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EXPRESS HEALTHCARE

INDIA'S FOREMOST HEALTHCARE MAGAZINE SEPTEMBER 2022, ₹50

INTERVIEWS

Ritesh Talapatra
Managing Director
Optum India

Vikram Vuppala
Founder and CEO
NephroPlus

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Interview

Dr Praveen Malik
Animal Husbandry Commissioner, Government of India

Hospital Infra

Despite IT upgrades why hospitals are lacking in efficiency?

NEWBORN SCREENING AND TESTING PICKING UP PACE IN INDIA?

Understanding the need and viability of newborn screening programmes in India is crucial to secure every newborn's health

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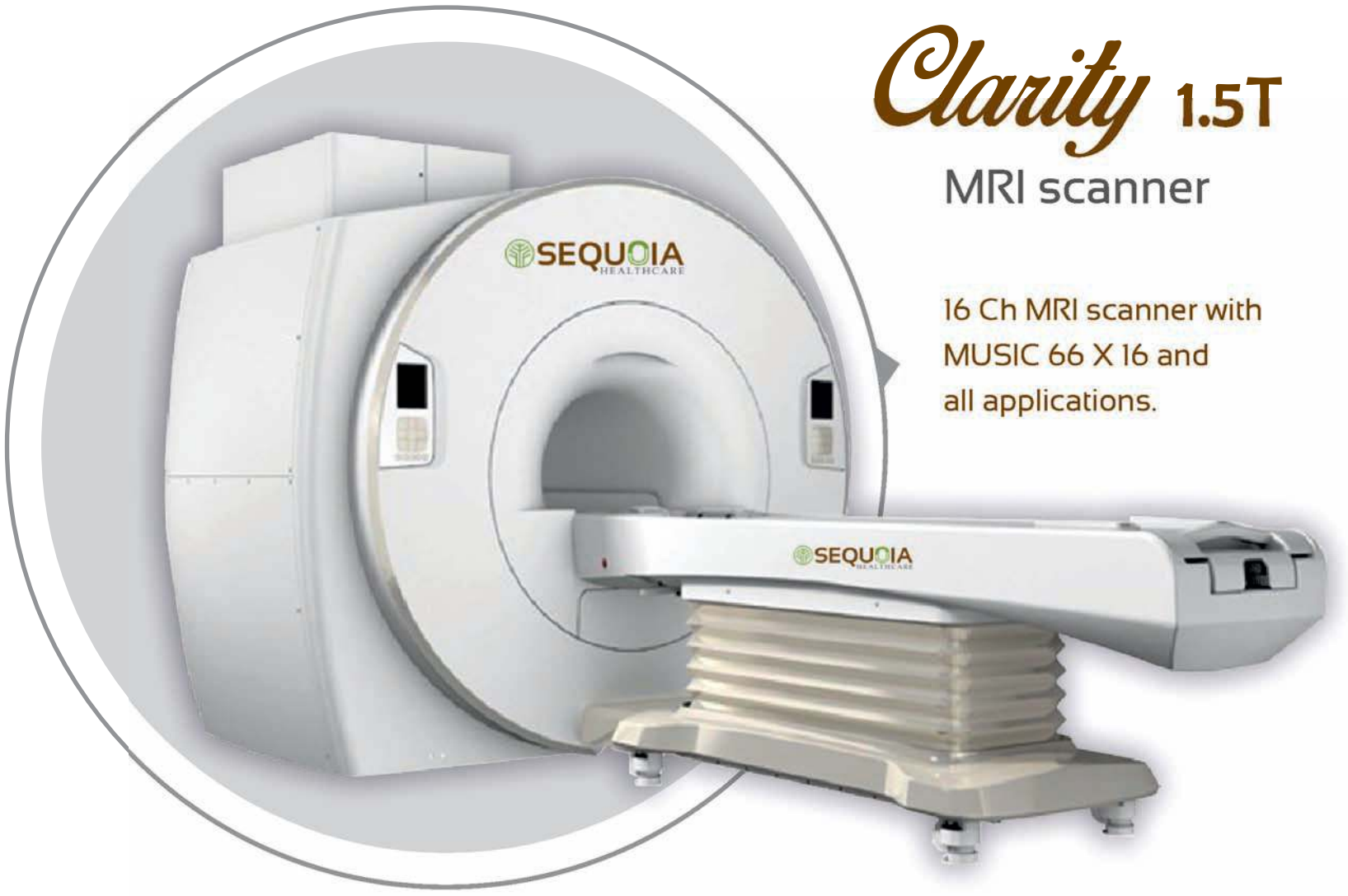

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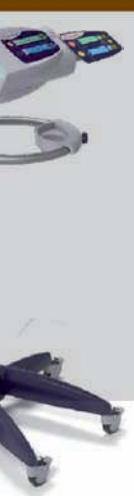

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Revenues recovering but twindemics threaten the balance

A BNP Paribas' analysis of 1QFY23 trends in the healthcare sector shows that healthcare firms' base business (non-COVID) recovered from the impact of the Omicron wave seen in 4QFY22. The report shows that occupancy levels for hospitals improved, along with a rise in average revenue per operating bed, which led to q-q margin expansion. Diagnostics companies' non-COVID revenue also improved year on year, reporting a better three-year CAGR. The BNP Paribas team expects the encouraging trend to continue in FY23 and assuming no further COVID waves, they believe that by 2HFY23, occupancy for hospitals should revert to pre-COVID levels and diagnostics firms should post double-digit revenue growth y-y.

As per Sriraam Rathi-Pharma and Healthcare Analyst, BNP Paribas India, healthcare seems to be on a long-term structural growth path and he expect hospitals and diagnostics to witness double-digit revenue CAGR in the non-COVID business over the next three years, driven by infrastructure expansion, increasing healthcare awareness with affordability and a high disease burden. His rationale is that a focus on an asset-light model should help improve return ratios for these companies.

Considering individual scrips, occupancy level for hospitals like Apollo Hospitals and Fortis Healthcare recovered well post a dip in 4QFY22 on account of the Omicron wave. An increase in footfalls and pick-up in elective surgeries was responsible for this cheer and the analysts expect occupancy level to revert to pre-COVID levels of 65-70 per cent in the quarters ahead.

For diagnostic companies, the improved three-year CAGR for non-COVID revenue was due to a pick-up in volumes and rising share of health packages. However, EBITDA margin dropped for diagnostic companies as volume growth rate is yet to revert to the pre-COVID levels of 13-15 per cent. Increased spend on marketing and digital initiatives too played spoiler to this tale.

It is important to note that these predictions are not without caveats. Downside risks to the BNP Paribas valuation for Apollo Hospitals are a longer gestation period of new beds planned in the near term; and secondly, a delay in ramp-up of business through the 24x7 arm.

Similarly, Fortis Healthcare could falter if there are a further outbreak of COVID cases, which may impact non-COVID hospital occupancy, and a slowdown in non-COVID diagnostic tests; and secondly, any adverse ruling of the Supreme Court in the ongoing case with the ex-promoters.

In the case of diagnostics players like Dr Lal Pathlabs and Metropolis Healthcare, the downside risks are shift of the larger market to online players, higher competition in the organised space, and a slowdown in industry revenue growth.

As governments and corporates across the world and in India figure out the best strategy to tackle the 'Twindemics' of COVID-19 and monkeypox, there is no doubt that healthcare infrastructure has to increase. However, the increase has to be in tune to needs of all sections of the population.

While analysts would advocate caution on improving metrics, healthcare leaders can only move forward

Luckily, post pandemic, the healthcare sector and especially healthtech companies are seeing more investors willing to invest in the healthcare ecosystem. Banks like HDFC Bank, Axis Bank, Bank of Baroda, IDBI Bank etc are stepping forward with loans and financing solutions for hospitals as they invest in infrastructure like specialised medical equipment, new hospitals beyond the metros, etc.

Mythri Macherla, Assistant Vice President, and Sector Head, ICRA confirms that several players in the ICRA sample set have announced sizeable expansion plans, with the addition of approximately 6,500-7,000 beds over the next three-four years, even as they continue to scout for inorganic growth opportunities. According to her, with robust performance expected in FY2023 and FY2024, the debt metrics will remain strong going forward, despite incremental debt funding for the expansion plans.

Besides the COVID-19 reality check, the Prime Minister's 'Heal in India' Mission announcement on Independence Day will only trigger more such investments as hospitals hope to tap the reportedly nearly $10 billion Indian medical value travel (MVT) sector. Some experts believe India is well placed to garner over 40 per cent of the global MVT market share in terms of patient numbers by 2025 to become a leading global MVT destination.

Most large hospital chains in India already have a thriving MVT revenue stream, counting patients from regions spanning SAARC, East Africa, and CIS countries. The strategy now is to consolidate and try for regions beyond these countries, leveraging deep talent pools of medical expertise. Hopefully these opportunities will also reduce the brain drain of India's doctors and medical staff to other countries.

In fact, ICRA's Macherla lists revival in international patient footfalls as the third factor, after high operating leverage benefits and steady demand for high-margin elective procedures, as the reason why the OPM in FY2023 will remain healthy. However, she does caution that OPM is expected to slightly moderate to approximately 18-20 per cent given the inflationary pressures.

While analysts would advocate caution on improving metrics, healthcare leaders can only move forward. Let us hope that proactive policies, financing and strategic healthcare management practices ensure we pin down the Twindemics at all levels of society. Healthier balance sheets in the future quarters would only encourage more support on all fronts.

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INTERVIEW

We're building new ways to listen and respond to those we serve

Ritesh Talapatra, Managing Director, Optum India explains to **Viveka Roychowdhury** how the future of healthcare will be characterised by the interplay between people, environments, and the tools of technology and Optum's play to leverage these trends

What are the different solutions in health-tech that Optum focuses on?
Optum has the data and analytic capabilities to help make care more precise, more effective, and more equitable. Our technology allows us to take the noise out of an overly complicated system and connect patients and providers to the information they need and to each other.

We're building new ways to listen and respond to those we serve from integrated platforms and data that help physicians deliver more personalised, outcome driven care, to an ecosystem of virtual care and services that wrap around the needs of our patients. We're pursuing innovations that make health care simpler and more effective. And we're using technology to make the health system work more like an actual system.

For physicians, technology enables value-based care giving them the tools, insights, and actionable knowledge to help their patients live healthier and more independent lives – while improving health outcomes and lowering costs.

For local health systems looking to strengthen clinical expertise, eliminate waste, and take friction out of their administrative systems, our technology, data, and analytic capabilities make care delivery more efficient and effective while improving how it's paid for.

And for patients, members and customers, technology brings transparency, personalisation, and empowerment to the way they find, experience, and pay for care.

> Our approach to technology isn't about designing another app to fix health care. It's about connecting people to their care teams, payers to providers, and ultimately connecting a disconnected health system

Our approach to technology isn't about designing another app to fix health care. It's about connecting people to their care teams, payers to providers, and ultimately connecting a disconnected health system so that it works better for the people it was created to serve.

What are the challenges that the healthcare spaces face currently and how can they be resolved?
The health eco-system is complex and fragmented, making navigating it challenging for both consumers and the organisations serving them. We believe there are eight key macro forces impacting health care globally

Economic limitations: Employment trends, business reconfiguration and a slow return to economic stability and growth impacts both consumers and the health eco-system. Consumers' employment status can impact decisions on health coverage, spending and what needs they prioritise.

Consumerism: Increased consumer decision-making for all things health and wellness as trade-offs increase. Shrinking health care dollars combined with new market entrants creates stiffer competition. Health organisations that match consumers' lifestyles and deliver at a price they can afford will earn their business.

Reconfigured delivery models: Nontraditional and digital expansion from telemedicine, online tools and remote monitoring to mobile, community and in-home services are disrupting traditional care models. Traditional organisations willing to align around the consumer, adjust and/or form new relationships can reconfigure delivery models to provide more holistic and coordinated care especially as these trends further accelerate the democratisation of data throughout the industry.

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Decreased total cost of care: Expectations improve overall health care affordability and decrease total cost of care have accelerated with the health discrepancies spotlighted by the pandemic. And, as consumers bear more of the costs and explore their choices, affordability will be a mandate to stay competitive and meet consumer needs. Re-examining and refining networks and service portfolios as well as tackling administrative burden are important for both payers and providers.

Demand for advanced analytics: The need to lower costs, personalise treatment and prove quality will increase reliance on interoperability through use of advanced analytics, predictive modeling and artificial intelligence. This connectivity will allow all stakeholders to help predict risk and bring the full capabilities of their health ecosystem forward. Some systems will be able to afford this independently, while others will negotiate access through strategic partnerships and value-based financial arrangements.

Value chain reorganisation: Meaningful reorganisation within the health care value chain to prioritise value creation and holistic care coordination. COVID-19 has created enormous expectations for safe, consistent, cost-effective alternatives in health care delivery. Reorganisation within the health care value chain will inevitably occur. Those organisations in "survival" mode may find themselves better suited for partnership or closure, and those who may be well diversified may divest of their under-performing assets

Holistic risk considerations: Measuring and managing risk holistically, including considerations for social determinants of health, critical components of delivery and financing models, will create clear pictures of communities to recognise the full set of factors that contribute to health concerns and costs. Organisations that have market intelligence can collaborate to address risk and gain dramatic market relevance.

Regulatory refinement: Regulatory reaction and reprioritisation at federal and state levels as a result of significant budget and social pressures continue to be a wild care for health organisations.

Working across all spectrums of health care, Optum understands these challenges. We have the data, analytics and insights combined with the technology, clinical and administrative expertise that enables us to collaborate across the healthcare ecosystem and tackle these challenges.

What do you think is the future of healthcare in India and globally?

Globally, health care sector and health technology in particular are now accelerating at a great pace. The future of healthcare will be characterised by the interplay between people, environments, and the tools of technology. Towards that end, there are several threads that are all very important:

◆ A patient centric approach to healthcare, that anticipates the patients need, involves the patient in her healthcare journey and provides the best care at the most convenient location

◆ At the same time, we want to focus on the provider experience - We envision a future where doctors can spend time on what is most important – patient interaction, and digital health solutions act as enablers providing suggestions on next best action.

The center of gravity for healthcare is moving out of large hospitals and closer to our homes. What COVID has done is basically accelerated that journey. As per a leading management consultant, use of telehealth is currently 38 times higher than it was pre-pandemic. And the convenience is here to stay-83 per cent of patients expect to use telemedicine after the pandemic resolves

◆ Finally, we want to do all this in a way that makes healthcare much more affordable. For example, if are able to steer our members towards more affordable generics, we can save them money; if we are able to provide clinicians with state of the art decision support that pulls in historical data and all the research and advise them on the next best course of actions, we can improve clinical outcomes; if we can equip the elderly with the right sensors in their homes, they can live more comfortably and independently – there are many more examples of how we can help regular patients everywhere and at Optum, we are involved in every single example that we have mentioned

At Optum, we are extremely proud of our investments and commitments in this space. By leveraging our strong talent pool in India and working collaboratively with our global teams, we want to build solutions and processes that can help build the future of healthcare. We have matured product engineering practices and critical business operations such as transaction processing, medical coding, revenue cycle management and more, to fuel our vision of profitable growth, consumer centric engagement, digitisation, and analytics.

What is the role that India can play to solve global healthcare challenges?

India has a vast technology talent pool, estimated at around 1.6 million. Indian technology and healthcare workers are highly valued globally. Health care sector and health technology in specific is accelerating at a great pace and there is a need for this talent to invest their skills in healthcare and solve for the future global challenges. There is also a vibrant startup ecosystem in India developing numerous innovations in health tech domain.

At Optum, our India in collaboration with our global team are building deep industry expertise with data, advanced analytics, reengineering and automation and emerging technology. Using our 30,000+ strong talent pool in India, we want to build solutions that can help build the future of healthcare, right here in India.

There is also a vibrant startup ecosystem in India developing numerous innovations in health tech domain. At Optum we are planning to support this ecosystem through our Optum Startup Studio programme which has just been launched in India in partnership with International Institute of Information Technology, Hyderabad (IIITH). This partnership will also entail research on specific challenges in the healthcare sector with a focus on applying learnings and distinct capabilities to provide people an opportunity to live healthier lives.

What are the trends in the healthcare space that we will witness?

One of the biggest trends, which we had witnessed even prior to COVID-19, is that the center of gravity for healthcare is moving out of large hospitals and closer to our homes. What COVID has done is basically accelerated that journey. Per a leading management consultant, use of telehealth is currently 38 times higher than it was pre-pandemic. And the convenience is here to stay-83 per cent of patients expect to use telemedicine after the pandemic resolves.

We would call out four key areas which we believe are making a real mark on modernising health:

◆ The first is what we call consumer experience: Ability for an informed and tech enabled consumer to research their condition, search and compare providers, look at different prices and select the clinician and the site they want to visit, book appointments and be reminded for different things. Researchers have observed that as awareness of some of these technologies grow, their utilisation grows across age categories.

◆ The second, related area is wellness – where people are using their mobile phones and computers to research and find diets, exercise regimens etc. but also wearable technologies and IoT in actively monitoring their health and sharing it with their primary providers.

◆ The third area could be around predicting health events and intervening to prevent them – this goes into AI assisting in personalising care experience and disease prediction.

◆ And the final area is the creation of a digital platform that allows for the interoperability of data, with consent, across organisation boundaries and allows a knowledgeable user to almost set up their own healthcare ecosystem in the palm of their hands

◆ The views expressed by the speaker are for informational purposes only and should not be construed as any advice/consult provided. Audience/recipient to use their own discretion

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A comprehensive healthcare law is the need of the hour

Satya Muley, Founder, Satya Muley & Co stresses that there is a serious and urgent need to clearly state the role of the Union Government for enhanced coordination with various state and local governments. Conflict and overlapping of roles and authorities must be eliminated

COVID-19 which gave us a once-in-a-century kind of horrific experience is still around while Monkeypox has already arrived on the global scene.

During the peaks of COVID-19, the world saw a variety of disturbing situations such as people dying due to lack of medication, hospital beds, ventilators, and even due to lack of oxygen supply.

While the world grappled with the effects of COVID-19, India was no exception. In India, we even saw people suffering due lack of basic healthcare. Yes, India stood apart from the rest of the world by demonstrating that it can tackle the crisis in an unexpectedly good way and can supply vaccines to the world. But fact remains that India could have done better with a well-defined comprehensive healthcare law in place.

Is good healthcare a matter of fundamental right?

Although the Right to Health, good healthcare is nowhere explicitly mentioned as the Right to Life is mentioned in the Constitution of India, various landmark judgements of the Supreme Court have held that the Right to Life under Article 21 includes the Right to Health and in turn, translates into Right to Healthcare.

Therefore, the government has the Constitutional obligation to provide good health care to the population.

Due to the large population, in India, we tend to lose 100's of lives due to a lack of first aid, medicine, hospital beds, and most importantly shortage of medical and healthcare professionals. Therefore, even if India has somehow managed to sail past the COVID-19 storm, we still face the big question – whether India is ready to tackle similar or more severe health crises or emergencies and what is the way forward?

Answers to such questions are not easy, and with the Government being composed of and influenced by elected representatives, accountability is a grey area in the absence of comprehensive healthcare law.

The current scenario

The Indian Constitutional provisions have mandated the role of the government at all three levels – the Union Government, the State Government and the local bodies (which include the corporations till the gram panchayats, etc.). But the existing laws which safeguard the fundamental right to good health care are very few and not very comprehensive.

The Epidemic Diseases Act, 1897: This British-era law deals with some of the situations, but with changing scenarios and in modern times this law is found to be severely lacking on several fronts.

The Epidemic Diseases Act needs to be amended if it has to continue, on several fronts on an urgent basis. Provisions related to identifying, testing, isolating, contact tracing, controlling, coordinating, and containing any epidemic are absent in the current law and must be incorporated.

The definition and categorisation of various diseases and the demarcation of areas based on severity levels must be incorporated into the law. Basic rules related to quarantine and related facilities should also be incorporated and not left to the whims and fancies of local authorities.

The Disaster Management Act, 2005: This law is not dealing directly with healthcare situations but affixes roles and responsibilities at the national, state, and local levels to deal with various types of disasters which may include health-related disaster situations such as pandemics. Therefore, the law does not go a long way to dealing with the ground-level needs of the population.

Other laws: There are a few other laws in India such as the Indian Aircraft (Public Health) Rules, 1954, which do deal with some aspects of precautionary and proactive aspects of health and medical situations, but in a very limited way. The Public Health Bill was introduced in 2009, but it did not take off. The National Public Health Bill 2017 did not progress well either.

Lack of awareness and knowledge: There is a serious lack of general knowledge about laws and healthcare-related rights, and therefore a rampant violation of rights does take place in India. The lack of understanding of the Disaster Management Act and the shortcomings of the law itself was exposed on various fronts during COVID-19 peaks. In many locations, the authorities issued notifications under the DM Act and began to fine people for not wearing masks, and later the legal fraternity had to point out that there was no such provision in the said law.

A case for comprehensive healthcare law: The above-discussed points tell us that it was nothing short of a miracle that India could escape paying an enormous price for its underdeveloped healthcare system and lack of comprehensive healthcare laws during the COVID-19 crisis. Yes, the Union Government did a lot, the states and the local authorities also did what was best possible at that time. But moving ahead India needs a comprehensive healthcare law.

There is a serious and urgent need to clearly state the role of the Union Government for enhanced coordination with various state and local governments. Conflict and overlapping of roles and authorities must be eliminated.

An institutional mechanism that can establish a network with governments, research institutions, and health care providers should be included in the improved law. Fiscal and monetary relief for states and local bodies during medical emergencies should be included in the laws.

Conclusion

The COVID-19 pandemic has prompted the Union Government to kick-start a process of research and drafting of a proposed National Public Health Law and it is expected that a draft bill will be announced for public consultations anytime soon.

The draft of 2017 started with the objective of replacing the 125-year-old Epidemic diseases Act, and it is expected that it shall happen that way. It is also expected that the new law shall be futuristic and shall include subjects such as natural disasters, bioterrorism, chemical and nuclear attacks, or accidents.

However, India has seen very slow work on legislation drafting, debates and enactments. The implementation also needs supporting infrastructure otherwise the new law will stay only on paper. Yes, India not only requires a comprehensive law that deals with healthcare subjects, but it is an urgent requirement.

NEWBORN SCREENING AND TESTING PICKING UP PACE IN INDIA?

Understanding the need and viability of newborn screening programmes in India is crucial to secure every newborn's health

By Kalyani Sharma

As per WHO, In India, more than 1.7 million children are born with birth defects every year. The term 'birth defect' encompasses a diversity of health conditions and has been recognised globally as a major contributor to neonatal and infant mortality and disability. This is where the role of New Born Scree-ning or NBS comes in.

NBS detects rare congenital metabolic disorders in children which are commonly called as Inborn Errors of Metabolism or IEM. If not treated, these disorders will lead to mental retardation, disability or death. NBS is the only way to detect these disorders early in the new-born period.

There are as many as 500 IEMs which lead to congenital disorders. Vast number of these disorders are genetic in nature due to defects in the gene that codes for enzymes in various metabolic pathways such as carbohydrate metabolism, amino acid metabolism, fatty acid metabolism etc. These defects will lead to accumulation of toxic substances which interfere normal functioning of cells in our body leading to diseases.

Talking about the need for newborn screening and testing in India, Neeraj Gupta, Founder & CEO, Genes2Me added, "Do you know that India tops the list when the context is about most births in the world? Moreover, the infant mortality rate in India is pretty high too. Keeping all these factors in mind, it is essential to conduct newborn screening testing. Catering to the basic medical requirements across the length and breadth of a country like India is tough."

In India, infant mortality is higher compared to other developed countries. Many newborns are susceptible to various diseases that are not visible at the time of birth but affect babies later in their lives.

Explaining about the inborn errors, Dr Karthik Nagesh, Chairman & HOD-Neonatal ICUS & Manipal Advanced Children's Centre, Manipal Hospitals said, "For a newborn,

Do you know that India tops the list when the context is about most births in the world? Moreover, the infant mortality rate in India is pretty high too. Keeping all these factors in mind, it is essential to conduct newborn screening testing. Catering to the basic medical requirements across the length and breadth of a country like India is tough

Neeraj Gupta
Founder & CEO, Genes2Me

Given a birth prevalence of 9/1000, the approximate number of babies born with congenital heart conditions in India is more than 200,000 per year. One-fifth of these children are likely to have a severe deformity that necessitates interference within the initial year of life

Sujata Pawar
Founder and CEO, Avni

The market scenario for NBS has definitely improved and many hospitals are offering it. Currently, NBS in India is mostly limited to urban centres and is not very affordable for people from all economic categories. There is a need to make it affordable and accessible for everyone. If the screening is done on a mass scale, the costs of screening may come down

Dr Paras Kumar J
Neonatologist, SPARSH Hospital for Women and Children

The NBS initiative has been recommended for last two decades in many states and at the national level but is not yet implemented in full due to lack of funding and low prioritisation

Dr Karthik Nagesh
Chairman & HOD-Neonatal ICUS & Manipal Advanced Children's Centre, Manipal Hospitals

NBS tests are usually performed at about 72 hours of birth for these disorders. These diseases need to be identified at the earliest possible stage so that the necessary treatment if available; can be instituted before irreversible damage occurs

Dr Amin Kaba
Consultant Pediatrician, Masina Hospital

the first month is considered the most crucial as it lays the foundation for the baby's healthy development. It is the period where any metabolic disorders/diseases if inherited genetically may present with severe symptoms. Many neonates however, are asymptomatic and clinically present with significant morbidity or mortality even later. These inherited IEMs, if not diagnosed early in life may unfortunately pose life-threatening problems and irreversible neurological and multi-organ damage to the child. Hence these disorders need to be detected early, soon after the baby's birth. The NBS also known as a baby's first test is a proactive initiative to detect early and prevent genetic metabolic disorders in a newborn. These tests are conducted within 48-72 hours of the birth of the infant."

Sujata Pawar, Founder and CEO, Avni stresses, "Most developed nations include a hearing test in newborn screening, as well as measure the level of oxygen in a baby's blood to identify newborn babies who need to see a cardiologist right away; neither testing involves a bloodspot. Given a birth prevalence of 9/1000, the approximate number of babies born with congenital heart conditions in India is more than 200,000 per year. One-fifth of these children are likely to have a severe deformity that necessitates interference within the initial year of life. Many Neonatal Intensive Care Unit (NICU) admissions are also attributed largely to IEM. Many infants develop mental disabilities, intellectual difficulties, autism, dyslexia, behavioural abnormalities, and scholastic backwardness later in their lives if they go undiagnosed and left untreated."

Market scenario

According to data provided by Indian Paediatrics, in India, the prevalence of IEMs is 1 in 2,497 newborns; the incidence of congenital hypothyroidism is 2.1 per 1,000; and G6PD deficiency is 2–7.8 per cent.

Sharing some figures on the market, Dr Akshata Raviraj Gondkar, Consultant Biochemist- Biochemistry, Neuberg Anand Reference Laboratory said, "The global newborn screening market size is projected to reach USD 1.3 billion by 2026 from USD 0.9 billion in 2021, at a CAGR of 8.3 per cent during the forecast period. Growth in this market is majorly driven by the increasing prevalence of newborn diseases in recent years, prompting providers to raise awareness and support the demand for advanced screening instruments. India provides significant opportunities to players in this market due to their high birth rates and increasing disposable income. According to the UN Children's Fund, India records 25 million births every year, or nearly one-fifth of the global annual

childbirths. The high birth rate and the availability of newborn screening in public hospitals indicates a strong demand for market products and consumables."

Dr Paras Kumar J, Neonatologist, SPARSH Hospital for Women and Children said, "The market scenario for NBS has definitely improved and many hospitals are offering it. Currently, NBS in India is mostly limited to urban centres and is not very affordable for people from all economic categories. There is a need to make it affordable and accessible for everyone. If the screening is done on a mass scale, the costs of screening may come down."

Dr Lathiesh Kumar Lead Neonatology, Consultant-Paediatrics and Neonatology, Aster Women and Children Hospital said, "The size of the global newborn screening market is anticipated to increase by 8.3 per cent CAGR from 2021 to 2026, from USD 0.9 billion to USD 1.3 billion."

Current available test for NBS in India

Early diagnosis of IEM is a challenge for pediatricians since they will not present any symptoms in the new-born period. Most of the IEM cases are diagnosed after a few months or even after a few years of birth and by this time life threatening irreversible damage to the brain or other disability has already happened. NBS is the only way to pick up these disorders early so that the child can get an early intervention and treatment. Experts explain some of the current available tests for newborn screening in India.

In India, the 'National Neonatology Forum' of India has published 'Clinical Practice Guidelines' for the early diagnosis of patients with metabolic disorders to enable early intervention and prevent morbidity and mortality.

Dr Nagesh while explaining the guidelines said, "According to the guidelines, there are three levels of newborn screening

New-born screening has been made mandatory in most of the private institutes but still needs to reach the government setups in rural areas where we may be missing many cases

Dr Yogesh Kumar Gupta
Consultant-Paediatrics, Fortis Hospital

Incorporating NBS into national health programme would increase the coverage and make the NBS available to much needed economically challenged population. One of the best things government could do for the health of its people would be to budget for including NBS in the health programme

Dr Sujit Chatterjee
CEO, Dr L H Hiranandani Hospital

The central government along with the state government has to initiate the universal implementation of NBS. The programme has to be initiated nationwide and the result has to be analysed by experts

Dr Madhavi V
Consultant Geneticist, Fernandez Foundation

The WHO has recommended that genetic services should be introduced in countries with an infant mortality rate (IMR) less than 50. India with an IMR of 40 should introduce newborn screening and genetic services

Dr Tushar Parikh
Consultant Neonatologist & Paediatrician, Motherhood Hospital

Public-private alliances might be taken into consideration in order to execute the NBS program on a nationwide scale, ensuring that every newborn will be able to benefit from it. Major government hospitals in significant cities ought to serve as the process' initial catalyst. Later, proceed to tier 2 and tier 3 levels while putting in place the new infrastructure

Dr Srinivasa Murthy C L
Lead Paediatrics, Consultant – Pediatrics and Neonatology,
Aster Women and Children Hospital, Bangalore

tests that are to be carried out at the hospitals. Level 1 screening test is strongly recommended universally for all newborns in the country to enable detection of the two commonest diseases that is Congenital Hypothyroidism and Congenital Adrenal Hyperplasia (CAH). Level 2 screening should be conducted in a high-risk population (with family history of intellectual/ physical deformity, symptoms of IEM and in critically ill neonates). A number of disorders can be detected in this test including phenylketonuria, galactosemia, tyrosinemia, Glucose-6-phosphate dehydrogenase deficiency, biotinidase deficiency, cystic fibrosis, maple syrup urine disease (MSUD) etc. Level 3 screening is offered to families of a newborn in tertiary care hospitals in high resource centres where the screening is offered for nearly 50 more neonatal disorders."

Dr Amin Kaba, Consultant Pediatrician, Masina Hospital explains that, "NBS tests are usually performed at about 72 hours of birth for these disorders. These diseases need to be identified at the earliest possible stage so that the necessary treatment if available; can be instituted before irreversible damage occurs. The screening tests are usually done either on a urine sample or a heel pin prick single drop of blood taken on a filter paper. The commonly used tests are Dried Blood Sample (DBS) Analysis on Tandem Mass, Spectrometry (TMS) and Urine Analysis by GCMS. With increasing awareness and usage, the costs are coming down quite rapidly and a basic screen for 5 common diseases can be done for as low as Rs 1000 and a more detailed one for about Rs 6000."

Dr Yogesh Kumar Gupta, Consultant-Paediatrics, Fortis Hospital said, "Metabolic disorders make a big chunk of problems in children which go undetected or in diagnosed till they present which can be late and sometimes with irreversible damage. Screening of their rare but serious disorders is the only way forward to prevent the morbidity and mortality. We were earlier carrying out screening for congenital hypothyroidism which still remains the most common cause of mental retardation. With advent of advanced technology, we have expanded the testing to many rarer metabolic conditions."

Dr Sujit Chatterjee, CEO, Dr L H Hiranandani Hospital highlights, "NBS test as the name suggest is a group of tests done within three days of birth to screen for diseases that may be sub-clinical and have long term implications on quality of life. Some diseases, though subclinical initially, can have lasting and irreversible damage if detected later in life, hence the importance of NBS. It is a cost-effective intervention to decrease the burden of disease in the community and to intervene early so as to prevent morbidity and mortality arising from the otherwise un-detected disease. Commonly the NBS includes: 3 drops of blood on a filter paper collected by needle prick on sole of newborn, urine soaked on a filter paper by keeping the paper near urethra, hearing screening by oto-acoustic emission study and if refer then confirmed later by ABR before 3 months and eye and fundus examination by dilating the pupils of both eyes with eye drops to detect disorders like IEMs, congenital hypothyroidism, congenital adrenal hyperplasia, G6PD deficiency, cystic fibrosis, hearing deficits and visual impairments."

Upcoming trends

These tests are mandatory in developed countries but in a developing country like India, their availability and accessibility were an issue. However, with

the trend that NBS is slowly picking up, these tests are now available, accessible and even prescribed by specialists and not limited to a few labs.

Dr Kumar highlights, "One of the key trends is that earlier NBS was available mostly in high-tech laboratories. This scenario has changed quite a bit. NBS is now easily accessible in urban centres and in fact, in many hospitals they do it as a routine screening for all babies. The basic five panel tests are offered to all the newborns."

Dr Madhavi V, Consultant Geneticist, Fernandez Foundation said, "Phenylketonuria was the first disease screened by NBS from dried blood spots by bacterial inhibition assay. With improvements in technology and the introduction of newer techniques like ELISA (enzyme-linked immunoassay), high-performance liquid chromatography (HPLC), and liquid chromatography-mass spectrometry (LCMS), more disorders are being incorporated into the NBS panel. Currently, more than 100 metabolic and genetic disorders are being screened in several laboratories. It is estimated that about 10000 babies affected with beta thalassemia are born every year. As it has a high carrier frequency, newborn screening for hemoglobinopathies may be considered as an additional strategy. Hearing loss has a high incidence, and if not corrected before six months of age, may lead to permanent hearing and speech impairment. Hence, screening for hearing loss is important."

Incorporation of NBS in National Health programme: Need of the hour

Although, NBS in India is slowly picking up pace, it is still not as par with the number of births and the current rate of infant mortality in the country. Cost, awareness and ignorance are among the factors for this reality.

The good news is that with increase in the uptake of these tests, the costs will also come down further making these tests more accessible to the general population as well.

Incorporation of NBS in National Health Programmes is the utmost need of the hour. All the more crucial is its viability and proper implementation.

Explaining the current policy scenario, Dr Nagesh said, "The NBS initiative has been recommended for last two decades in many states and at the national level but is not yet implemented in full due to lack of funding and low prioritisation. Currently, there are a good number of NBS laboratories either public or private that offer NBS tests in India, and the number is growing. There is a lack of awareness among parents about NBS in the country, which hence keeps it from reaching its full potential."

"The fact that 76 per cent of the Indian population is classified as low socioeconomic with another 20 per cent falling under the poor category, accessing basic healthcare facilities is certainly difficult particularly for the impoverished community in the rural parts of India. Even in the urban middle-class, there may be major difficulties in conducting basic NBS programs due to the limited availability of resources. Owing to its huge population, implementing the NBS program in India necessitates a careful prioritisation and structured approach. Segregating it into a three structured approach of Level-1 to 3 based on the state's budgetary allocation and the incidence of IEM in the community is the way forward. Prevention of avoidable infant deaths and mental retardation should be given a consideration and the benefits of implementing state wide universal NBS will lead to significant drop in neonatal mortality rates over time", he added.

Experts believe that this will give a better idea of the kind of disease load that's prevalent in our country.

Dr Gupta says that, "New-born screening has been made mandatory in most of the private institutes but still needs to reach the government setups in rural areas where we may be missing many cases. There are various labs which run tests for metabolic screening. But we need to be very specific and precise in looking for these metabolic disorders. I would always recommend a certified and skilled lab or institution whenever we go for newborn screening. These screening tests have to be very sensitive, so they pick the defect much before they present and that's the whole purpose of screening. Definitely by expanding the screening programme to various institutes and hospitals we can significantly diagnose and pick these disorders. By making it available on a mass scale, we can cut down on the cost of the tests too which is the major obstacle in implementing these tests routinely."

Commenting on the same, Dr Chatterjee said, "Incorporating NBS into national health programme would increase the coverage and make the NBS available to much needed economically challenged population. One of the best things government could do for the health of its people would be to budget for including NBS in the health programme."

Stressing on a successful pilot, Dr Tushar Parikh, Consultant Neonatologist & Paediatrician, Motherhood Hospital said, "In the state of Goa 'Heel to heal' programme was carried out few years ago to screen all babies for newborn metabolic disorders. Surprisingly the incidence of metabolic disorder was to the tune of 1 out of 650 babies. This was a pilot project which gave high incidence of these disorders in our population. Total of 48,000 babies underwent screening. With so much burden of disorders in our country it is definitely important to screen the babies for NBST. India is going through a progressive transitional phase of control over infant mortality and morbidity due to infections, and emergence of genetic conditions. The WHO has recommended that genetic services should be introduced in countries with an infant mortality rate (IMR) less than 50. India with an IMR of 40 should introduce newborn screening and genetic services. The Indian Academy of Pediatrics strongly advocates inclusion of newborn screening in our public health policy. The current infant mortality rate for India in 2022 is 27.695 deaths per 1000 live births."

Adding her views Dr Madhavi said, "The central government along with the state government has to initiate the universal implementation of NBS. The programme has to be initiated nationwide and the result has to be analysed by experts. With the already available facilities at public hospitals, dried blood spot collection can be done. Definitive diagnosis of high-risk neonates can be offered at selected centers where diagnosis, treatment, and prenatal test in subsequent pregnancies are available. The key to the success of the programme is continuous follow-up with the affected babies. Hence, follow-up of these babies can be done by Accredited Social Health Activist (ASHA) workers who are trained professionals, primarily women, with a focus on women and child healthcare, and come from the rural communities they serve. The ASHA workers can help in monitoring cases to ensure compliance and bring patients to the notice of the physicians if required."

Subhamoy Dastidar, Co-Founder & Director, Lilac Insights said, "Public studies recommend that universal screening programmes should include two to four disorders. Presently, private NBS programmes have taken the lead with packages to detect three disorders to a comprehensive set (for 50+). Since 52 per cent of births in India are in public hospitals, public NBS screening programmes have the potential to achieve universal screening."

Way forward

For a successful implementation of NBS in National Health Programmes, involving the private sector and encouraging the PPP model can play an important role as it can increase the scalability of the screening the larger population, easy availability and accessibility of tests and can also help in making the parents aware about overall need and advantages of NBS.

Stressing on the need for PPP, Dr Srinivasa Murthy C L- Lead Paediatrics, Consultant – Pediatrics and Neonatology, Aster Women and Children Hospital, Bangalore said, "To lower infant mortality rates, Rashtriya Bal Swasthya Karyakram (RBSK) is being introduced throughout India as part of the National Rural Health Mission (NHM). Public-private alliances might be taken into consideration in order to execute the NBS program on a nationwide scale, ensuring that every newborn will be able to benefit from it. Major government hospitals in significant cities ought to serve as the process' initial catalyst. Later, proceed to tier 2 and tier 3 levels while putting in place the new infrastructure."

Talking about the way forward, Pawar said, "Despite the numerous advantages and the absolute necessity of a screening programme in India, putting it in place presents its own set of barriers. NBS is a programme, not a test. It requires much more than tools and supplies. It necessitates meticulous planning, commissioning, follow-up and confirmatory testing, adequate dietary and healthcare assistance, and expert genetic pre-and post-test counselling. Therefore, the central and state governments, as well as private healthcare providers, must collaborate to demonstrate commitment to incorporating newborn screening testing into the national health programme."

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The NBS in India shows a variable pattern in testing

Dr Akshata Raviraj Gondkar, Consultant Biochemist- Biochemistry, Neuberg Anand Reference Laboratory highlights the upcoming trends in newborn screening in India and explains about the various tests conducted to detect inborn errors of metabolism

Current available tests for Newborn Screening (NBS) in India

The NBS in India shows a variable pattern in testing. Some states like Chandigarh, Kerala, Goa and Tamil Nadu offer it as a part of program in government hospitals. Some offer it through private labs and Some after prescribed by pediatrician.

Currently it is offered as basic NBS which includes the testing for:

◆ Congenital Hypothyroidism - TSH
◆ Congenital Adrenal Hyperplasia- 17 OH Progesterone (The most basic which may be considered as mandatory)
◆ Glucose 6 Phosphate Dehydrogenase deficiency- G6PD
◆ Galactosemia- Galactose
◆ Biotinidase deficiency- Biotinidase (Offered as Basic 5)
◆ Cystic Fibrosis- Immunoreactive Trypsinogen
◆ Phenyl ketonuria-Phenylalanine (Offered as Basic 7)

Through screening for the 22 Acyl carnitines and 12/20 Amino acids along with urine organic acids, we can screen for Inborn Errors of Metabolism (IEMs) belonging to below metabolisms which is most of the times offered as the extended panel for NBS

Organic acid metabolism disorders

◆ Propionic acidemia
◆ Methylmalonic acidemia (methylmalonyl-CoA mutase deficiency)
◆ Methylmalonic acidemia (cobalamin disorders)
◆ Isovaleric acidemia
◆ 3-methylcrotonyl-CoA carboxylase deficiency
◆ 3-hydroxy-3-methylglutaric aciduria
◆ Holocarboxylase synthase deficiency
◆ Beta-ketothiolase deficiency
◆ Glutaric acidemia type 1

As the awareness about NBS in India is still in dormant state, it is not offered in many places considering the delivery/birth is normal and both parents are normal. But as the consanguinity is prevalent in India, prevalence of IEMs in a newborn cannot be ruled out

Fatty acid oxidation disorders.

◆ Carnitine uptake defect/carnitine transport defect
◆ Medium-chain acyl-CoA dehydrogenase deficiency
◆ Very long-chain acyl-CoA dehydrogenase deficiency
◆ Long-chain L-3 hydroxyacyl-CoA dehydrogenase deficiency
◆ Trifunctional protein deficiency

Amino acid metabolism disorders.

◆ Argininosuccinic aciduria, Arginenimia, Citrullinemia type 1- Urea Cycle Disorders.
◆ Maple syrup urine disease
◆ Homocystinuria
◆ Classic phenylketonuria
◆ Tyrosinemia type I, Type 2

Hemoglobinopathy

◆ Screening for Hb S, HbE and Hb D
◆ Upcoming trends in newborn screening in India

As the awareness about NBS in India is still in dormant state, it is not offered in many places considering the delivery/birth is normal and both parents are normal. But as the consanguinity is prevalent in India, prevalence of IEMs in a newborn cannot be ruled out. So, there is a need to make it mandatory for every newborn. This should happen through the pediatricians, obstetricians who should offer and register the mother for NBS of the baby after birth.

◆ Any consanguineous marriage couple giving birth, the baby should go in for NBS.
◆ Any previous unexplained death of the child in NICU the new baby should go in for NBS.
◆ Any previous child with mental retardation or seizures or dysmorphic features the new baby should go in for NBS.

With regard to this the parents should be counseled during antenatal checkup and also by pediatrician during neonatal examination immediately after birth.

So, the upcoming trend with regard to tests would be:

◆ Basic NBS plus extended covering the amino acids and acyl carnitines
◆ To offer karyotyping whenever a baby with ambiguous genitalia is detected along with 17 hydroxy progesterone
◆ To offer screening for thalassemia at birth by doing the globin chain analysis
◆ Any hypoglycemia and a child should be looked for as the baby may IEM
◆ Glycogen storage disease type II (Pompe disease)
◆ Hearing loss
◆ Severe combined immunodeficiency
◆ Mucopolysaccharidosis type 1 (MPS I)
◆ X-linked adrenoleukodystrophy
◆ Spinal muscular atrophy due to homozygous deletion of exon 7 in SMN1

If proper clinical history is provided and properly correlated with the other investigations like ABG analysis, lactate and plasma ammonia levels then the screening tests can be used as confirmatory, and the treatment can be initiated simultaneously doing next generation sequencing as it takes 28 days to be reported.

Market scenario of newborn screening testing in India

◆ The global newborn screening market size is projected to reach USD 1.3 billion by 2026 from USD 0.9 billion in 2021, at a CAGR of 8.3 per cent during the forecast period.
◆ Growth in this market is majorly driven by the increasing prevalence of newborn diseases has risen in recent years, prompting providers to raise awareness and support the demand for advanced screening instruments.
◆ India provides significant opportunities to players in this market due to their high birth rates and increasing disposable income. According to the UN Children's Fund, India records 25 million births every year, or nearly one-fifth of the global annual childbirths. The high birth rate and the availability of newborn screening in public hospitals indicates a strong demand for market products and consumables.
◆ Based on technology, the market is segmented into immunoassays & enzymatic assays, tandem mass

spectrometry, molecular assays, hearing screening technologies, pulse oximetry, and other technologies. In 2019, the immunoassays & enzymatic assays segment dominated this market.

◆ In 2022 the Tandem Mass Spectrometry availability in majority of labs has dominated and has also helped in bringing down the prices for the NBS which was once thought a very expensive test now it is reachable to middle class population too.

◆ The NBS should reach the peripheries as it is right now seen blooming in metros, but the pediatricians and obstetricians should be encouraged.

◆ With the turn around time of 96 hrs to 72 hrs for peripheries with the improvement in the transport facility the NBS market has a good scope even in the peripheries.

◆ Major 10 players covered, including:

PerkinElmer (US), Demant A/S (Denmark), Natus Medical (US), Bio-Rad Laboratories (US), Danaher Corporation (US), and Medtronic (Ireland), Chromsystems Instruments & Chemicals GmbH (Germany), Trivitron Healthcare (India), Baebies (US), and Recipe Chemicals Instruments (Germany)

Viability and importance of NBS in national health program

◆ Prevalence of consanguinity and the prevalence of arranged marriages and no premarital counselling makes the inborn errors percolate through generations.

◆ Although the exact incidence in India is not known, approximately 4:1000 and 5:1000 are estimated to have hearing defects and congenital heart abnormalities, respectively, whereas the incidence of IEMs is estimated to be approximately 1:1000.

◆ The WHO has issued guidelines and criteria for selecting disorders in NBS program. Wilson and Jungner in 1996 have outlined the selection criteria for disorders in NBS program. These criteria are applicable to systematic or population-based screening of any type of disease and not only to inherited disorders.

◆ Wilson-Jungner criteria for disease selection in NBS:

a. The condition should be an important health problem

b. Natural history of the condition should be well understood

c. It should be detectable at an early age

d. Treatment at an early stage should be beneficial

e. Suitable test should be devised for early detection

f. The test should be acceptable

g. Intervals for repeating the test should be available

h. Adequate health service provision should be made for the extra clinical workload resulting from the screening

i. The risks, both physical and psychological should be less than the benefits.

j. The cost should be balanced against the benefits.

Based on the above criteria each state can identify the Inborn errors prevalent in their respective state but this can be done only when the Government set up also offers the Newborn screening to all the babies born in Government hospital where the Poor class and middle class population delivers the baby.

Indian Academy of Pediatrics proposes the three tier for NBS through National Program

◆ Category A (all newborns): Screening for congenital hypothyroidism and hearing should be a must in Indian scenario. G6PD screening should be done in Northern states of the country. Screening for Sickle cell disease and other hemoglobinopathies should be undertaken in pockets of high incidence.

◆ Category B (High risk screening): Screening for the following disorders should be conducted in the high-risk population (consanguinity, previous children with unexplained intellectual disability, seizure disorder, previous unexplained sibling deaths, critically ill neonates, newborns/children with symptoms/signs/investigations suggestive of inborn errors of metabolism). These conditions include phenylketonuria, homocystinuria, alkaptonuria, galactosemia, sickle cell anemia and other hemoglobinopathies, cystic fibrosis, biotinidase deficiency, maple syrup urine disease, medium-chain acyl-CoA dehydrogenase deficiency, tyrosinemia and fatty acid oxidation defects.

◆ Category C: Screening (in resource-rich setting/expanded screening) for 30-40 inherited metabolic disorders may be offered to 'well-to-do' families, especially in urban settings where facilities for sending sample to laboratory are available.

Under the Child Health Programmes the Newborn screening to be included which can offer a good health even for a baby with IEM. Government has taken initiatives to provide the treatments of some IEMs at a subsidise rates.

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Nourish the new-born better - Ensure the youngest lives get the healthiest possible start!

Thomas John, Managing Director, Agappe explains about a test on mothers' milk "Creamatocrit" which gives accurate values on calorie contents and this guides the maximum use of mother's milk and minimise the fortifiers or formulas in the beginning or even in the longer term

Government of India started an initiative through National Nutrition Mission (NNM). According to Mission 25 by 2020, the NNM aims to achieve a reduction in stunting from 38.4 per cent to 25 per cent by 2022. A specific programme "POSHAN ABHIYAAN" focussed on various aspects to improve child health below 5 years and reduce the infant mortality by 2 per cent every year. The programme has specific targets for reducing stunting, anaemia, under nutrition and low birth weight all related to control the mortality rate and Inborn Error of Metabolism (IEM). The concept of IEM arose at the beginning of the 20th century. Precise diagnostic tools have allowed the identification of many new IEMs in the past few decades. IEM has a direct link with malnutrition.

However, there is another important facet which is missing all the due attention i.e., Energy from mother's milk to the new-born. Breastmilk provides optimal nutrition, promotes normal growth, and reduces the risk of new-born diseases/illness. It is important to monitor both mother and child on their daily nutritional intake to minimise inborn disorders. For new-born, only nutritional intake is mother's milk, hence it is significant to monitor the mother's milk and mother's nutritional intake.

New-borns with pre-term and low birth weight conditions are prone to enteral feed intolerance, nosocomial infection, and necrotising enterocolitis. Breastmilk has its unique nutritional composition and protective qualities which are proven to help safeguard against the mentioned conditions as well as provide other immunological benefits. The benefits are even more pronounced when applied to a pre-term or Low birthweight baby due to their vulnerable conditions. Several older studies indicate however that weight gain may be slower in human milk-fed than formula-fed premature infants, raising questions about the caloric adequacy of breastmilk. Have we tested the calories in mothers' milk as our routine practise? The answer is NO. It has led to a practice of using formula and fortifiers in many NICUs across the country as an exclusive form of nutrition for premature, LBW infants. A test on mothers' milk "Creamatocrit" as routine testing gives accurate values on calorie contents and this guides the maximum use of mother's milk and minimise the fortifiers or formulas in the beginning or even in the longer term. Awareness is needed to create nutritionally fit young mothers to give due nutritional benefits to her new-born.

Somehow, the lipid concentration in breastmilk varies considerably, depending upon the stage of lactation, frequency of milk expression, time of day and completeness of breast emptying. The lipid concentration contributes most of the calories in breastmilk, so fluctuations always affect caloric density. The Creamatocrit provides objective and real-time information about the caloric content of any given breastmilk sample. This provides nutritional data for neonatologists, nurses, lactation consultants, and nutritionists to individualize feeding interventions for infants in a variety of ways and in a variety of settings. In the NICU, the Creamatocrit Plus is instrumental when performing hindmilk fractionation of breastmilk which has shown to accelerate weight gain in LBW infants without the use of formula or fortifiers. In NICU baby is fed with human milk expressed by the mother, which has then undergone subsequent processing, being frozen, transported, stored, and reheated before feeding. Also, almost all the babies are fed with composite milk rather than only foremilk or hindmilk.

Creamatocrit technique, a simple and inexpensive method to estimate the lipid concentration and calories in breast milk for daily practice. The Creamatocrit Plus is also a valuable diagnostic tool for lactation consultants to manage breastfeeding problems with mothers. Also, it could be helpful for clinicians in evaluating breastfed infants. The test results can be used to confirm lipid concentration variations and help Lactation consultants to prescribe a corrective milk expression schedule or changes to storage techniques.

Mothers also feel assured when they see that their breastmilk has enough calories, especially in comparison to formula, thus encouraging them to continue with their breastfeeding efforts.

Agappe Diagnostics POC division in partnership with EKF US, offers a unique Mothers Milk Centrifuge cum Reader- Creamatocrit plus, to check the calories and Fat content in the mother's milk with very less volume of milk approx. 0.2-0.5 ml for routine testing and to put for use in daily practice without wasting large volume of mothers' milk for testing. As Mother's milk is very dynamic and changes rapidly due to many external and internal factors, hence it is important to check calories and fat content as routine practise, this gives abundant confidence and assurance to the mothers and clinicians that they are ensuring the youngest lives get the healthiest possible start.

This is a journey India needs to walk for the sake of its mothers and children, for the sake of our country's future.

INTERVIEW

Epidemics and pandemics can only be controlled by coordinated action

Dr Praveen Malik, Animal Husbandry Commissioner, Government of India in an interaction with **Viveka Roychowdhury** explains about One Health Framework in detecting the future waves of the COVID pandemic and highlights the role of data collection and analysis in monitoring disease outbreaks

What is the importance of the One Health Framework for detection and containment of future waves of the COVID pandemic as well as other disease outbreaks?
Pandemics have become more frequent and are casting economic gloom over the nations. It is estimated that 60 per cent of human pathogens originate in animals – about three quarters of which are of wildlife origin. One Health Initiative Task Force defines One Health as the collaborative efforts of multiple sectors and disciplines working locally, nationally, and globally, to attain optimal health for people, animals, and our environment. Epidemics and pandemics can only be controlled by integrated and coordinated action by the animal, human and environmental health sectors as is envisaged under one health framework. The networking of intersectoral diseases diagnostic laboratories, creating a network of "genomic surveillance" labs having strong bioinformatics team for data analysis and interpretation, operationalising an integrated disease surveillance system for human, animal and environmental samples is always helpful in early detection of the future waves of disease outbreaks. Improved coordination, enhanced capacity of field epidemiology coupled with real time reporting and information sharing across sectors will help respond us to make quick mitigation responses. These detection and response mechanisms amply supported by appropriate communication strategies for wider outreach will help containing not only COVID-19 but also other infectious diseases of human and animals.

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Data collection and analysis is essential to monitor disease outbreaks, both in animals or humans. How is India's mechanism for data collection and disease surveillance being shored up?
Envisioning the importance of information management in animal health system, the department has worked on various fronts. National Digital Livestock Mission (NDLM) has been initiated, which is already building a national surveillance program for livestock health with potential to link wildlife and human surveillance data. NDLM is a digital platform being developed by DAHD with the support of NDDB on the foundation of the existing Information Network for Animal Productivity and Health (INAPH). The ambitious National Digital Livestock Mission aims to build a digital ecosystem for animal husbandry sector with unique animal ID being assigned to all animals and data capture in central database (INAPH), linked to farmers ID. In addition to NDLM, SOPs for disease testing are being harmonised for all Regional Disease Diagnostic Laboratories (RDDLs) / Central Disease Diagnostic Laboratories CDDLs and state diagnostic laboratories. All laboratories would be linked for-real time sharing of generated data by these labs which will be linked to NDLM appropriately. New tools for disease surveillance are being explored which will focus not only on strengthening of existing mechanism but also include approaches like environmental surveillance, disease modelling and disease forewarning mechanisms based on various parameters. A defined sampling frame will be used for active and targeted surveillance of various infections and AMR though the network of laboratories. In case of humans, Integrated Health Information Portal is created that provides real time data for data sharing through NDLM.

What is the investment in setting up a chain of laboratories to analyse the samples quickly?
The investment size would be dictated by the number of laboratories to be set up, distribution of laboratories as per the level of biosafety like BSL-2, BSL-3, or BSL-4; the state-of-the-art equipment in labs, and the

IT-infrastructure required for disease data collection, collation, analysis and disease reporting, disease forecasting, and strategising disease prevention and control programmes. We have got an established network of national referral regional, state, and district level labs which are supported suitable by central and state funds. The DAHD is supporting the Regional Disease Diagnostic Labs and Central Disease Diagnostic Labs for managing this network. During 2021-22, RDDL network was allocated a fund to the tune of 5.50 crore which is likely to be increased during 2022-23 based on actual requirement by the labs.

What have been the Government of India's approach to implement this project?

The implementation of One Health has been targeted by DAHD under One Health India project which has already been initiated in two states namely Uttarakhand and Karnataka. The project has been started with the financial support from Bill & Melinda Gates Foundation (BMGF) with the Confederation of Indian Industry (CII) being the implementing partner. For the effective implementation of the project, One Health Support Unit (OHSU) has been established with dedicated teams for planning and coordination at the central level and dedicated state teams for overseeing the activities in respective states add on with a communication partner. The OHSU will assist in setting strategic activities and provide technical inputs for the creation of the roadmap for National One Health Platform. One Health framework comprises of the domain experts across veterinary science, epidemiology, wildlife, disease diagnosis, laboratory assessor, data standards, and human health sectors. One Health approach involves inter-sectoral coordination among human, animal and wildlife health, enabling better disease reporting through creation and strengthening the one heath laboratory network, and integrating it with the National Digital Livestock Mission, capacity building through customising new training modules and improving the old ones for health professionals, creating awareness amongst the stakeholders for enhancing their active participation by preparation of IEC material, and finally strengthening of biosafety and biosecurity measures for livestock farmers at the farm level. All these interventions will help in efficient surveillance, early prediction, detection, and diagnosis of zoonotic diseases leading to improved livestock and human health, ensuring food safety and nutritional security, managing livestock-human-wildlife interface, better livelihood opportunities to meet SDGs, reduce human diseases and antimicrobial burden and better preparedness for future pandemics.

Envisioning the importance of information management in animal health system, the department has worked on various fronts. NDLM has been initiated, which is already building a national surveillance program for livestock health with potential to link wildlife and human surveillance data

How is the GoI selecting states and disease areas for implementation of One Health?

The processes for state selection and disease prioritisation in the respective states have been very challenging tasks. The state selection process considered the developing, analysing and interpreting various one health indices (Human-Animal Interaction Index, Ecosystem Health Index, Health Infrastructure Index, and Livestock Disease Diversity Index) for all the states and then calculating the rankings for each state. The disease prioritisation for the respective states was done based on the dynamics of the operational and non-operational parameters which dictate disease emergence as well as help in strategising the disease prevention and control programmes.

How did you design the interventions of One Health?

Designing workable and efficient One Health interventions was a challenging task which required the inclusion of the practices and measures which proved to be a success at the global level and at the same time needed to be very much indigenous and meet the requirements of the One Health pilot in the selected states of India. The quadripartite (FAO-WOAH-WHO-UNEP) working on worldwide cross-sectoral strategy for "One Health" to prevent, detect, control, and eliminate health threats to human originating directly or indirectly from farm animals, also proved to be a great learning path. For designing the interventions our team thoroughly studied the studies conducted in various countries, global best practices being followed for moving towards the goal and ultimately attaining the ambitious vision of One Health. After a rigorous study and mapping finally, we formulated six major interventions including: institutionalising coordination among human-wildlife interface, enabling better disease reporting through creation and strengthening the one heath laboratory network, and integrating it with the National Digital Livestock Mission, capacity building through customising new training modules and improve the old ones for health professionals, creating awareness amongst the stakeholders for enhancing their active participation by preparation of IEC material, and finally strengthening of biosafety and biosecurity measures at the farm level.

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Digital technology: Defining the new era of healthcare

Gaurav Gupta, Vice President-Engineering, GlobalLogic emphasises that the convergence of three key elements – medical expertise, technology, and data, can improve accessibility, affordability, and quality of healthcare at a large scale.

In the last two years, the world has witnessed the paradigm shift the COVID-19 pandemic has brought to the healthcare sector. The increased demand on healthcare institutions has called for a long-term strategy to support the workforce and patients alike through technology-enabled solutions. It has become imperative for healthcare organisations to shift from their traditional methodologies in the face of an emerging digital reality that will revolutionise the functioning of healthcare in the future.

From using mobile applications and software that support the clinical decisions doctors make every day to harnessing the power of Artificial Intelligence (AI) and Machine Learning (ML), technology is reshaping how healthcare is delivered. With traditional models or methods, patients are required to visit a hospital to report their symptoms, undergo numerous tests, and subsequently receive medical care based on the results. These are now getting replaced by the advancements in digital technologies which have enabled easy accessibility to care, improved quality, and reduced cost of care services.

To shape the future of disruptive innovation for everyone's benefit, there are three major challenges we must tackle on a global and multi-stakeholder level –

- ◆ Reduce the burden of hospital visits for patients, their families, and caregivers
- ◆ Monitoring, recording and visualisation of symptoms, and sharing data between patients and medical professionals
- ◆ Fragmented and siloed patient data and information

The convergence of three key elements – medical expertise, technology, and data, can improve accessibility, affordability, and quality of healthcare at a large scale. There is a need to democratise healthcare access and delivery, along with making it more individualised and inclusive. By harnessing the potential of data and technology, it can result in streamlining physicians' work, optimising systems, improving patient outcomes, reducing human error, and lowering costs through enhanced web and mobile experiences. Some of the areas where digital technology can make an enormous impact in healthcare and is predicted to change the future of medicine include:

From using mobile applications and software that support the clinical decisions doctors make every day to harnessing the power of Artificial Intelligence (AI) and Machine Learning (ML), technology is reshaping how healthcare is delivered

The rise of on-demand healthcare: Advancements in telehealth and telemedicine will help provide expanded healthcare access, reduce contact between healthcare workers and patients, provide critical care for patients with chronic conditions who need frequent check-ups and ensure continuity of care.

The growth of wearable medical devices: IoT devices personalises the healthcare experience, helps in remote monitoring of patients' medical conditions, and helps reduce insurance premiums by taking preventive measures. IoT devices that monitor complex medical equipment's (CAT Scanners, X-ray scanners etc.) help in predictive maintenance and avoid costly downtime.

Use of big data: The inclusion of big data in healthcare not only helps in lowering the rate of medication errors through patient record analysis, but also facilitates preventive care for recurring patients. It also enables research and clinical trial companies to do meta-analysis on larger data- set and permits healthcare professionals to stay on top of cutting-edge techniques and trends.

Exploring the world of VRL: Use of Virtual Reality (VR) for patient care has numerous advantages as it assists in treatment of pain, anxiety, and post-traumatic stress disorder. It also enables medical professionals to build their skillset by interacting with simulated environments for surgery training, rehabilitation, and pain management.

Inclusion of AI and ML: The wonders of AI & ML with the use of AI chatbots powered by Natural Language Processing (NLP) gather important patient information and helps direct queries to the concerned healthcare professionals. Pattern recognition helps patients access precision medicine tailored to their genetics (example – cancer). Moreover, in medical imaging diagnostics, AI helps radiologists spot details that escape the human eye and in the pharmaceutical industry it helps in reducing the drug development cycle significantly.

Promise of better Electronic Medical Record (EMR): Use of technologies such as blockchain has proven to be an effective tool in preventing data breaches and improving inaccuracy of medical records. It enables a secure way to manage medical records & transactions among patients, healthcare providers and insurance companies.

Health on the go: Healthcare applications enable patients to monitor their health, provide them with medical information, allow them access to test results and prompt them when it is time to get their check-up. Moreover, healthcare apps enable healthcare professionals with easy access to test results, drug dosing recommendations and other information they need urgently.

The focus on the central entity of healthcare ecosystem - the 'Patient', has significantly increased. Advancements in technology has empowered people to manage their health more effectively and is having a profound effect on how health services are delivered.

The innovations through emerging technologies and solutions are making healthcare services more accessible, affordable, and more personalised. The continued transformation will usher us into a new era of universal healthcare experience enabled by greater trust.

How digital technologies can help hospitals become future ready

Nandakumar K, General Manager-India, Honeywell Safety and Productivity Solutions explains that hospitals and other healthcare facilities can become more efficient, competitive and future-proof by using IoT-enabled, real-time monitoring tools

The pandemic poked holes in the fabric of our healthcare ecosystem, highlighting huge shortfalls and uncovering multiple avenues of improvement that can be achieved by leveraging advanced technologies.

Automation, digital supply chains, robotics and next-gen interoperability are some options that can drive better operations management and back-end efficiencies. For instance, Robotic Process Automation (RPA) and Artificial Intelligence (AI) allow caregivers to free up time spent on documentation, allowing them to devote more time and energy on caregiving.

Automation and real-time monitoring

Per industry data, 22.8 per cent of caregivers' time is expended on non-patient related activities because of inefficient communication and lack of care-collaboration tools. Consequently, caregivers are burdened with heavily repetitive, time-consuming tasks such as recording patients' vital signs. Apart from loss of productivity, such manual processes increase caregivers' risk of exposure to infections and unwanted incidents. Fortunately, 18 per cent of physicians' tasks can be safely automated.

To achieve this, healthcare organisations need technology that integrates seamlessly with existing processes, covering the patient's first visit to the hospital, diagnosis and return home from care. Therefore, engineers are now designing and implementing cutting-edge technologies for revamping hospitals, making them more efficient and connected. One of these digital technologies is Honeywell's Real Time Health Monitoring Systems (RTHMS) – a smart edge-to-cloud communication platform for remote and real-time monitoring of patients that acts as a bridge between caregiver and patient, enabling the former to track patients' vitals and receive this data directly onto their smartphones.

Technologies such as Internet of Things (IoT), wearable devices and AI can facilitate the analysis and interpretation of patient data remotely, securely and in real-time, boosting patient outcomes. A care delivery model utilising RTHMS and allied digital tools offers benefits for all stakeholders – hospitals, caregivers and patients:

For hospitals

◆ **Reduces capital expense:** A transition from a capex to opex model reduces the need to invest in expensive equipment for vital tracking.

◆ **Optimises resources:** Enables hospitals to locate assets and personnel quickly to optimise usage, increase productivity and improve patient experience.

◆ **Builds credibility with prompt responses:** Reduces the time in which patient information and medical knowledge are collected, analysed, shared and applied as meaningful insights. Reduces response time by approximately 20-25 per cent.

For caregivers

◆ **Enhances safety:** Remote monitoring reduces the risk of infection among caregivers as it limits contact with patients.

◆ **Boosts productivity:** Tech-enabled care lowers fatigue and augments productivity. On average, nurses walk 9.1 km during one shift on a designated floor. RTHMS reduces a minimum of 30 per cent of this physical effort.

◆ **Improves efficiency:** Caregivers can immediately address the patient's need in case of an emergency as 18 per cent of the physician's tasks can be automated with RTHMS.

For patients

◆ **Increases mobility:** Wireless monitoring allows patients to have more mobility in the room.

◆ **Facilitates remote care:** Particularly in the pandemic scenario, RTHMS eliminates the need for patients to be present in hospitals by providing professional assistance remotely. This also enables hospitals to be freed up beds for severely ill patients.

How real-time technology works

Digital devices such as RTHMS comprise two parts – hardware and software. The hardware constitutes a wristband to monitor SpO? and a body patch for recording the patient's ECG, skin temperature, respiratory rate, heart rate and posture – all of which can be viewed on a mobile device. The software includes data and analytics processing as well as dashboard visualisation. This obviates the need for periodical collection of vitals, thereby reducing the number of trips to the patient's room. When a patient is in the hospital, his/her vitals are tracked through wi-fi. All the data resides in the cloud and is encrypted.

Considering the current shortcomings in the nation's healthcare infrastructure, it is imperative to digitalise the patient care ecosystem and plug the gaps to ensure effective and efficient care delivery. Accordingly, digital health centers and real-time monitoring systems, among other new-age technologies, can improve healthcare outcomes.

These offerings are suitable for diverse facilities, including hospitals, ambulatory care centres, elderly home care, emergency and specialised day surgery and clinics. Undoubtedly, such state-of-the-art, IoT-enabled technologies will help hospitals and other healthcare facilities become future-ready.

How telehealth has embraced tech to go beyond just video consulting

Pramod Kutty, CEO & Co-Founder, Connect2MyDoctor stresses that moving beyond urgent care and convenience, telehealth is now evolving into areas like remote patient monitoring

Telehealth grew in popularity during the pandemic across the globe, due to its convenience factor, effectiveness and growing ease of use. It is highly probable that even after the corona virus ebbs in intensity, healthcare practitioners will continue to depend on telehealth as its advantages are now well established in the medical circuit. Not only are the doctors now comfortable with the concept, the patients too are getting familiar with virtual healthcare platforms raising optimism in telehealth circles about its increased usage in days to come.

Telehealth firms connect medical practitioners with patients over online sessions, removing barriers of time and distance. Such medical consultations can be about healthcare screenings or about more specialised services and as time evolves more advanced consultations can be brought under the telemedicine umbrella. Over time, more tech innovations are bound to enter the virtual health care space and the signs are already visible.

Moving beyond urgent care and convenience, telehealth is now evolving into areas like remote patient monitoring. Just like in the online education sphere where the hybrid model has kicked in, the healthcare industry too will see an online-offline combination in the near future.

> Just like in the online education sphere where the hybrid model has kicked in, the healthcare industry too will see an online-offline combination in the near future

Greater emphasis is now placed on patient experience. Telemedicine systems are trying to help patients get their diagnosis, treatment plan and prescriptions within 30 minutes on average.

Provider efficiency is another factor that's receiving attention. It's seen that many digital tools have failed to pay attention to interoperability or integration with electronic health records, thus adding to the operational burden. This often robs them of the crucial relationship building exercise with patients.

The positive news is that telehealth has moved beyond just video consultations by bringing new technologies under its fold. For instance, Connect2MyDoctor has launched cARe - a 3D/AR module for patient education on its virtual care platform. cARe enables an easier explanation of anatomical structures and physiological mechanisms to a patient through the video consultations. The start-up is also working to launch an integrated tool to enable physiotherapists and orthopaedic surgeons to measure Range of Motion (ROM) and remotely monitor patient rehabilitation. The overall focus is to address what's more possible in telehealth and think just beyond standard video calling which can be fulfilled by common communication tools out there.

Embracing technology will be crucial as far as hospitals and the medical staff are concerned, especially in institutions which still adopt a conservative approach to healthcare. Understanding of data analytics for instance is important with regards to patient care, as big data tools can often play a crucial role in formulating treatment plans for various demographics. Remote patient monitoring for chronic care has been a big step forward in this regard. While patients may know the symptoms of a particular disease, they can't be expected to figure out the early warnings of an impending medical situation. In such cases, wireless remote monitoring will pick up the signs and alert the doctors. Many lives can be saved in this manner.

However, there is still a need for greater integration of telehealth into the daily schedules of healthcare practitioners. Hybrid care models are still a work in progress and unless we are able to equally support both online healthcare and in-person care, a seamless integration will remain as a concept on paper.

The key now would be to expand the access. Speciality care should now reach remote areas where online consultations are yet to take off in a large way due to lack of awareness. Even in urban centres, especially suburban areas, virtual healthcare will need better support. In such areas, there has to be an accent on value-based care. Even as we look to provide the incentives that go alongside telehealth, we should never take our eyes off affordable care especially when looking to expand into remote areas.

India needs a focused, systematic and phased approach to augment health system infrastructure across 730 plus districts. About 100 to 150 districts per year should be taken up to develop 'model health districts as witnessed with the Smart Cities Mission, according to a KPMG report this year.

The National Health Authority (NHA) has announced the integration of eSanjeevani with its flagship scheme Ayushman Bharat Digital Mission. As the KPMG report says this would allow the existing users of eSanjeevani, the telemedicine service, to create their Ayushman Bharat Health Account (ABHA) and use it to manage their health records.

For telehealth models to become even more popular, there has to be greater emphasis on convenience. Even today, there are too many avoidable clinician visits happening despite the availability of virtual care. If virtual visits can be used alongside e-triage tools, there could be better medical outcomes. An e-triage tool uses an algorithm to predict patient outcomes based on a system engineering and machine learning method, to identify relationships between predictive data and patient outcomes. By reducing unnecessary hospital visits, one can drive down the cost of healthcare.

This is not to say that telehealth is an all-encompassing phenomenon. It has got its limitations. Physical examinations and long-term patient care need periodic physical visits. Hence, telehealth should be seen as a powerful tool that further assist in-person visits. A hybrid approach will be ideal at this stage. With 5G kicking in, there could be faster adoption of telehealth services, as delivery of medical images get faster, remote patient monitoring become better even as VR/AR applications open up a plethora of possibilities, turning telehealth into industry of significant merit.

Transforming healthcare with AI and robotics

Vivek Kanade, Managing Director, Siemens Healthcare highlights that AI and robotics have the potential to significantly improve quality & safety of healthcare delivery and provide a wider access to health care

Healthcare delivery in our country is replete with many challenges, like one doctor per 1,445 citizens as against WHO's norm of 1,000, or like 0.7 beds per 1,000 which ranks us far below the global average of 3.4. The challenge is also of affordability and accessibility to care, among many others.

However, amidst these challenges the silver lining is the explosion of "innovations" & "technology". Many innovations have acted as a catalyst in developing advanced therapies for the treatment of routine ailments and equally for most complex cases. For India, we have a possibility of addressing significant aspects of our challenges by adoption of these "leap-frogging" innovations.

Let us look at the two of the most promising innovations, the Artificial Intelligence (AI) and robotics. Both these technologies have potential to significantly improve quality & safety of healthcare delivery and provide a wider access to health care.

NASSCOM predicts that the use of AI will add USD 450–500 billion to India's GDP by 2025. Also, NITI Aayog in its National Strategy on Artificial Intelligence has suggested an overarching goal to 'make India a global leader in AI by ensuring responsible and transformative AI for all'.

With tailwind provided by such policies, India now has the world's third-largest startup ecosystem, many of them in AI, in healthcare. Also, most venture capital funding is now going to AI projects in the e-commerce, banking, and in healthcare sector, as reported by NASSCOM.

AI is seen the key enablers to address the shortage of clinical experts. In addition, it is becoming instrumental in creating newer mechanisms for patient care. To name some examples - AI is already creating an impact, especially in the core 'patient care' areas like, triaging, diagnostics, clinical decision support, using wearable devices to understand and improve patient experience and patient care, etc. It is also contributing in behind-the-scenes topics like improving hospital operations, logistics, population health management, etc.

Technologies like robot-assisted surgeries are the need of the hour and paramount to treating and addressing the burgeoning load of non-communicable diseases in India. Now, there are many centers who routinely perform robot-assisted surgeries for colorectal, gynecologic, urologic, thoracic, heart, etc. cases

AI is helping healthcare providers to analyse patient reports better and map the response to treatments given. In diagnostic imaging, AI is providing the ability to sift through large volumes of medical data quickly 'and precisely' to aid clinical findings. The biggest contribution of AI for caregivers is by allowing them to be more 'Productive' and for patients is by making their treatments more 'Precise' (data-driven) & 'Personalised' to his/her individual case. Though, there are many milestones to be crossed for 'precision medicine' to be perfect, but AI can help drive us closer to those goals.

However, AI implementation can most surely address the shortage of clinical expertise and at the same time arguably bring higher level of quality in health management.

Very much like AI, the advent of robotics in healthcare also is a recent phenomenon. Though robotics in hospital environment was present for quite some time (in transporting laundries and food to different floors and wards, etc.) however these examples were very few and were far removed from direct patient care. Changing this scenario, the current need for robotics to deliver high precision care directly to the patient. Hence surgery was automatically the first domain where robotics unveiled itself, in a new avatar. India's first robot-assisted surgical procedure took place at a Delhi hospital in 2002.

The key benefits from robot-assisted surgery were its minimally invasive nature, resulting in fewer complications, like surgical site infection, less pain and blood loss, and most important – a shorter hospital stay, thereby freeing up already scarce hospital beds.

Technologies like robot-assisted surgeries are the need of the hour and paramount to treating and addressing the burgeoning load of non-communicable diseases in India. Now, there are many centers who routinely perform robot-assisted surgeries for colorectal, gynecologic, urologic, thoracic, heart, etc. cases. In addition to surgery, robotics is increasingly used in hospitals for the execution of repetitive tasks, for the management of large volume of laboratory tests, for rehabilitation & physical therapy.

As a test, a cardiac intervention case was performed in Gujarat where Dr Tejas Patel performed world's first tele-robotic angio procedure on a middle-aged woman with blocked artery, while sitting 32 kms away from the patient. Thus, demonstrating that robotics, has the ability to provide access to "expert" care, breaking the distance barrier.

The growing relevance of the Robot-assisted healthcare is underlined by estimates that peg this market to become Rs 2,600 crores by 2024, growing at a CAGR of 19.8 per cent.

In conclusion, the advanced AI, robotics medical devices & software are seamlessly finishing the jobs with higher precision and are empowering patients to receive the right care, faster.

Optimisation of the continuum of care and improving clinical outcomes can be achieved with the effective use of automated and connected devices enabled by artificial intelligence.

The integration of technology in healthcare, like AI, robotics, and others, primarily begin with the vision of improving access to quality care for all patients and today, thanks to AI and robotics. at least for some clinical conditions, patients in remote locations can receive same quality of care as their counterparts in more developed global cities.

INTERVIEW

Accessibility and reliability are the main gaps in dialysis care

Vikram Vuppala, Founder and CEO, NephroPlus in an interaction with **Kalyani Sharma** explains about his company's recently launched digitalised dialyzer reprocessor for dialysis and highlights its advantages for nephrologists

What was the core purpose of introducing a digitalised dialyzer reprocessor, Renova by NephroPlus? Can you highlight the key features of this product?

While the number of people availing the dialysis services has increased over time, there has been negligible innovation in the technology supporting this critical life-saving treatment. NephroPlus is committed to not only making dialysis accessible to every patient in every setting but is working tirelessly to innovate and improvise technology so it can be leveraged to improve patient outcomes. Renova is a breakthrough that is all set to redefine dialysis care delivery.

Renova is a cloud-connected device. Using the power of the internet cloud, this protocol-based fully automated reprocessing machine is designed to minimise manual errors which are widely believed to cause cross infections in dialysis centers. Apart from the innovation in design and hardware, Renova has incorporated never before features in a dialysis reprocessing machine such as- remote troubleshooting and cloud-based data storage.

This allows biomedical engineers to identify and troubleshoot issues quickly and efficiently. With the spread of dialysis centers and the length and breadth of the country, it can be time-taking and cost ineffective for engineers to travel to centers to fix breakdowns. With Renova they can simply log in to the machine using the Renova , app, which allows them to see the machine's status, including observing the functioning of every valve in the device during operations and spot the exact issue and determine whether it can be fixed remotely or requires manual intervention thus saving a lot of time and resources required for maintaining these life-saving machines.

> Renova eliminates the scope of manual errors that can ultimately lead to cross infections, residual chemical infusion, environmental contamination, and much more

Another major innovation introduced is cloud-based data storage. Machines in the market had an archaic printing system where the results of each reprocessing cycle were printed on a piece of paper and then stapled to the case sheet of the patient. With case sheets also going online, it was cumbersome to have to print out the reprocessing status. Further, the quality of the printer was also poor resulting in replacement costs being incurred every few months. All this prompted us to shift the entire process to the cloud. In Renova, all reprocessing data is stored on the cloud which when analysed and correlated with clinical outcomes, improve processes and in turn patient outcomes.

How will this product help nephrologists?

A dialyzer, also called the artificial kidney, it is an essential apparatus to filter out all the extra sugar, salt, waste, and fluid, leading the cleaned blood back to the patient's body. It is also the most expensive consumable in the dialysis procedure, given its paramount functionality. The traditional dialyzer reprocessor requires manual cleaning, which can lead to patient cross-infection. The revolutionary all-digitalised dialyzer reprocessor, Renova eliminates the scope of manual errors that can ultimately lead to cross infections, residual chemical infusion, environmental contamination, and much more.

Furthermore, the cloud-based storage feature ensures that reprocessed data is now stored on the cloud, enabling analysis and correlation with clinical outcomes, which helps to improve the process. Doctors will get access to reprocessing data which is stored online. Better data analysis will be possible, including correlating reprocessing data with clinical outcomes. Patients will benefit as they will get access to a very safe and efficient reprocessing machine which will deliver better outcomes.

What was the investment made by the brand during development? What is the roll-out plan for the same across multiple markets?

We at NephroPlus were frustrated with one critical piece of equipment that is used widely in dialysis centres in the developing world – the Dialyser Reprocessing Machine. Reprocessing is a safe and efficient technique by which a dialyser, or the artificial kidney, which is the most important and the most expensive consumable that is used for dialysis, is reprocessed for use by the same patient a few times.

Over the last couple of years, our team worked on this machine, building one from scratch, by solving many of the problems that exist in the machines available in the

Indian and international markets. We started with an initial investment of Rs 25 lacs in the development of this fully automated indigenous machine and we are committed to continued investments in technology that will redefine dialysis and improve lives of our dialysis patients.

We are proud to announce that Renova has been granted a patent for the several innovations we have introduced. Apart from many hardware aspects we have incorporated, we have also introduced two revolutionary and previously unheard-of features in Renova– remote troubleshooting and cloud-based data storage.

We plan to make these machines available to other dialysis centres as well so they can also get the benefit of the new features in this machine. We are hopeful that this will improve the efficiency of dialysis centres in the developing world and help to provide safe, effective dialysis to all patients.

At present, that breakthrough innovation will start as a pilot project across four centers in Hyderabad, Chennai, and Bangalore.

Can you throw some light on the role of technology in the dialysis sector?

Dialysis has been around for about 80 years now. Unfortunately, compared to other fields like cardiology and oncology, this field has seen very little innovation. At best, incremental improvements have been made to the technology available.

Hemodialysis apparatus includes: dialyzer; dialysis solution (dialysate);tubing for the transport of blood and dialysis solution; and hemodialysis machine to power

Recently, however, there have been some initiatives to improve dialysis machines and associated equipment that is used in dialysis centres and this is most welcome. Key market players of the dialysis equipment market are moving toward miniaturisation of the machines due to the ease of its portability and for providing a more affordable form of hemodialysis at home.

What according to you are the current challenges and gaps that need to be filled as far as dialysis care is concerned?

As kidney transplant is still an elusive procedure in India, most patients are put on hemodialysis. The driving force for the ever-increasing demand of dialysis equipment is the exponential rate of growth of non-communicable diseases like diabetes , obesity, and hypertension; and the continuous increase in the geriatric population (most likely to suffer from ESRD). Hemodialysis segment accounts for a major part and is projected to grow over the forthcoming years. The greatest challenge is the lack of instructive training and ease of accessibility of the equipment. Large inequities exist in access to dialysis. Two thirds of the population of India live in rural areas, where the availability of hemodialysis is limited. Access to reliable quality dialysis care and affordability are the main gaps. Only about 10-15 per cent of patients who need dialysis are getting it. A clear majority of ESRD patients in India do not have access to long-term dialysis and die prematurely because of resource limitations and lack of access.

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INTERVIEW

We must focus on improving access and affordability of vital, quality cardiology care solutions nationwide

Srikanth Suryanarayanan, Head-Imaging, GE Healthcare in an interaction with ***Express Healthcare*** highlights the role of medtech industry in creating solutions for efficient interventional cardiac care

India experiences a significant portion of the global heart disease burden. How do you think India can address this, and what is the role that the healthcare industry can play in enhancing care delivery?
India accounts for one-fifth of Non-Communicable Diseases (NCDs) deaths worldwide, particularly observed in younger population, according to a paper by the World Health Organization. In fact, according to the National Center of Biotechnology Medicine, NCDs contribute to 60 per cent of all deaths in India. Out of this 60 per cent, 82 per cent occur due to cardiovascular diseases, chronic respiratory diseases, cancer, and diabetes.

The country's CVD burden is amplified by its widening doctor-patient gap and the lack of access to affordable healthcare solutions. The pandemic also exacerbated the threat of such non-communicable diseases as it further limited access to care and prompted unhealthy and sedentary lifestyle patterns (including unhealthy diet and less exercise).

As the key demographics affected by cardiovascular diseases in India evolve, this also results in a gap in cardiac care delivery to effectively address and support this population. Personalised care is important to fully take individual patients into account. With the aim to address this rising cardiovascular disease burden, the healthcare industry has been gearing to bridge the care delivery gap.

Some key measures to bridge this care delivery gap include building strengthened, resilient healthcare

infrastructure, rethinking delivery models by adopting technology-based virtual and remote care solutions and increasing local investment in R&D to support the rise of enhanced care offerings.

To be aware about what CVDs are is only the beginning. We need better understanding and implementation of precautionary measures, including to avoid known risk factors, maintaining a healthy lifestyle, and recognizing symptoms and seeking care in a timely manner.

Access to efficient interventional cardiac care is still a challenge in India. How do you think the industry can look at creating solutions for the future?
We must focus on improving access and affordability of vital, quality cardiology care solutions nationwide. Healthcare facilities and medtech companies are working to leverage newer solutions, including tech-led innovations to deal with the threats posed by cardiac diseases.

At GE Healthcare, we believe in the power of collaboration when it comes to the most critical healthcare threats. GE Healthcare's collaboration with Boston Scientific is a step in this direction.

What is the scope of GE Healthcare's collaboration with Boston Scientific?
This is a first-of-its-kind collaboration between the two MedTech companies in India, both with strong interventional cardiology portfolios. The advanced medical devices and capabilities from Boston Scientific, coupled with GE Healthcare's strong medical imaging systems like cardiac catheterization lab and related software, support diagnostics through treatment and monitoring of the cardiac patient-care pathway.

We aim to broaden the horizons for interventional cardiology in India and empower clinicians by guiding accurate treatment to facilitate better patient results. Through this collaboration, we will work to collectively support the training and education of healthcare professionals and raise consumer awareness about the impact of vascular imaging advancements within cardiac catheterization procedures, thus enabling better patient outcomes.

Earlier this year, GE Healthcare signed a similar partnership with Boston Scientific in Southeast Asia which also offers combined cardiology solutions to customers including in training and education.

What are the key trends you foresee in India's medtech sector to support the delivery of efficient, quality care?
While India's medtech sector is still at a nascent stage, it is poised for significant growth. Several trends are contributing to the sector's upward trajectory and consequently reshaping the Indian healthcare system. With a rise in health-focused consumers and patients, as well as limited in-person consults owing to the pandemic, the digital health innovations, and services available have seen a considerable rise in recent years, spanning tele-health and other virtual care solutions.

Further, to enable greater connectivity and streamline healthcare networks to alleviate the burden on health systems, considerable focus has gone into improving operational processes in hospitals, clinics and other health centres, including through the adoption of unified digital health platforms, cloud computing, electronic records and more.

There have also been other key trends involving the rise of cutting-edge tools, including AI and ML solutions to generate patient insights from data that guide clinicians in clinical decision-making, and AR and VR tools for physicians to support virtual, hands-on training through enhanced visualisation of procedures. The sector has also witnessed a growing number of collaborations between public and private entities, industry and academia, which can support augmented R&D efforts across care pathways, spearheading innovation and scaling access to novel innovative healthcare solutions to larger segments of the population.

Overall, we have observed and are committed to supporting the delivery of more precise and holistic care that places patient centricity at the centre of decision-making. We are committed to improving patient outcomes, while also supporting operational efficiency of health systems and reducing the burden on healthcare practitioners as we move into the future of care.

INTERVIEW

We are planning to partner with various state governments to deploy Lord Sehat kiosks

Naitik Vyas, Director, Lords Mark Industries in an interaction with ***Express Healthcare*** throws light on POC market in India and explains the objective behind launching Lords Sehat health ATM

What role can Point of Care (POC) diagnostic services play in disease prevention, healthcare interventions and reducing the burden on healthcare systems?
COVID has shown us that India's healthcare diagnostic system is not well equipped to take the burden of conducting RTPCR tests in volume and to deliver the results on time. The worst affected has been rural India where getting the results got further delayed compared to the urban centres. In such a situation time is very critical and with the invention of POC kits, it becomes easier for individuals to understand the outcome even if the accuracy stands at 80-90 per cent than gold standards. Rural India, where diagnostic labs are not available, will be the greatest beneficiary of these POC kits. They will get the results on time and the waiting period will be nullified. Also, these kits are helpful for mass screening in areas where the spread of any communicable disease is identified.

What's your view on the impact of Public-Private Partnership (PPP) in expanding diagnostic coverage to underserved populations across regions?
I am a believer in the Public Private Partnership (PPP) scheme if it is in the right spirit. The government must provide equitable healthcare to the masses and with the help of private players, operations can be run smoothly and proper patient care can be delivered. Government has an infrastructure in the form of primary healthcare centres, hospitals etc, wherein private players can bring in advanced technology and operational

efficiency to scale and provide affordable healthcare to the underserved population as well. Already the cost of diagnostic services is less in India compared to the global markets. For instance, a Vitamin D test at one point in time was costing Rs. 2000. But now it can be done at Rs 200.

What is the growth prospect of the Point of Care (POC) diagnostics market in India and what are the key growth drivers?
The global point-of-care diagnostics market is projected to grow from $36.37 billion in 2022 to $51.94 billion by 2029, at a CAGR of 5.2 per cent. We expect that the Indian market is also going to grow at a faster rate, especially since the central government has been pushing more on healthcare via Ayushman Bharat and the national digital health mission programme. Key drivers for this growth are people, who now actively want to check their health parameters and the government can provide access to technology and open the doors for more home-based tests. If these two things come together then growth will be exponential. The pregnancy kit is one such example, which is now being used by a large section of the Indian population.

How will 'Lords Sehat' ATMs address the healthcare access barriers in India?
In rural areas, the biggest challenge is having a diagnostic centre and providing immediate test results. But with Lord Sehat, it is possible to test more than 50 plus health parameters and provide instant results with gold standard devices. The health parameters that we test include glucose reading, lipid profile, haemoglobin, BMI, BMR etc. Conducting these kinds of tests doesn't require a high-skill individual but it enhances the access to quality healthcare checkups in rural areas. Moreover, we believe that the cost of an overall health checkup which generally goes up to Rs 3000 comes down to Rs 700 - Rs 800 with the 'Lord Sehat' ATM. This makes the tests more affordable for the masses. We have applied for a patent for Lord Sehat.

What's your plan for making POC diagnostic services accessible to rural and various underserved regions?
We are planning to partner with various state governments under the health initiatives and use public health centres as infrastructure to deploy Lord Sehat kiosks and train local people to handle the device which in turn will generate employment as well. We are also exploring partnerships with NGOs to sponsor Lord Sehat and we execute the test in rural areas in association with them.

Your diagnostics equipment manufacturing facility at Vasai near Mumbai will be operational soon. What's your outlook for the company's OEM manufacturing vertical?
In the past two years, Lord Sehat has already worked in the diagnostic sector under the brand name of LordsMed. Now that we are building our manufacturing unit in Vasai, we will be focusing more on haematology, Immunology, biochemistry, and rapid kits products. We believe in the next 3 to 5 years more pharma companies will enter the diagnostic space and we would like to be their OEM partner in providing best-in-class products at affordable rates. . We are exploring international OEM partners as well. We have signed an MOU with a Singapore-based company to manufacture products in our facility once it is ready and pass their due diligence parameters. The plant will be ISO 8, Class 100000, ISO 13485 QMS standard and WHO GMP certified.

What was the objective of launching Lords Sehat health ATM at Ambala Police Headquarters?
We have set up Lords Sehat at the Ambala Police Headquarters under the CSR initiative as a part of our tribute to the dedication and relentless efforts of the Haryana Police in maintaining law and order and ensuring the safety and security of the people. We have made preventive health checkups accessible for them as call for duty leaves them with very little time to go for regular health checkups. We have made the first 500 diagnostic tests at Lords Sehat complimentary for the Haryana police personnel. Anil Vij, Hon'ble Health Minister, Government of Haryana has recently inaugurated walk-in health kiosk along with other key dignitaries. We wish to collaborate with the Haryana government and other stakeholders to further expand the Lords Sehat network to other parts of the state.

INTERVIEW

Innovation holds the key to enhance the cancer care ecosystem

Manikandan Bala, Senior Vice President, TIMEA & Asia Pacific, Direct Sales Strategies & MD India & SA, Elekta in an interaction with **Kalyani Sharma** highlights that India urgently needs to strengthen its infrastructure for cancer treatment by maximising the adoption of precision radiotherapy technology across the country to effectively manage the country's rising cancer burden

What is precision radiotherapy? Why it is the need of the hour?
Radiotherapy is one of the most critical treatment options available in cancer care management alongside surgical and medical oncology. The discipline of radiation oncology has existed for decades, only getting better over time. The 'precision' in radiotherapy is an outcome of the advancements achieved through innovation in technology. If I could broadly categorise, radiation therapy has two primary goals: to deliver the clinically planned dose at the targeted tumour in the most effective manner and to protect the organs at risk around the tumour.

This is why precision is key. Any compromise could have a direct impact of the desired outcome. Over the years, improvements in treatment planning systems and equipment capabilities have enabled the care givers to accurately define target volumes and deliver planned doses with sub millimetre accuracy.

Let us understand some of these advancement with practical examples. During the course of treatment delivery, the patient is expected to remain still. Now breathing is an involuntary bodily function that tends to move the tumour with each inhalation and exhalation, very realistically interfering with the radiation target. This puts the surrounding organs at some risk. With advancements such as Active Breathing Coordinator, we are able to address this challenge with great efficiency.

India urgently needs to strengthen its infrastructure for cancer treatment by maximising the adoption of precision radiotherapy technology across the country to effectively manage the country's rising cancer burden

Today we are at a point where we can, with diagnostic clarity, in real time, track the tumour while the patient is being treated and adapt the treatment on requirement. This is now possible through technology like Elekta Unity, our MR-Linac. As recently as five years ago this was unheard of as the technology simply didn't commercially exist. We are working tirelessly with our clinical partners to make this possible and make it available to our community across the country. In the next couple of months, we should have our first system up and in service to the nation.

What according to you are some of the prevalent challenges in India's overall cancer care infrastructure?
The distribution of radiotherapy machines per million population in India is very low, at less than 0.5 per million. In contrast the developed countries have 4 per million. That's a staggering 8-fold disparity. To further add to this disparity, while most of the India population lives in rural India, the concentration of these facilities is around the urban cities. For most patients, the treatment is still out of pocket. All these add up to the challenges of availability, accessibility, and affordability.

Then there is the lack of trained manpower to operate these machines as we move into interiors of this vast country. What does this mean? There are not enough treatment centres to cater to our population's requirement. If one needs care, they will need to travel long distances to receive their treatment adding significant physical, emotional, social and economic pressure on the patient, as well as his/her family. The lack of trained manpower could have a direct implication on the treatment outcome.

These are some of the core challenges. The other challenges are to do with data and informatics. Availability of actionable data, consistency in data, ability to integrate with registries and use of it to build predictive models.

India urgently needs to strengthen its infrastructure for cancer treatment by maximising the adoption of precision radiotherapy technology across the country to effectively manage the country's rising cancer burden.

What measures has Elekta taken towards strengthening the cancer care ecosystem?
We are working closely with the government on Public-Private Partnership (PPP) projects at government

facilities to enable affordable clinical excellence and cutting-edge technology access closer to patient's homes. Basis our observations, a large majority of the existing technology available in India was primarily designed keeping the developed markets in mind. Hence, while advancing cancer care technology solutions in India, we are ensuring collaboration with clinicians and partners to continuously develop innovative, outcome-driven and cost-efficient solutions that are in sync with the on-ground requirements.

Last year, we also launched our strategy, ACCESS 2025, with a vision where everyone has access to the best cancer care. Through this strategy, we intend to scale-up access to precision radiotherapy, enhance clinical decision making via analytics, and build a seamless cancer care experience for patients.

Innovation holds the key to enhance the cancer care ecosystem. In line with this, through our comprehensive digital solutions suit, we can streamline actionable data integration & collection, run predictive analysis, enable framework to integrate with cancer registries and enhance patient centricity. Our AI based solutions can also predict any potential machine breakdowns and proactively either digitally solve the issue or in some cases assign service personnel to the hospital even before the systems fails. These are some measures we've taken to ensure the sustainability of the cancer care ecosystem.

We have leveraged technology to provide cloud-based centralised planning systems. What this means is that whether you are in a tier 3 city or a metro, the treatment delivery plan quality remains the same.

Taking into account the lack of skilled man power, there is a need for consistent up-skilling initiatives for field professionals to be aware about the latest innovations and best global practices. We are closely engaging subject matter authorities to regularly run such online programs to encourage knowledge sharing within the industry professionals, facilitating continual learning and up-skilling.

Essentially, in order to strengthen the overall cancer care ecosystem, it is critical to focus on some key areas like access, innovation, digital infrastructure, and up skilling.

How do you look at India's present and future cancer care infrastructure?

While the government is driving commendable initiatives, which have led to improvement in cancer care, programs and policies built on strong public health paradigms must be implemented in order to close these gaps in the system. Upgrading existing resources and expanding the number of cancer centres can be effective in India. Undoubtedly, a comprehensive approach is the need of the hour to address not only present but also future challenges involving cancer care in India. On the other hand, by increasing the adoption of modern, precision radiotherapy technology, it is also possible to shorten treatment times, address hard-to-treat cancers, and if scaled, also reduce the cost of treatment. At Elekta, we are committed towards building hope for those with cancer. Collective and targeted efforts synergising government, policy makers, private players, and civil society is essential to ensure prevention, early-stage detection and equitable access for cancer care in the country.

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Trivitron Healthcare launches CoE in metabolomics, genomics, newborn screening and molecular diagnostics

IVD CE-approved kits for various newborn screening, infectious, non-infectious diseases and cancer markers based on RT-PCR, ELISA, rapid cards/POCT, clinical chemistry and CLIA will be manufactured at this facility

Trivitron Healthcare, a global manufacturer of medical devices has constantly strived towards novel innovation and applications to transform healthcare with quality products, services & smart ventures. For millions of healthcare practitioners across the world, Trivitron is known for trust, quality, safety, and innovation driven products. Further to cater to the growing healthcare needs, a Centre of Excellence (CoE) with state-of-the-art R&D and Manufacturing facilities was launched on 19th August 2022 at AMTZ Campus, Vishakhapatnam, India by Prof. Ajay Kumar Sood, Principal Scientific Advisor to the Government of India and Prof. (Dr) Balram Bhargava, Former Director General, Indian Council of Medical Research.

At the inauguration, Dr GSK Velu, Chairman & Managing Director, Trivitron Healthcare said, "Trivitron is committed to providing futuristic applications by encompassing advanced R&D, which will be coupled with strong manufacturing capabilities under the supervision of leading scientists and industry experts in this center which spans over 43,000 square feet area. This centre will implement research and innovation in the field of metabolomics, genomics, newborn screening, and molecular diagnostics and bring out cost-effective and affordable medical technology products and services. With 15 certified manufacturing facilities in India, USA, Finland, Turkey & China, Trivitron spearheads innovation in the field of in-vitro diagnostics, medical imaging and critical care solutions."

The centre includes an advanced genomics and molecular diagnostics facility for developing kits and reagents for Next Generation Sequencing (NGS) and oligonucleotide synthesis, protein chemistry, cell culture and analytical lab

By harnessing the enormous power of genomic research and Trivitron's expertise in advanced diagnostics, this CoE will focus on creating unparalleled medical discoveries to transform healthcare delivery. The new centre is equipped with state-of-art infrastructure to support the entire product & process development lifecycle at the respective domain specific labs to achieve optimal scale-up to industrial production.

A great venture to futuristic medicine and diagnosis

IVD CE-approved kits for various newborn screening, infectious, non-infectious diseases and cancer markers based on RT-PCR, ELISA, rapid cards/POCT, clinical chemistry and CLIA will be manufactured at this facility. Since all the components are made in-house, Trivitron will have the fastest turnaround time in the country. The major focus of this facility will be on the manufacturing of genomics-based kits and reagents. This will include the synthesis of customised primers and probes for RTPCR based screening kits, enzymes, master mixes etc.

The centre includes an advanced genomics and molecular diagnostics facility for developing kits and reagents for Next Generation Sequencing (NGS) and oligonucleotide synthesis (synthesis of customised primers and Taq Man Chemistry dual labelled probes), Protein Chemistry (design and expression of different recombinant enzymes and proteins), cell culture and analytical lab. The company plans to manufacture all the raw materials and components of molecular diagnostics, NBS, and NGS in-house following advanced protocols and research approaches.

The new centre of Trivitron will have provision to manufacture 300 million RTPCR tests and over 70 million tests of Rapid Card/POCT per annum. Additionally, more than 100 million tests can be manufactured for genomics, ELISA, CLIA, NBS and other diagnostics kits.

Transasia-ERBA launches Monkeypox PCR kit

Transasia-Erba Monkeypox RT-PCR Kit is a highly sensitive but easy to use RT-PCR assay with uniquely formulated primer and probe for enhanced accuracy

R to L: Dr. Alka Sharma, Adviser in the Department of Biotechnology; Prof. Ajay Kumar Sood, Principal Scientific Adviser to the Government of India; Prof. Balram Bhargava, former Director-General at the Indian Council of Medical Research (ICMR); Dr. Jitendra Sharma, MD & CEO, Andhra Pradesh Medtech Zone (AMTZ); Dr. Manoj Chugh, AVP-R&D Reagents, Transasia Bio-Medicals Ltd.; and Dr. Arabinda Mitra, Scientific Secretary launching Erba MDx Monkey Pox RT PCR kit at TDPL (AMTZ), Vizag.

MonkeyPox PCR test kit by Transasia-ERBA was recently launched by Prof. Ajay Kumar Sood, Principal Scientific Adviser to the Government of India; Dr Arabinda Mitra, Scientific Secretary, Office of the Principal Scientific Adviser to the Government of India; Prof. Balram Bhargava, former Director-General at the Indian Council of Medical Research (ICMR); Dr Alka Sharma, Adviser in the Department of Biotechnology, and Dr Jitendra Sharma, MD & CEO, Andhra Pradesh Medtech Zone (AMTZ) at a brief launch ceremony at AMTZ, Vizag.

The World Health Organization (WHO) recently declared the rapidly spreading Monkeypox outbreak a public health emergency of international concern. According to the global health agency, there are over 16,000 reported cases of Monkeypox in more than 75 countries.

Transasia Diagnostic Pvt Ltd.'s (TDPL) technologically advanced world-class IVD production facility at the Andhra Pradesh MedTech Zone (AMTZ) has the capacity to manufacture more than 200 million test/month for MonkeyPox alone

Transasia-Erba Monkeypox RT-PCR Kit is a highly sensitive but easy to use RT-PCR assay with uniquely formulated primer and probe for enhanced accuracy.

Suresh Vazirani, Founder Chairman of Transasia-Erba Group of Companies announced, "It's a proud moment for us to launch another 'Made in India' highly sensitive RT-PCR test kit to our growing range of immunoassay and molecular solutions. This further emphasizes our commitment to the health of the people of India and the world."

"Being the first and only indigenously developed, highly sensitive MonkeyPox RT PCR, we are sure it will allow an opportunity for early detection and better management of infection. This also indicates that the Transasia-Erba group is capable of producing affordable and reliable devices through innovative research," he cited.

Dr Manoj Chugh, Vice President, R&D Reagents, Transasia Bio-Medicals Ltd. further added, "The ErbaMDx Monkey Pox RT PCR kit is compatible with commonly available RT PCR analyzers and extraction platforms. This kit further ensures zero cross reactivity from other orthopox viruses or organisms."

Transasia Diagnostic Pvt Ltd.'s (TDPL) technologically advanced world-class IVD production facility at the Andhra Pradesh MedTech Zone (AMTZ) has the capacity to manufacture more than 200 million test/month for MonkeyPox alone. Prof. Sood while referring to the WHO briefing held on August 17 said that more than 35000 monkey pox cases were confirmed in 92 countries and 12 deaths are reported. He expressed his delight to launch the MonkeyPox kit from Transasia and remarked it as a timely launch. Dr Bhargava too lauded Transasia's efforts for developing highly sensitive and specific Real time PCR kit to detect MonkeyPox.

Dr Sharma in his address said, "I congratulate the team at Transasia for launching yet another Made in India, next-gen, quality product for the health of the people of India. MonkeyPox is a growing concern in the country as well as the world and test kits such as ErbaMDx Monkey Pox RT PCR are the need of the hour for accurate diagnosis to control the spread of the infection." With a legacy of over 4 decades, Transasia Bio-Medicals Ltd. - India's Leading Invitro Diagnostic Company, is at the forefront for providing quality and affordable diagnostic equipment and test kits to pathology laboratories and hospitals even in the remotest areas of the country.

Alarming healthcare trends that Indian startups must tackle

Amrit Singh, Co-Founder and CRO, Loop Health emphasises that it is essential that the various stakeholders of the country's sprawling medical vista such as hospitals, medical colleges, health tech enterprises, and research institutes multiply their efforts in curbing these popular diseases

The recent pandemic has reinstated the importance of good health and fitness in everyday life. The need for an efficient immune system became evident to fend off infections and pathogens. With humanity entering a new age of healthcare and medical response mechanism in the wake of the pandemic, technology has emerged as the major differentiator; both reshaping and redefining primary care and disease management. Closer to home, the Indian healthcare Industry continues to be the largest service sector in the country. Presently growing at a CAGR of 23 per cent, the sector is slated to reach USD 372 billion by the end of 2022.

The infusion of technology and innovation has catapulted a series of breakthroughs across healthcare. The glorious coming together of medicine and engineering has proven to be a pivotal force that is disrupting all quarters of the industry. The rise of new-age technologies like AI, ML, IoT has offshooted numerous trends in the medical industry that are taking the sector by storm. Furthermore, the emergence of novel tech paradigms in healthcare is revolutionising the industry like never before. Innovations like robotic surgery, 3D printing, laser technology, voice-controlled assistance, telemedicine, remote care, blockchain, etc. are driving immense growth and progress across the medical sector.

Intriguingly, the pandemic has also invariably shifted focus from a sino-centric model to an indo-centric one when it comes to the supply of reliable healthcare products and medical devices across the globe.

While the sinister origins of the virus caused China to lose considerable standing across the International socio-political and economic spectrum, India's effective contribution of the two COVID vaccines to many countries brought it much goodwill and benediction. At the same time, it also strengthened the global reputation of India as a veritable Eleventh-hour Samaritan.

Moving aside COVID-19, the Indian healthcare vista continues to be challenged by a number of other diseases that are prevalent in the national populace. Due to a number of underlying factors, ailments like diabetes, heart disease, and IBS (Irritable Bowel Syndrome) are becoming increasingly commonplace in the country. The alarming rate at which these diseases are rising amongst masses necessitates an urgent response from the Indian healthcare ecosystem. It is essential that the various stakeholders of the country's sprawling medical vista such as hospitals, medical colleges, health tech enterprises, and research institutes multiply their efforts in curbing these popular diseases:

Heart disease: The growing occurrence of circulatory illnesses is leading to a surge in the pacemaker market on account of several risk factors like improper diets, tobacco use, and excessive usage of alcohol. As per a 2021 report by the World Health Organization, India would account for one-fifth of the total deaths arising from stroke and ischemic heart disease, especially amongst younger adults. Moreover, an approximated 17.9 million people perished due to cardiovascular diseases in 2019 which made up for 32 per cent of all global deaths. Of these deaths, 85 per cent were because of heart attacks and strokes. Therefore, the rising frequency of cardiovascular diseases will surely shepherd the growth of the pacemaker market. Interestingly, the global pacemaker market size is slated to grow from $4.57 billion in 2021 to $4.88 billion in 2022 at a compound annual growth rate (CAGR) of 6.8 per cent and is expected to touch $5.77 billion in 2026 at a CAGR of 4.3 per cent. It is a must for Indian entrepreneurs and startups to bolster their innovation and research capabilities for effectively addressing cardio vascular diseases. No wonder, leading companies active in the pacemaker market are aiming to develop new-age technological solutions to fortify their position.

Diabetes: Secondly, over 77 million individuals suffer from diabetes in India and this momentous figure is only set to rise to over 134 million by 2045. Most alarmingly, approximately 57 per cent of these individuals are feared to remain undiagnosed throughout their lives. The chief factors behind the surge in diabetes in Indians are increased insulin resistance, stronger genetic factors and environmental factors which are commonly related to the rampant and unchecked urbanisation. It is important that Indian enterprises and startup proactively strive towards eliminating type-2 diabetes from India by increasing preventive awareness amongst masses and extending the necessary primary treatment to those sections especially that have been hitherto bereft of gaining quality medical treatment.

IBS: Although India as a nation has historically witnessed lower rates of Irritable Bower Syndrome than US and Europe, the increasing consumption of synthetic foods, GMO products, pesticides, and industrial agricultural practices are causing a spike in the percentage of people afflicted with IBS. The inflammatory bowel disease treatment market consists of sales of inflammatory bowel disease therapeutics and drugs by either organisations, partnerships, or sole proprietors for providing medical treatment for inflammatory bowel diseases. Inflammatory bowel disease comprises of two medical conditions, Crohn's disease and ulcerative colitis distinguished by the chronic inflammation of the Gastrointestinal (GI) tract. The primary treatment for inflammatory bowel disease aims to reduce the inflammation, maintain remission, and avert further complications. It is essential for Indian startups to increase awareness regarding various health and lifestyle practices for avoiding the spread of IBS across both rural and urban populations in the country.

Conclusion

With such lifestyle-oriented diseases and complications spreading rapidly across the country, it is essential for healthtech startups and medical enterprises to channel their efforts in minimalising the impact of these diseases. It is equally important to create awareness regarding diabetes and heart disease which can be easily avoided through a general shift in lifestyle and embracing a healthy routine. At the same time, the vast number of healthtech startups present in the country should aim to democratise the access to quality healthcare and treatment, especially for people living in remote and far-flung regions of the country.

Factors attracting Indian medical talent to pursue international career opportunities

Alejandro Coca, Head of Business, TrueProfile.io highlights that for the past two years, medical professionals have been in high demand across the world. And, since this need will only increase over the next decade, the healthcare industry is sure to provide plenty of employment possibilities

Since the country's independence in 1947, India has been the world's greatest supplier of immigrant physicians. According to the Organization for Economic Cooperation and Development (OECD), over 69,000 Indian-trained physicians worked in the United States, United Kingdom, Canada, and Australia in 2017, accounting for 6.6 per cent of all doctors registered with the Medical Council of India (MCI). The nation with the biggest number of medical schools in the world has also become a top provider of nurses (typically trailing only the Philippines). Nearly 56,000 Indian-trained nurses work in the same four nations, accounting for approximately 3 per cent of all registered nurses in India. Researchers estimate that between 20 and 50 per cent of Indian health care employees are planning to seek jobs abroad. This trend is driven by a desire to pursue global career opportunities and gain experience in an international setting.

In recent years, some countries have actively sought out and welcomed Indian medical professionals seeking employment abroad. For instance, in the United Kingdom, a special expedited visa for doctors and other medical workers was announced in the fall of 2019. The immigration programme would help fill positions in the National Health Service (NHS) to alleviate shortages. More than 15,000 doctors in the NHS got their primary medical qualification in India in 2017, and as of early 2019, Indians were the largest non-British nationality employed by the NHS.

Besides, the opportunity to work with leading healthcare providers with state-of-the-art equipment and employee-friendly policies – what attracts many healthcare workers to relocate abroad is a high quality of life and the advantage of education and healthcare benefits for family members. In addition, below are three key factors influencing Indian medical talent to pursue career prospects across international destinations:

One of the benefits of working abroad is the candidate's increased cultural awareness. Opportunities to interact with native speakers and acquire a new language are thereby increased

Increased cultural competence

One of the benefits of working abroad is the candidate's increased cultural awareness. Opportunities to interact with native speakers and acquire a new language are thereby increased. In addition, through engaging with patients and professionals of various cultures and religions, the applicant can acquire new techniques and abilities that would otherwise be impossible to gain exposure to in their home country. A variety of cultural customs and beliefs influence the health of people in various parts of the world. Therefore, the quality of treatment you provide to your patients will be affected by your knowledge and sensitivity to cultural norms. There have been many medical professionals who have been able to work in another country and bring their newfound knowledge and skills back to their own country.

Increased earning potential

Considerations like pay, benefits, and room for professional advancement typically top the list when searching for a new job. Whenever this happens, several people start looking for healthcare jobs abroad, where they can pick and choose among countries with different levels of medical development. An individual's healthcare career, income, and quality of life all benefit from moving their job hunt abroad in order to secure foreign experience. Working in the medical field in a developed country provides a unique opportunity to be on the cutting edge of medical science. Simply having this background will make you a more attractive candidate for future positions and can help to fast-track your career.

Increased chances of international opportunities

For the past two years, medical professionals have been in high demand across the world. And, since this need will only increase over the next decade, the healthcare industry is sure to provide plenty of employment possibilities. Those with foreign experience are more likely to be recruited for open positions abroad. Employers in the healthcare sector in Saudi Arabia, the United Arab Emirates, the United Kingdom, and Ireland are actively seeking competent overseas medical experts to fill positions in their organisations.

Conclusion

Increasing employment through the export of Indian medical professionals, the healthcare industry was highlighted earlier this year by the MSDE, the government agency responsible for workforce development and training. By 2022, the ministry said it will have sent 300,000 doctors, nurses, and associated health professionals to places including the United States, the United Kingdom, Germany, Australia, Japan, Sweden, and Singapore. These individuals would not be legal permanent residents, but rather, as has been reported in numerous media outlets, workers in industries facing a demand and population growth crisis.

The MSDE is aiming to connect the Indian labour market with the rest of the world by training and sending out health workers to other countries. Industries such as automotive manufacturing, building and construction, manufacturing machinery, and the hospitality industry have been suggested as potential recipients of skilled employees from the United States. In the next three decades, as the global population ages, there will be a larger need for healthcare employees, which might be good news for the Indian economy.

Despite IT upgrades why hospitals are lacking in efficiency?

Hospitals have revolutionised the way they function by imbibing technology in all realms. Ideally, we should have progressed better, but did not. **Dr Aswini Ashokan Naidu**, Co-Founder & Director, Avisa Smart Hospitals explains the reasons as to what is stopping the Indian medical services from becoming topnotch

India is known as the IT/tech hub of the world, as it produces brilliant minds every year. Over the years they have come up with extra ordinary solutions for problems affecting human race. On the other hand, in the last two years, majorly due to COVID, India's healthcare has come under radar for not living up to the standards as patients struggled to find a place that would give them much needed medical attention. It is saddening to know that according to the Human Development Report 2020 there are just five beds for every 10,000 Indians. Among 167 countries, India ranks 155th when it comes to bed availability. What's worse is the fact that there are just 8.6 doctors per 10,000 people in India.

This speaks volumes about the dwindling infra of healthcare in India. In the past decade experts realised that to tackle the inefficiency and shortcomings of these hospitals it would be best to take help of technology. Today video consultations have become prevalent. You can book an appointment, call the ambulance, get diagnostic test reports at the click of the button with the help of dedicated apps. Hospitals have revolutionised the way they function by imbibing technology in all realms. Ideally, we should have progressed better, but did not. Let us try and understand the reasons as to what is stopping the Indian medical services from becoming topnotch.

Adaption to technology and adhering to IT upgrade still remains the biggest challenge in current healthcare system. The reasons are aplenty, the major one being the challenges faced by hospitals in adoption of technology. This happens at two levels- the patient and the hospital. Despite its need for efficiency and patient care, the healthcare industry has been slow to implement digital strategies. In order to effectively increase the operation efficiency with technology and smart solutions, organisation needs adequate foundational elements and complete ecosystem which is easy to use, user- friendly, accessible and with adequate customer-support. The healthcare system has various gaps in quality, access, overall operational efficiency, patient journey etc. which validates need of using digital health technology and smart solutions. On the other hand, the patients too are unable to cope up with the digitisation at various levels. The challenge contributes to array of problems such as demographics of the patients as well as the stakeholders of healthcare which includes children and senior citizens who are not well-versed with technology. These complex systems lead to users resorting to old manual ways creating long delays and inefficiency in the overall system.

Secondly, adhering to IT upgrades is a challenge. For some of those places where the hospitals have become fully digitised, the patients as well as different stakeholders of hospitals do not use it for daily use or adhere to common policy, sops and the practices causing a disruption and inefficiency. It is mainly because the process seems complex and complicated to the end users. Which means technology gets wasted despite money and effort being spent on it.

And thirdly, it is because of lack of user friendly and accessible systems. Let's accept that education in India still has a long way to go before majority of citizens become literate. Also, most of the patients have some hesitation or fear of technology. One such person struggling at the digital hospital query center can lead to a long queue, which will mar the entire purpose of cutting the queue, without human intervention. Today, majority of people are comfortable with whatsapp and smartphones only because of accessibility, and user-friendly operating systems. We need to do the same with software that is related to health care.

Dealing with these three problems on priority basis will help us to change the way healthcare works, and improve the experience of the customers. We need to come up with smart solutions and build an ecosystem that will help us to tackle the problems and result in effective solutions in the coming years. To ride through these initial years, I suggest the best solution would be to have help available at these digital centers in the form of executives who will promptly step in anytime the patient walks up and looks puzzled by technology. They can simply guidethe patients or their caregiver through the process and help them overcome the initial hesitation. Though the medical community is under immense pressure to provide more quality care, but only those will survive the future who are able to move step by step with technology, keep an eye on latest innovations in terms of medical care or medial services, and benefit from it.

Why embedded insurance is the answer to increasing insurance penetration in India

Sylvester Carvalho, Lead-Product, Riskcovry explains how embedded insurance can improve overall insurance penetration in India

Due to the growing insurance protection gap, revamping the insurance distribution process is more critical now than ever. However, the fundamental weakness of the insurance industry distribution model remains the same - the inability to match supply with demand functionally. The complexity, lack of flexibility, and difficulty in purchasing insurance, coupled with the high cost of insurance distribution and lack of real-time data to create accessible & personalised insurance products, are in no manner helping increase the protection gap.

Currently, over 50 per cent of the Indian population is under 30 years of age, and e-commerce penetration is at an all-time high. With even complex and high-value purchases made online, distributing mainstream insurance online is the only way to cater to the tech-savvy customer base of today. Embedded insurance creates a pleasing solution for insurance, consumers, and technology alike.

Here's how embedded insurance can help with 4 key customer-facing factors of the insurance industry and improve overall insurance penetration in India:

Purchase journey

With technology consuming a fair amount of our lives, insurers can now choose to serve insurance products when they are most relevant to the buyer. Weaving insurance into an existing product purchase workflow reduces friction and succeeds in meeting the customer where they are. By decreasing the tech overhead, insurers can also offer competitive prices for embedded insurance products, thus increasing the product reach and the value of the purchase.

For instance, consumers are highly unlikely to seek out insurance during or shortly after smartphone purchases. However, e-commerce platforms offering mobile protection insurance at the point of sale improve awareness and chances of the buyer securing their smartphone right from purchase.

The trust factor

Insurers inherently command minimal customer trust and loyalty owing to their primarily offline purchase journey. The documents and signatures collected during the purchase journey are often misplaced and not safely disposed of, leading to the misuse of customer data. By contrast, digital services command sky-high trust owing to their well-established, robust privacy and security policies.

Embedded insurance provides an opportunity for insurers to piggyback off of the tech providers' positive customer experience. Traditional insurers wrapped in a reliable digital-first system will further urge customers to buy coverage.

Big data

Insurers collect mounts of customer data by the sheer nature of their operating module. However, this very data poses privacy threats to the consumer, decreasing the trust value of the insurer. By partnering with a tech provider, insurers can turn this data pile into a potential value-add. Digital platforms can safely store and analyse accumulated data and provide a better customer risk profile.

With embedded insurance, digital agencies can provide underlying risk data to the insurer with greater accuracy. While insurers can use this information to improve underwriting and increase usage-based personalised products to increase sales, customers can benefit from the insurance products offered at competitive prices - a win-win experience.

Millennial talk

It is no secret that the tech-first younger generation of the country is unhappy with the service and process the insurance industry operates in. Tech players, on the other hand, build products and communication systems that naturally captivate them.

Digital-first insurers hold multiple advantages when catering to a younger customer base.

- Millennials are more likely to purchase insurance from a digital distribution platform than one that runs an offline purchase journey.
- Digital platforms can create multiple positive touch points throughout the consumer lifecycle via health tracking, education on expanding their insurance portfolio, etc. In comparison, communications with a traditional insurer are majorly limited to the time of purchase and claim. This limited communication channel is often negatively associated with something going sideways in the customer's life.

The way forward for embedded insurance

Increasing the number of flexible & personalised insurance products and creating positive communications systems with multiple touchpoints with the help of digital partners is critical in the current market. Since digital services are best at keeping customers tied to the insurance ecosystem for longer, embedded insurance presents a gateway to increasing insurance penetration in India.

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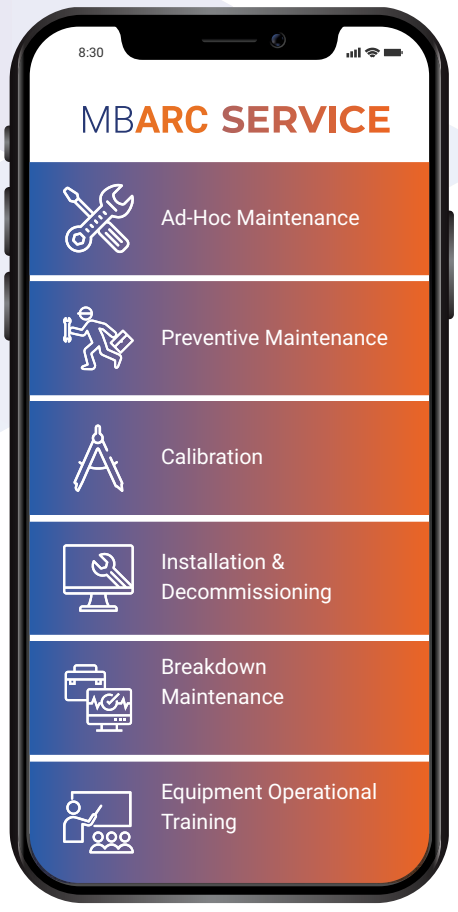

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- Preventing **revenue loss** from downtime
- **Improved productivity** of the biomedical staff

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Immunofluorescence analyzer: The new way forward

Thomas John, Managing Director, Agappe talks about the role of immunofluorescence assays and highlights the key features of the Mispa Revo Plus by Agappe which is a portable immunofluorescence device

Immunofluorescence Assay (IFA) assays is a technique that allows the identification of a variety of antigens/antibodies in body fluids by their specific ability to have antigen antibody reactions, where the bound antigen-antibody complex is visualised by incubation with fluorescently labelled antihuman antibody for accurate measurement. IFA can be a huge help in the early detection and treatment of diseases, whether they are chronic, infectious, or lifestyle based.

Innovative medical tools of immunofluorescence analyzers are employed extensively in the identification of cancer, infectious diseases, cardiovascular disease, and other conditions like fertility and pregnancy. The majority of IFA analyzers have a tiny footprint but deliver accurate results with a short turnaround time. The need for immunofluorescence analyzers has significantly increased over the past several years, mostly as a result of the increasing popularity of Point of Care devices in diagnostic market.

The Mispa Revo Plus is a portable immunofluorescence device that uses antigens or antibodies to determine the concentration of specified analytes in serum, plasma, and whole blood. Direct and indirect immunofluorescence assays are the two main varieties. Indirect IFA uses two antibodies for the detection while the direct IFA method only uses one. While the indirect IFA approach is less expensive and more sensitive, direct IFA is more expensive and offers less sensitivity.

The indirect FIA method used by Mispa Revo Plus is called TRFIA (Time Resolve Fluorescence Immuno Assay). We thereby provide increased sensitivity and specificity.

Innovative medical tools of immunofluorescence analyzers are employed extensively in the identification of cancer, infectious diseases, cardiovascular disease, and other conditions like fertility and pregnancy

Rare earth ions (Eu3+ Compounds), which can produce highly specific fluorescent light and are visible for a longer period of time, are the fluorescent compound utilised in the Mispa Revo Plus cartridge. In Mispa Revo Plus, TRFIA technology ensured reliable findings.

With a cartridge stability of 18 months, Mispa Revo Plus can perform more than 20 parameters in various profiles, including thyroid, cardiac, fertility, bone metabolism, etc. With a time limit of less than 20 minutes, the secure QR code calibration makes it possible to receive reports extremely quickly.

The IFA analyzer Misap Revo Plus perfectly satisfies the post-pandemic market demands for POC diagnostics. As seen below across disease/test profiles, early users of Mispa Revo Plus have attained highly valuable test results on a number of factors.

The Thyroid Function Test, which consists of T3, T4, and TSH, is one of the most often requested blood tests and the initial line of inquiry when thyroid illness is suspected. The most reliable single marker for ruling out primary thyroid dysfunction is the measurement of serum TSH levels.

Cardiovascular biomarkers have a crucial role in the rapid, accurate diagnosis, treatment, and prognosis of acute coronary syndrome. Cardiac biomarkers are chemicals that the heart releases into the blood when it is injured or under stress. The majority of cardiac biomarker tests are rarely used by doctors. Troponin is the currently preferred biomarker test for identifying heart injury. Heart failure is typically diagnosed by NT pro BNP.

While trying to get pregnant can be exhilarating, for some women it can also be challenging and upsetting when time goes by with no luck. According to statistics, between 10 and 14 per cent of Indians struggle with infertility. The rise in infertility among married couples is a result of a number of health problems, with changing living habits emerging as a key contributor. Six key biomarkers, including FSH, LH, prolactin, progesterone, beta-HCG, and AMH, have an impact on fertility. Revo Plus will be the equipment of choice for testing fertility parameters.

These days, vitamin D deficiency is a lifestyle issue, especially for older people, grownups, and people who don't get enough sunlight. Rickets and osteomalacia are metabolic bone disorders that are largely caused by vitamin D deficiency. Recent studies have shown a connection between low vitamin D levels and a number of different conditions, including the metabolic syndrome, diabetes, cardiovascular illnesses, autoimmune disorders like rheumatoid arthritis, infections like tuberculosis, and even an increased chance of getting cancer.

Mispa Revo Plus can therefore aid in the quick and precise identification of a number of viral disorders, cardiac indicators, and fertility markers. Its mobility, portability, and real-time monitoring characteristics are extremely valuable to both patients and clinicians in a big way.

Medikabazaar introduces India's first on demand service platform for medical equipment lifecycle management

Based on market feedback and detailed analysis of customer issues, Medikabazaar is launching MBARC

Medical Equipment Lifecycle management is highly inefficient in India for most of the mid-size and large hospitals. Every hospital wants to guarantee that its medical devices and CAPEX stay operational and available, but the high cost and lack of service providers, particularly in tier 2 and tier 3 cities, exacerbate the problem.

Based on market feedback and detailed analysis of customer issues, Medikabazaar is launching MBARC. MBARC covers three important tenets of equipment lifecycle management and the name has been derived to reflect these three unique product offerings:

MBARC has been designed as an end-to-end platform to help hospitals manage their biomedical assets. MBARC is a on demand service aggregation model by Medikabazaar, India's largest online B2B platform for medical supplies.

MB Asset Management will enable hospitals, clinics and medical institutes to manage the entire lifecycle of healthcare assets through a cutting-edge automated system. Monitor, Measure & Manage all the hospital's capital assets at a click of a button for seamless, cost-effective and efficient operations.

MB Recycle of medical equipment will be done through restoration, reconditioning, repairing, replacement of worn parts, and installation of a device. Hospitals may also buy, recycle or sell old medical equipment that is fit to be used.

MB Care will provide a one-stop shop to book all your biomedical services including preventive maintenance, installation and commission, equipment safety test and audit, calibration, and user training.

Medikabazaar with the pool of trained and qualified engineers is serving the hospitals in tier1, tier2, and tier 3 cities with the newest technology. Medikabazaar has also launched the MBARC app to connect hospitals with biomedical service engineers and enable them to book services in a few clicks.

> In the launch phase, MBARC covers the following devices currently viz. C-Arm, CT scan, Defibrillator, ECG Machine, Lab Equipment, Medical Furniture, Oxygen Concentrator, Patient Monitor, Smoke Evacuator, Ventilator, and X-ray Machine. Additionally, MBARC also covers services for high CAPEX devices such as MRI, CT scan, Pet CT and HIPEC for our partner brands

You may add one or multiple devices on the "My Devices" section of the app, and book services for each device seamlessly. View your past bookings through the bookings section, you may view current and past service bookings, the devices serviced, the brand and the service booked date.

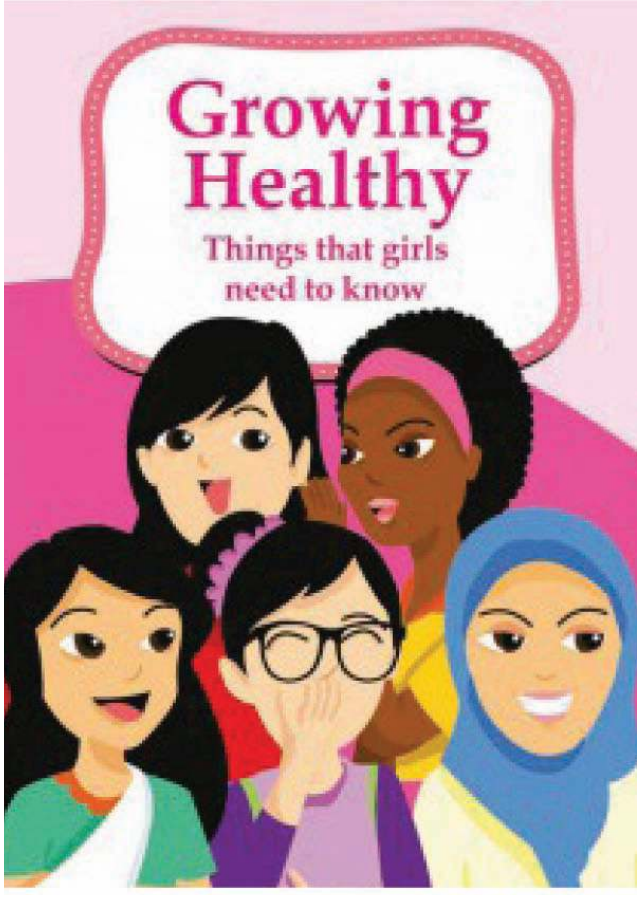
In the launch phase, MBARC covers the following devices currently viz. C-Arm, CT scan, Defibrillator, ECG Machine, Lab Equipment, Medical Furniture, Oxygen Concentrator, Patient Monitor, Smoke Evacuator, Ventilator, and X-ray Machine. Additionally, MBARC also covers services for high CAPEX devices such as MRI, CT scan, Pet CT and HIPEC for our partner brands.

This is yet another initiative by Medikabazaar that opens a great job opportunity for the bio medical engineers PAN India as they can be part of the MBARC service team and be part of the big revolution MBARC is bringing to the medical equipment lifecycle service market.

With MBARC, you are just a click away to access an extensive network of competent and certified service engineers to take care of any repair and maintenance needs of your medical equipment.

Impact of poor menstrual hygiene on health

Chanchal Jangid, Officer-Sales & Marketing, Ami Polymer Pvt Ltd. highlights the impact of poor menstrual hygiene and shares the tips to improve it



All women go through the natural physiological process of menstruation in her life. However, although they experience this, not everyone is aware of how to ensure hygiene. During the time of menstruation, the women risk of being infected and the potential of life-threating ailments are increased. If women have poor menstrual hygiene, it can lead to many issues on health such as bacterial and fungal infection, irritations etc. to the vaginal and urinary area.

let us feel less confidant and unhappy. Therefore, each women out there deserves to feel confident and happy to live her life peacefully.

What can cause a poor menstrual hygiene practice?

◆ Bacteria into vaginal can cause to Urinary Tract Infection (UTI)

◆ Cervical cancer has been increased due to the UTI infections. It occurs in the mouth of uterus are which happens due to the Human Papillomavirus (HPV).

◆ Due to unhygienic practices a women can also become unfertile.

◆ Unbalanced PH level which can cause an unhealthy bacteria

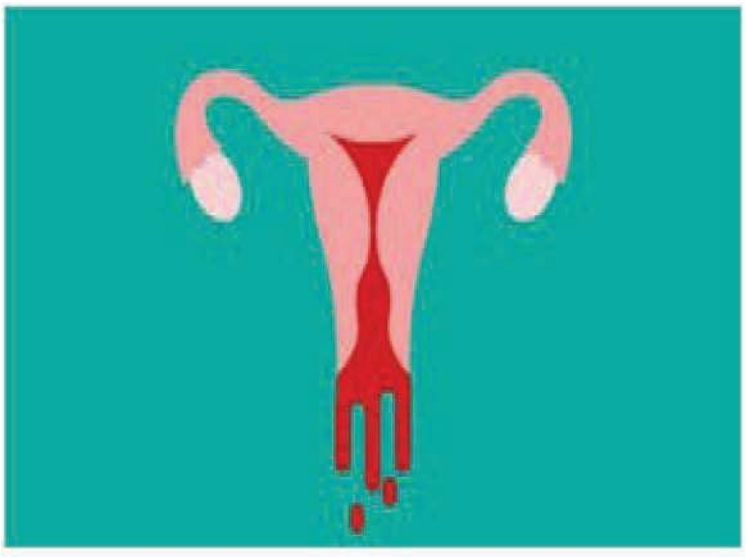
◆ Growth of bacterial infections can damage the vagina.

◆ Good or bad menstrual hygiene also affect women who are pregnant or are trying to get pregnant.

Tips for good menstrual hygiene

◆ Change the sanitary napkins/tampons/menstrual cup while periods frequently to avoid any contamination of the blood with the vagina area and also the skin irritation

◆ Avoid scented products made for intimate hygiene, which can affect vagina area and can disturb by having irritation and heavy white discharge.



If women have poor menstrual hygiene it can lead to many issues on health such as bacterial and fungal infection, irritations etc. to the vaginal and urinary area

Every women should take care of them during the menstruation not only because it is important but also it is required to have a healthy and happy life. Ultimately, bad or poor menstrual hygiene can

◆ Avoid tight clothes while period to have a breath which help to stay fresh and dry

◆ Wash your vagina area especially while changing the sanitary napkins/tampons/menstrual cup.

◆ Do not use the sanitary napkins/tampons/menstrual cup more than 4-6 hours or as recommended by the product, which can affect vagina area.

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Ami Polymer Pvt Ltd.

Sequoia Healthcare introduces the inspiration 64 Slice CT Scanner

It provides exceptional CT experience for the end users

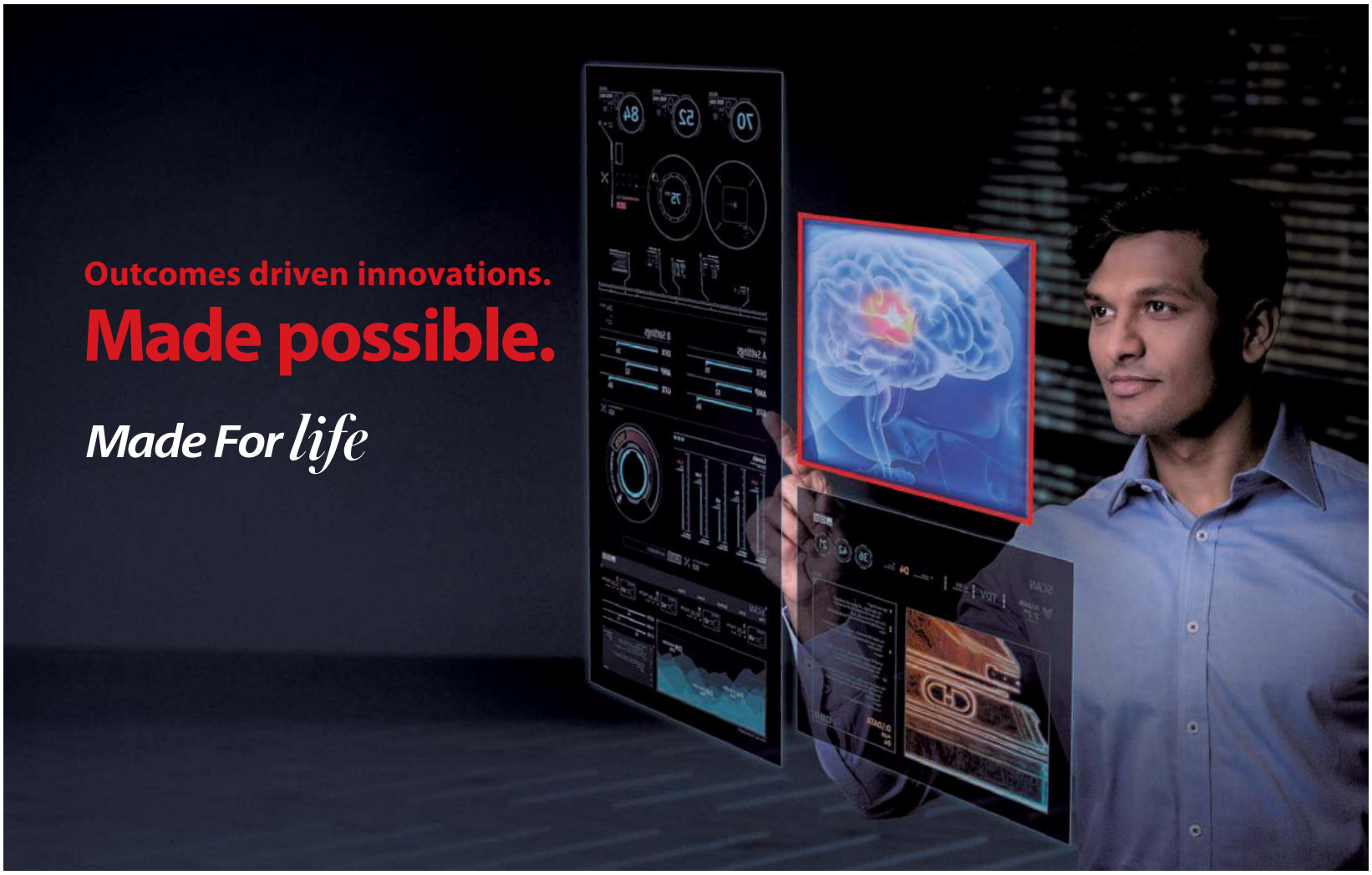
Sequoia Healthcare, based out of Bangalore and intensely focused on driving global innovation in the imaging solution segment manufactured indigenously in the country, has launched an advanced yet affordable Inspiration 64 Slice CT scanner with smart features and bore design recently.

The Inspiration 64-smart large bore Slice CT Scanner comes with a 3D vision camera with auto-positioning and remote control. It brings in the finest quality of images and stable performance consisting of innovative workflow for topogram to diagnosis by generating HD Image Chain of 024 matrix. It is a new detector design for shortening the X-RAY path and improving on the image quality with the help of a 75 cm Gantry aperture that offers extra scan facilities as compared to the standard scanning.

According to S. Viswanathan, Chief Executive Officer, Sequoia Healthcare, "The company's purpose is to improve the quality of human life by helping healthcare providers to do more with technology. It guides our actions and is the key to deliver our strategy. Inspiration 64's precision tomography is independently developed in a Hi-Resolution, High-Definition Algorithm. Inspiration 64 adopts a unique low-dose technique to minimise the radiation dose to patients, which is better known as iDream. The adequate X-Ray tube heat storage and generator capacity are increased 2.7 times with the help of iDream software.

He further said, "Sequoia Healthcare strives to bring in advanced and affordable international technology, which serves in cost-effective healthcare. Sequoia believes in delivering radiology equipment accessibility for cost-effective healthcare. In short, we want to bring diagnostic reach to all. With high-tech services accompanied with new world Artificial Intelligence (AI), robotics, etc., Sequoia aims to become the number imaging devices manufacturer in the world."

Canon



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