Chamber - for Paediatrics and Neonatal Application

The nice 8050 and 8010 delivers precise, reliable performance, an advanced micro- processor controller assures the control of the system. The system responds immediately to any change in settings, and constant self diagnostic verify proper operation every second of use.

High and low temperature protection is assured throughout operation, including warm-up and setting changes.

If the delivery temperature exceed 41°C independent circuitry shutdown all heating elements.

Contact details:

website:www.niceneotech.com
email: marketing@niceneotech.com
Phone no: 09840874902

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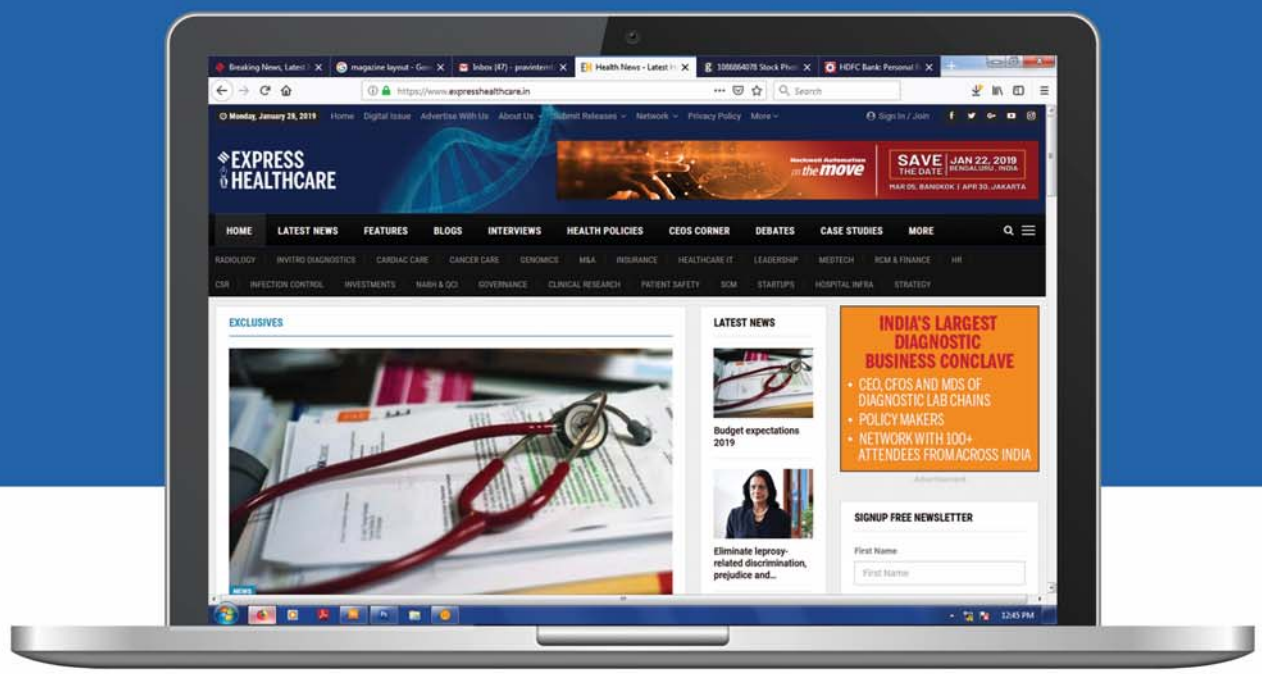

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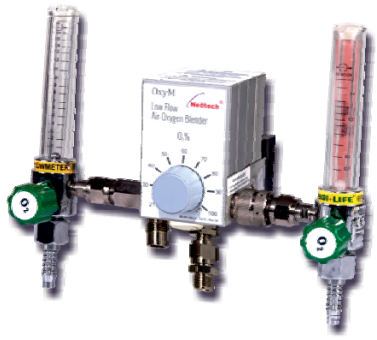
Continued monitoring and updated technology have been the strengths of nice Neotech

Heated (Respiratory) Humidifier
nice 8050

Infant T-Piece Resuscitator
nice 5020



Low Flow Air Oxygen Blender
nice 5005

CE 0843

Infant Radiant Warmer
nice 2010 BC

M/s. **nice Neotech Medical Systems Pvt. Ltd.**, was established in the year 1997. **'nice'** stands for **'Neonatal Intensive Care Equipment'** which aptly amplifies the objectives of the organization.

nice Neotech design the product as per world standard which symbolizes excellence in form, function, quality, safety, sustainability and innovation, and communicate that the product is usable, durable, aesthetically, appealing and socially responsible & most user-friendly.

Our product range include Infant Incubator, Infant Transport Incubator, Infant Radiant Warmer with T – Piece Resuscitator & Infant Phototherapy, Infant Radiant Warmer, Infant LED Phototherapy, Bubble CPAP System, Heated(Respiratory) Humidifier, Infant T – Piece Resuscitator, Infant/ Neonatal Fiber Optic Transilluminator, Oxygen Analyser, Infant/ Neonatal

Respiration Monitor, Infant Observation Trolley, Infant Weighing Scale, Oxygen Hood, Air Oxygen Blender, Medical Air Compressor, Reusable/ Disposable Breathing Chamber, Reusable/ Disposable Breathing Circuit, Nasal Mask, Nasal Prongs, Head Bonnet, and Eye Mask etc.

Applications:

1. Mother & Child Care
2. Level I NICU
3. Level II NICU
4. Level III NICU
5. Pediatric ICU
6. Newborn Emergency care Unit
7. Respiratory care
   - Neonatal Respiratory care
   - Adult Respiratory Care

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Tel:+91-44-2476 4608, +91 98408 73602 / 98408 74902.
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