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JUNE 2023, ₹50

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Interview

Jonas Muff
Founder and CEO,
Vara

Diagnostics
Dinesh Chauhan,
CEO, CORE Diagnostics

IT INFRA IN HEALTHCARE IN NEED OF SYSTEMATIC APPROACH

More investment and adoption of stringent policies are required to build secure and sustainable IT infrastructure in healthcare

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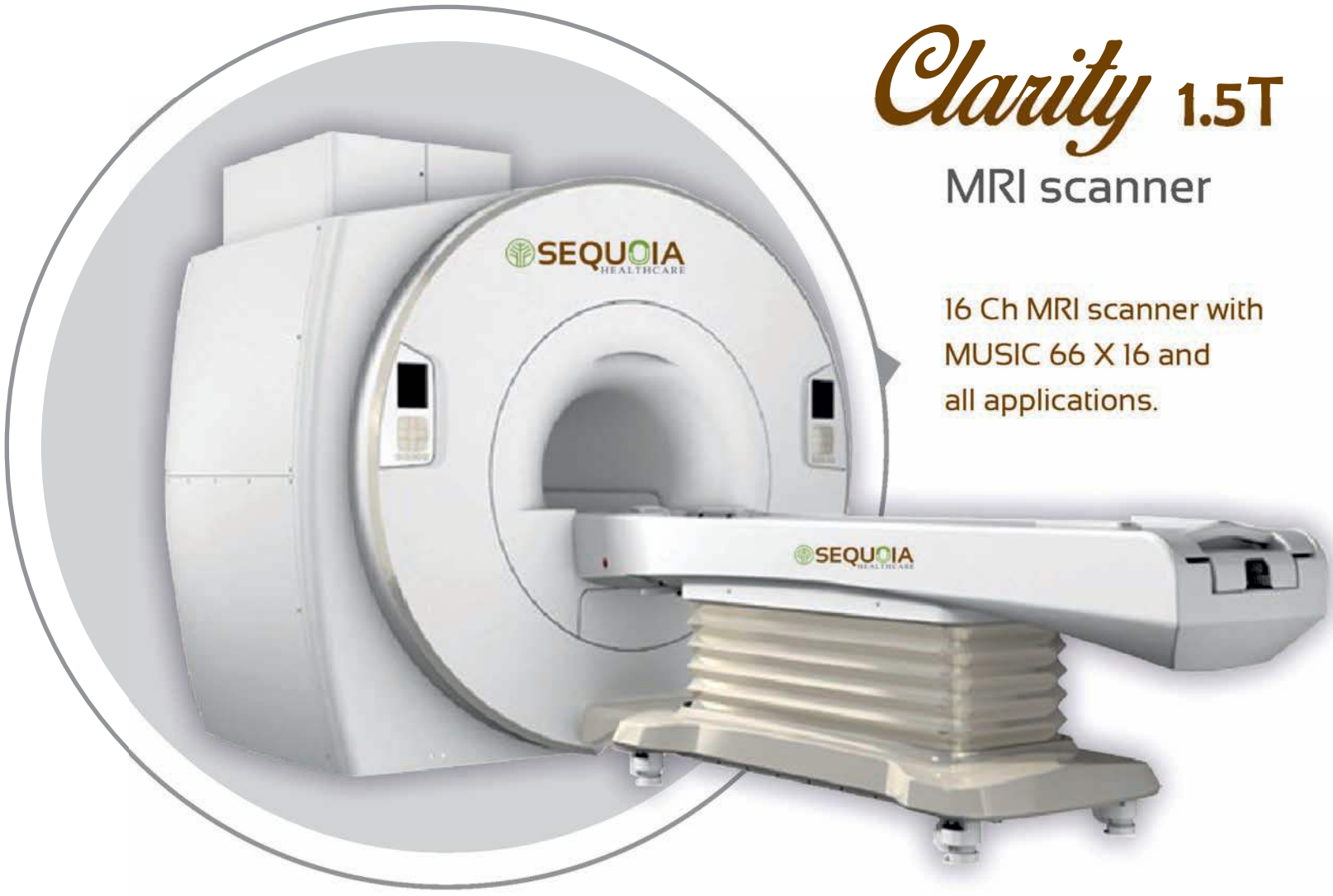

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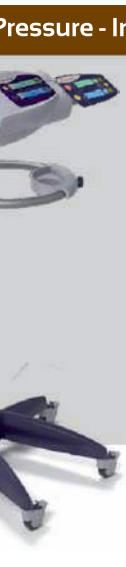
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New doctor registration rules become another flashpoint

While the new regulations governing the registration of doctors released by the National Medical Commission (NMC) on May 10 are a step in the right direction, the NMC needs to quickly fix some contentious issues before operationalising them. Called the Registration of Medical Practitioners and Licence to Practice Medicine Regulations, 2023 the regulations specify the eligibility criteria to register in the National Medical Register (NMR). Each registered doctor will receive a Unique Identification (UID) generated centrally by the NMC's Ethics & Medical Registration Board (EMRB), granting the doctor registration in NMR and eligibility to practice medicine in India.

For patients, the new regulations and the UID system offer hope that a central registry will make it easier to track unscrupulous doctors, who may have been barred from practice in a certain state due to unethical practices but often set up practice in another state.

However, the regulations have created confusion among doctors and resentment among state medical councils. The tussle for authority and registration revenue seems at the heart of this latest turf war between the NMC and the state medical councils.

The grouse that the NMC did not incorporate the detailed observations sent by associations representing doctors in response to the draft circulated in 2022 seems reasonable. In a four page letter to Sandhaya Bhullar, Secretary, NMC dated May 20, 2023, Dr Sharad Kumar Agarwal, National President, and Dr Anilkumar J Nayak Honorary Secretary General, Indian Medical Association (IMA) made several critical observations on the clauses of the May 10 notification, stating that 'the final regulations that has been put into operations continues to be plagued by inconsistencies, inadequacies and contradictions...'

For starters, the letter alleges that the May 10 notification does not define 'Registered Medical Practitioner'. Neither does it specify how state medical councils are supposed to regulate professional conduct, promote medical ethics or take disciplinary action against doctors. This would therefore need a separate regulation.

A major bone of contention is that the new regulation makes NMC the primary registering authority for doctors, allowing them to practice across the country, thereby taking away the powers of state medical councils.

Similarly, the letter points out that the processing fee of generation of the UID, 'the lone source of revenue receipt is pocketed by the NMC making them (the state medical councils) lifelong redundant and bankrupt as well.'

The fact that the new regulation proposes that the registration will be valid for five years will benefit doctors, as it reduces their paperwork, and also allows them to practice in multiple states without too many administrative hassles.

However, the IMA letter points out that this move would be 'perilous for the State Medical Councils, especially from the point of view of their receipt revenue for the purposes of Renewal of Registration ....'

The tussle for authority and registration revenue seems at the heart of this latest turf war between the NMC and state medical councils

State councils argue that registering at the central level is already being done, as part of the Indian Medical Register (IMR). Would the NMR be a duplication of efforts as doctors are also required to register with their state medical councils?

How soon will existing data from the IMR be migrated to the NMR? Will registered doctors need to re-register themselves?

In the era of social media, misinformation has a tendency to spread faster than truth. For instance, doctors received a social media post, with a link supposedly to the IMR, asking them to check their details on the IMR. Panic broke out when doctors noticed a 'disparity' in the IMR data.

On May 25, the Maharashtra Medical Council (MCC) had to issue a public notice, that contrary to viral social media posts, the NMC had not yet provided the electronic format or software for doctors to file and search for their details in the IMR. Hence most of the sections/clauses of the May 10 gazette notification were currently not executable.

While the MCC letter mentioned that as per usual practice, they had sent their data to NMC for updating the IMR, it is a reported fact that while state councils are required to send the state-wise registration data to the NMC to update the IMR on a periodic basis, most states do not do this as diligently as required.

The May 20 IMA letter also points out that though the new regulation requires doctors to apply via a web portal of the EMRB, no such web portal has been notified as of now. In the absence of such a portal, a transition period of 3 months from the publishing and notification of the Regulation is too short, reason the IMA functionaries.

Some state medical councils have their state medical registers in a digital format, and the IMA letter proposes that the entire information of such state medical registers should be transferred to the NMR without compelling individual doctors included in such electronic formats to make individual applications for inclusion in the NMR.

The IMA letter reasons that 30 days is too short a period for state medical councils to verify registration applications, as it involves authentication of all documents, including certificates, especially internship completion certificates and confirmations. In the case of foreign medical graduates, this includes confirmation of documents submitted by them from foreign universities and vetting of documents from the embassies.

One hopes that the central and state medical councils find a middle path to this latest flashpoint and start focusing on real issues like shaming errant doctors, weaning out unethical medical colleges, revamping medical education in India, protecting doctors from violence and above all, nurturing trust between doctors and patients.

VIVEKA ROYCHOWDHURY *Editor*
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INTERVIEW

AI can transform breast cancer screening in India

Jonas Muff, Founder and CEO, Vara explains how AI can really expand the horizon for breast cancer screening in India and talks about his company's future plans for the Indian market, in an interaction with **Kalyani Sharma**

Tell us about Vara's journey in India so far. What are the future plans for the Indian market?
We are very excited to bring Vara's innovative AI-driven breast cancer screening technology to India. India is where Vara is needed the most as breast cancer is now the most common cancer that affects Indian women. For every two women detected with breast cancer in India, we lose one to it. Breast cancer is very deadly when detected late. In India >50 per cent of breast cancers are detected in stage three or four.

Vara's mission is to find every deadly breast cancer early - because when breast cancer is detected early,
◆ Research has shown that cancer diagnosis at an earlier progression state is associated with significantly higher survival rates (up to 97 per cent),
◆ Treatment costs are lower and less invasive
◆ Life quality increases significantly

We have received a tremendous response from the market so far, with many healthcare providers and corporate partners showing keen interest in our solution. Our plan for the Indian market is to expand our network of partners, starting from Mumbai, and offer Vara's services to as many women as possible. We are also committed to educating women about breast cancer and the importance of early detection through various awareness programmes.

Can AI really expand the horizon for breast cancer screening in India? How do you see its acceptability in the Indian market so far?
Absolutely. AI can transform breast cancer screening in India. With one of the highest prevalence rates in the world, India is just starting to look into a population-based breast cancer screening programme.

Many healthcare systems that want to implement population-based breast cancer screening programmes find it challenging due to a few factors. It requires significant infrastructure investment upfront in equipment and IT, it is human intensive to require a doctor on premise for procedures such as ultrasound and requires the availability of sub-specialised screening experts which are scarce worldwide.

Evidence has shown that AI can be highly effective in improving the scale and efficiency of breast cancer screening programmes by complementing a radiologist to manage their workloads and to improve their efficiency overall. For instance, Vara's AI-powered breast cancer which is widely adopted in the German national screening system has shown to have a sensitivity of 90 per cent and a specificity of 93 per cent, which meets mammography, the current gold standard for breast cancer screening. Vara's AI decision referral pathway augments radiologists, such that they can screen more women and achieve better efficiency, per cent.

We have seen a growing acceptance of our technology in the Indian market, and we are confident that it will continue to grow as more women become aware of the benefits of early detection.

Vara recently announced a partnership with Suburban Diagnostics and NM Medical. Can you elaborate more on this? What do you aim to achieve with this partnership?
Both of our first partners, Suburban Diagnostics and NM Medical, are pioneering access to high quality healthcare and recognise the importance of building a nationwide screening programme, starting with Mumbai, to catch every deadly breast cancer early.

As the role of technology to improve outcomes in modern healthcare is becoming increasingly evident, our technology combined with the operational expertise of our partners will help us achieve our goal of early detection and improve outcomes for women with breast cancer.

How do you see the integration of AI in cancer shaping up in the future?
AI is making rapid strides in revolutionising healthcare, and its application in cancer care is no exception. AI is being used to develop predictive models for cancer, to identify risk factors, and to support decision-making for diagnosis and treatment.

One area where AI is showing promise is in the early detection of cancer. Vara specialises in AI-driven cancer diagnostics. In our home market, Germany, 1 in 3 women is scanned for breast cancer using Vara's technology, wherein we have been able to show that Vara can find 42 per cent of all missed interval cancers and reduce the workload of radiologists by 73 per cent. Vara has published its approach and results in *Lancet Digital Health,* demonstrating that Vara assisted radiologists to significantly outperform an average radiologist.

The integration of AI in cancer care is still in its early stages, but the benefits are clear. AI can improve the accuracy and efficiency of cancer screening and diagnosis, which can lead to better patient outcomes. As the technology continues to evolve, it is imperative that AI will play an increasingly important role in cancer care. Vara is at the forefront of this AI-driven approach to cancer care, and our screening tool is a prime example of the potential of this technology.

Do you see the accuracy and accessibility of AI-integrated breast cancer screening as a challenge? If yes, what could be the possible solution?
Vara trains its AI model on one of the largest data sets in the world with over 9 million mammograms that is continuously enriched by women who go through Vara enabled screening centers. While accuracy is an important challenge, our screening technology has been extensively tested and validated not only in clinical settings but also diagnostic applications as a reliable and practical tool for breast cancer screening.

We continue to work with our partners in India, Egypt, Mexico and in Germany to improve screening access to every at-risk woman and as many women as possible. By addressing these challenges, we can make a significant impact on breast cancer screening and improve outcomes for women with breast cancer.

Kalyani.sharma@expressindia.com
journokalyani@gmail.com

Unleashing the power of EIT technology in redefining respiratory care

EIT is a non-invasive imaging technique that utilises electrical impedance measurements to generate real-time images of lung function. By applying small electrical currents through an array of electrodes placed around the chest, EIT technology measures changes in electrical conductivity and produces cross-sectional images of lung ventilation

In recent years, advancements in medical technology have revolutionised healthcare practices, and one such groundbreaking innovation is Electrical Impedance Tomography (EIT) technology. EIT has emerged as a game-changer in the ventilation industry, offering tremendous benefits for clinicians around the world.

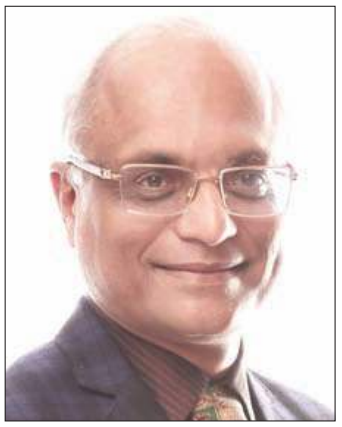
Understanding EIT technology

EIT is a non-invasive imaging technique that utilises electrical impedance measurements to generate real-time images of lung function. By applying small electrical currents through an array of electrodes placed around the chest, EIT technology measures changes in electrical conductivity and produces cross-sectional images of lung ventilation. These images provide clinicians with valuable insights into the distribution of air within the lungs, enabling them to optimise ventilator settings and improve patient care.

Enhancing ventilation strategies

Traditionally, clinicians have relied on subjective methods such as auscultation or X-rays to assess lung function. However, these methods often provide limited and delayed information. EIT technology, on the other hand, offers real-time, continuous monitoring of lung ventilation, allowing clinicians to make prompt adjustments in ventilation strategies.

EIT images provide a visual representation of lung function, displaying regional differences in ventilation distribution. This allows clinicians to identify areas of over- or under-ventilation and make informed decisions to optimize ventilator settings accordingly. By personalizing ventilation based on individual patient needs, EIT technology can potentially reduce the risk of ventilator-associated lung injury and improve overall patient outcomes.



EIT technology has proven to be particularly valuable in critical care settings, where ventilator management plays a crucial role

Dr R K Mani
Director Clinical Services & Consultant Pulmonology,
Yashoda Super Specialty Hospitals,
Ghaziabad

The Pulmovista, developed by Dräger, is a groundbreaking device that revolutionises respiratory care by leveraging the principles of EIT

Dhritimay Dhar
Vice President- Sales and Marketing,
Draeger India and South Asia

EIT images provide a visual representation of lung function, displaying regional differences in ventilation distribution

Dr R K Mani, Director Clinical Services & Consultant Pulmonology, Yashoda Super Specialty Hospitals, Ghaziabad said, "EIT technology has proven to be particularly valuable in critical care settings, where ventilator management plays a crucial role. In conditions such as Acute Respiratory Distress Syndrome (ARDS), EIT provides clinicians with real-time feedback on lung recruitment and titration of Positive End-Expiratory Pressure (PEEP). By precisely adjusting ventilation parameters, clinicians can optimise gas exchange, reduce complications, and enhance patient recovery. Moreover, EIT technology offers insights into the effect of body positioning and postural changes on lung function. This information assists clinicians in choosing the most appropriate patient positioning to improve ventilation, prevent atelectasis, and facilitate secretion clearance."

The benefits of EIT technology extend beyond ventilation optimisation. Its non-invasive nature and real-time monitoring capabilities minimise the need for additional imaging techniques, reducing patient discomfort and radiation exposure. EIT can be easily integrated into existing ventilator systems, making it a cost-effective solution for healthcare facilities.

Dhritimay Dhar, Vice President- Sales and Marketing, Draeger India and South Asia said, "The Pulmovista, developed by Dräger, is a groundbreaking device that revolutionises respiratory care by leveraging the principles of EIT. Pulmovista system captures the resulting changes in electrical impedance and generates dynamic, high-resolution images that depict the distribution of air within the lungs during the breathing cycle. This advanced level of insight enables clinicians to make data-driven decisions, make timely interventions to optimise ventilation strategies, and ultimately improve patient outcomes. EIT technology is undeniably a game-changer in the ventilation industry that is revolutionising the way clinicians approach respiratory management."

Unlocking new possibilities

EIT technology is paving the way for a new era in respiratory care. Ongoing research aims to leverage EIT for monitoring lung perfusion, detecting pneumothorax, and even guiding interventions during bronchoscopy. As the adoption of EIT expands, it is crucial for healthcare organisations and professionals to embrace this innovation and harness its full potential in advancing patient care.

The National Medical Devices Policy, 2023: A game changer to create a $50 billion sector by 2030

Himanshu Baid, Managing Director, Poly Medicure Ltd highlights that Poly Medicure restates its pledge to constant product and process innovation towards its mission of making quality affordable healthcare accessible to all

India's medical device industry is a vital and crucial part of the country's healthcare system. Together with healthcare providers, pharmaceutical companies, and the healthcare insurance sector, it serves as a crucial pillar in the healthcare delivery system and aids in achieving the main goals of the National Health Policy (NHP), 2017. The multidisciplinary field of medical devices can be broadly divided into the following categories: (a) electronic equipment; (b) implants; (c) consumables and disposables; (d) surgical instruments; and (e) in vitro diagnostic agents. According to the CDSCO, there are additional device categories spread throughout 24+1 (IVD) sub-categories.

As India supported the domestic and international fight against the COVID-19 pandemic through the mass production of medical devices & diagnostic kits, such as Ventilators, Rapid Antigen Test kits, Real-Rime Reverse Transcription Polymerase Chain Reaction (RT-PCR) kits, Infrared (IR) Thermometers, Personal Protective Equipment (PPE) Kits, & N-95 masks, the contribution of the Indian medical devices sector has become even more notable.

The medical devices business in India is a rising star that is rapidly expanding. The medical devices business in India was $11 billion (roughly 90,000 crores) in 2020, with a 1.5 per cent share of the worldwide medical device market. The Indian medical device industry is expanding and has huge potential to become self-sufficient and contribute to the aim of universal health care.

With the new policy in place, the government hopes to reduce India's import dependence to approximately 30 per cent in the next few years and to make India one of the top five global manufacturing hubs. The policy thrust is to look at export-driven manufacturing of high-end devices that are also affordable to Indian hospitals and laboratories, while dramatically reducing import dependence.

The initiative also aims to raise the amount spent on medical devices per person in India. Compared to the global average per capita consumption of $47 and the per capita consumption of wealthy countries like the US at $415 and Germany at $313, India has one of the lowest per capita expenditures on medical devices at $3.

In addition to reducing imports, the policy will help in lowering the costs and increasing the accessibility. This will guarantee greater use throughout the hospital, better healthcare, and more inexpensive therapy.

Strategies to promote medical device sector through National Medical Device Policy 2023:

◆ **Regulatory streamlining:** creation of a Single Window Clearance System, enhancing the Role of BIS and designing a coherent pricing regulation.

◆ **Enabling infrastructure:** The establishment and strengthening of large medical device parks.

◆ **Facilitating R&D and innovation:** Department's proposed National Policy on R&D and Innovation in the Pharma-MedTech Sector.

◆ **Attracting investments in the sector:** encourages private investments, Venture Capitalists, and also Public-Private Partnership (PPP).

◆ **Human resources development:** To have a steady supply of skilled work force across the value chain.

◆ **Brand positioning and awareness creation:** Dedicated Export Promotion Council enabling market access.

The National Medical Devices Policy also aims to establish an innovative and globally competitive industry in India, supported by world-class infrastructure in accordance with PM Gati Shakti, an enabling ecosystem, a streamlined regulatory framework, and qualified manpower, to meet the evolving healthcare needs of patients. This will make sure that everyone has access to high-quality healthcare goods that are patient-centric, innovative, and reasonably priced. This goal is to gain a 10-12 per cent market share in the expanding worldwide market over the next 25 years to become the world leader in the production and innovation of medical devices. The initiative is expected to boost the Medical Devices Sector from $11 billion to $50 billion by 2030.

The Policy establishes a road map for promoting safety and quality to increase Access & Universality, Affordability, Quality, Patient-centered & Quality Care, Preventive & Promotive Health, Security, Research and Innovation and Skilled manpower in a methodical manner.

I am pleased to commemorate the historic adoption of the National Medical Devices Policy, which will be a game changer for India's MedTech sector. The sector is now supported by a strong and consistent policy framework aimed at reducing regulatory processes, promoting Ease of Doing Business, embracing global standards, and boosting sector competitiveness.

> The Indian medical device industry is expanding and has huge potential to become self-sufficient and contribute to the aim of universal health care

Investing in adolescent vaccination: Key to unlocking India's demographic dividend

Somesh Kumar, Country Director, Jhpiego India highlights that effective service delivery mechanisms for vaccines that meet the unique needs of adolescents and adults require a human-centered design approach, community engagement, and innovation

India is home to a large adolescent population of over 243 million, representing a significant potential for economic growth. However, ensuring their health and well-being is crucial as adolescence is a vulnerable period for health risks. Investing in adolescent health is necessary to promote future generations' well-being and unlock India's demographic dividend.

The Government of India has launched initiatives like the *Rashtriya Kishor Swasthya Karyakram (RKSK)*, which provides comprehensive healthcare services to adolescents, including sexual and reproductive health, mental health support, and nutrition education. The School Health and Wellness Program supports the overall well-being of students and creates a conducive environment for learning. Adolescent Friendly Health Clinics (AFHCs) provide tailored healthcare services to meet the specific needs of adolescents.

One of the most cost-effective tools in promoting adolescent well-being by preventing and controlling diseases is vaccination. In India, communicable diseases are a major health concern among adolescents, leading to hospitalisations and deaths. Specifically, diphtheria affects 24 per 100,000 people in the age group of 10-19 years in India, while measles outbreaks primarily affect children aged 0-15 years. Typhoid has an incidence rate of 421 per child-years in the age group of 10-15 years, and HPV affects 3.2 per cent of girls and 2.1 per cent of boys in this age group. In 2020, India reported 77,348 deaths from cervical cancer due to HPV.

Schools can be important locations for adolescent vaccination and can also promote the importance of vaccination through educational programs

Prioritising adolescent vaccination

This highlights the critical importance of prioritising adolescent vaccination as a preventive measure to reduce the burden of vaccine-preventable diseases among this vulnerable population. The World Health Organization (WHO) has emphasised the urgent need to expand immunisation activities beyond infancy, particularly to adolescents.

India's Universal Immunisation Programme provides free vaccination for adolescents against Tetanus and Diphtheria. Diphtheria cases in India predominantly occur in the age group of 5 years and above, with a significant proportion in > 10 years age group during an outbreak in Kerala in 2016. In response, the National Technical Advisory Group on Immunization (NTAGI) substituted the Tetanus Toxoid (TT) vaccine with Tetanus and Adult Diphtheria (Td) vaccine in India's immunisation program in 2019, with the aim to prevent the spread of this vaccine-preventable disease and address the increasing cases of Diphtheria in school-going children and adolescents.

Vaccine coverage for Td10 and Td16 in India's immunisation program is sub-optimal with coverage reported at 54.9 per cent and 48.4 per cent during FY 2018-19. The coverage further declined in the following years, with Td10 coverage dropping from 63 per cent to 52 per cent and Td16 coverage dropping from 58 per cent to 51 per cent during FY 2019-20 and 2020-21.

Ensuring universal access, affordability, and availability of vaccines to non-infant age groups is hence crucial. Effective service delivery mechanisms that meet the unique needs of adolescents and adults require a human-centered design approach, community engagement, and innovation. These demands coordinated efforts from the government, healthcare providers, communities, and stakeholders to reimagine the immunisation infrastructure, address vaccine hesitancy, and promote awareness, leading to improved health outcomes and a healthier future for India.

Partnering with schools can boost adolescent vaccination rates in India. Schools can be important locations for adolescent vaccination and can also promote the importance of vaccination through educational programs. Implementing school-based health programs can also improve access to vaccines for adolescents who lack access to healthcare facilities.

Collaboration between health and education systems can promote adolescent vaccination through school-based programs, health education, early intervention, engagement of parents and guardians, and monitoring and evaluation. This approach has been successful in the Measles-Rubella and COVID-19 vaccination drives in India and can be leveraged to meet the diverse needs of adolescents and enhance their overall health and well-being by providing them with timely and accessible vaccination services.

Investing in resilient service delivery platforms for adolescents can help achieve high coverage of HPV vaccination in India, as the world aims to eliminate cervical cancer. This includes creating sustainable healthcare systems, raising awareness and demand, ensuring affordability and accessibility, and continuous monitoring and evaluation. These efforts can help establish a strong platform for HPV vaccination delivery in India when the government introduces the HPV vaccine.

A social and economic imperative

Vaccinating adolescents is crucial for protecting them from preventable diseases, reducing the burden on the healthcare system, and contributing to a healthier and more productive society. Providing access to life-saving vaccines for all adolescents is a social and economic imperative. Vaccines are a critical tool for ensuring that our youth have the best possible start in life.


9.34333

IT INFRA IN HEALTHCARE IN NEED OF SYSTEMATIC APPROACH

More investment and adoption of stringent policies are required to build secure and sustainable IT infrastructure in healthcare

By Kalyani Sharma

India's healthcare and hospital IT infrastructure has been undergoing significant advancements and digital transformations in recent years be it adoption of Artificial Intelligence (AI), Electronic Health Records (EHR), Health Information Exchange (HIE), telemedicine, health management information systems or mobile health apps. This had led to the healthcare IT infrastructure becoming more interconnected and data-driven. With the huge amount of health data being stored and collected, robust cybersecurity measures is the need of the hour.

The recent AIIMS cyberattacks is just one example that underlines the gaps that still need to be filled. Healthcare/Hospital IT infrastructure in our country has a lot to catch up on in terms of investment, stringent policies and other parameters.

Talking about the role of cybersecurity, Vishal Salvi, Chief Information Security Officer & Head of Cyber Security Practice, Infosys said, "Cyber-attacks in the health and life sciences sectors have surged in the aftermath of the pandemic. As the healthcare sector continues to undergo digital transformation, the risk of cyber-attacks is inevitable. In 2022 alone, the healthcare industry in India faced over 1.9 million cyberattacks, as per cybersecurity think tank CyberPeace Foundation and Autobot Infosec Private Ltd. Cybersecurity plays a crucial role for healthcare providers to build trust among people over their data. Securing the massive volumes of data that the healthcare sector possesses is only the first step. To be resilient to cyber threats, organisations need to build a highly adaptive security ecosystem which encompasses enforcing IT hygiene, building defence mechanisms, improving risk management, and managing threat detection and response. At Infosys, we enable our customers to drive a mindset built on 'secure by design' which ensures that security is deeply embedded in their systems, and not deployed as an afterthought."

A sustainable cybersecurity approach is one that takes care of today's needs and anticipates tomorrow's requirements

Vishal Salvi
Chief Information Security Officer & Head of Cyber Security Practice,
Infosys

With exposure management, healthcare providers can successfully reduce cyber risk and strengthen their defences, making it more expensive for hackers to breach their organisations essentially cutting through the noise to effectively establish deterrence

Kartik Shahani
Country Manager,
Tenable India

One of the biggest challenges with patient data is that there's so much of it! And working with our clients, we see this data spread across a multitude of disparate IT systems which throws up more challenges

Vaidant Singh
Chief Marketing Officer,
SourceFuse

Connected medical devices are another area of concern for cybersecurity in Indian healthcare. Pacemakers, insulin pumps, and monitoring systems are all becoming increasingly connected to the internet, making them vulnerable to cyber-attacks

Shikha Sharma
Sr. Manager & Head IT,
PSRI Hospital

Minatee Mishra, Director, Product Security – Security Center of Excellence, Philips Innovation Campus said, "Healthcare is a lucrative market for hackers globally because of the treasure trove of sensitive data and traditionally weak security controls. The threat landscape is evolving rapidly and entry barriers for malicious attackers are low (e.g. Ransomware as a Service). The attacks on some of the reputed healthcare institutions demonstrate that we in India aren't immune to evolving threats."

Quoting some numbers, Vikram Thaploo, CEO-Telehealth, Apollo Hospitals Enterprises said, "A recent simulation conducted by CyberPeace Foundation, a cybersecurity think tank, revealed that the Indian healthcare industry faced approximately 1.9 million cyberattacks in 2022. The most recent incidents include the cyber-attack on two prominent public health facilities in Delhi, underscoring the urgent need for robust cybersecurity infrastructure in the healthcare sector."

Kartik Shahani, Country Manager, Tenable India also mentions, "The 2022 Threat Landscape Report by Tenable revealed that India's healthcare sector was the second most targeted by cybercriminals, signalling that innovation has outpaced cybersecurity due diligence within the industry. Given how the threat landscape has changed, it's never been more important for healthcare organisations to view the entire attack surface, detect the attack pathways cybercriminals could take and identify the most critical assets exposed."

Present issues that must be resolved while engaging with patient data

When engaging with patient data in India, there are

several issues that need to be addressed and resolved to ensure data privacy, security, and compliance with relevant regulations.

Vaidant Singh, Chief Marketing Officer, SourceFuse shares his experience with patient data. He explains, “One of the biggest challenges with patient data is that there’s so much of it! And working with our clients, we see this data spread across a multitude of disparate IT systems which throws up more challenges: for doctors, not having a complete patient history during consultations impedes patient care; the power to extract business intelligence and track population health trends is unfeasible; for overburdened call centers, leveraging data to improve efficiencies falls by the wayside; and with so many systems in use, data security and regulatory compliance may be compromised. The solution is data aggregation, having one platform that seamlessly connects all the dots. While each client has unique objectives, data consolidation in the cloud is often the common goal, and from there the opportunities to leverage advanced and sophisticated cloud tech & services is boundless.”

According to Shikha Sharma, Sr. Manager & Head IT, PSRI Hospital, connected medical devices are another area of concern for cybersecurity in Indian healthcare. Pacemakers, insulin pumps, and monitoring systems are all becoming increasingly connected to the internet, making them vulnerable to cyber-attacks. Healthcare organisations must prioritise the cybersecurity of these devices by implementing measures such as firmware updates, firewalls, and intrusion detection systems. Implementing these measures can ensure that medical devices are secure and patient safety is not compromised.

Thaploo added, "The growing reliance on IoT and software-driven medical equipment has introduced cybersecurity concerns surrounding legacy devices and systems. By implementing incentive-based programs, the medical industry can encourage the development of modular and updatable medical technology and software that adheres to minimum cybersecurity standards."

India has no comprehensive laws that protect the privacy of individuals’ personal data, including health records. This leaves citizens vulnerable to data breaches and misuse of their data

Vishal Gondal
Founder & CEO,
GOQii

The collection and sharing of patient data come with ethical and legal considerations. Healthcare providers must ensure that patients' data is collected with their informed consent, stored securely, and shared only with authorised parties

Vikaas Bhatnagar
Chief Information Officer,
Asian Institute of Medical Sciences

Patients must have easy access to their own data in order to participate in their own care and make informed decisions. This requires making data available in a format that patients can understand and use

Karunya Sampath
Co-founder & CEO,
Payoda Technologies

The first step towards enhancing data security is to develop and implement a comprehensive security plan. This plan should include an assessment of the hospital's risks and vulnerabilities, as well as a detailed description of security policies, procedures, and controls

Tanay Tulsaney
Co-Founder,
DigiLantern

Discussing about the current issues, Vishal Gondal, Founder & CEO, GOQii said, “India has no comprehensive laws that protect the privacy of individuals’ personal data, including health records. This leaves citizens vulnerable to data breaches and misuse of their data. Also, patients do not have control over how their data is used by healthcare providers, or who can access it. This also means that patient data can be shared with third parties without the patient’s knowledge or consent, raising serious privacy concerns.”

“Healthcare technology firms have to exercise significant care when collecting, processing, and storing personal health data. While sharing health data may be the key to medical innovations that transform patient care; checks and balances should be put in place, with clear guidelines on accountability before the implementation of digital healthcare across the country. Privacy settings for health records on health apps should allow the patient to either share their health records with their health coach and doctor or keep them private and visible only to themselves. The healthcare apps should let the patient using the app decide whether they want to share their future posts publicly, with just their friends, or keep them visible to only themselves”, he added.

Emphasising on the issue of collection and sharing data,

Vikaas Bhatnagar, Chief Information Officer, Asian Institute of Medical Sciences said, "The collection and sharing of patient data is essential for effective healthcare delivery, research, and policymaking. However, the collection and sharing of patient data come with ethical and legal considerations. Healthcare providers must ensure that patients' data is collected with their informed consent, stored securely, and shared only with authorised parties.

"Additionally, healthcare providers must ensure that they comply with data protection laws, such as the Health Insurance Portability and Accountability Act (HIPAA) and the General Data Protection Regulation (GDPR). These laws require healthcare providers to ensure the confidentiality, integrity, and availability of patient data."

Patient data must be accurate and complete in order to be useful for decision-making. This requires careful data collection and management practices.

Karunya Sampath, Co-founder & CEO, Payoda Technologies shares some steps that healthcare organisations can take to improve the quality of patient data which includes standardising data collection and coding practices, validating data for accuracy and completeness and using data quality tools to identify and correct errors.

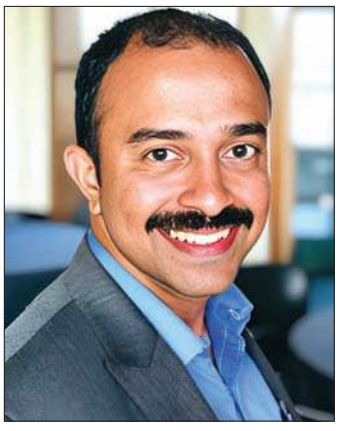
On data accessibility she explains that patients must have easy access to their own data in order to participate in their own care and make informed decisions. This requires making data available in a format that patients can understand and use. Some of the ways that healthcare organisations can make data more accessible to patients includes providing patients with online access to their EHRs, creating patient-friendly summaries of EHR data and providing patients with educational materials about their data.

One approach to safeguard hospital networks is by implementing XDR-enabled anti-virus protection, which can provide protection against virus and ransomware attacks

Karan Thakral
Vice President-IT,
CK Birla Hospital

Data privacy tools are the components that secure networks, like backup data, antivirus, data accessibility, etc. Ensure to use these tools wisely, as they could potentially help secure the entire network in the first place

Dr Sanjay Durani
Medical Superintendent,
Sanar International Hospitals



It is crucial to generate awareness within the industry about the importance of security, allocating sufficient budgets, attracting skilled professionals, and adopting strong strategic and tactical approaches to safeguard data

Manu Pathumana
Vice President,
Cyber Defense Services,
Mphasis

Monitoring IT systems, implementing incident response plans, and robust data backup and recovery plans go a long way in detecting, containing, and mitigating the impact of data breaches

Sajiv Nair
Assistant CTO and Managed services head,
ESDS software solutions

Dr Nithin Kumar, Associate Professor of Community Medicine, Kasturba Medical College, and Manipal Academy of Higher Education and Dr Partha Protim Hazarika, Assistant Professor of Health Information Management, Manipal College of Health Professions, Manipal Academy of Higher Education explains, "While handling patient data, ensuring its safeguarded storage is of utmost importance. Breaches in patient data safety can lead to unauthorised access, fraudulent incidents like identity theft, and potential harm to patients with possible consequent medico-legal complications. Similarly, caution must also be exercised in the appropriate collection and usage of the data, to ensure optimum benefits from the same. This comprehensive approach mandates smooth collaboration and cooperation amongst healthcare providers, technology vendors, administrators, policymakers, and patients."

"On data transparency they mention, "clear and transparent consent processes should be established, ensuring that patients understand how their data is collected, used, stored, and shared. Healthcare organisations and technology vendors should develop secure, user-friendly, and accessible platforms for patients to access their data in digital format."

Key measures to protect hospital data security in the public and private sector

According to the World Health Organization (WHO), up to 1 in 4 hospitals worldwide have experienced data breaches, which can result in serious consequences for patients, such as identity theft or the exposure of sensitive medical information.

Experts suggest that developing a security plan, conducting a risk assessment, data encryption, data backup and recovery, regular software updates and employee

education and training are some of the key measures that can help in protecting hospital data.

Conducting a comprehensive risk assessment helps identify potential vulnerabilities, threats, and risks to the IT infrastructure. This assessment includes evaluating systems, networks, applications, and devices to determine security gaps and establish appropriate controls.

Explaining the role of developing a security plan, Tanay Tulsaney, Co-Founder, DigiLantern, highlights, “The first step towards enhancing data security is to develop and implement a comprehensive security plan. This plan should include an assessment of the hospital's risks and vulnerabilities, as well as a detailed description of security policies, procedures, and controls. It should also outline the responsibilities of staff members and the procedures for reporting security incidents.”

Karan Thakral, Vice President-IT, CK Birla Hospital shares, “One approach to safeguard hospital networks is by implementing XDR-enabled anti-virus protection, which can provide protection against virus and ransomware attacks. Hospital networks can also be protected through state-of-the-art firewalls, which are monitored and managed in real-time, with the latest threat signature updated to protect against potential cyber-attacks.”

When it comes to data handling, sensitive data should be encrypted both in transit and at rest. Encryption helps protect patient information from unauthorised access and ensures that even if data is intercepted or stolen, it remains unreadable without the decryption key. Also, there should be regular implementation of regular data backup procedures to ensure data can be restored in the event of a ransomware attack, data loss, or system failure. Off-site backups and testing the restoration process are crucial to maintain data integrity.

The development of a comprehensive national health data policy, the implementation of strong data protection regulations are some of the key reforms necessary to improve India's health data security ecosystem

Dr R S Nehra
Principal Consultant,
Cyber Security,
Aakash Healthcare

Data that is sensitive to patients should be encrypted during storage, transmission, and processing to ensure their confidentiality

Gaurav Parchani
CTO & Co-founder,
Dozee

India can learn the global best practices for health data security through international engagements

Mahesh Shinde
Director - IT, P.D.
Hinduja Hospital and Medical Research Centre

The Healthcare sector should recognise the critical data elements and should plan a multiple-level data security framework to protect data

Raj Gore
CEO,
Healthcare Global Enterprises

Explaining about data privacy tools, data storage and networks, Dr Sanjay Durani, Medical Superintendent, Sanar International Hospitals said, “The network should be private and secured through a firewall and access policies. Data privacy tools are the components that secure networks, like backup data, antivirus, data accessibility, etc. Ensure to use these tools wisely, as they could potentially help secure the entire network in the first place. If our data privacy tools are robust, such threats are less likely. As far as data storage is concerned, every patient's data is essential in their patient journey; doctors need to go through already collected data and set the direction of treatment. Hence, it should be secured and maintained correctly in the first place. Even if systems crash, the organisation will have backup data for treatment while the entire system is in recovery mode.”

Shahani emphasises on the role of exposure management in protecting data. He said, “Any cybersecurity professional in the healthcare industry would know that sensitive patient data is a big draw for financially motivated cybercriminals. Not only is that data valuable to the organisation, but it is critical for quality patient care and, frequently, lives depend on it remaining secure and available at all times. With exposure management, healthcare providers can successfully reduce cyber risk and strengthen their defences, making it more expensive for hackers to breach their organisations — essentially cutting through the noise to effectively establish deterrence.”

Gaurav Parchani, CTO & Co-founder, Dozee while talking about access Control and authentication mentions, “Data that is sensitive to patients should be encrypted during storage, transmission, and processing to ensure their

confidentiality. Restrict unauthorised access to patient information by using strong access controls, such as role-based access, multi-factor authentication, and privileged access management."

Employees should be aware of the importance of safeguarding patient data and understand their role in maintaining cybersecurity. Their training and educating them about cybersecurity and best practices, such as identifying phishing emails, using strong passwords, and reporting suspicious activities can go a long way in preventing such threats.

On this, Manu Pathumana, Vice President, Cyber Defense Services, Mphasis stresses, "As the healthcare industry undergoes digital transformation to meet the increasing demand for services, protecting data becomes paramount for both public and private sectors. Weak security postures, often resulting from overlooking security as an afterthought, can lead to breaches and incidents. It is crucial to generate awareness within the industry about the importance of security, allocating sufficient budgets, attracting skilled professionals, and adopting strong strategic and tactical approaches to safeguard data."

Sajiv Nair, Assistant CTO and Managed services head ESDS software solutions also highlight, "Monitoring IT systems, implementing incident response plans, and robust data backup and recovery plans go a long way in detecting, containing, and mitigating the impact of data breaches. There is, however, more to be done, as employees play a crucial role in maintaining cyber resilience. Employing a culture of digital hygiene amongst the workers and equipping them with the skills and knowledge to identify and respond to potential attacks is equally essential."

Cyber risk quantification involves assessing and measuring the potential impact of cyber threats and attacks on an organisation's finances and operations. By quantifying cyber risks, hospitals can prioritise investments in cybersecurity and digital transformation based on their potential impact on the hospitals

Rahul Tyagi
Co-Founder, SAFE India

The growing reliance on IoT and software-driven medical equipment has introduced cybersecurity concerns surrounding legacy devices and systems

Vikram Thaploo
CEO-Telehealth,
Apollo Hospitals Enterprises

Healthcare is a lucrative market for hackers globally because of the treasure trove of sensitive data and traditionally weak security controls.

Minatee Mishra
Director,
Product Security – Security Center of Excellence,
Philips Innovation Campus

Governance and policy reforms necessary to improve India's health data security ecosystem

Improving India's health data security ecosystem requires governance and policy reforms to address existing gaps and strengthen data protection measures.

India is already in the process of enacting the Personal Data Protection Bill (PDPB), which aims to establish comprehensive data protection laws. The bill once passed should be implemented effectively, providing a clear legal framework for the protection of health data, defining rights and obligations, and establishing penalties for non-compliance.

Tulsaney said, "India has made notable advancements in its healthcare sector, but it is crucial to prioritise governance and policy reforms for the safety and privacy of healthcare data. The WHO provides a useful guideline for governments to establish robust health data governance frameworks, implement data protection policies, and invest in secure technical infrastructure. Implementing these measures would help India build a robust health data security ecosystem and take significant strides toward safeguarding patient and healthcare provider information."

According to Dr R S Nehra, Principal Consultant, Cyber Security, Aakash Healthcare, "The development of a comprehensive national health data policy, the implementation of strong data protection regulations, promotion of interoperability standards, strengthening of cybersecurity infrastructure, and promotion of public-private partnerships are some of the key reforms necessary to improve India's health data security ecosystem. While the Personal Data Protection Bill, 2019, is a step in the right direction, but it needs to be implemented with strict regulations and penalties for non-compliance."

Fostering collaboration between the government, healthcare industry, and technology providers to jointly address data security challenges is also important as it can leverage the expertise and resources of both sectors to develop innovative solutions and frameworks for health data protection.

Another important aspect is conducting public awareness campaigns to educate individuals about their rights regarding health data privacy and the importance of secure data handling. Empowering individuals with knowledge will enable them to make informed decisions and actively participate in protecting their own health data.

Raj Gore, CEO, Healthcare Global Enterprises also highlights, "Cybersecurity plays a critical role in protecting sensitive patient information, maintaining uninterrupted healthcare services, and meeting regulatory requirements. It secures data from unauthorised access, breaches, and data theft, ensuring confidentiality. The Healthcare sector should recognise the critical data elements and should plan a multiple-level data security framework to protect data. This is best done if we refer and follow standards like ISO 27000-2022 and HIPAA. The Government of India should pass a proper Data Protection and Privacy Law. In the absence of the same. We are following what is best references available outside the country. The issue with doing so is that there are many items/clauses which are to be dealt with differently in our country-specific context. The

field of cybersecurity requires continuous effort, with organisations needing to consistently enhance their security measures in response to ever-changing threats."

Stressed hospital budgets and digital transformation

In the context of stressed hospital budgets, making a compelling case for digital transformation in India's healthcare sector requires highlighting the benefits beyond data security.

In this context, Salvi explains, "Amid changing demographics of customers with sophisticated expectations as well as increased regulatory scrutiny, digital transformation is inevitable. By capitalising on digital technologies such as AI and cloud computing, healthcare organisations can aim to provide more accessible, affordable, intelligent, and accurate services. In addition to data security, a well-designed security system can also predict and slow down attacks, while preventing damage before it occurs."

"A sustainable cybersecurity approach is one that takes care of today's needs and anticipates tomorrow's requirements. Given the dynamic nature of the current business environment and economic climate, ignoring building future capabilities could cost one in the long run."

Dr Kumar and Dr Hazarika shares, "When advocating for digital transformation in a hospital with a limited budget, we must keep in mind that, while making the initial investment in digital technologies may appear intimidating, it is critical to consider the long-term cost-saving potential and value that digital transformation can bring to healthcare organisations. By demonstrating how digital transformation can optimise operations, improve patient outcomes, and generate cost savings, healthcare organisations can make a compelling case for prioritising digital initiatives despite budget constraints.

Pathumana stresses, "With the daunting challenge of meeting the high demand for healthcare services amid limited resources, the imperative for digital transformation in the healthcare industry cannot be overstated. Waiting for extensive physical infrastructure and a substantial increase in healthcare professionals is simply not feasible given the urgency of the situation. In this context, digital transformation serves as a powerful force multiplier, enabling us to leverage existing resources and facilities to reach a larger segment of the urban and rural population in need of quality healthcare services."

"The benefits of digital transformation extend far beyond mere data security. It presents hospitals with an expanded addressable market, promising improved return on investments, revenue growth, enhanced access to talent, and staff development opportunities. By embracing digital solutions, healthcare institutions can also contribute significantly to larger national and societal goals of equitable healthcare access. However, it is crucial to recognise that successful digital transformation relies heavily on robust cybersecurity measures. Protecting patient data and ensuring privacy are paramount for fostering trust and maintaining the integrity of healthcare systems."

By emphasising on the number of benefits and showcasing how digital transformation can address budget constraints while delivering improved patient care and long-term cost savings, India's healthcare sector can make a strong case for embracing digital technologies and securing the necessary funding and support for implementation.

Rahul Tyagi, Co-Founder, SAFE India opines that cyber risk quantification is one way to make a case for digital transformation despite stressed hospital budgets stresses. He explains that cyber risk quantification involves assessing and measuring the potential impact of cyber threats and attacks on an organisation's finances and operations. By quantifying cyber risks, hospitals can prioritise investments in cybersecurity and digital transformation based on their potential impact on the hospitals. In addition to improving data security, digital transformation can bring other benefits to hospitals, such as increased efficiency, improved patient care, and reduced costs. For example, digital health solutions like telemedicine and remote patient monitoring can help hospitals provide care to more patients while reducing the need for physical infrastructure and staff. By quantifying the potential financial and operational impact of cyber threats and attacks, hospitals can better understand the ROI of digital transformation and make more informed investment decisions.

Way forward

Investment in IT infrastructure, adoption of stringent policies and standards, and implementation of effective cybersecurity measures are important to ensure that patient data is secure. The healthcare industry in India has a long way to go in terms of cybersecurity, but with concerted efforts, it is possible to overcome the challenges and ensure sustainable future for the industry.

Kalyani.sharma@expressindia.com
journokalyani@gmail.com

Policy reforms

- **Creation of a regulatory body:** The regulatory body should be empowered with adequate authority and resources to enforce compliance. Regular audits and inspections should be conducted to ensure that these organisations handling health data adhere to prescribed security standards
- **Data Protection Legislation:** India needs comprehensive data protection legislation that specifically addresses health data security. The legislation should establish clear guidelines on data collection, storage, processing, sharing, provisions for consent and breach notification etc.
- **Collaboration:** Collaboration between the government, healthcare industry, technology providers and research institutions are vital in today's information era. Collaboration leads to development of innovative solutions. ABDM is one example. India can learn the global best practices for health data security through international engagements.

Governance

- **Incident management system:** Establishing a robust incident response system is critical for managing data breaches effectively. Organisations should have well-defined procedures in place for detecting and reporting of breaches.
- **Continuous monitoring:** Regular monitoring and evaluation of the health data ecosystem is essential to identify the gaps, assess the effectiveness of policies and regulations and make necessary improvements.
- **Access control and authentication:** Implementing robust access control mechanisms is vital to protect health data. Two-factor authentication, strong passwords, and biometric identification can help ensure authorised access.

Source: Mahesh Shinde, Director - IT, P.D. Hinduja Hospital and Medical Research Centre

> Employees should be aware of the importance of safeguarding patient data and understand their role in maintaining cybersecurity. Their training and educating them about cybersecurity and best practices, such as identifying phishing emails, using strong passwords, and reporting suspicious activities can go a long way in preventing such threats

INTERVIEW

Understanding criticality of data privacy when dealing with sensitive and personal patient information is important

Shashidhar Rachuri, Director of Innovation & Growth, Noventiq India in an interaction with ***Express Healthcare*** highlights that the role of cybersecurity in Indian healthcare is multi-faceted. It involves identifying potential risks, developing and implementing security protocols, and monitoring and managing security incidents

What are the key measures to protect hospital data security in the public (government-funded) and private sectors?
Today, data security is a critical issue in the healthcare industry, particularly in hospitals where sensitive patient data is constantly being collected, processed, and stored. Therefore, protecting hospital data security is necessary. For that I believe hospitals must implement some strict security protocols, such as access control policies, regular risk assessments, and vulnerability scans. Also, staff members should receive regular training on data security practices to prevent human error. Advanced cybersecurity systems and data encryption technologies are also recommended to safeguard patient data. Private hospitals may work with specialised third-party vendors for added security, to ensure patient data remains confidential and secure.

Could you shed some insight on the present issues that must be resolved while engaging with patient data?
Understanding the criticality of data privacy and security when dealing with sensitive and personal patient information is important. One of the major challenges faced by the healthcare industry is interoperability, which can cause delays or incomplete diagnoses, leading to poor patient outcomes. Ensuring that patient data is standardised and accessible across different healthcare systems is the key to improving patient care. Furthermore, I recognise that there are ethical concerns related to the use of patient data. Patients should have control over how their data is used, and must be fully informed of any risks and benefits associated with its use

> Ensuring that patient data is standardised and accessible across different healthcare systems is the key to improving patient care

What are the governance and policy reforms necessary to improve India's health data security ecosystem?
India's healthcare industry has been rapidly digitising in recent years, leading to an explosion of health data. However, this has also raised concerns about the security and privacy of patient data, thus requiring the ecosystem need of robust governance and policy reforms to ensure that patient data is secure, protected, and used ethically.

Ensuring the security and privacy of patient data is crucial and requires clear data protection regulations and standardisation of health data management. The Personal Data Protection Bill needs to be enacted, and DISHA needs greater investment in awareness to protect patient data. Improving data quality and facilitating data sharing will improve patient outcomes. It's crucial to raise awareness about patient rights and steps they can take to protect their data while increasing transparency about the collection, use, andprotection of patient data.

What is your opinion regarding the use of Electronic Medical Records (EMR) in the Indian healthcare system? how can the present situation be improved?
EMRs have the potential to transform the Indian healthcare delivery system, but adoption has been slow due to challenges such as limited digital infrastructure, a shortage of digital literacy among healthcare providers, and the absence of standardisation and interoperability. The high cost of implementation is another obstacle, particularly for small and medium-sized providers. The Indian government can help provide subsidies and tax benefits to incentivise adoption. Additionally, a resilient cybersecurity framework is essential to protect patient data from cyber threats, which should include regular security audits and implementation of advanced cybersecurity systems and data encryption technologies.

How do you envision the role of cybersecurity in Indian healthcare?
In a massive country like India, prioritising cybersecurity is a must to safeguard data and building trust with patients. The role of cybersecurity in Indian healthcare is multi-faceted. It

involves identifying potential risks, developing and implementing security protocols, and monitoring and managing security incidents. The system meanwhile, could potentially benefit from a patient-centric approach to cybersecurity which could help establish trust between both system and its patients. Lastly, cybersecurity is not a one-time investment but a continuous process that requires adaptation to changing threats and technologies. Therefore, it's must for healthcare organisations in India to remain proactive in identifying and mitigating potential cybersecurity risks.

What percentage of hospital budgets in India, ranging from small and medium to large corporate chain hospitals, are typically set aside for data security? Is this sufficient for an efficient data security system and if not, what are the suggested investments?
Talking about current terms, The Indian government allocated Rs 200 crores for the National Digital Health Mission in the 2022-23 budget, indicating that they recognise the importance of cybersecurity in the rapidly evolving healthcare industry. However, the effectiveness of this allocation depends on the hospital's security needs and risk profile, as data security requires ongoing investment. While any investment in data security is better than none, many healthcare experts suggest that current investments may not be sufficient to address the increasing sophistication and frequency of cyber threats. Hospitals may need to allocate more resources for data security measures, including technology, training, and increased investments, to stay ahead of the evolving cybersecurity landscape.

With stressed hospital budgets, how do you make a case for digital transformation? What are the benefits beyond data security etc.?
In the face of stressed hospital budgets, it can be challenging to make a case for digital transformation. However, the benefits of digital transformation extend far beyond just data security. Digital technologies currently have the potential to revolutionise the way healthcare is delivered, resulting in increased efficiency, substantial cost savings, automating administrative tasks, reducing manual errors, and streamlining workflows, significantly leading to improved patient outcomes. I am of the opinion that it is crucial to go beyond for highlighting data security when making a case for digital transformation in hospitals. It's important to demonstrate and educate people of the returns that investment in digital transformation brings, and how it can assist hospitals in thriving in the current digital era.

Addressing challenges of precision medicine: Role of advanced diagnostics

Dinesh Chauhan, CEO, CORE Diagnostics explains that advanced diagnostics play a critical role in overcoming the challenges of precision medicine. By providing accurate and comprehensive patient data, these technologies can help clinicians tailor treatment plans to each patient's unique needs

Precision medicine, or personalised medicine, is revolutionising healthcare by tailoring treatment approaches to individual patients based on their unique genetic makeup, lifestyle, and environmental factors. This approach holds immense promise in improving patient outcomes, optimising therapies, and reducing healthcare costs. However, realising the full potential of precision medicine requires overcoming significant challenges, and advanced diagnostics play a crucial role in this endeavor.

One of the key challenges in precision medicine is accurately identifying and characterising diseases at the molecular level. Traditional diagnostic methods often lack the detailed information necessary for precise treatment decisions. This is where advanced diagnostics, such as genomic testing and molecular profiling, step in. These cutting-edge techniques delve deep into a patient's genetic material and identify specific genetic alterations, biomarkers, and molecular signatures associated with diseases. By unraveling the intricate genetic landscape, advanced diagnostics enable healthcare providers to stratify diseases more accurately and make informed decisions regarding targeted therapies.

Another challenge in precision medicine lies in monitoring treatment response and disease progression. Traditional methods of assessing treatment efficacy, such as imaging and clinical evaluations, may not capture the dynamic changes occurring at the molecular level. Advanced diagnostics offer a solution by providing real-time insights into treatment response through liquid biopsies, ctDNA analysis, and other molecular monitoring techniques. These non-invasive approaches allow healthcare providers to track molecular changes, detect minimal residual disease, and adjust treatment strategies accordingly, leading to better patient outcomes.

The advantages of advanced diagnostics in precision medicine are numerous. These technologies can help improve treatment outcomes and reduce healthcare costs by providing clinicians with more accurate and comprehensive patient data

Additionally, the implementation of precision medicine on a large scale poses challenges in terms of scalability, affordability, and accessibility. Advanced diagnostics must be efficient, cost-effective, and readily available to reach a broader population. Innovations in technology, automation, and streamlined workflows are vital in addressing these challenges.

Furthermore, the integration of advanced diagnostics with data analytics and artificial intelligence is revolutionising the interpretation of vast amounts of genomic and clinical data. These advanced computational tools aid in identifying patterns, predicting treatment responses, and discovering novel biomarkers. By harnessing the power of big data, advanced diagnostics contribute to evidence-based decision-making, clinical trial design, and the development of innovative therapies.

The role of advanced diagnostics

Advanced diagnostics play a critical role in overcoming the challenges of precision medicine. By providing accurate and comprehensive patient data, these technologies can help clinicians tailor treatment plans to each patient's unique needs. Here are some examples of how advanced diagnostics are currently being used in precision medicine:

Genomic testing: It is a key component of precision medicine, as it allows healthcare providers to identify genetic variations that may contribute to disease risk or treatment response. Advanced genomic testing technologies, such as next-generation sequencing, can rapidly analyse large amounts of genetic data, allowing clinicians to make more informed treatment decisions.

Liquid biopsies: They are a minimally invasive diagnostic tool that allows clinicians to analyse cancer-specific genetic material, such as circulating tumor DNA. This technology can help identify the specific genetic mutations driving a patient's cancer and monitor treatment response over time.

AI and machine learning: These powerful tools can help clinicians analyse complex data sets and make more informed treatment decisions. For example, machine learning algorithms can analyse imaging data to help clinicians identify early signs of disease and predict treatment outcomes.

Benefits of advanced diagnostics:

The advantages of advanced diagnostics in precision medicine are numerous. These technologies can help improve treatment outcomes and reduce healthcare costs by providing clinicians with more accurate and comprehensive patient data.

Improved treatment personalisation: Advanced diagnostics can help clinicians customise treatment plans, enhancing treatment effectiveness and reducing the risk of side effects.

Faster diagnosis and treatment: It can rapidly analyse complex data sets, allowing clinicians to make more informed treatment decisions.

Reduced healthcare costs: By improving treatment effectiveness and reducing the risk of complications, advanced diagnostics can help reduce healthcare costs over time.

Transforming healthcare

Precision medicine has the potential to transform healthcare by delivering personalised treatments that are tailored to each patient's unique needs. By leveraging advanced diagnostic technologies, healthcare providers can improve treatment effectiveness and reduce healthcare costs. However, realizing the full potential of precision medicine will require continued investment in research and development and policies that support patient access to these cutting-edge technologies.

Neuroaesthetics: Should Indian hospitals capitalise on this healthcare design trend?

Nandini Bazaz, Director-Architectural Services, HOSMAC explains how neuroaesthetics, an emerging idea in hospital design, can improve patients' emotional and psychological well-being significantly

Neuroaesthetics is a branch of psychology that concerns itself with the connection between our experience of beauty and art and the way that our brain processes information. It is based on the concept that one's surroundings have a significant influence on their emotions, thoughts, and, ultimately, their health. Thus, it would not be wrong to say that architecture and design of any healthcare facility have a considerable influence on the emotional and psychological well-being of its patients. Therefore, given its wide number of benefits, Indian hospitals are fast picking up on the trend of neuroaesthetics.

Indian hospitals have generally prioritised practical design solutions with clinical aesthetics. Sterile white walls with harsh lighting and antiseptic interiors have been a common sight across most hospitals in India. Such uninviting interiors can lend cold, demotivating psychological impact(s) on patients and dampen the spirits of especially those undergoing long-term treatment. Fortunately, there has been some movement towards patient-centric designs in recent years. Hospitals are now willing to combine subtle aspects of nature, art, and neuroaesthetics to create a pleasant and welcoming atmosphere for patients and to aid their healing and rehabilitation.

How can neuroaesthetics benefit us?

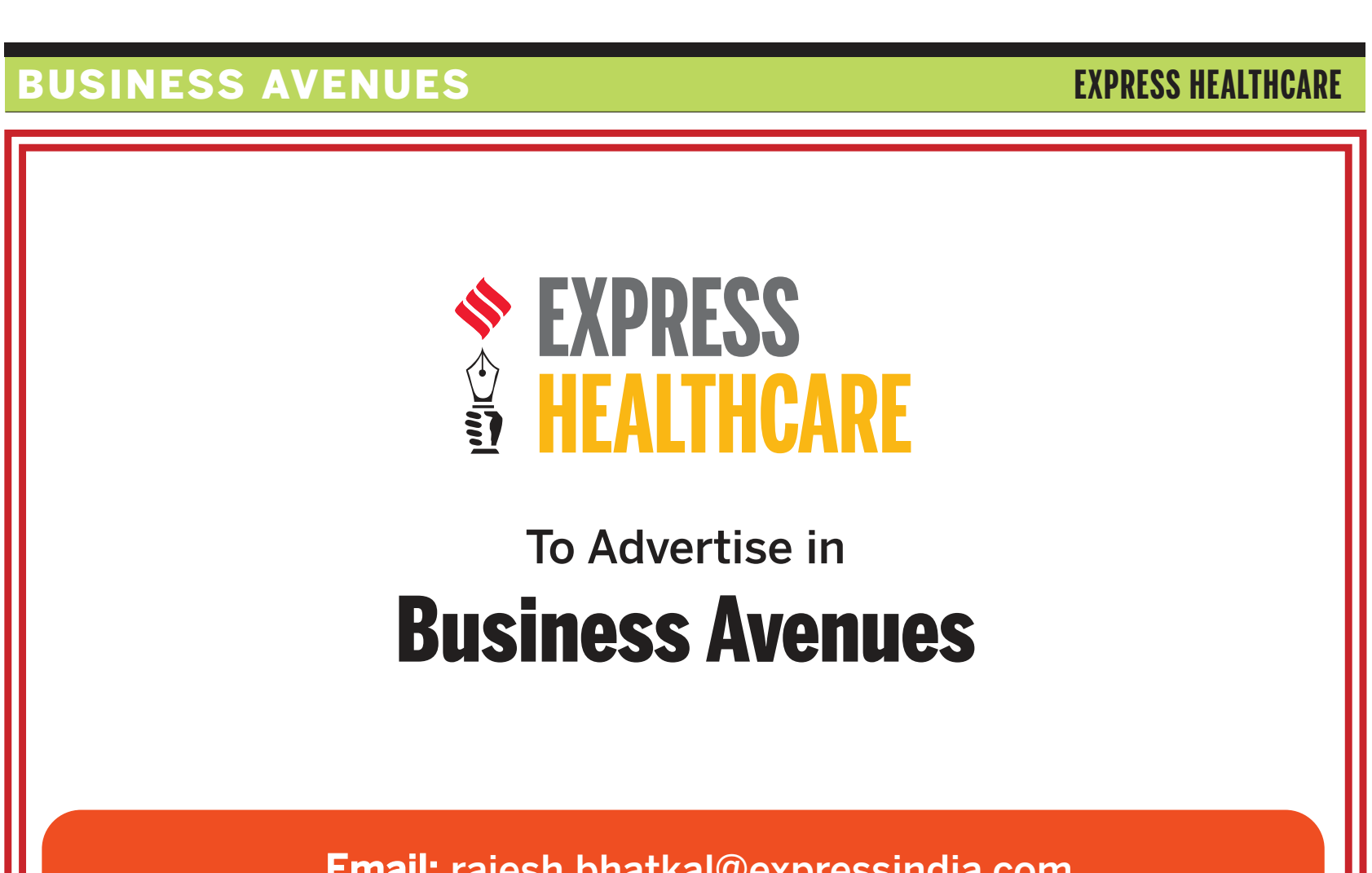
Exposure to nature, such as greens, has been found in studies to dramatically reduce stress and improve healing. In Indian towns where pollution and congestion are common, adding natural features into hospital architecture might help the patients to relax. Indeed, studies from the Indian Institute of Technology (IIT) Delhi discovered that exposure to nature in the form of plants and greenery lowered stress levels, increased overall well-being, and promoted better mental health in metropolitan settings.

Art installations can also have a substantial influence on the emotional well-being of patients. Art may bestow reprieve for patients and their families in Indian hospitals, which sometimes have long wait periods and overcrowded rooms. Art therapy has been shown to dramatically lower anxiety and sadness levels in patients with mental illnesses, according to a study done by the National Institute of Mental Health and Neurosciences (NIMHANS), Bangalore.

Another aspect of neuroaesthetics that can have a substantial influence on patient rehabilitation is natural lighting. Natural light may be accessed in hospital architecture from places where sunshine is abundant, creating bright and pleasant environments. The Indian Green Building Council (IGBC) has also discovered that natural light in hospital settings can enhance the moods of patients and employees, leading to better outcomes.

Apart from creating a welcoming environment, another advantage of adding neuroaesthetics in hospitals is the placebo effect. The placebo effect is the positive impact that a patient feels after getting therapy, even if the treatment itself has less therapeutic value. The placebo effect may be capitalised upon in hospitals by establishing a good tranquil environment for patients, resulting in greater healing and rehabilitation. In fact, a study done by the All India Institute of Medical Sciences (AIIMS) discovered that patients who received therapy in a relaxing atmosphere fared better than those who received treatment in a clinical setting.

Neuroaesthetics is an emerging idea in hospital design that can improve patients' emotional and psychological well-being significantly. In India, where hospitals frequently suffer from long wait times, incorporating elements of nature, art, and light in its design may make the employees feel more at ease and improve patient healing times.



INTERVIEW

Crucial role of ultrasound systems in diagnosing lifestyle related ailments

Dr Chander Lulla, Senior Consultant Radiologist, Ria clinic, Mumbai in an interaction with ***Express Healthcare*** shares his experience with the new LOGIQ™ ultrasound system by **GE HealthCare** which is powered with cSound Architecture with XDclear™ probes for exceptional 2D imaging

Ultrasonography has changed and transformed diagnostics and treatment over the last decade. The continuous iterations in equipment, treatment interventions, a combination of AI and superior imaging, are continuously helping machines improve efficiency and reliability. This is in parallel to lifestyle and other related diseases that have seen a steady rise over the last decade. The complex morphology and structural changes of disease has necessitated the need for advanced imaging equipment with state-of-the-art technology that can enable early detection, intervention, and treatment of various diseases for better prognosis and quality of life.

Ultrasonography has shown significant progress with non-invasive methods, helping radiologists become versatile, diagnosing comprehensively, and making quick decisions with precision and purpose. The new LOGIQ™ ultrasound system is powered with cSound Architecture with XDclear™ probes for exceptional 2D imaging. Advanced diagnostic tools, such as 2D Shear Wave Elastography and Ultrasound-Guided Attenuation Parameter (UGAP), helps reduce the need for invasive procedures and provide valuable information for patient management decisions. To simply user the workflow of the end user we have also introduced Hepatic assist which combines 2D shear wave elastography and UGAP to give holistic view on the liver health.

> The new LOGIQ™ ultrasound system can be used in almost any space. Its state-of-the-art features and technologies make it strong enough to conduct a full spectrum of ultrasound exams and procedures on any body type

The new LOGIQ™ ultrasound system can be used in almost any space. Its state-of-the-art features and technologies make it strong enough to conduct a full spectrum of ultrasound exams and procedures on any body type. It was specifically designed to optimise clinicians' productivity, exceed expectations regarding performance, and to maximise your diagnostic confidence.

The machine's precision and phenomenal impact has already been experienced by the leading expert, which is shared below.

How is the LOGIQ™ ultrasound system helpful today given that lifestyle ailments are on the rise?
Lifestyle diseases are constantly increasing and with the high BMI of patients today, a radiologist seeks higher resolution constantly especially in liver fat quantification. This is where the LOGIQ™ platform offers precision because it incorporates the cSound architecture & XDclear™ transducers with clear imaging and visualisation. In this concept, it is not necessary to look specifically for focal zones anymore, because the machine resolution for both near and far fields are the same which I have personally observed in all high BMI patients.

Could you elaborate more on the transducers and the value they add to your work?
The XDclear™ transducer is a single crystal transducer which provides high resolution as well as incorporates a new cooling technique called the 'Cool Stack technique' which allows the transducers to cool down fast. Transducers tend to generate heat because they are single crystal, and this cooling technique improves their durability and longevity, so they won't fail as quickly as regular transducers.

Among the vast array of transducers, I personally like L6-24-D which goes upto 24 MHz for small parts imaging; especially the fingers & musculoskeletal imaging. C2-9-D transducer is another one which has a range of frequencies from 2-9 MHz, allowing for obstetric and fetal imaging in addition to other convex probes.

The addition of advanced Speckle reduction imaging - SRI to the LOGIQ™ Platform has been very beneficial. Advanced SRI is a known tool to improve fetal imaging. It helps us smoothen fetal images and remove artefacts and provides good contrast resolution of the images. Another range of transducers are ML6-15-D which is good for shoulder imaging and other Musculoskeletal features that I am using.

What differentiating features of the new LOGIQ™ ultrasound machine is helping to ease your worklow with improved diagnosis?
The LOGIQ™ machine has a vast number of features which when used solo or in conjunction with others are proving to be very helpful and stress-free, both for us as imaging technicians as well as patients coming to us for diagnostics.

We have a wonderful color doppler with Radiantflow which allows us to see blood vessels in a cast like manner, improving detection of peripheral vascular pathology. We are also seeing 2D fusion with this technology, which allows us to do better biopsy because one can actually fuse in real time the 3D CBCT volumes with ultrasonography. This is extremely useful for biopsy of the prostate, liver and other conditions.

The 2D Shear Wave has expanded to much beyond what it was earlier. It is now on the convex abdominal probe, multiple linear probe and also trans-vaginal and trans-rectal probe. This is very useful for doing prostate imaging, because when I'm doing strain and 2D in prostrate, I can localise lesions better and can use it for better biopsy detection.

Tell us how you would assess the AI framework & overall structure?
LOGIQ™ ultrasound system is a fortified machine which is allowing me to investigate many conditions, from obstetrics to liver to radiology and vascular, thereby helping me give better output to my patient. With a single machine, I can do imaging which is comprehensive and improve my throughput with patients.

The machine is compact and ergonomically designed so that there's less strain on the radiologist. It allows flexibility to move the keyboard, so there is less strain during the procedure. The AI on the machine is excellent and helps to improve workflows. The Hepatic Assist allows performing of UGAP & Shear Wave simultaneously giving values both in kPa and meters/sec. Fat estimation is given in terms of attenuation values and output happens simultaneously. These are some of the best things provided by the LOGIQ™ platform in this new era. The imaging is very fast, and I am able to provide comprehensive care for a range of possibilities, from obstetrics to radiology to peripheral vascular and abdominal imaging. This is a great addition to the portfolio of machines I possess.

Nexage unveils smart-tech medical scrubs: The future of healthcare attire

Nexage's smart-tech medical scrubs boast an impressive array of characteristics, including antimicrobial properties, durability, UV protection, odor resistance, pH neutrality, and non-toxic materials

Nexage has once again pushed the boundaries of innovation with their latest addition: smart-tech medical scrubs. These cutting-edge garments will revolutionise the healthcare industry by combining advanced technology with practical features that address the unique needs of medical professionals. Nexage's smart-tech medical scrubs boast an impressive array of characteristics, including antimicrobial properties, durability, UV protection, odor resistance, pH neutrality, and non-toxic materials. Let's explore how these futuristic scrubs are set to transform the way healthcare professionals approach their work.

Antimicrobial power

In healthcare settings, maintaining a clean and sterile environment is crucial. Nexage's smart-tech medical scrubs are equipped with antimicrobial properties that actively fight against the spread of bacteria and viruses. By reducing the risk of cross-contamination, these scrubs enhance the safety of both medical professionals and their patients, allowing healthcare workers to focus on providing top-quality care.

Built to last

Recognising the demanding nature of the healthcare profession, Nexage has crafted their smart-tech medical scrubs with durability in mind. These garments are made from high-quality materials that can withstand the rigors of daily wear and tear, ensuring they can endure even the most demanding work environments. With long-lasting scrubs, healthcare professionals can enjoy the confidence of reliable attire that stands the test of time.

Shielding from harmful UV rays

Healthcare professionals often find themselves exposed to prolonged periods of natural and artificial light. Nexage's smart-tech medical scrubs offer a UPF rating of 50+, providing effective protection against harmful UV rays. This feature not only safeguards the wearer's skin health but also highlights the brand's commitment to supporting the overall well-being of medical professionals.

Freshness all day

Working long shifts in close proximity to patients can sometimes lead to undesirable odors. However, Nexage's smart-tech medical scrubs combat this issue by incorporating odor-resistant technology. By actively reducing unpleasant smells, these scrubs create a more pleasant working environment for healthcare professionals.

Skin-friendly and environmentally conscious

Understanding the importance of skin comfort, Nexage has developed their smart-tech medical scrubs with a pH-neutral approach. This ensures that the garments are gentle on the skin, reducing the risk of irritation and promoting wearer comfort throughout the day. Furthermore, the use of non-toxic materials aligns with Nexage's commitment to sustainability and eco-friendly practices, showcasing their dedication to a healthier planet.

Nexage's introduction of smart-tech medical scrubs heralds a new era for healthcare attire. These garments not only possess innovative features but also cater to the specific needs of medical professionals. By embracing technology and pushing the boundaries of textile innovation, Nexage is paving the way for a safer, more comfortable, and more efficient healthcare environment. With their commitment to excellence and forward-thinking designs, Nexage continues to inspire the industry and redefine the future of healthcare fashion.

INTERVIEW

Convergence of AI and precision medicine holds immense potential to transform healthcare

Shishir Gupta, Head-Growth & Strategic Initiatives, GE HealthCare South Asia in an interaction with ***Express Healthcare*** explains the role of AI in delivering precision care in the case of a complex disease like cancer

By 2023, cancer is projected to increase by 12 per cent in India, accounting for 9 per cent of deaths worldwide. Despite advancements in cancer care, what do you think are today's biggest challenges?

Over the past decade, there have been notable advancements in cancer research. Despite significant breakthroughs in screening, diagnosing, and treating cancer, the global impact of the disease remains substantial, affecting millions of individuals worldwide. As per American Cancer Society, by 2040, there is an anticipated global increase in the burden of cancer, with an estimated 27.5 million new cases every year, primarily driven by population growth and aging. In India alone, there are approximately 1.5 million new cancer cases reported each year. This growth is attributed to the rising prevalence of lifestyle risk factors such as poor dietary habits, low physical activity, obesity, tobacco, and alcohol consumption, as well as exposure to viruses and ultraviolet radiation.

While public health campaigns communicate the same, the correlation between behaviours and lifestyles and risk of developing cancer is not well internalised among individuals. Nonetheless, cancer prevention and early detection remain critical areas where the implementation of effective strategies can have a substantial impact on reducing both the morbidity and mortality associated with this disease. Additionally, there is a pressing need to address disparities in access to quality cancer care, particularly in underserved areas, to ensure

equitable treatment opportunities for all patients. A multidisciplinary approach involving medical oncology, radiation oncology, surgical oncology, other specialised experts along with digital / AI support is required to ensure holistic disease management for the patient.

Which areas in cancer care need more attention and improvement?

Cancer is a complex condition that often requires multiple interventions provided by various health professionals over prolonged periods of time. Care coordination encompasses numerous aspects of health service provision including appropriate care that is timely and provided by a multidisciplinary team comprising of medical, nursing, and allied health professionals.

Several areas in cancer care warrant increased attention and improvement to enhance patient outcomes and overall quality of care. First and foremost, there is a need to further advance cancer prevention and early detection efforts. This includes implementing comprehensive awareness campaigns to educate individuals about the importance of lifestyle modifications, such as healthy eating, regular exercise, and avoiding tobacco and excessive alcohol consumption. Additionally, expanding access to screening programs and promoting benefits of early diagnosis can significantly improve treatment outcomes. Another crucial area for improvement is the development and implementation of personalised treatment strategies. Advancements in genomic research and precision care offer opportunities for tailoring treatment plans to individual patients based on their unique genetic profiles. This approach can lead to more effective and targeted therapies, minimising unnecessary side effects and maximising treatment efficacy. Fostering collaboration and communication among healthcare providers through multidisciplinary care models is crucial for comprehensive cancer care. By addressing these areas, we can make significant strides in improving cancer care and ultimately enhancing patient outcomes.

What is the role of AI in delivering precision care in the case of a complex disease like cancer?

The convergence of AI and precision medicine holds immense potential to transform healthcare for the evolving patient population, ensuring that individuals with distinct treatment responses or specific healthcare requirements receive appropriate care when needed. This transformative approach becomes possible when robust AI algorithms generate valuable insights and augment clinician decision-making.

For instance, the integration of AI technologies into medical imaging assists radiologists in efficiently handling extensive volumes of imaging data through advanced image reconstruction algorithms. Incorporation of AI has the potential to enhance the consistency and accuracy of imaging data by producing clearer and more defined images, enabling more precise diagnoses for patients. Through the utilisation of AI for image analysis, clinicians can potentially expedite the identification of conditions, facilitating early intervention and timely treatment.

We, at Wipro GE Healthcare, are at the forefront of driving progress in precision medicine by integrating clinical care and patient data through the patient journey. We have an ongoing initiative focused on collaborating with startups. We have successfully conducted three cohorts, wherein we invite startups to develop AI tools that can be tested on our robust platforms equipped with high computing capabilities. Through this process, we aim to validate the applications of these AI tools before their official launch. The AI tools we aim to introduce for healthcare diagnosis are continually evolving, and we are dedicated to addressing the evolving needs of patients in this domain.

Wipro GE Healthcare offers a variety of oncology products and solutions. Could you please elaborate on how they enable clinicians and patients in cancer care?

From early detection to remote monitoring, GE HealthCare's innovative suite of diagnostic and treatment technologies are designed to help improve detection, clinical efficiency, operational efficiency, and outcomes for cancer patients. Operating in 160 countries, GE HealthCare provides a comprehensive range of multi-modality cancer care solutions aimed at improving outcomes for patients.

Our comprehensive range of imaging and digital solutions plays a vital role in supporting cancer screening by leveraging advanced technologies such as AI, radiomics, and clinical decision support. These tools

offer valuable insights into the presence, location, and potential prognosis of the disease. To enhance the precision and effectiveness of cancer screening, we have incorporated innovative approaches that integrate data from genetic profiles, blood analysis, family history, and personal health records. By identifying at-risk patients with integrated key datasets more precisely and efficiently providers can navigate through the most appropriate pathway to detect, characterise, and treat their patient's cancer. Our oncology offerings include a full suite of multimodality imaging, radiomic and workstation products and solutions: cutting-edge technologies such as computed tomography (CT), magnetic resonance imaging (MRI), positron emission tomography/CT (PET/CT), PET/MR, single-photon emission computerised tomography (SPECT), SPECT/CT, ultrasound, pharmaceutical imaging agents, advanced workstations, and digital analytics.

Another focus area for GE HealthCare is lung cancer diagnosis and treatment. Accurate diagnosis plays a crucial role in determining the prognosis of patients with lung cancer. However, the presence of incidentally detected pulmonary nodules often poses a challenge as their cancer risk is indeterminate, leading to difficulties in diagnosis and management for clinicians.

By continuing to collaborate with leading clinical, academic, pharmaceutical, and research organisations to innovate new radiopharmaceuticals and solutions, we continue to improve clinical, operational, and patient outcomes at every stage of the oncology care pathway.

Based on the estimated incidence of cancer cases in India, what role does early detection play in improving patient outcomes?

The absence of widespread screenings for numerous types of cancer results in diagnoses at later stages, which are associated with lower survival rates, high economic burden on patients and increased strain on the healthcare system. However, there exists a potential to expand screening programs and enhance early detection for a wider range of cancers such as breast cancer. By doing so, we can contribute to improved patient outcomes, including enhanced survival rates and a better quality of life for patients.

COVID-19 pandemic had disrupted several essential health services globally and early detection of cancer services was one of them. Now that we have moved beyond the pandemic, focus needs to shift back to timely identification of cancer so that healthcare professionals can intervene at an early stage when treatment options are more effective and have a higher chance of success. Moreover, early detection provides an opportunity for implementing personalised treatment plans tailored to each patient's specific needs, considering factors such as tumour characteristics, genetic profiles, and overall health status.

HMD supplies 1.75 billion syringes of total 13.3 billion COVID-19 vaccines administered globally

Nearly 1 COVID vaccine in every 7-8 people worldwide was administered using HMD's syringe

Hindustan Syringes & Medical Devices Ltd (HMD), one of the leading manufacturers of disposable syringes in the world and possibly the largest for auto disable syringes in April 2023 has achieved another milestone of supplying 1.75 billion syringes of the total 13.3 billion COVID-19 vaccines administered globally, which means over 13 per cent of COVID shots administered worldwide was using Kojak Selinge AD Syringes of HMD. Nearly 1 COVID vaccine in every 7-8 people worldwide was administered using HMD's syringe.

In their endeavor to ensure there is no shortage of syringes to help vaccinate India against COVID, HMD had supplied over 921.7 million syringes from Dec 2020 till April 2023 to the government to help vaccinate over 1 billion people till date using more than 2 billion syringes to support the massive vaccination campaign to eradicate COVID-19 and help make India Aatmanirbhar.

Pardeep Sareen, Vice President-Marketing, Hindustan Syringes and Medical Devices said "Total government orders HMD received till date from Dec 2020 are of more than 900 million pcs of 0.5 ml Kojak Selinge AD Syringes. In addition, HMD has been supplying various sizes of Dispo Van and Kojak Selinge AD Syringes in the private sector vaccination campaign. All orders received till date from December have been supplied on time or before time as per our commitments."

HMD has made India proud with its global recognition as a key international supplier of critically needed syringes by supplying to COVAX facility of WHO (via UNICEF), approximately 650 million AD & Disposable syringes to UNICEF, over 150 million syringes to PAHO, both of which were later distributed to various developing nations around the world. On top of the same, over 45 million syringes were supplied as an emergency supply to Japan in 2020, mostly by air freight.

"We feel humbled & honored to contribute to the International Vaccination Campaign along with extending our help to eradicate the covid pandemic globally. The prestigious vaccine bullets needed our humble guns. It was a huge responsibility, and we are glad we could shoulder the responsibilities with the Government", said the elated Sohail Nath, Director, Hindustan Syringes and Medical Devices.

"India's vaccination drive has been a role model for the world. To help vaccinate the world against covid, HMD's manufacturing plants were operational 24/7. Our machines cranked out more than 4.2 lakh syringes of various types per hour at our factories spread over 11 acres in Faridabad industrial district in Haryana. HMD initially had the capacity to produce over 250 crore assorted syringes of various types and sizes per year & we invested over Rs 100 crore from our own resources, without government financial support to scale this to over 350 crores more syringes including expanding our vertical line of needle and capillary tubing capacities in our sincere quest for ensuring no syringe shortages", said Rajiv Nath, Managing Director, Hindustan Syringes and Medical Devices.

"But now we had to reduce our production of syringes drastically as covid vaccination rates dipped to negligible levels in the last quarter. Production of AD immunisation syringes at our plant has fallen from 45-50 lacs units per day a year ago to 5-6 lakhs now. We are repurposing our machines to produce Smart Kojak needlestick prevention syringes for curative healthcare drug delivery and are looking to penetrate overseas markets which have higher standards for injection safety than India currently for both patients as well as healthcare workers", added Nath.

"We assured the government that we will always prioritise domestic needs. COVID-19 crisis has shown that the Indian Syringe manufacturers sector can rise to the challenge. HMD's full cooperation & support will always be there with the Government of India in any crisis the country faces." assured Nath.

Emerging business of women hygiene products in India

Chanchal Jangid, Executive-Sales and Marketing, Ami Polymer Pvt Ltd highlights that the business of women's hygiene products in India has been growing steadily over the past few years and discusses about some of the most popular women's hygiene products and their benefits

Women's hygiene products are essential for maintaining personal cleanliness and comfort. These products help women to stay fresh, confident and comfortable throughout the day. From menstrual pads and tampons to intimate washes and wipes, there are varieties of products available in the market that cater to women's hygiene needs. In this article, we will discuss some of the most popular women's hygiene products and their benefits.

In conclusion, women's hygiene products are an essential part of every woman's personal care routine. From menstrual pads and tampons to intimate washes and wipes, there are varieties of products available in the market that cater to the varying needs of women. It is important for women to choose the right products that suit their needs and preferences to maintain optimal hygiene and comfort.

Business of women hygiene products in India

The business of women's hygiene products in India has been growing steadily over the past few years. With increasing awareness about menstrual hygiene and the availability of more affordable products, the market for women's hygiene products in India has seen a significant rise.

The menstrual hygiene market in India is estimated to be worth around Rs 5,000 crores, with sanitary pads being the most commonly used product. However, there is also a growing demand for tampons and menstrual cups among urban women who are looking for more eco-friendly and comfortable options.

Several Indian and multinational companies have entered the women's hygiene products market in India, offering a wide range of products at various price points. Some of the major players in the market include Whisper, Stayfree, Sofy, and Kotex. These companies have invested heavily in marketing and advertising campaigns to raise awareness about menstrual hygiene and promote their products.

Additionally, there has been a rise in the number of startups in the women's hygiene products market in India. These companies are offering innovative and eco-friendly products such as reusable menstrual cups and biodegradable sanitary pads. The growth of these startups is driven by the increasing demand for sustainable and environmentally friendly products among Indian consumers.

The government of India has also taken several initiatives to promote menstrual hygiene and increase access to women's hygiene products. In 2018, the government launched the "Pradhan Mantri Bhartiya Janaushadhi Pariyojana" scheme, which aims to provide affordable sanitary pads to women in rural areas. Additionally, the government has abolished taxes on sanitary pads to make them more affordable for women.

Most popular women hygiene products

Top 10 women hygiene products company in India

◆ **Procter & Gamble (P&G) India** - P&G India is a leading player in the women's hygiene products market with brands like Whisper, Always, and Tampax.

◆ **Johnson & Johnson India** - Johnson & Johnson India offers a wide range of women's hygiene products such as Stayfree and Carefree sanitary pads, and o.b. tampons.

◆ **Kimberly-Clark Lever India** - Kimberly-Clark Lever India is a joint venture between Kimberly-Clark Corporation and Hindustan Unilever Limited. They offer a range of products under the brand name of Kotex.

◆ **Unicharm India** - Unicharm India is a subsidiary of the Japanese company Unicharm Corporation. They offer a range of women's hygiene products under the brand name Sofy.

◆ **Nua** - Nua is a startup that offers eco-friendly and sustainable menstrual products such as biodegradable sanitary pads and menstrual cups.

◆ **Carmesi** - Carmesi is another startup that offers eco-friendly menstrual products such as organic cotton sanitary pads.

◆ **Heyday** - Heyday is a company that offers period subscription boxes that contain menstrual products, pain relief products, and snacks.

◆ **Pee Safe** - Pee Safe is a company that offers intimate hygiene products such as intimate washes and wipes.

◆ **Bella India** - Bella India offers a range of women's hygiene products such as sanitary pads, tampons, and panty liners.

◆ **Sirona** - Sirona is a company that offers a range of women's hygiene products such as menstrual cups, disposable panties, and pain relief patches.

What Ami Polymer can provide in women hygiene sector?

Ami Polymer Pvt Ltd is one of the leading manufacturers in Silicone rubber products. They are open for private labelling on the products for "Menstrual cups and Silicone Steriliser cups" with bulk requirement for B2B business. The menstrual cups are manufacture in Clean Room - ISO Class VII Certified facility. Adding, further they are also open for customisation in the products and for the new development depending upon the customer requirements.

MS. CHANCHAL JANGID
Executive: Sales & Marketing

+91 9223411447
chanchal.j@amipolymer.com/
support2@amipolymer.com

https://www.amipolymer.com

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