

mindfocus

Volume IV

Healthcare Technology for a better tomorrow

Tech Trend

AI driven USG technologies will lead the way

Quality Assurance

Significance of quality standard in labs

Best Practices

Optimising 5S in hospitals

India needs a homogenous cardiac care system

Dr. A B Gopalamurugan
Sr. Interventional Cardiologist & Electrophysiologist
Kauvery Hospital, Chennai

warns heart diseases are 17 times more of a killer than COVID and what needs to be done

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Healthcare Within Reach

A close-up, slightly blurred photograph of a surgeon in a blue scrub suit and mask, focused on a procedure. The background shows a sterile operating room environment with medical equipment.

Simply Clear

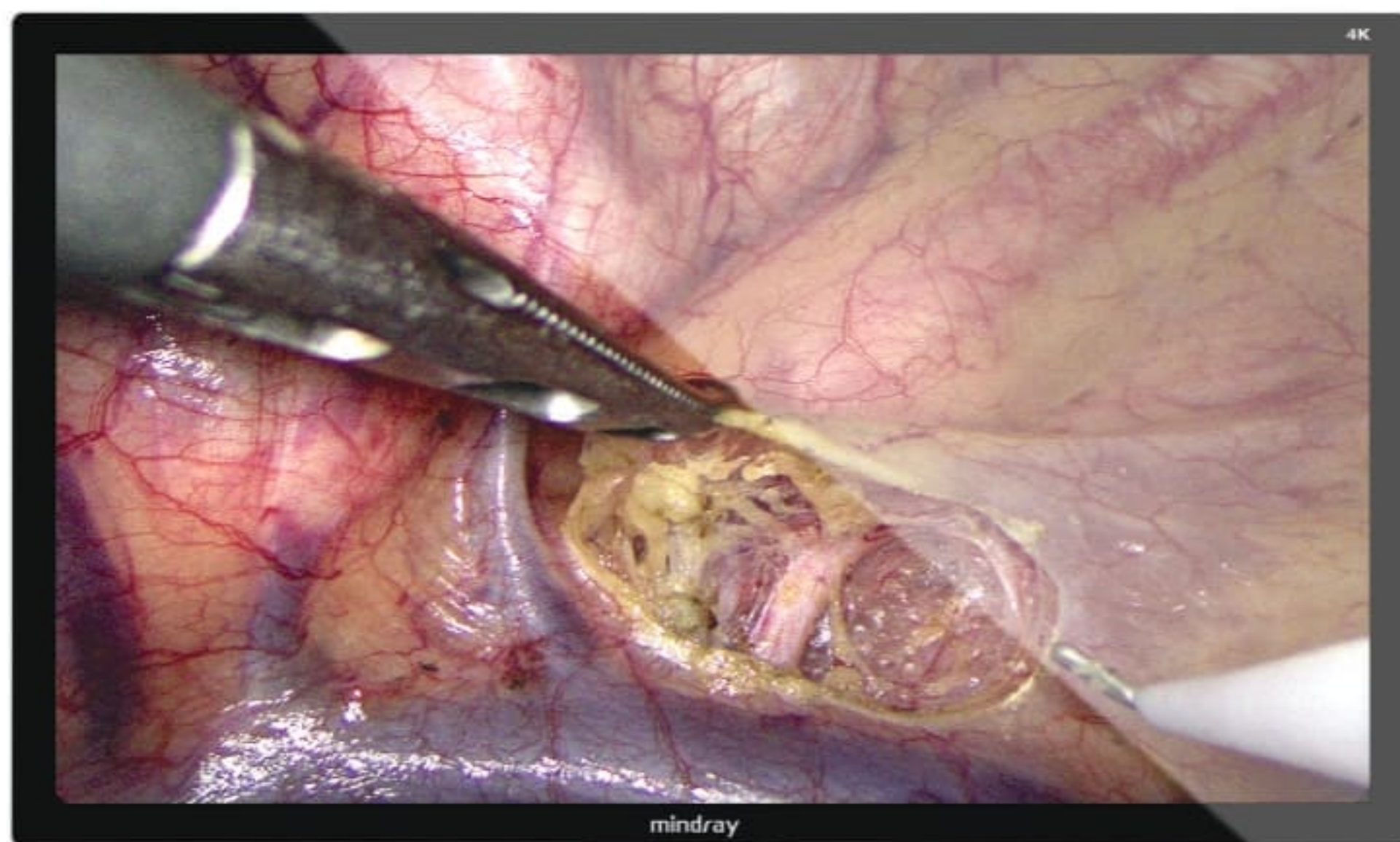
Seeking the ultimate boundary
of minimal invasive surgery

COMING SOON

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HyPixel™ U1

4K Endoscope Camera System



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With the industry at a crossroads between crisis and opportunity, it is the right time to catch the pulse of the industry
”



2021 The Blueprint for a Healthier Bharat

The year 2020 gone, hasn't seen business as usual. We experienced great uncertainty and stress, but even with all these trials and tribulations, we learnt to build resilience. One of the most challenging disciplines for entrepreneurs and businesses in 2020 has been strategic planning and revenue forecasting. Many things made strategic planning difficult, not the least of which is fighting the fires immediately around us. In revisiting strategic plans, it is important to step outside the current madness for a minute and introspect. With the industry at a crossroads between crisis and opportunity, it is the right time to catch the pulse of the industry.

Act right!

At Mindray, we are optimistic about the future opportunities that lie ahead. In this respect, we are well-prepared to become the most trusted partner for a healthier Bharat. We will adopt a four-pronged growth strategy driven by technological innovations, specialised supply chain, digital advancements and improved partnerships, and customer relationships.

Team Mindray, during the pandemic, has proved its mettle in the fight against COVID-19. I have never felt so proud but to see how the team has come out more resilient from the crisis and displayed immense promise for the future.

It's time we capitalise on this potential!

Firstly, integrate digital technologies in all your product and services to guarantee high-quality healthcare. We all believe that the rapid acceleration of digital health technologies that the industry experienced in 2020 will continue to grow in the next year. But while harnessing the power of the digital world we will have to keep quality and patient safety as the heart of all things.

Next is innovation, which should certainly be backed by critical and design thinking. The most important element to drive innovation is ecosystem partnerships and collaboration. Collaboration with regulators seemed challenging prior to the pandemic and now it is well within our reach as regulators are looking for solutions.

Lastly, invest in human capital development, training and capacity building. To emerge stronger from any crisis, there is a need for India to strengthen and upskill the healthcare workforce and address its ever-changing dynamics.

In line with these ideas, Mindray is all set to take the next leap in India's healthcare transformation. We are and will continue to be the trusted partners of a healthier Bharat.



Dean Zhang
Managing Director,
Mindray Medical India Pvt. Ltd.



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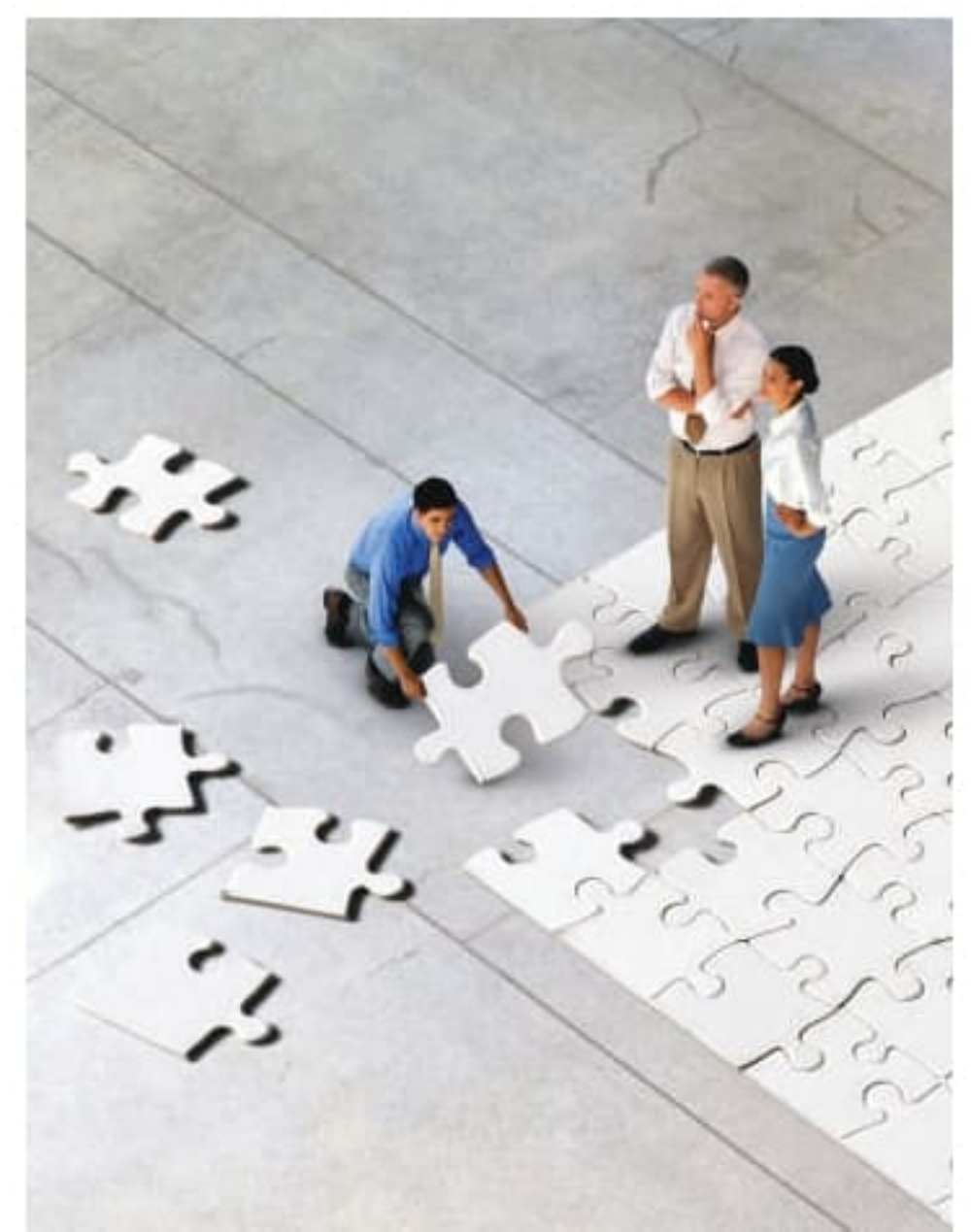


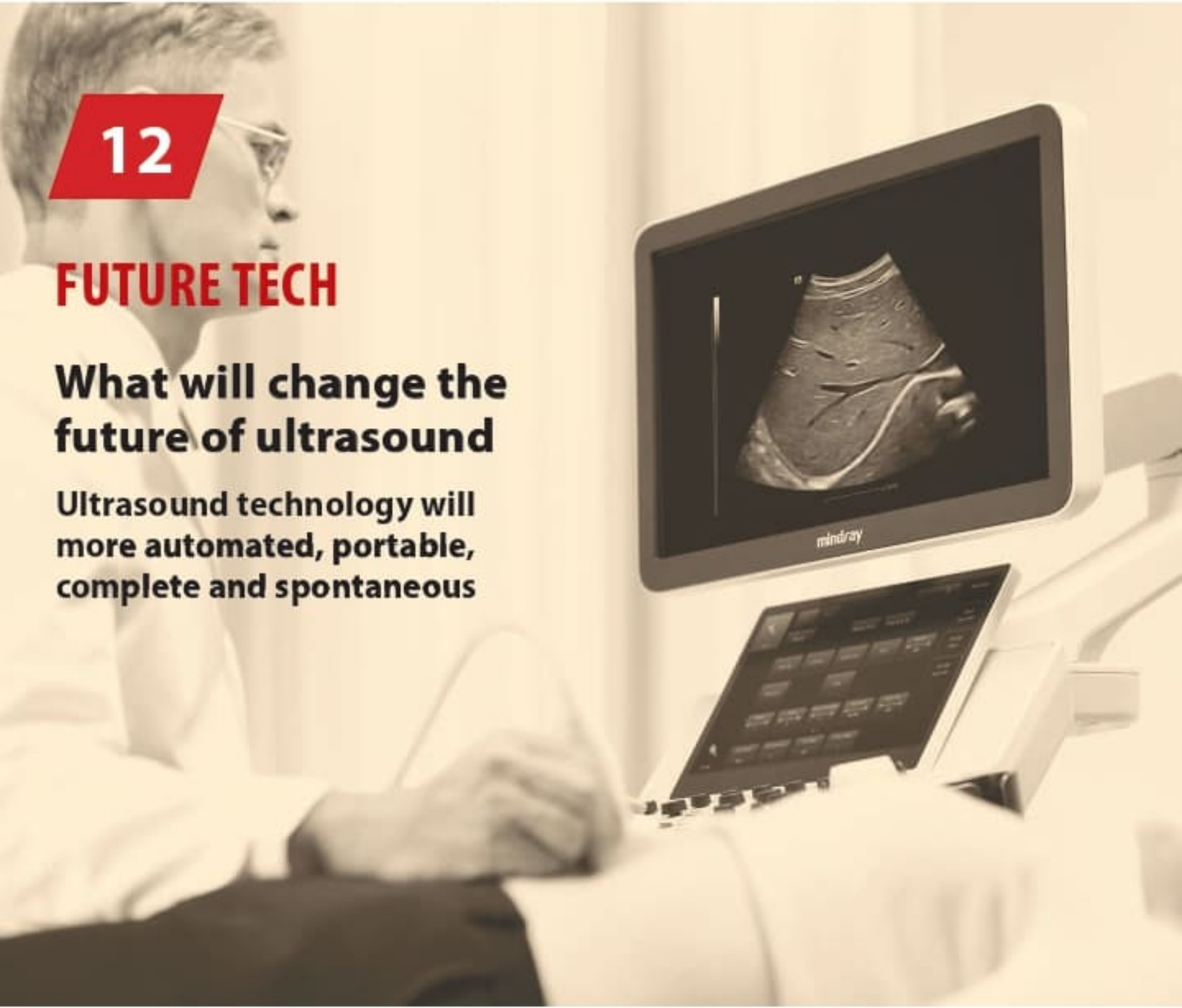
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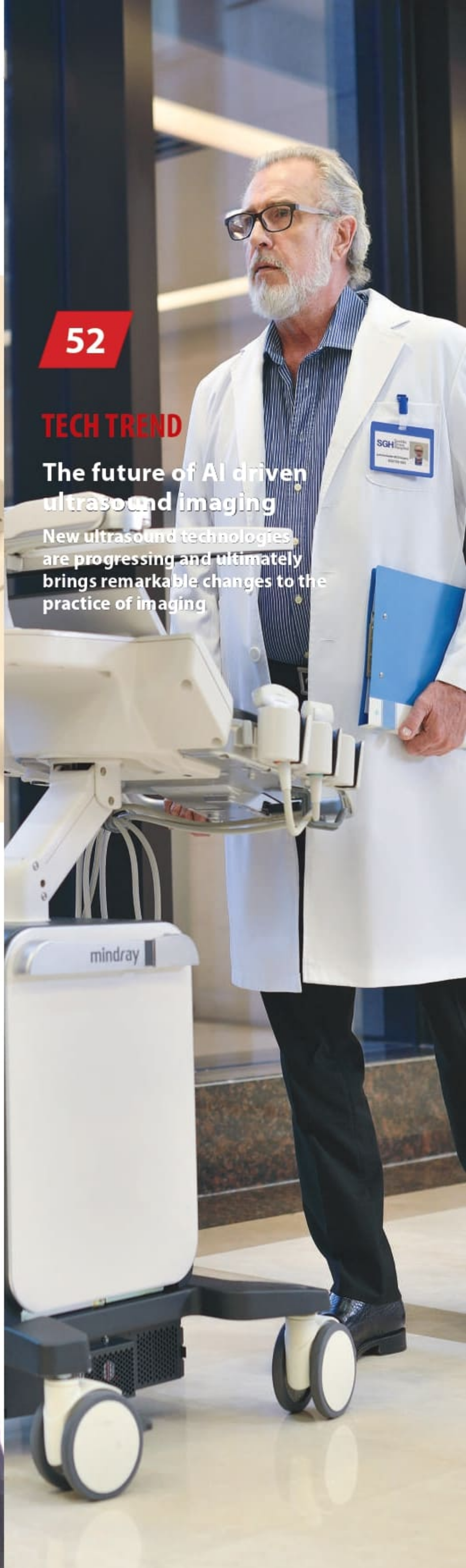


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With the industry at a crossroads between crisis and opportunity, it is the right time to catch the pulse of the industry.

Dean Zhang
Managing Director,
Mindray Medical
India Pvt. Ltd.





2021 WILL BE THE YEAR OF DIGITAL TRANSFORMATION IN IVD

Be it COVID-19 or not, Mindray has been committed to transforming the IVD segment in India and world over. In an interview, **Sudeep Mukherjee, Deputy Director - IVD, Mindray Medical India Pvt. Ltd.** explains the latest offerings by Mindray and updates us on the innovations and technologies that will matter in 2021.

WHAT ARE THE LATEST TRENDS WITHIN THE IVD DIAGNOSTIC EQUIPMENT SEGMENT?

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There have been quite a few changes that happened in recent times and what we see today is a trend in customer focus on mid-segment equipment. Like large labs nowadays even small to mid-workload laboratories need a one-stop solution with high reliability and cost-efficiency. They are also placing more importance on traceability, quality control and calibration. This increases the placements of close system analysers with manufacturer supported reagents & consumables. Though last year overall market was under the grip of nationwide lockdown and experienced lower number of tests; however, it has started to

recover now. Industry is experiencing increase in routine as well as COVID-19 monitoring related parameters. This also encourages users to think for integrated systems having Biochemistry & Immunochemistry tests facility together. In case of haematology segments also trends are towards entry level and high end five part CBC instruments.

CAN YOU BRIEF ABOUT MINDRAY'S OFFERING IN THE IVD SEGMENT?

—
Mindray offers comprehensive solutions for routine to specialised laboratories in the field of biochemistry, immunochemistry, haematology and urine analysis. With entry level to high-end versatile instrument models in clinical chemistry and haematology,



Sudeep Mukherjee,
Deputy Director - IVD,
Mindray Medical India Pvt. Ltd.

Mindray addresses the need of the hour. With vast range of own manufactured reagents and long span of equipment Mindray offer comprehensive packages for every level of laboratories fighting with the present situation.

In addition to chemistry, immunochemistry and haematology routine parameters Mindray offers ferritin, CRP, D-Dimer, retics count etc with a quick development of COVID-19 antibody kits on immunochemistry platform.

HOW ARE MINDRAY'S HEMATOLOGY, BIOCHEMISTRY AND CLIA AUTOMATION HELPING LABORATORIES MANAGING WORKFLOW WITH LIMITED MANPOWER IN THESE COVID-19 TIMES?

Mindray offers sturdy and robust instruments with user-friendly software and minimal manual intervention truly walk away systems and in turn this helps laboratories to manage their work more efficiently at this tough time. Moreover, remote access of instruments by company service support team for any operational assistance & necessity also helps in maintaining the uptime of instruments.

HOW DO MINDRAY'S SOLUTIONS HELP IN ADDRESSING CHALLENGES SUCH AS REDUCED PRODUCTIVITY & LONG TAT, THE COST-EFFECTIVENESS OF TESTS AND REDUCED MANUAL ERRORS?

Mindray focusses mainly on resolving these primary problems to ensure that the lab functioning is not hampered in any way and accuracy and efficiency are well maintained. Cost-effective Mindray automation solutions through high throughput instruments enable managing accuracy, reliability & TAT. Easy maintenance of small to big automated instrument models helps users to get a matched solution for their needs.

WHAT NEW TECHNOLOGIES HAS MINDRAY INTRODUCED IN THE GLOBAL MARKET TO IMPROVE PATIENT CARE DURING COVID-19 TIMES

During the pandemic, we have effectively conducted training to customers, end-users and dealers through virtual digital platforms.



“WITH VAST RANGE OF OWN MANUFACTURED REAGENTS AND LONG SPAN OF EQUIPMENT MINDRAY OFFERS COMPREHENSIVE PACKAGES FOR EVERY LEVEL OF LABORATORIES FIGHTING WITH THE PRESENT SITUATION.”



Knowledge sharing through webinars and virtual seminars by converging global subject experts was our primary focus. We have ensured that COVID-19 parameters on all platforms are well informed for better prognosis and disease management.

HOW MUCH IMPORTANCE DOES MINDRAY GIVE IN DEVELOPING AI-DRIVEN SOLUTIONS FOR ITS CUSTOMERS TO IMPROVE EFFICIENCY?

labXpert software offers unique features and optimises functions to simplify the work flow for data analysis in the haematology segment. It improves

auto validation for normal samples and increases the ability to re-exam efficiency. This provides a more intuitive interface for review and validates pathological samples at its full potential.

WHAT ARE THE LAB TECHNOLOGIES THAT ARE TRANSFORMING DIAGNOSTICS SERVICES IN TIMES OF COVID-19?

Diagnosics services have seen immense transformations in the past few years. The pandemic has only accentuated this transformation. At Mindray, we have kept innovative are products to suit the customer demands and need. Mindray auto hematology analyzers can automatically report NLR(i.e. neutrophils divided by that of lymphocytes) result in every hematology test, helping clinicians predict

severe illness in COVID-19 patients and better manage medical treatment. Mindray provides D-dimer testing by both our Coagulation and Biochemistry products. A recent meta-analysis has shown that patients with severe COVID-19 have higher D-dimer concentrations. The risk stratification assisted by D-dimer testing and early treatment might reduce COVID-19 related morbidity and mortality.

IN 2021, WHAT ARE THE NEW INNOVATIONS THAT WILL BENEFIT INDIA'S DIAGNOSTIC SECTOR?

The year ahead will see newer technologies that will enhance lab performance and ensure better patient outcomes. Some of the innovations are mentioned below:

- Digital imaging techniques in cell biology
- Total Lab Automation
- Increase of Artificial Intelligence (AI) applications
- CRP testing along with CBC by mainstream Hematology Analyzers
- Increased usage of identified COVID-19 related parameters like NLR, D-dimer etc for better prognosis

HOW IS MINDRAY HELPING INDIA TO UTILISE THESE LATEST TECHNOLOGIES TO IMPROVE DIAGNOSTIC TESTING AND MEDICAL OUTCOMES?

Mindray's range of haematology, biochemistry and immunology products caters to the need of all the market segments by providing economical and continual innovative solutions.

HOW IS MINDRAY UTILISING ARTIFICIAL INTELLIGENCE (AI)-BASED ALGORITHM TO HELP IMPROVE PATIENT OUTCOMES?

Mindray has been utilising AI technologies in many ways to improve clinical and patient outcomes. One such example is the labXpert software that helps doctors to remotely monitor the workflow and manage the patient reporting efficiently.



HOW AI AND 4D IMAGING WILL CHANGE THE FUTURE OF ULTRASOUND

Ultrasound will turn out to be considerably more automated, portable, complete and spontaneous for clients making it a crucial regular device for patient diagnosis and care, explains **Dr Deepthi Jammi**



(AI) and 4D imaging are leading to crisper images and more efficient data collection.

With the help of an ultrasound, doctors can see more now than ever before. There is a growing body of evidence about the benefits of the point-of-care ultrasound and why it should be part of the standard care protocol for many diseases.

An ultrasound gives doctors an incredible insight into patient's bodies and allows them to diagnose, intervene, treat, and monitor the condition of patients closely. Even though it was invented many years ago, this is still a relatively young technology. The impact of ultrasound innovation has developed as new capabilities demonstrate its usefulness in a variety of settings.

POCKET-SIZED ULTRASOUNDS ARE CHANGING THE IMAGING LANDSCAPE

There has been a considerable change in the use of ultrasound. What was once viewed as a high-tech device used by educated medical professionals is now accessible to the masses and in a smaller than standard structure. Now a smaller handheld version is available places that could never previously afford it.

While smaller ultrasound machines won't replace the larger powerful linear probes found in hospitals settings, handheld ultrasounds will make medical imaging more effective in daily practice. The larger sized developed machines will consistently have a home in the trauma centre and facilities since they are capable of more functions. The smaller ones will make ultrasound imaging more affordable and easier to use.

IMPROVING WORKFLOWS WITH NEXT-GEN ULTRASOUND

The medical field is in a time of progression and change. Medical technology has evolved in such a way that it reduces time and is more profitable



Dr Deepti Jammi,
MBBS., M.S.(OG) Postdoctoral fellowship in
Fetal medicine, Chennai Women's Clinic & Scan
Centre, Chennai

Ultrasound technology has evolved to such great extent that today, it has become a fundamental imaging modality in the entire continuum of healthcare. Though ultrasound originated within traditional imaging technologies, novel point-of-care applications are now being performed. They are contributing to better patient care that is safer and more economical than conventional imaging technologies. Advances like Artificial Intelligence



Next-Gen ultrasound machines

have features like lesser dropdown menu, lesser keystrokes, quicker processing time and computerisation of measurements.

without giving up on quality. This is a major topic discussed among all healthcare providers. With ultrasound systems and their connected reporting systems this means improving and streamlining the workflow process. Next-Gen ultrasound machines have features like lesser dropdown menu, lesser keystrokes, quicker processing time and computerisation of measurements. Those might seem like trivial changes that don't amount to much but they add up over time. At the point when less time is spent clicking buttons and looking through dropdowns, additional time is spent on the patient. They get a better level of care while the technician can do their job more effectively. The future isn't adding more features, it's getting rid of superfluous buttons and increasing speed.

THE ROLE OF AI IN ULTRASOUND

AI is perhaps the biggest factor in the next

stage of evolution across industries. For example the biggest issue in echocardiography has consistently been difficulty in replicating a picture. This is dependent on experience of the sonographer and advancement of the machine. Then a solution was found with the help of artificial intelligence software that automatically takes the image volume data from 3D echo and remakes the optimal version of diagnostic views. It uses 3D data to automatically compute measurements to help clinicians quickly assess disease states and determine treatment options. Compared to 2D images this can gather and calculate dimensions three to six times faster than manual or semi-automated methods.

NEW ULTRASOUND VISUALISATION METHODS

Ultrasound manufacturers are moving beyond the basic 2D and 3D imaging. They are

concocting better approaches to recreate new displays to make things simpler to see, interpret and comprehend. Newer imaging ways are developed to address the fetal heart and brain imaging specifically. Detailed fetal cardiovascular assessments are difficult to perform as a result of the small size and quick heartbeat rates. At 18 weeks, the fetal heart is the size of an olive and beats around 150 times a minute. The structure is complex, and the baby is in constant motion, making it hard to hit a moving target. This advancement assists specialists detect congenital heart defects in babies sooner than before.

ADVANCES IN POINT-OF-CARE

Ultrasound innovation continues to carve out space in the point-of-care market. These systems are used to take a quick look to rule out any potential cardiac and vascular issues with patient. This is the first mobile app-based ultrasound system. The app turns any Android-based smartphone or tablet into a portable ultrasound imaging device. All you have to do is plug a transducer probe in the device's USB port. The transducer performs all the securing functions and a portion of the picture reproduction while the advanced gadget fills in as the screen to see the pictures.

ON THE ANVIL

Industry insiders predict continued advancements in ultrasound technology-oriented toward cost-effective solutions that don't compromise high-quality imaging. Ultrasound will turn out to be considerably more automated, portable, complete and spontaneous for clients making it a crucial regular device for patient diagnosis and care. One of the unique characteristics of the ultrasound separating it from other imaging modalities is how it allows a clinician to remain present with his or her patient at the bedside, preserving the crucial human connection which is so vital to effective diagnosis and care.

ULTRASOUND MANUFACTURERS ARE MOVING **BEYOND THE BASIC 2D AND 3D IMAGING.** THEY ARE CONCOCTING BETTER APPROACHES TO RECREATE NEW DISPLAYS TO MAKE THINGS SIMPLER TO SEE, INTERPRET AND COMPREHENDTEN YEARS.



Ultrasound in the bedside

It allows a clinician to remain present with his or her patient and preserve the crucial human connection which is so vital to effective diagnosis and care.



Dr. Gopalapurugan is well known across India for pioneering cutting edge interventional cardiology and transcatheter valve replacement therapy. He conducts the country's largest course for transcatheter valve therapies known as **INDIAVALVES**. Dr. Gopalapurugan is an expert in Multivessel and left main stem angioplasty, Electrophysiology and device therapy, Cardiac structural Intervention like TAVI, Mitral and Tricuspid valve Therapy & Aortic Endovascular Therapies.

How can India BUILD A CUTTING-EDGE HOMOGENOUS CARDIAC CARE SYSTEM?

BIO
DR. A.B.GOPALAMURUGAN,
SENIOR INTERVENTIONAL
CARDIOLOGIST &
ELECTROPHYSIOLOGIST

He is a honorary consultant and associated as Senior Consultant Interventional Cardiologist & Electrophysiologist, Chief of Department for Transcatheter valve & Endovascular Therapy at Kauvery Hospital in Chennai. Dr. Gopalamurugan offers state-of-the-art cardiac treatments with a specific focus on complex cardiac interventions, electrophysiology interventions, percutaneous valves and endovascular intervention.

The battle against COVID-19 wasn't a cakewalk. We have had to lose too many lives and had to completely change our lifestyle having to sacrifice the most integral part of human behavior-social life.

But in this turmoil, we also are close to achieving scientific triumph regarding vaccine development and medtech innovation. In our experience, we gathered a significant understanding of the opportunities that can help India progress as a nation, for the health and well-being of its citizens. Despite difficulties, we as a community have looked beyond the crisis to build a buoyant society. The focus now shifts to rebuilding our economy and fix areas that need utmost attention such as expanding healthcare infrastructure

and capability, improving access and healthcare financing, and fostering a culture of innovation and collaboration. We also look at policy interventions and preventive strategies for diseases such as infectious diseases, diabetes, CVDs, cancer, and accordingly strengthen healthcare infrastructure within critical care and emergency medical centres.

In this article, **Dr. A B Gopalamurugan**, revered for his cutting-edge interventional cardiology and transcatheter valve replacement therapy expounds on the need to build robust cardiac care and critical care system for India and how medtech players like Mindray can contribute to this mission.

Mindray HemoSight™ technology

Visualizing complex hemodynamic data in ICUs



“PEOPLE DON’T KNOW THAT **HEART DISEASES ARE 17 TIMES MORE OF A KILLER THAN COVID-19.**

THE NUMBER OF PEOPLE DYING OF HEART DISEASE IS QUITE HIGH AS COMPARED TO COVID-19”

NEED FOR EVIDENCE-BASED CARE AND TECHNOLOGY CAN ACHIEVE IT

We are all aware that besides the infectious COVID-19 pandemic, India is facing an NCD [Non Communicable Disease] epidemic. CVDs are one of the top killers in our country. Around 17 lakh people have died of cardiovascular diseases this year in India. Cardiologists across the world are reporting a marked increase in sudden cardiac deaths even as the current focus has shifted to the challenges from COVID-19 and other communicable diseases. “People don’t know that heart diseases are 17 times more

of a killer than COVID-19. The number of people dying of heart disease is quite high as compared to COVID-19. People need to understand that the symptoms of heart diseases should not be ignored. One can easily come out of a COVID-19 infection but heart disease will lead to more complications and hence more risk of mortality. Therefore, all our policy interventions should also be focused on improving this awareness of this fact. We need to encourage people to seek cardiac care”, informs Dr. A B Gopalmurugan.

While Dr. Gopalamurugan pointed out the criticality of the situation, he also brought the most important aspect to fore such as infection control and building patient confidence.

He highlighted that the current COVID-19 situation has generated fear among people and so there is a need for healthcare providers to reassure patients that they are safe to return to hospitals. “There should be stringent infection control protocols followed at all touchpoints. There shouldn’t be any room for a mistake. Take technological support to ensure patient safety and become robust in our communication ways. Incorporate digital technologies such as video consultations for known patients. It is time we move on to utilizing cutting edge technologies that help us to deliver care in the safest and quickest way so that patients get a good

quality of life, has minimum exposure to infections and has lesser hospital stays," he says. However, he also points out that the adoption of technology in our country is very heterogeneous as there are no standardized protocols that elaborate on one uniform care system. Hence, the adoption of technology has been widely disproportionate in terms of geographical distribution and we as a nation need to change that. Similarly, he speaks about the need to effectively upgrade critical care units and emergency services.

Now clinicians can activate the voice recognition component of iVocal on TE7 Ultrasound System by selecting the iVocal feature on the system and then tapping the Play button. With these simple clicks, the TE7 is all set to perform its tasks assigned by the operator via voice command. This also means lesser human contact and higher patient and provider safety.

ADVANCEMENTS IN ULTRASOUND TECHNOLOGIES THAT CAN GO A LONG WAY

Advances in ultrasound are making the technology appear more attractive for certain clinical applications, from breast health to cardiology, thanks to their non-invasiveness, cost-effectiveness and lack of radiation. Some of the emerging innovations in ultrasound, such as advanced applications in 3D imaging, newer applications of ultrasound contrast, shear wave elastography,



development of wireless transducers, app-based ultrasound technology, fusion with CT/MR, laparoscopic ultrasound, are set to transform health diagnosis and interventions shortly.

"In the field of cardiology, the ultrasound guided angioplasties has helped in achieving long term outcomes for treatment. Intravascular ultrasound (IVUS) guidance during the percutaneous coronary intervention (PCI) offers tomographic images of the coronary vessels, allowing optimization of stent implantation at the time of PCI. Therefore, ultrasound has become a vital element for conducting PCIs. Not only this, echo and ultrasound today has been extensively used to guide surgeons during complex coronary interventions. So, I would say that without ultrasound, cardiac interventions are incomplete", opines Dr. Gopalamurugan. In the current pandemic situation, it is advised to keep our equipment's clean and sanitised. It is inconvenient for clinicians to physically reach the console and the body part they need to scan during surgery, especially when performing an ultrasound-guided exam. Mindray introduced iVocal, the voice enabled command feature, on its TE7 Touch Screen Ultrasound Device to resolve these pain points. This role of voice recognition helps clinicians to monitor the device through voice command alone, thus reducing the risk of infection spreading.

STRENGTHENING CRITICAL CARE IN INDIA WITH TECHNOLOGY

One extremely critical flaw that the pandemic slammed on our face was the lack of appropriate



Mindray EWS technology

Integrating the latest National Early Warning Score protocol

ADVANCEMENTS SUCH AS
**CARDIAC
MONITORING,**
CATHETER MONITORING
AND SOME FANCY WAYS TO
RAISE ALARM BELLS WHEN A
PATIENT IS LIKELY TO GO DOWN
HAVE ACTUALLY IMPROVED
EFFICIENCIES WITH ICU

ICU infrastructure in the country. In developed countries, caring for critically ill patients involves a coordinated system of triage, emergency management, and critical care. This is complicated and unaffordable in many parts of our country. In contrast, critical care remains at a nascent stage in some tier II-III cities within our country. However, these can be upgraded and improved with better technologies such as early warning scoring, critical stats for patient monitoring, and data mining capabilities in order to provide care anywhere at anytime and in the most efficient manner. Today, technology is becoming more pervasive. Especially within ICUs, we see a lot of connected devices that help in the overall physician, nursing, and patient experience. Advancements in the field of patient monitoring are one such example.

“Advancements such as cardiac monitoring, central monitoring, catheter monitoring and some fancy ways to raise alarm bells when a patient is likely to go down have actually improved efficiencies with ICUs. The critical numbers that we get from these monitoring systems help us to save many lives. Moreover, technologies such as AED and ICD also play a significant role in saving lives”, he further states.

Apart from this, Dr. Gopalamurugan pointed out that in India many people die of sepsis. If this condition is timely recognized, evaluated and treated, healthcare providers can save many lives. Mindray provides a full sepsis solution that incorporates all SOFA and qSOFA guidelines, including PCT examination, blood culture and patient monitoring solution, which offers important clinical significance at any level of medical management. Benefiting from cutting-edge clinical metrics such as rSO₂, ICG, PiCCO, AG, RM, BIS, NMT, and state-of-the-art support resources for clinical decision-making such as HemoSight™, ST Graphic™, DSA, BeneVision N22/N19 improves clinical confidence to the full and helps make clinical decisions easier and quicker. Further, the connectivity capabilities of BeneVision N22/N19 fit seamlessly into any clinical workflow for a paperless future. Revolutionary iView clinical informatics workstation brings all intelligence (PACS, LIS, EMR, etc) on screen at point of care for one-stop diagnosis. Industry-leading BeneLink integrates all bedside devices to the monitor in realtime and



facilitates centralized data management. Interestingly, BeneVision can be utilised in the out-of-hospital setting too. In compliance with out-of-hospital patient transport standards such as EN1789, EN13718-1, IEC60601-1-12 and U.S. military standards, N1 is a highly competent solution for various out-of-hospital transport settings both on land and in air. The N1's exceptional reliability and strong performance enhance your confidence to provide seamless patient care during transport no matter intra or out of hospital. Weighing less than 1 kg, this palm-sized portable patient monitor is designed for uninterrupted monitoring during intra and out-of-hospital patient transport with maximum reliability. It provides a steadfast and versatile solution that connects the vision for caregivers throughout the entire care process. Moreover, when connected to a bedside patient monitor, advanced parameters collected from the host monitor such as AG and BIS, etc., will also be stored in N1 with trend data and alarm events reviewable even when it is disconnected.



Ambulatory technologies should include equipment that provides realtime patient information such as ECG, SpO₂, EtCO₂, Temp, NIBP, to the hospital, allowing doctors to track the entire rescue process all the way from the field to the hospital.



He further mentioned that Mindray's PHEIS features patient information and data sharing between the ambulance and the hospital very effectively. It allows the hospital to be involved in the rescue right from the beginning, thereby saving valuable time and lives. This system enables doctors to support paramedics via internet during the patient's C-B-A procedure by advising drug therapy, CPR or intubation. For patients in critical condition every

second counts. PHEIS helps to save valuable time by supporting remote diagnosis and allowing the hospital to prepare treatments well in advance. Its

ENABLING EVIDENCE-BASED AMBULATORY SERVICES

Moving on, Drt Gopalamurugan also spoke about the improvements needed in the concept of Home-to-hospital. He emphasized the need for educating patients on the golden hour, the risk of heart diseases, and the kind of emergency medical services available to them. "While patient education is paramount, ambulance vehicles and EMS should also be upgraded with the needed technologies."

every minute matters!

KAUVERY HOSPITAL'S EMERGENCY & TRAUMA CARE

044-4000 6000

INITIATIVES FOR CLINICAL EXCELLENCE



Between 2006-2007, Dr Gopalamurugan started a new service through his own initiative whereby patients in a DGH presenting with atrial fibrillation for more than 24 hours duration underwent cardiac assessment, TOE and cardioversion and were discharged in less than 24 hours time in sinus rhythm.

He proposed this service idea which was accepted by the hospital's administrative team including the clinical director, he materialised this service provision and received positive feedback.

While practicing at The Heart Hospital, UCLH, London, he was instrumental in initiating a new service ie- percutaneous occlusion of left atrial appendage for stroke prevention for patients who cannot tolerate anti-coagulation therapy in the long term. Furthermore out of his acute interest in complex coronary intervention, he put together the necessary steps to start laser coronary atherectomy at the Heart Hospital, UCLH, London.

powerful data transmission capability, including vital sign waveforms as well as alarm and defibrillation events, provides hospitals with all relevant information.

Especially the 12-lead ECG report helps doctors to quickly decide on the reperfusion method (intervention or fibrinolytic therapy) for a suspected STEMI (ST- elevation myocardial infarction) patient.

ROLE OF AI

There are various capacities in which AI is emerging as a game-changer for healthcare delivery. Recent studies show that the care of critically ill patients generates a median of 1348 individual data points per day and that this number has increased 26 per cent over five years. A smart clinical decision support solution with easy-to-use interfaces and real-time data mining capabilities is essential for an ICU in order to lessen cognitive load, improve workflow and reduce medical error. To navigate this complex array of data, Mindray developed a comprehensive ICU solution consisting of patient monitors, ventilators, infusion pumps and point-of-care ultrasound systems, all of which are integrated with various smart decision support tools. Through a range of Clinical Assistive Applications (CAAs), these devices can integrate, analyze and interpret large volumes of patient data in real-time, helping clinicians quickly identify adverse events and make accurate, informed and timely decisions that assure patient safety.

On the same line, Dr. Gopalamurugan speaks about how AI backed devices can help in bringing in the required efficiencies in patient care. "AI improves efficiency, accuracy and workflow management. In many ways, AI has been helpful to healthcare providers, especially in diagnostics, but it has to be guided by human intellect. For example, if we do an AI-backed abdomen ultrasound, then the results should



be vetted by a doctor. So there is a strong need for AI and correlation analysis by clinical experts”, he informs.

For example, in today's fast-paced and crowded hospital settings, clinicians are challenged to deliver accurate patient assessments rapidly and to perform routine interventions quickly and effectively. Ultrasonography, especially Point-of-Care (POC) ultrasonography is a proven method to provide more efficient and cost-effective healthcare. However, there existed a number of situations where a clinician or sonographer may have difficulty completing the exam using only the console to manipulate an ultrasound system, and hence affecting work efficiency.

NEED FOR QUALITY CARE MEASURES

While incorporating technology to improve patient outcomes is one aspect, the other thing is quality control. “Most importantly, our country needs quality control measures from the government. So, if we have to be seen as a cutting-edge healthcare delivery centre then we have to develop homogenous means to deliver the same kind of care across the country. And to do that we need similarly trained people and unified treatment protocols across the country. Patients should get the best no matter where they are. It should be geographically decided. There should be high-quality care delivered nationwide in a very homogenous manner”, he emphasised. So as healthcare providers need to focus on quality healthcare delivery, technology partners need to adhere to quality compliance and standardised QA/QC. And here comes the role of technology partners such as Mindray.

ROLE OF MINDRAY, AS A TECHNOLOGY PARTNER TO ENSURE QUALITY HEALTHCARE

“There is a lot that technology providers can do to complement the efforts put by healthcare



providers to uplift cardiovascular services in India. For instance, our country needs 88,000 cardiac specialists but currently, we have less than 5000 specialists. Therefore, we are short of cardiac care providers and ultrasound specialist for CVDs. I feel technology partners like Mindray has a big role to play in building a future-ready cardiac care system. They have a huge market to capture. They can come up with quality-based cost-effective technologies that can be beneficial to patients”, Dr. Gopalamurugan believes. Moreover, he stresses the fact that partner like Mindray can be instrumental in building emergency care and bring in advanced technologies in ambulatory care.

He further urged Mindray to focus their innovation on AI-based technologies to improve healthcare in remote India.

So as Dr. Gopalamurugan highlights various aspects in which India can strengthen its cardiac care system, he also threw light on some of the significant technological innovations that can be incorporated. Going forward, as he mentioned technology partners such as Mindray has a key role



mindray

KICK-OFF MEET

24th - 26th Jan.2019

SUSTAINING THE GROWTH STORY IS A PRIORITY

Suresh Babu, Director - PMLS & SU and Service, Mindray Medical India Pvt. Ltd. describes the business challenges during pandemic and discusses how the team demonstrated resilience and remained committed to serving customers against all odds through teamwork and strong dedication.

OF COURSE, THE HEALTHCARE SCENARIO HAS NOT SEEN THIS SORT OF SITUATION BEFORE, WHAT ARE THE BIGGEST CHALLENGES FACING DURING COVID-19, HOW DO YOU DEAL WITH IT?

—
I wish, we will never see any similar situation in our lifetime. Every single individual, irrespective of the profession got badly affected by this pandemic. Healthcare providers and sanitation workers have become the life savers. Certain medical devices like ventilators, multipara monitors, infusion syringe pumps, point of care ultrasound devices etc. have become very crucial in combating this pandemic. Being a manufacturer and supplier of these critical devices, Mindray has been playing a very responsible role during this tough time. All the above, there were not sufficient cargo carriers to bring the finished goods into India for almost four months even though the situation now has not been

brought to normal. We, Mindray India being a responsible organization and committed to a healthier Bharat quickly got into action, formed a core team internally to coordinate with various departments in organization to clear the hurdles, if any, in time to meet up the customers requirement. Priority has been given to COVID-19 related supplies by acting responsibly. There has been a great teamwork and an excellent commitment from Mindray India team during this pandemic time. Sales team transformed into support roles, service team was seen everywhere wherever they were required, supply chain team hammered out innovative ways to overcome the transportation challenges and back office team converted their homes into office supporting the team and customers round the clock. To provide valuable knowledge to healthcare professionals treating COVID-19 patients, our marketing team created an academic knowledge exchange

BIO

M Suresh Babu is a dynamic healthcare professional having 25+ years of experience in medical device industry. Currently he heads functional divisions of Patient Monitoring, Life Support Systems, Surgical Units & Service Operations in Mindray Medical India Pvt Ltd. **He is** an intrapreneur in Strategy & Business Planning and an expert in Sales & Marketing and Business Development of medical devices. He is also expert in project management, financial management, client retention, implementing policies and cost control. **His areas** of interest include anesthesia, critical care, surgical, CSSD and cardiology devices.



“THE ONLY POSITIVE EFFECT OF THIS PANDEMIC IS MAKING **PEOPLE THINK INNOVATIVELY**

A LOT OF INNOVATION PLAYS A CRUCIAL ROLE IN THIS PANDEMIC. TEAMS AND ZOOM APPLICATIONS HAVE REDEFINED THE WAY OF WORKING. OUR CUSTOMER MEETINGS HAVE EXPONENTIALLY INCREASED.”

"CUSTOMERS FIRST, EMPLOYEES NEXT AND FINANCIALS FOLLOW. THIS IS ONE OF THE GREAT MANTRAS FOR ANY ORGANIZATION THAT IS ASPIRING TO GROW IN INDIAN MARKET"

platform through a series of online webinars, conferences and training programs. The quantity of the ventilators we supplied during COVID-19 time is more than the sum of last two years quantities. We also have been keeping sufficient safety stock inventory in India to meet up any emergency requirement to support COVID-19 warriors.

WHAT INNOVATIVE SOLUTIONS/ PROCESS/GUIDELINES DID YOU COME UP DURING THIS TIME WHICH YOU PLAN TO CONTINUE EVEN AFTER THE CRISIS IS OVER?

—
Only positive effect of this pandemic is making people think innovatively. A lot of innovation plays a crucial role in this pandemic. TEAMS and ZOOM applications have redefined the way of working. Our customer meetings have exponentially increased. Coordination among

various departments in India and overseas to resolve the customer concerns have become quite effective. There has been great amount of saving in terms of time and money on travel. I am sure this will go on even after the pandemic. In Mindray, it is believed that the e-learning system, a resource that has become the company's focus regardless of the acknowledgement or investment in this important asset, is bound to become one of the most efficient and accessible methods for acquiring knowledge. Mindray India has also initiated various webinar and online training programs for COVID-19 warriors during this challenging time.

In Mindray, we have witnessed a complete revamping on processes in almost all departments. The major one is production. Being flexible on customization of product configuration led to more

than ten and in some cases even fifteen variants of each model of the product. But when we analyzed the historical data, we found that ninety percent of the configurations fall into two or three variants. Hence, we decided to restrict the variants and started producing them continuously without even waiting for any customer order to meet up the COVID-19 related demand by reducing the lead time significantly. This helped a lot to serve our esteemed customers in a big way. Operation and supply chain team has been restructured by redefining the clear responsibilities, timelines and escalation mechanism to meet up any adverse situation like this. Fortunately, many guidelines were formed for combating the pandemic. Government extended an excellent support to medical equipment companies and hospitals. We witnessed NITIAYOG senior officials organizing periodical meetings with equipment suppliers, making them part of the team in combating COVID-19, hearing out any hurdles and resolving them immediately. I hope this will continue even after the pandemic.

WHAT ARE THE OVERALL INDUSTRY EXPECTATIONS FROM THE GOVERNMENT?

—
Government is taking several steps to streamline the way forward for medical devices industry. There have been several guidelines and registration processes to ensure safe and quality products. Affordability is another important aspect. The cost is ultimately charged to the end customer that is the patient. Hence, industry must step up and produce quality goods in an affordable price and government must extend the necessary support in this direction. It could be reduction of customs duty or GST that will ultimately benefit the patient.

'Atmanirbhar Bharat Abhiyan' is one of the great things emerged during this pandemic. There has been a great response for this. We hope to see government putting more efforts in making this further successful. The

'GROWTH' IS THE MEASURE OF **HEALTHINESS OF ANY ORGANIZATION.** MINDRAY HAS BEEN A VERY HEALTHY ORGANIZATION RECORDING DOUBLE DIGIT GROWTH EVERY YEAR FOR LAST TEN YEARS.

pandemic also directs us to the importance of healthier India. There is an absolute need for collaboration with Subject Matter Experts in the industry who can deliver quality products at an affordable price for a healthier India, at the same time inviting foreign investment in this sector. There must be a single window system to complete all necessary formalities for interested parties. Some state governments have really done a great job in this direction. More encouragement in terms of providing the basic infrastructure and tax benefit is expected. Healthcare is still compromised for people residing in rural areas. Private hospitals are not setting up the facilities as expected due to viability problems. Industry and government must work together to find a suitable solution and develop a roadmap for these facilities. There should be more emphasis

WHAT ARE YOUR KEY PRIORITIES AS A DIRECTOR OF KEY BUSINESS VERTICAL AT MINDRAY INDIA?

—
Customers first, Employees next and Financials follow. This is one of the great mantras for any organization that is aspiring to grow in India market. It is more than a decade for Mindray in India market by adopting the same strategy crossed several milestones in terms of customer

satisfaction and employees mindshare. Growth in sales revenues just followed. Today, Mindray is one of the top three companies in India market for our respective product lines. My key priority is always strengthening the customer relations. 'After sales service' is the most important aspect in medical devices industry especially when we deal with lifesaving devices. To have happy customers, we must have a good team. My other priority is to retain and motivate our strong team that we built over a decade. Creating opportunities for their career growth is the prime objective. 'Growth' is the measure for healthiness of any organization. Mindray has been a very healthy organization recording double digit growth every year for last ten years. Sustaining this growth story is another priority.

WITH RESPECT TO PLANNING AND EXPANSION WHAT IS YOUR VISION BY 2022?

—
Mindray India has been operating for over a decade now with the aim of Healthier Bharat. We consider the Indian market as a growth driver for Mindray's global business. Strategically, it is one of the important markets for the company. India is of the few countries chosen for long term investment on infrastructure and resources to facilitate a healthy growth. Based on market requirement, we keep adding new products every year. This year we launched our state of art, premium segment Anesthesia workstations A9/A8. We also have launched new series of infusion syringe pumps enable clinician to use even TCI and PCA applications. We also have entered into endoscopy and surgical instruments field and would like to give an excellent experience to our surgeons with highest quality images. AED is another product we introduced recently in consideration of arousing awareness about first aid rather than business. Many precious lives can be saved if we create proper awareness among the public. IRC (Indian Resuscitation Council), which is an initiative of Indian Society of Anesthesiologists (ISA) has been doing this noble job. They have been doing training across India and bringing awareness among general public. If we get a chance, we would like to jointly work with them in this life saving mission. Our Vision is 'Better healthcare for all'. We would like to see all our esteemed customers experience the same.

mindray
healthcare within reach



DC-80 with X-Insight

**Insight,
Intelligence,
and more**



MINDRAY INDIA INTRODUCES A9 & A8 RANGE OF ADVANCED ANESTHESIA SYSTEMS

Mindray India has recently introduced its brand new A9 and A8 anesthesia systems, which are now available in the Indian market. This marks Mindray's entry as a key player in the high-end anesthesia machine market. The new anesthesia systems empowers anesthesiologists to ensure comprehensive patient safety throughout the perioperative period, from induction to recovery.

Empowering the operating area
The latest Mindray anesthesia systems feature state-of-the-art technologies that meet clinicians' needs in the perioperative period, enabling them to provide patients with reliable, secure, and safe anesthesia while reducing the risk of anesthesia. The A9 and A8 advanced anesthesia systems minimize the hazards of human error while reducing workload, and lowering the environmental impact from the operating room. Mindray's new anesthesia systems empower anesthesiologists to ensure comprehensive patient safety throughout the perioperative period, from induction to recovery. Using High Flow Nasal Cannula oxygen (HFNC),



Mindray's new systems extend safe apnoeic time from 8 to up to 30 minutes to help clinicians intubate more easily.

ADVANCED FEATURE

The machines also integrate Automatic Controlled Anesthesia (ACA), a pioneering assistive technology that automatically adjusts fresh gas and vaporizer output to quickly achieve preset target end-tidal agent and inspiratory oxygen concentration, ensuring accurate and stable levels of anesthesia. The technology also helps cut down on workload for clinicians; while reducing cost by minimizing the consumption of gas and agents used throughout the case.

UNCOMPROMISED SAFETY

Committed to improving safety, Mindray's new systems feature ICU-quality ventilation technologies to protect a patient's respiratory system throughout the perioperative period. Both systems have integrated a Volume

Exchanger, an innovative system that delivers precise and reliable ventilation to patients with rapid wash-in and wash-out time. Additionally, Mindray has incorporated powerful protective ventilation toolkits to reduce the incidence of postoperative complications, such as transpulmonary pressure monitoring.

SEAMLESS WORKFLOW

Furthermore, to create a greener operating room, the A9 employs anesthetic gas reduction strategies during surgery. Clinical decision-support tools, such as the Optimizer, AA measurement, and AA prediction, help advise clinicians of the most efficient gas flow to reduce waste. It also features an e-AGSS system that monitors the waste gas scavenging flow rate and indicates anomalies – plus switches off in standby to reduce energy consumption.

CAPTIVATING USER INTERFACE

Designed with deep insights into the clinical workflow of the operating room, the intuitive user interfaces ease the workload of busy and stressed anesthesiologists. An 18.5" capacitive touchscreen with 360-degree rotation provides an intuitive interface and up to 10 customizable profiles for different clinical scenarios or use requirements. Automated pre-use system check helps ensure proper functioning with graphic display of errors, and it can be scheduled any time as needed.

In addition, the machines can be physically connected to many other Mindray devices as a highly integrated anesthesia workstation. It can also seamlessly connect to multiple hospital information systems using Mindray's flexible integration solution, so caregivers can check on a patient's status anywhere, anytime.





How to optimise 5 S in hospitals

In the long run, 5S in hospitals a concept derived from lean manufacturing makes processes run more smoothly and prevents medical errors, and saves cost, informs **Deepak Venkatesh Agarkhed, Bachelor in Engineering, Master in Business administration, Master Black Belt-Six Sigma**

How many times have you thought of implementing 5S philosophy at your hospital?

I am sure that this thought has crossed your mind several times. But you may think that a complete overhaul of process within your hospital setting to accommodate 5s philosophy could be difficult. That's a misconception. In this article I will explain how 5s in healthcare can help you increase efficiency, reduce medical errors and save cost.

SIGNIFICANCE OF 5S IN HOSPITALS

The major difference between engineering, manufacturing plants and hospitals is the repetitive nature of work. A worker in a shop floor of manufacturing plant will conduct the series of tasks in the same way throughout his work shift, whereas each patient in a hospital is treated differently based on the nature of illness. In spite of the differences, hospitals have a lot to emulate from lean manufacturing plants. One of the practical programme hospitals can adopt is the 5S philosophy of process improvement. The philosophy

of 5S in healthcare represents a way of focusing and thinking in order to better organise and manage workspace, specifically by eliminating wastes as defined by the Lean Manufacturing system. It is one of the most widely used and fundamental components of Lean Manufacturing. Its simple, common-sense application is highly effective and reliable as a stabilising force in Lean strategies.

5S PHILOSOPHY FOR PROCESS IMPROVEMENT

The 5S in healthcare focuses on organisational cleanliness and standardisation to improve profitability, efficiency and safety by reducing wastes of all types. The 5S philosophy was born in Japan with each S designating progression in implementation.

THE 5S CASE STUDY

A non-invasive cardiology department in a multi-speciality hospital was struggling to cope with patient management. At this department, patients had to wait for a long time to get their clinical



Deepak Venkatesh Agarkhed,
Bachelor in Engineering, Master in Business
administration, Master Black Belt-Six Sigma



The philosophy of 5S in healthcare represents a way of focusing and thinking in order to better organise and manage workspace, specifically by eliminating wastes



The table shown below provides meaning of each S.

Japanese Term	English Translation	Equivalent 'S' term
Seiri	Organisation	Sort
Seiton	Tidiness	Systematise (storage)
Seiso	Cleaning	Sweep (shine)
Seiketsu	Standardisation	Standardise
Shitsuke	Discipline	Self – Discipline (Sustain)

examinations such as i.e. ECG, TMT, Echo. The department was demanding additional space to put up one more ECG room to cater to the growing patient load. The departmental facility had the following functional rooms at the ground floor of main building.

- ECG room with two equipment
- Echo colour Doppler room -1
- Echo colour Doppler room-2
- TMT room
- Holter/Ambulatory BP unit room
- Common Doctors room

The footfall of patients per day was around 115 (includes both outpatient & inpatient) and department functions between 9 am till 6 pm.

During the peak hours the patients who come for ECG has to wait on an average of 45 minutes and there were frequent breakdown of ECG units.

The quality department along with Lean consultants decided to understand existing

policies, processes and activities of the NIC department. It took one week to study the existing work flow, patient and staff movement.

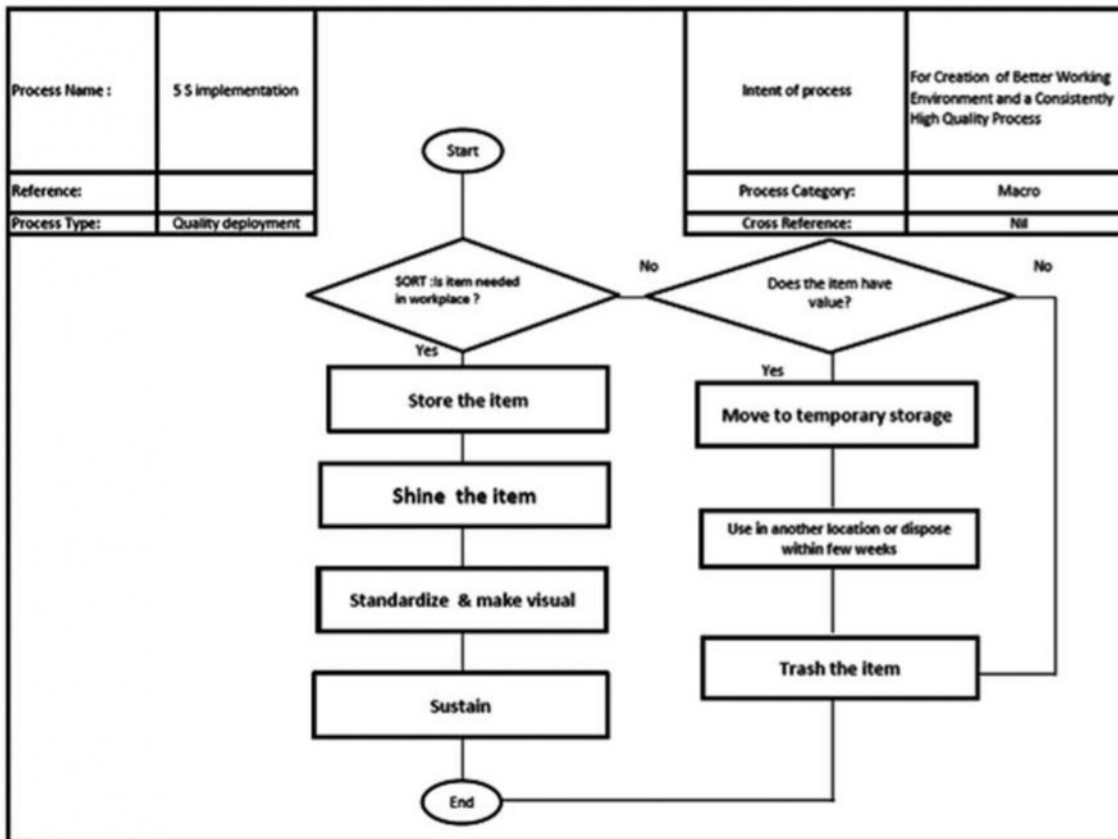
As a solution to this problem, the quality team planned to use 5S methodology for the department. The application of 5S and its benefits were presented to the entire team by the quality and Lean consultant. The cardiology team was encouraged to share their thoughts and ideas that could help in improving the 5S implementation process. After immense brainstorming, the following activities were carried out in each stage of 5S initiative.

1. 5S Sorting

In this first step, workers sort everything in a workspace into what is and what is not needed. This is the phase that helps in making effective use of space by clearing out hazardous items and clutter that distracts us from doing the job efficiently.

- a. Low priority items which are used once in a year are identified like defective patient cables, defective spare parts, used batteries in holter/ ambulatory BP units, used printer cartidges, used jelly bottles, old patient reports were identified. The items were listed and sent to store department for condemnation
- b. Average priority items like paediatric TEE probe, second holter recorder, tool

The flowchart below provides the roadmap for 5S implementation.



box, thermal papers for TMT, stationary items were kept inside secure cupboard.

c. High priority items like frequently used probes of colour doppler disposable ECG electrodes, ultrasound jelly bottle, tissue paper are kept along with equipment.

c. The present department inventories were revisited and reorder level is mentioned like ultrasound jelly bottle, blank CD, tissue paper.
d. The location of storage cabinet was shifted in ECG room from extreme corner to centre of room to avoid excess movement of staff.

2. 5S Storage:

The concept follows the advice: "A place for everything and everything in its place." Staff position items based on use, with frequently needed items kept closer at hand. Every item that made it through the Sort stage is given a storage space.

- a. The boundary of medical equipment like colour doppler, ECG unit, ambulatory BP workstation are marked besides other items waste bin, crash cart.
- b. The visual signboard is put across on each storage cabinet. Inside each storage cabinet there is labelling for each section.

3. 5S Shinning:

With the clutter gone and storage space organised, it's time to clean. After a thorough initial cleaning, workers clean the station every day (sometimes twice a day). This maintains the gains made in the Sort and storage phases. Cleaning includes storage areas, machines, equipment, tools and work surfaces. The Shine phase creates a more pleasant environment for employees, who no longer have to combat dust, dirt and clutter. Cleaning the area every day also leads to a higher level of employee buy-in for the 5S method.

- b. It was made mandatory to clean ultrasound



- probe with left over jelly after each case by clinician.
- c. The technician is made in charge to clean the equipment on daily basis.
- d. Housekeeping team has been instructed to clean floor, remove dusting at the start of each shift in presence of nursing team member. The waste bin will be cleared three times a day.
- e. All maintenance activities by clinical engineering team will be followed by room cleaning by housekeeping department.
- f. All lights in false ceiling were made working so that proper room illumination is always maintained.

4. 5S Standardisation:

This step involves creating ways to sustain the first three steps. Employees participating in creation of a set of standards that will govern maintenance of the workspace going forward. Once this “new normal” becomes a habit, all old habits will fall away. This may require oversight and enforcement before becoming a habit. The Standardise phase takes the progress and changes in behaviour

from the first three steps and makes them the standard procedure.

- a. The visual chart on process to be followed in case of cardiac emergencies while undergoing procedure is prominently displayed in TMT room. The hand cleaning protocol is displayed on top of sink.
- b. Do’s & Don’t for each equipment are displayed near the respective machine.
- c. The patient report pattern was standardised. ’

5. 5S Sustain:

Here the goal is to stick to the new rules. Employees keep the new standards in place and practice the first three steps everyday until they become accustomed to doing things in the new way. This final step often proves the most challenging. However, without sustaining the new system, all the cost and effort that went into creating it will prove pointless. Kindly note that the 5s Sustain phase of 5S often requires training and good communication, but it eventually will lead to

employees becoming comfortable with 5S procedures.

- a. It was decided to give responsibility in rotation basis among technicians.
- b. The functional head was requested to audit each stage for all the area and provide feedback.

There were lot of practical hurdles faced like each technician wanted to have separate set of inventory, Nursing staff not happy with mandatory cleaning of equipment on daily basis and few clinicians were not ready to take care of ultrasound probe after scanning .With support of functional head most of the issues were overcome and within two months visible difference was noticed in cardiology area.

THE RESULTS OF THE 5S IN HOSPITAL STUDY

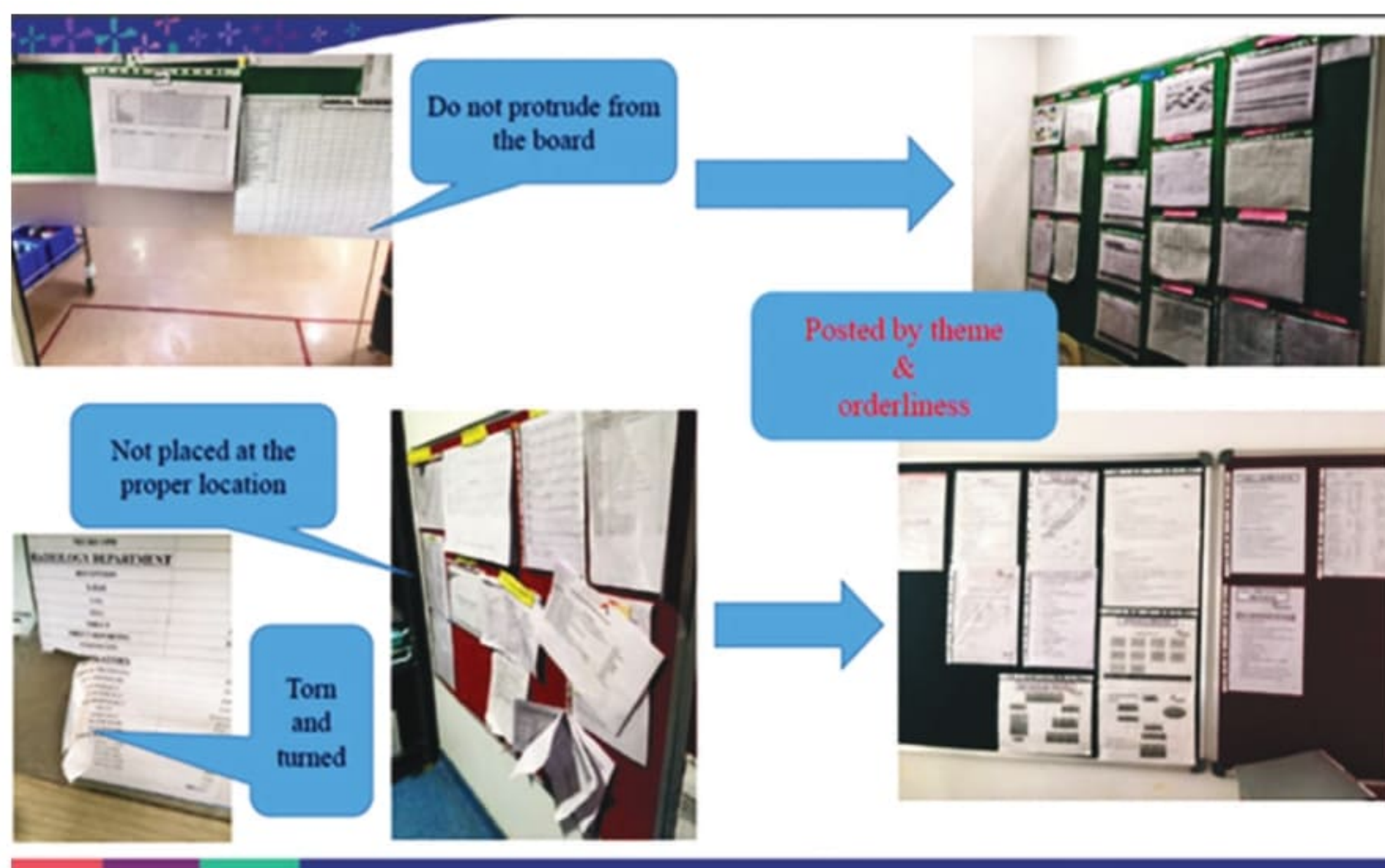
While the department implemented the 5S in healthcare, there were key learnings. As all unused things which were mostly dumped in the Holter room were now cleared, the space could now be utilised when the patient load increases. Space utilisation became more effective with usage of Holter room for ECG study was a good option.

The historical data on breakdown, load of each ECG unit across hospital were reviewed using the hospital information system. The ECG unit from deluxe ward was shifted to the NIC team during morning hours.

The following noticeable benefits were observed after 5S implementation.

- The patient satisfaction has gone up by 15 per cent after 5S implementation
- Stock out of inventory is not happening as there is visualisation of reorder level in storage area
- The step towards autonomous maintenance is achieved as technicians are taking care of cleaning of equipment

#5S can be applied across hospital departments like operating room, medication storage, biomedical engineering workshop and CSSD. The waste (i.e. MUDA) on account of more inventory, unnecessary movement of staff and transportation of material and redo of work can be reduced with 5S implementation, resulting productivity increase in workspace.



5S often requires training and good communication, but it eventually will lead to employees becoming comfortable with 5S procedures

Sonoscan emerges as India's credible imaging lab chains

While hospitals are equipped to handle a multitude of emergencies and health problems, there is considerable room for improvement when it comes to integrating aspects of a patient's personal routine into the hospital stay. Small but significant changes could improve the overall patient experience and increase the sense of independence without endangering the level of medical care.



Dr. S. Boopathy Vijayaraghavan
Director, Sonoscan Diagnostic Centre started the centre in 1984 and grew it to a full equipped advanced ultrasonography scan centre in Colmbatore. His particular area of interest involves the Dynamic, High-Resolution and Paediatric Sonography.

Patient satisfaction is a crucial and one of the most commonly used indicators for measuring quality at any diagnostic centre. It has a positive effect on clinical improvement, patient adherence and retention, job satisfaction and appropriate clinical care by clinicians. On the other hand, the mismatch between patient expectations and the service received leads to dissatisfaction and poor patient outcome. Therefore, Sonoscan Diagnostic Centre-one of South India's reputed imaging lab, sustaining patient satisfaction is sacrosanct. But to achieve this, Sonoscan thoroughly banks on technology that facilities them to maintain precision, faster TAT, higher image quality and



சோஸ்கான் ஸ்கேன்
மருத்துவ ஸ்கேன் மையம்

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Dr. S. Boopathy Vijayaraghavan M.D., M.B.B.S.
மருத்துவ அறிவு மையம், மருத்துவ அறிவு மையம்

better diagnostic mechanism. Dr. S. Boopathy Vijayaraghavan explains how ultrasound technology has helped him attain the highest quality standards and precision in their reporting, driving them to be one of India's credible imaging lab chain.

IMPROVING PATIENT EXPERIENCE THROUGH INNOVATIVE TECHNOLOGY

The past decade has witnessed significant developments in ultrasound technologies ranging from portable devices, wireless transducers to 3-D/4-D ultrasound imaging and artificial intelligence. These advances have increased productivity of clinicians and overall quality of patient care. At Sonoscan, ultrasound systems such as DC-80 with X-Insight have facilitated them to focus on improving the overall quality of patient care. The DC-80 with X-Insight offers a complete elastography solution with best in class shear wave and strain elastography for tissue stiffness assessment, UWN+ CEUS and quantitative analysis tools for vascular perfusion analysis, Depth VR for vivid 3D/4D with depth perception, tissue tracking for regional myocardial analysis and more.

"Quality of patient care, time spent at the centre, ambience, hygiene and quality of equipment are crucial to me as a healthcare provider. Moreover, patient experience has become a very important indicator of quality. Therefore, right from the very inception we at Sonoscan have focused on improving patient experience and satisfaction and have looked for technologies that help us achieve this", says Dr. S. Boopathy Vijayaraghavan. Moreover, clinical value is a primary factor that governs patient care provision. Hence at Sonoscan, technologies that ensure precision are a preferred choice.

Dr. S. Boopathy Vijayaraghavan goes on to say that precision in diagnosis goes a long way for appropriate and better clinical management of the patient which improves the overall patient care and satisfaction. It is very important to build up the practice and for better clinical outcome. Ultrasound technologies such as DC 80 X-Insight have mechanisms that improve turn-around-time, imaging picture quality, precision, user-



friendliness and patient comfort.

AI AIDING INTELLIGENT SOLUTIONS IN ULTRASOUND IMAGING

There is growing energy towards AI applications in the radiological domain. There are higher expectations that AI will enable a profoundly different generation of imaging products with the potential to unlock significant clinical and economic value in the longer-term. So, systems like DC-80 X Insight have some promising signs of value-adding AI solutions being brought to market.

For instance, Artificial Intelligence (AI)-enabled system ensures diagnostic confidence, it enables efficiency, consistency and accuracy. Dr. S. Boopathy Vijayaraghavan explains, "The technology has features like Smart CNS, Smart FH greatly reduced the scanning time.

Such features increase the through-put for patients and ensure better clinical outcomes. For more clarity at hand, DC-80 with X-Insight delivers express clarity as soon as the transducer touches the body. The system also has a newly conceptualized X-Engine integrated with both GPU and CPU enables multi-core parallel processing for fast imaging and superb clarity. With the advanced imaging engine, the imaging processing speed is accelerated three or four times faster than traditional processing, resulting in extremely fast imaging and superb clarity for 3D/4D and other applications.



The Glazing flow mechanism is a breakthrough and a brand-new way to demonstrate the colour doppler flow in a 3D visualisation. It can provide intuitive and easy visualisation of blood flow structures, especially in very tiny vessels. It's helpful for boundary definition of crossing vessels too. and is a great boon to diagnostic imaging, expresses Dr. S. Boopathy Vijayaraghavan speaking about the image quality and precision, Dr. S. Boopathy Vijayaraghavan shares, "The combination of X-insight technology with single crystal probe has made the image quality uniform from near to far field. For example, the tissue differentiation between the liver and kidneys in fetal imaging studies is very good and is essential. The precision in colour has made it more sensitive in visualising the fetal renal arteries and in endometrial flows."

While the technological prowess that DC-80 Insight displays, adopting this technology has brought more confidence to the Sonoscan team. "With AI and gesture sensitive touch screen, juggling between the knobs has reduced and it is easier to use the machine now. Plus, advanced healthcare solutions at various segments have created new magic in delivering better diagnosis at all levels. Hence, we can view the patient as a whole and devote our time for counselling as well."

ENABLING CONTINUED LEARNING

As Dr. S. Boopathy Vijayaraghavan rightly pointed

out that for better patient care, it is not only important to deliver better clinical results but to guide patients with emotional support and counselling. And above all, it is very significant to facilitate learning and education to advance radiological practice. "SONOSCAN commenced its service in April 1984. We were the only ultrasound service for a large geographical area of west Tamilnadu and entire Kerala for many years. Hence, we started training physicians from this region to improve radiological services which became very popular in a short period. In the last three decades, we have expanded our training programmes in radiological services for physicians from other parts of India and neighboring countries

for three decades. We kept constantly updating ourselves both in knowledge, newer ultrasound technologies and equipment that helped us to become numero uno in all these years. Even during the pandemic, we haven't stopped our training programmes. We started virtual web-based programs on www.sonoshare.in."

Interestingly, the company has played a vital role in enhancing physician education. Dr. S. Boopathy Vijayaraghavan informs about the company's clinical sessions for clinicians at different levels that embarked a new wave in teaching. He goes on to share, "WCC series where the Sonoscan team was involved, indeed gave a classroom experience. This created magic among ultrasound practitioners."

INNOVATIONS THAT MATTER

While creating learning opportunities, we at Sonoscan have also kept in mind that innovation uncovers a brand-new user experience. It helps in developing reliable solutions. Dr. S. Boopathy Vijayaraghavan looks forward to the advancement of the DC-80 with X-Insight series as he intends to continue playing his part in transforming India's healthcare scenario.



C-6800



mindray



Why should you look for quality assurance in medical laboratories

Dr Neeraj Jain, President, MELAP, New Delhi explains the significance of quality assurance mechanisms in medical laboratories experience and increase the sense of independence without endangering the level of medical care.



Dr Neeraj Jain,
President, MELAP, New Delhi

Medical laboratories in healthcare are key partners in ensuring and maintaining patient safety. It is said that 70 per cent of all medical decisions are based on laboratory results. Maintaining quality standards of the laboratory service plays a major role in ensuring the accuracy of these results, providing better patient care as a whole and promoting excellence. While the absence of the same may lead to

unreliable results, causing a delay in treatment, misdiagnosis and an increase in cost due to a need for retesting.

SIGNIFICANCE OF QUALITY STANDARDS IN A MEDICAL LABORATORY

Good quality is never brought about by accident; it is almost always the cumulative result of sincere intentions, dedicated effort, intelligent direction and skilful execution. As a choice,

good quality medical tests may not necessarily be the easiest or the cheapest. However, it is definitely the wisest for both patient health and welfare as well as laboratory credibility. International standard ISO15189, based upon ISO17025 and ISO9001 standards, provides the basic requirements for establishing competence and serves as the bible for quality in medical laboratories. And while this serves as an excellent guiding principle, no matter how good the quality mechanisms are on paper, absolute quality cannot be achieved if the theory is not translated into practice day-in and day-out.

The entire process of managing a sample must

be considered right from sample collection to reporting and saving results.

Box: Laboratory tests are influenced by :

- Lab environment
- Knowledgeable staff
- Reagents and Equipment
- Quality control
- Communications
- Process management
- Occurrence management
- Record keeping

Following are the quality assurance essentials which act as building blocks for quality management.

QUALITY ASSURANCE ESSENTIALS

Personnel:

Human resources, job qualifications, job descriptions, orientation, training, Competency assessment, professional development, continuing education.

Equipment:

Acquisition, installation, validation, maintenance, calibration, troubleshooting, service and repair, records.

Purchasing and inventory:

Vendor qualification, supplies and reagents, critical services, contract review, inventory management.

Process control:

Quality control, sample management, method validation, method verification.

Information Management:

Confidentiality, Requisitions, logs and records, reports, computerised laboratory information system(LIS)

Documents:

Creation, revision and review, control and distribution.
Records: Collection, review, storage, retention.

Occurrence Management:

Complaints, mistakes and problems, documentation, root cause analysis, immediate actions, corrective actions and preventive actions.

Laboratory Assessment:

Internal: Quality indicators, audit reports, audit reviews.

External: Proficiency testing, inspections, accreditation.

Process improvement:

Opportunities for improvement (OFI), stakeholders feedback, problem resolution, risk assessment, preventive actions, corrective actions.

Customer Service:

Customer group identification, customer needs, customer feedback.

Facilities and Safety:

safe working environment, transport management, Security, Containment, waste management, Laboratory safety, ergonomics.



mindray
healthcare within reach

CL-900i

Chemiluminescence Immunoassay System



The right size for your lab

The CL-900i is one of the smallest, fully automated chemiluminescence immunoassay analyzers in the world. It provides a throughput of up to 180t/h and 15 reagent positions, with easy operation of one-key start and zero user maintenance, an ideal immunoassay testing solution for your lab.



QUALITY MANAGEMENT SYSTEM ADDS UP TO THE COMPETITIVE ADVANTAGE

Implementing an efficient quality management system does not guarantee a 100 per cent error-free laboratory, but it goes a long way in detecting errors that may occur commonly and prevent them from recurring. It essentially puts us on the path to continuous improvement and brings us closer to our vision of bettering healthcare facilities every day.

There is a cost associated with quality, but are we cognizant of the fact that poor quality costs us even more?

Quality costs can be offset by quality

payoffs like enhanced reputation, loyal clientele, reduced system failures and machine downtime, less need for retesting for complaints etc. However, there is no offset for medical implications that may be caused by poor quality, and its impact on not just the laboratories in question but on healthcare as a whole.

Thus, implementing and maintaining good quality standards in laboratories is no more a choice, as it is not just the ethical and moral duty of all laboratories to provide accurate, reliable results, but it is essential to all aspects of healthcare and the medical profession.

Implementing and maintaining
good quality standards in laboratories is no more a
choice, it is a ethical and moral duty of all laboratories

Implementing an efficient quality management system does not guarantee a

**100 per cent error-free
laboratory, but it goes
a long way in detecting
errors that may occur
commonly and prevent
them from recurring.**



Mindray Automation Line **Envision more**

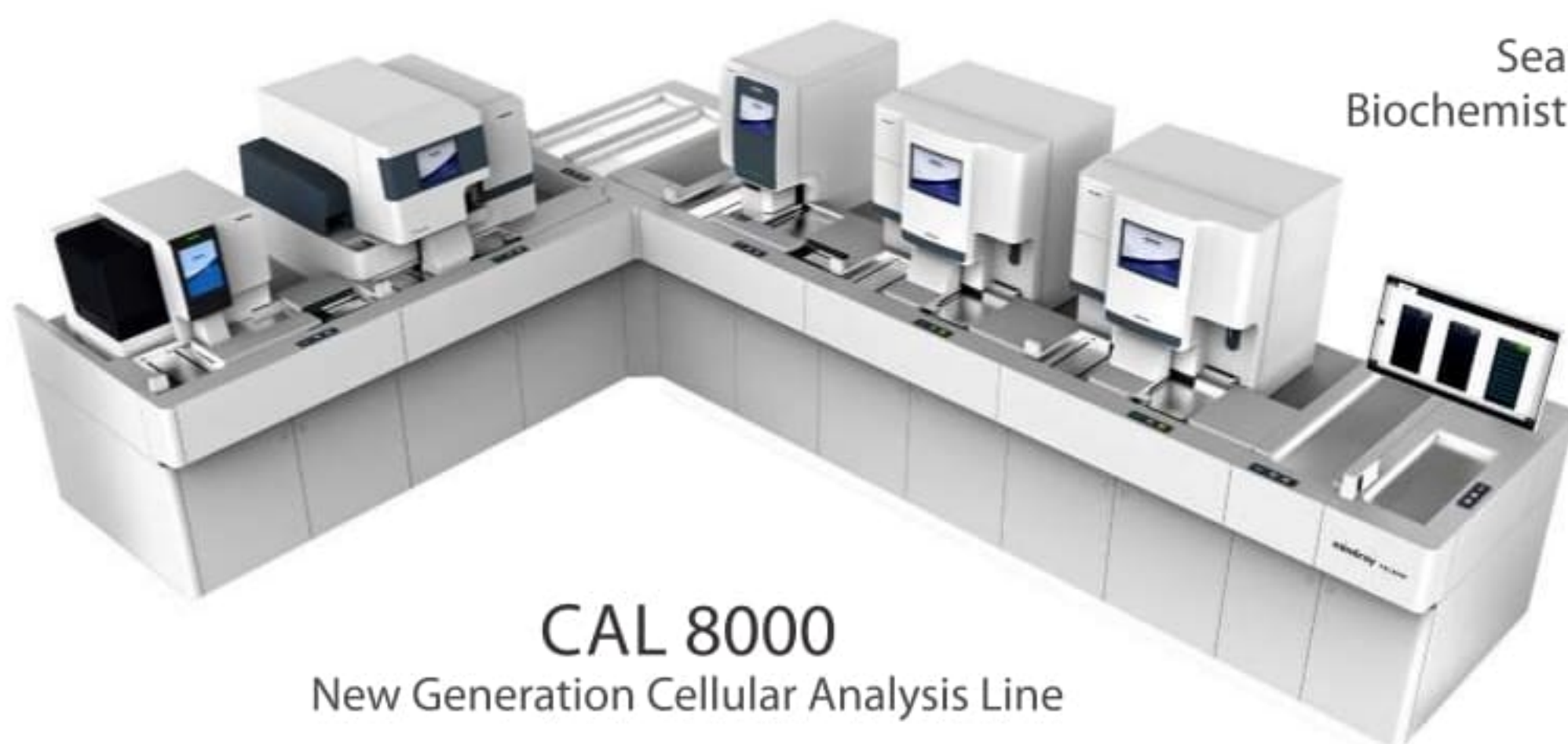
Smarter workstation,
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SAL 6000

Modular System

Seamless Integration of
Biochemistry & Immunoassay Platform



CAL 8000

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Saideep Healthcare: How an iconic healthcare institute battled the COVID-19

Saideep Healthcare & Research Pvt Ltd

stars as the region's most promising healthcare provider offering world class medical treatment, fulfilling the want of a state of art healthcare facility in the region. Comprising of the best in class technology with highly qualified specialists, Saideep Healthcare has boldly battled the COVID-19 crisis and ranks as a high performing hospital offering advanced medical treatments during the pandemic.



Dr. Deepak Siddavaram,
Founder Chairman and Managing Director,
Saideep Healthcare & Research Pvt. Ltd.

Saideep Healthcare & Research Pvt. Ltd. is a state of the art 260-bedded tertiary care center multi-specialty hospital located in Ahmednagar, which is a semi-urban area in western India. It caters not only to local but to patients from its adjoining 4 districts as well. According to Dr. Deepak Siddavaram, Founder Chairman and Managing Director, the Healthcare System in India is divided into Government and Private sectors. The government sector

mostly concentrates upon preventive medicine-vaccinations, mother & child care, and some community-acquired/contagious/vector-borne diseases. So most (which more than 50-80%) of the burden of healthcare is borne by the private sector. He further states that "During the pandemic, Saideep Hospital being the largest in the area was invariably selected to cope up with the COVID-19 pandemic and was ready to face the obvious challenges. With



Saideep Hospital has allotted 200 beds exclusively for COVID-19 cases while the remaining beds were used for non-COVID-19 patients.

an able infrastructure and the largest pool of certified and trained staff and in practice, the infection control protocols were all plugged in place." COVID-19 ready, Overcoming obstacles

Saideep being a 13 storey-vertical building faced many obstacles for separation of COVID-19 and Non-COVID-19 areas. "We had to rearrange the workflows for entry and exits of patients and visitors as well as staff for both areas. Additionally, we needed

to allot separate passenger as well as stretcher lifts for both areas' states Dr. Siddavaram. Fortunately, the structure of Saideep allowed for these changes and is still coping well with the pandemic. Saideep Hospital allotted 200 beds exclusively for COVID-19 cases while the remaining beds were used for non-COVID-19 patients.

CASE MANAGEMENT

All the critical cases were previously

shifted to ICU as soon as possible from the triage area but in COVID-19 times it was equally important to detect/rule out COVID-19 infection. Every case was screened with Rapid antigen/RT-PCR and HRCT regardless of the presenting complaints. It invariably increased the burden on the Triage unit. The hospital created a separate Triage area for known/suspected COVID-19 cases.

Life support assessment

The cases were prioritized as per their



According to the new data post-COVID-19 complications,

will be a major burden, particularly for cardiovascular incidences where substantial mortality and morbidity are expected. The hospital is closely following the patients prone to such events."

vital signs, symptoms, HRCT score, and lab results. Generally, a mass disaster requires triage but we had to resort to the triage process for pneumonia-like illness due to COVID-19 which was a unique learning experience. The hospital had to judiciously use Oxygen support therapy and use respiratory support devices viz. Bi-PAP machines, HFNO machines, and ventilators as per patient load. We went on a war footing and increased the capacity of oxygen bed availability expecting the influx of COVID-19 cases and it proved to be beneficial.

All supply chains viz. pharmacy, food, laundry, etc. were disrupted during the lockdown. The system had to innovate and improvise to normalize the processes. For example, previously the pneumatic transport system in the hospital was exclusively used for lab sample transport only, but now it is being used for medicines delivery also.

CONTROLLING THE COVID-19 SPREAD

The hospital's robust in-house infection control protocol and efficient training put well in practice served well in this COVID-19 pandemic. All 700+ employees were screened for COVID-19 with



RAT/RT-PCR as well as HRCT. It helped to detect infection among staff in the early stages and initiation of treatment and prevention of spread. 20 doctors and more than 80 nursing staff were initially infected with COVID-19 in the line of their duty of which 10% needed intensive care but no ventilator support and zero mortality. The hospital's current infection rate is now less than 1% and among the recovered cases there is no indication of any sequels. According to the new data post-COVID-19 complications, will be a major burden, particularly for cardiovascular incidences where substantial mortality and morbidity are expected. The hospital is closely following the patients prone to such events. To date, Saideep Healthcare has handled more than 1800 COVID-19 cases since April 2020.



TRUSTED AND DEPENDABLE COLLABORATION

Saideep healthcare has invested in many Mindray products such as multi-para monitors, defibrillators, infusion pumps, ventilators as well as operation room equipment like anesthesia machines, Lights, and Tables. The hospital has opted for an advanced Beneview platform from Mindray which served extremely well during COVID-19 times as remote monitoring was possible with the help of the CMS viewer app and the CMS system. The customized alarm settings of monitors and ventilators are of great help to the nursing staff which lightens the manual monitoring burden and enables them to concentrate more on patient care. Though the current Mindray equipment which used offer no clinical insights or predict any

The hospital would readily like to have a database available by Mindray for efficient clinical use of Mindray critical care equipment are advanced and are very dependable. The Mindray technical team was and is always available to assist us in our need and all problems are always resolved promptly. During the pandemic, the hospital team and doctors have displayed vigor and courage to handle the unseen crisis. The staff adhered to necessary protocols, the current pandemic has taught the system to be more resilient to adversities and spurred the desire for self-improvement that can lead to better patient outcome and managed care.



Mindray's AI driven futuristic ultrasound technologies will be the pro-choice by radiologists

Ultrasound imaging is fast evolving and adopting Artificial Intelligence-based technologies more than before for quicker and more precise diagnosis. **Dr. Rajeev Virmani – National Clinical Marketing Manager- Ultrasound Imaging System, Mindray Medical India Private Limited** emphasizes how new ultrasound technologies are progressing and ultimately brings remarkable changes to the practice of imaging by providing efficient and cost-effective treatments to patients.



Dr. Rajeev Virmani
National Clinical, Marketing Manager, Ultrasound
Imaging System, Mindray Medical India Pvt. Ltd.

WHAT PROMPTED YOU TO BECOME A RADIOLOGY PROFESSIONAL & WHY DID YOU CHOOSE THIS SPECIALIZATION?

From the early days of my Medical School, I realized that there was some innate knack that pushed me towards technology and its apt utilization for best patient outcomes. By the time, I was in 4th year and already had good exposure to various branches in Clinical Medicine, it got ingrained in my mind

that "Radiology and Imaging" is where I belong.

As a Radiologist, one really feels being at the center of patient care, irrespective whether it's a patient referred from Medicine, Surgery, OBG or ENT, as every patient from every demographic rely on medical imaging to diagnose and treat conditions. So, any successful Radiologist must be equally strong in the clinical knowledge of all other specialties in order to

interpret medical images and advise other physicians for clinical workups. Personally, I have always been a seeker. I get a lot of satisfaction in nourishing my quest to get to the root cause of the events. In Medicine, events can be named as diseases and the tool for me to understand them is RADIOLOGY.

WHAT IMPROVEMENTS WOULD YOU LIKE TO SEE IN ULTRASOUND TECHNOLOGY THAT CAN ASSIST YOU IN BETTER PATIENT OUTCOMES IN FUTURE?

More Artificial Intelligence-based technologies for day-to-day work can assist with quicker and more precise diagnosis. Emphasis is being moved from image optimization based on AI to image acquisition based on AI.

There is also an aspiration to better use and acceptability of emerging technologies such as Elastography and Contrast Imaging.

Finally, I would like to focus more on easy-to-use applications such as Smart OB, Smart Plane CNS, Smart Pelvic and Auto EF that enable

beginners to gain confidence with excellent patient results in a very short period of time. How has ultrasound helped in improving pregnancy outcomes in patients? Ultrasound has a role to play in modern-day medicine, from preconception to post delivery. The advent of easy-to-use technology such as Smart-OB has made it possible for more and more gynecologists to accept this as a reliable instrument that allows them to make fast decisions. In diagnosing and treating the major causes of neonatal death, ranging from infections, birth asphyxia or congenital abnormalities, ultrasound may offer considerable benefit, thereby minimizing fetal and maternal loss.

BEING A NATIONAL CLINICAL MARKETING MANAGER FOR ULTRASOUND SYSTEM, TELL US ABOUT THE GROWTH TRENDS IN THE RADIOLOGY MARKET WITHIN THIS PANDEMIC?

Pandemic has put a lot of focus on emergency





Point of Care (POC) Ultrasound is growing rapidly and there is a decent acceptance of AI based functions like Smart B Line for faster and precise diagnosis.

and bedside ultrasound. Delivering fast and accurate diagnosis has taken center stage. Use of the ultrasound for unconventional application like Lung Scan and Fluid Management is seen in a big way. Point of Care(POC) Ultrasound is growing rapidly and there is a decent acceptance of AI based functions like Smart B Line for faster and precise diagnosis. Also, tablet ultrasounds like TE7 would gain more attention because of its special design for POC, and easy disinfection. There is going to be huge demand for technology that can help clinicians to address diagnostic challenges and make rapid decisions in fast-paced, overburdened and demanding hospital environments especially during critical and emergency cases. To cater to these demands, we are also introducing latest technologies in Models like ME Series featuring smart fluid management solutions, comprehensive disinfection solution, convenient and agile mobility, intuitive interface and flexible battery solutions.

WHAT DO YOU FORESEE FOR THE HEALTHCARE AND MEDICAL IMAGING INDUSTRY IN THE COMING MONTHS?

In the coming months the industry will witness major investments in healthcare facilities with a focus on clinical quality and a robust surveillance system to enhance health infrastructure. Telehealth and Telemedicine would see more positive adoption as compared to Pre COVID-19 days. Last but not least, customer support for any company would continue to be of prime importance. We at Mindray take this very seriously as well. Our delivery is backed up in terms of both manpower and spare parts by the company's efficient support system. We provide life saving devices such as ICU grade ventilators, patient monitors and IVD instruments in addition to ultrasound Imaging devices and fully recognize the value of the support system to go on with the responsibility of a valued contributor to the entire healthcare ecosystem.



MINDRAY'S CLIA-SERIES REAGENT MENU OFFERS COMPREHENSIVE HORMONE TESTING SOLUTION

Mindray provides a number of scalable analyzers and assays for immunoassay, all of which will help optimize the uptime, reliability and efficiency of your laboratory.

SUPERIOR PERFORMANCE

Mindray CL Series Analyzers are designed for both quantitative and qualitative invitro assay determinations. For a wide range of applications, the test menu includes tumor markers, cardiac markers, fertility panel, diabetes panel, anemia panel, bone metabolism, adrenal function, thyroid markers, inflammation markers, hypertension panel & liver fibrosis panel. The recently released COVID-19 IgG Antibody Testing Kit (ICMR Validated & Approved) gives our immunoassay test panels more weightage.

The aim of our CLSeries analyzers is to classify and detect the concentration in a sample of specific substances, typically using an antibody as a reagent.

Mindray provides a number of scalable

analyzers and assays for immunoassay, all of which will help optimize the uptime, reliability and efficiency of your laboratory.

In contrast with the acridinium ester and luminol methods, we use the ALP + AMPPD process for the CLIA, which has a comparatively higher sensitivity. We are proud to say that we can achieve the highest sensitivity chemiluminescence 10-20 moles and TSH analytical sensitivity $\leq 0.005 \mu\text{IU/mL}$, functional sensitivity $\leq 0.02 \mu\text{IU/mL}$, integrated with the considerate selection of antibody antigen materials, each precisely controlled reaction step.

THYROID DETECTION

To fulfill your laboratory needs, Mindray offers a detailed assay menu for thyroid research. Our thyroid tests



K Harish Kumar
Asst. Application Manager- IVD (CLIA)-SOUTH-1
Mindray Medical India Private Limited

MINDRAY METABOLIC TESTS ARE DESIGNED TO PROVIDE LABORATORY CLINICIANS WITH THE CLINICAL KNOWLEDGE THEY NEED FOR PATIENTS WITH NON-SPECIFIC SYMPTOMS TO RECOGNIZE A DISEASE STATE.

can help doctors find the answers they need to make reliable decisions about thyroid disorders. Our TSH (3rd IS) assay complies with the highest industry requirements and with less than 0.02 mIU/L functional sensitivity. Free-T3, Free-T4, Total-T3, Total-T4, TSH, Anti-TG, Anti-TPO, Thyroglobulin & Reverse-T3 Assays are included in our Full Thyroid Line.

Improved Hematology screening In conjunction with haematology screening, Mindray's CL-Series Anemia Panel of Ferritin, Vitamin-B12, Folate & RBC Folate offers an accurate, holistic view of patient health in the diagnosis of anemia and identification of the cause. For the identification of iron deficiency anemia, ferritin & folate tests were used, while vitamin B12 and folate deficiencies causing megaloblastic anemia contributed to the correct course of treatment. Mindray metabolic tests are designed to provide laboratory clinicians with the clinical knowledge they need for patients with non-specific symptoms to recognize a disease state.

COMPLETE COVERAGE OF FERTILITY TEST

Fertility and pregnancy status are determined through reproductive endocrinology assays. These assays,

whether individually or in panels, are important to meet the changing needs and increased demand for fertility and pregnancy treatment options. With our fully integrated and harmonized systems, the CL-Series Reproductive Panel assays are designed to meet your primary laboratory needs in fertility hormone testing. Total B-HCG, FSH, LH, Prolactin, Testosterone, Progesterone, E2 & E3 parameters are included.

POWER TO ONCOLOGY TESTING

Mindray Immunoassay provides a broad range of assays to assess breast, colon, gastrointestinal, liver, ovarian, pancreatic, testicular and prostate cancer with several forms of cancers. The oncology solution from Mindray will help you reduce laboratory operating costs while maintaining the quality levels required to have a major positive effect on health care quality and costs. CEA, AFP, CA-125, CA-19-9, F-PSA, T-PSA, NSE, CYFRA 21-1, CA-72-4, CA-50, CA-242, F-PSA & T-PSA are included in the tumour marker profile.

Measurement of intact PTH, vitamin D, and calcitonin enables the detection of mineral pathway disorders that influence bone formation and remodeling, leading to the diagnosis of an underlying disorder. Mindray provides a variety of tests to help you evaluate certain components that are important for the diagnosis and monitoring of Bone Metabolism disorders. Our 25-OH Complete Vitamin-D Assay meets the highest vitamin D testing requirements.

Under the Inflammation Panel, Mindray recently added the parameter

MINDRAY CHEMILUMINESCENCE REAGENT



Mindray CL Series test menu includes tumour markers, cardiac markers, fertility panel, diabetes panel, anaemia panel, bone metabolism, adrenal function, thyroid markers, inflammation markers, hypertension panel & liver fibrosis panel.



Procalcitonin. The levels of PCT are associated with the severity of bacterial infections and the possibility of a positive blood culture. PCT is a clinically important diagnostic marker in the evaluation of patients with suspected sepsis or life-threatening septic shock.

DIABETIC PANEL

Mindray CL-Series Diabetic Panel assays, Insulin & C-Peptide helps physicians diagnose, track and treat diabetes mellitus regardless of its type, providing reliable outcomes, for patients with extreme complications such as neuropathy, and can reduce false elevation with low cross reactivity. In Adrenal Function, panels like DHEA-S, ACTH & Cortisol play a primary role.

CARDIAC SCREENING PROFILE

Mindray Cardiac Profile provides detailed cardiac solutions with CK-MB, Myoglobin, Troponin-I & BNP parameters that are a natural match for laboratories. With fast turnaround time, our assays and analyzers provide precise,

accurate results, enabling clinicians to provide better patient care. Troponin-I is heart-specific and, in combination with other clinical and diagnostic studies, can categorize the risk of patients more reliably before they encounter cardiovascular disease. Renin & Aldosterone is a screening method for Primary Aldosteronism for Hypertension Panel parameters. Parameters such as laminin, hyaluronic acid, PIIINP, CIV function as a biomarker for diseases of liver fibrosis, cirrhosis, and non-alcoholic fatty liver.

POWER PACKED TESTING CAPABILITY

In terms of sensitivity, precision, linearity and stability, Mindray cares for and enhances our system. With rapid technology advancement & large range of CLIA testing panels having 60 more parameters, Our CL-Series platforms highly fulfill the demands for Low to High Level Laboratories in hormone testing. More critical is the optimum reagent Onboard stability & Calibration stability, we believe that the reliable reagent must be responsive, precise, stable and

CL-Series platforms highly fulfill the demands for Low to High Level Laboratories in hormone testing

MINDRAY'S DC-40 FULL HD/CRYSTAL - A LEAP FORWARD IN HIGH DEFINITION ULTRASOUND IMAGING

Mindray recognizes the needs of every single Customer, delivering technical solutions through the adoption of advanced technologies and disciplined manufacturing processes. The R&D team at Mindray is working hard round the clock to create groundbreaking inventions that can reach every corner of human society. One such accessible "innovation bundle" is the DC-40 Ultrasound Device, recently released with two "DC-40 Full HD" and "DC-40 Crystal".



Arumugam Balasubramanian
Assistant Application Manager Mindray Medical
India

Traditionally, primary healthcare market lacks attention from high end features and advanced technologies. DC-40 comes with rich functionality and superior image quality to fulfil long awaited expectations of primary healthcare market. This feature-rich yet compact ultrasound system sets new standards in Ultrasound industry, by delivering outstanding clinical performance in a wide range of clinical applications. By the application of classic imaging

technologies, which are migrated from established ultrasound systems, DC-40 provides you exceptional scanning experience with the enhancement on the quality of image detail.

iClear (speckle-reduction imaging technology): virtually cleans the raw data to produce smooth sharper images with clear tissue border definition.

PSH (Phase Shift Harmonic imaging): makes images with purified harmonic signals come from tissues by

avoiding fundamental signals.

iBeam (Spatial-compounding): a multi-beam combining technology greatly improves Spatial resolution and adds more details from multiple angles.

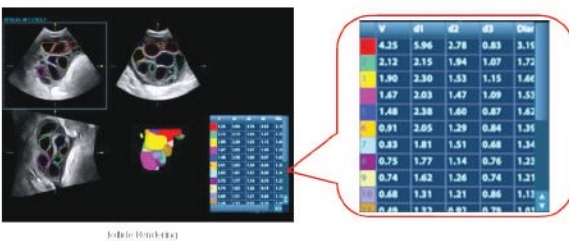
operation. It immediately removes occlusions and eliminates noise information, generating an optimal view of the fetal face with more simplicity. These automation tools help healthcare professionals to focus more on



To help clinicians achieve effective patient care, Mindray has incorporated many smart features which reduce scan time and increase patient throughput with greater confidence on diagnosis:

Smart OB provides accurate auto measurements for most frequently examined fetal parameters including BPD, OFD, HC, AC and FL.

Smart FLC is a tool to automatically detect the number of follicles and color code each follicle with different color. It calculates each follicle size, volume and also provides comprehensive report complete study.



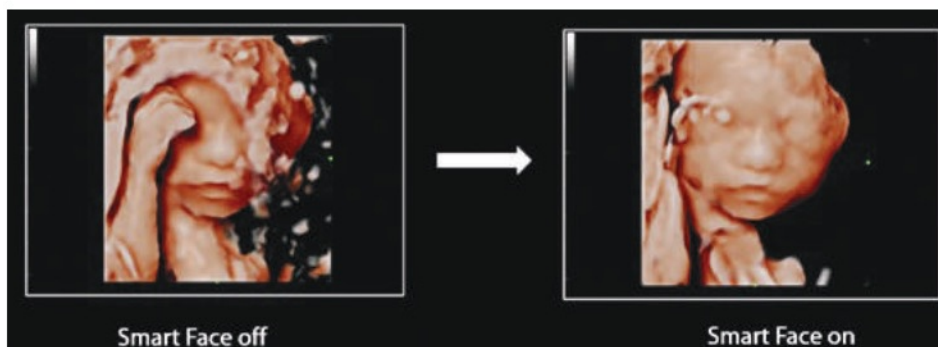
their scanning rather than time-consuming adjustments.

With the availability of both convex and Endovaginal volume probes, 3D 4D imaging capabilities are greatly helpful for medical professionals to detect and analyze fetal and Uterine abnormalities like Fetal cleft face, Bicornuate uterus, arcuate uterus etc. Integrating a ray-casting algorithm with a new virtual lighting modality, **iLive** generates an amazingly realistic view of the fetus with human skin-like images. With greater flexibility to change the position of illuminating light source, lighting and shadowing effect can be created on fetal face which look more vivid and naturalistic.

The ergonomically designed control panel has most frequently used buttons/functions around the trackball and within palm-reach limit of the user. Every single button is carefully designed to give you feather-touch feel every time you press it. The large size Full HD 21.5" LED monitor with articulating arm assist the users to have better productivity and strain-free viewing experience.



Smart Face provides fast and intelligent optimization for fetal face with one-touch



It has got 13.3" tablet-like smart touchscreen which gives you luxury feel of accessing all the functions in simple swipe/ touch.

One-Key exam mode switch:

The recent exam modes are listed on the right side of touchscreen. You can change the frequently used preset/probe by a single keystroke to simplify the workflow for efficiency.

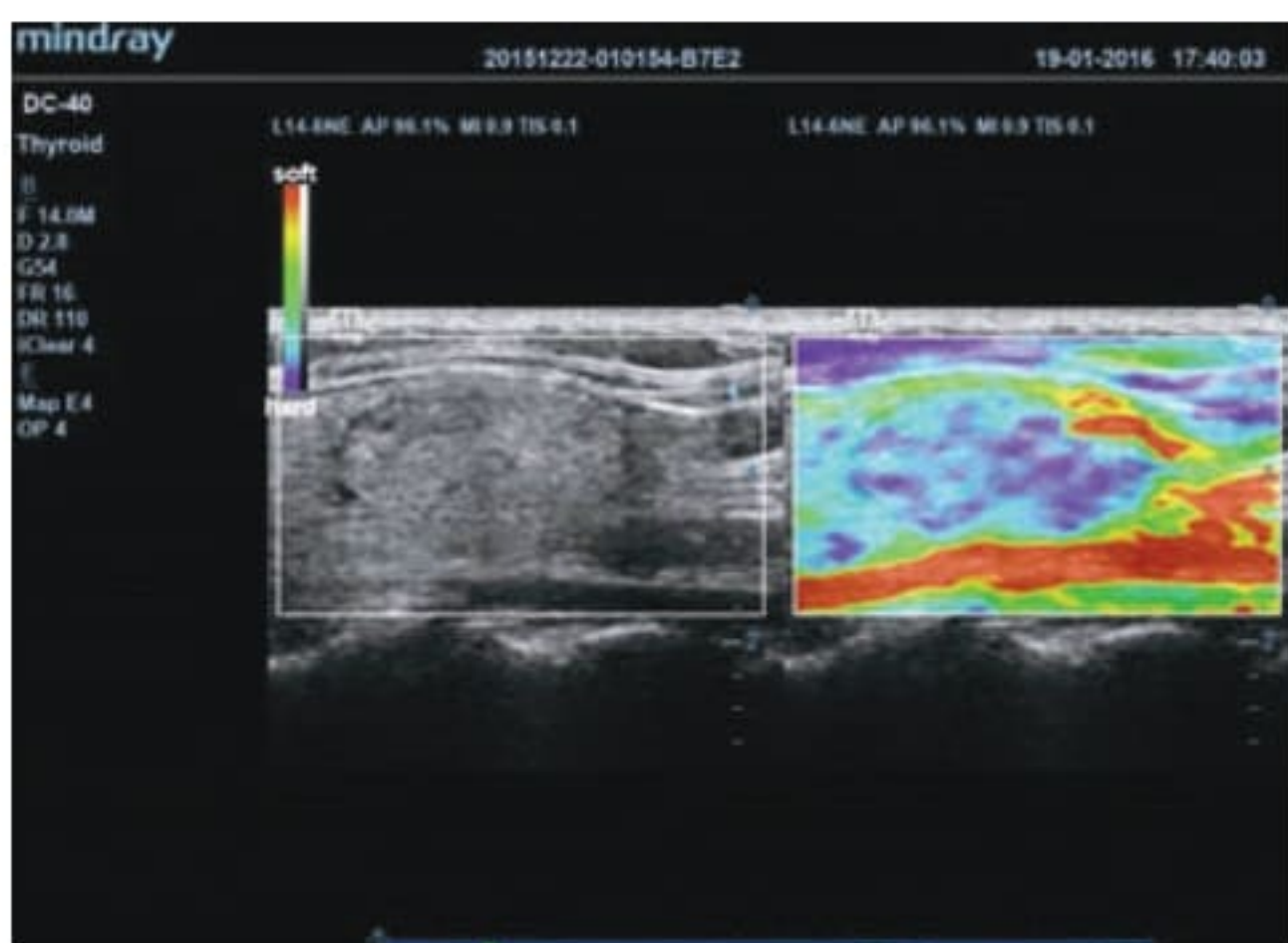
iPower (built-in battery) DC-40 supports scanning for more than 80 minutes without external power supply, which enhances the continuity of your daily work even when the power supply is poor and ensures the mobility.



ComboWave is a unique transducer technology used in Linear transducers. By applying new type of composite piezoelectric material, DC-40 obtains better acoustic spectrum and lowers acoustic impedance thus produces better performance of Linear transducers with greatly increased life. The specially designed biplane transducers, including the linear/convex and dual micro-convex, support versatile urological solution for your mind-extension. For decades, Mindray cares about using intelligence to enhance the safety, accuracy and stability of its products, to ensure the satisfaction during your daily



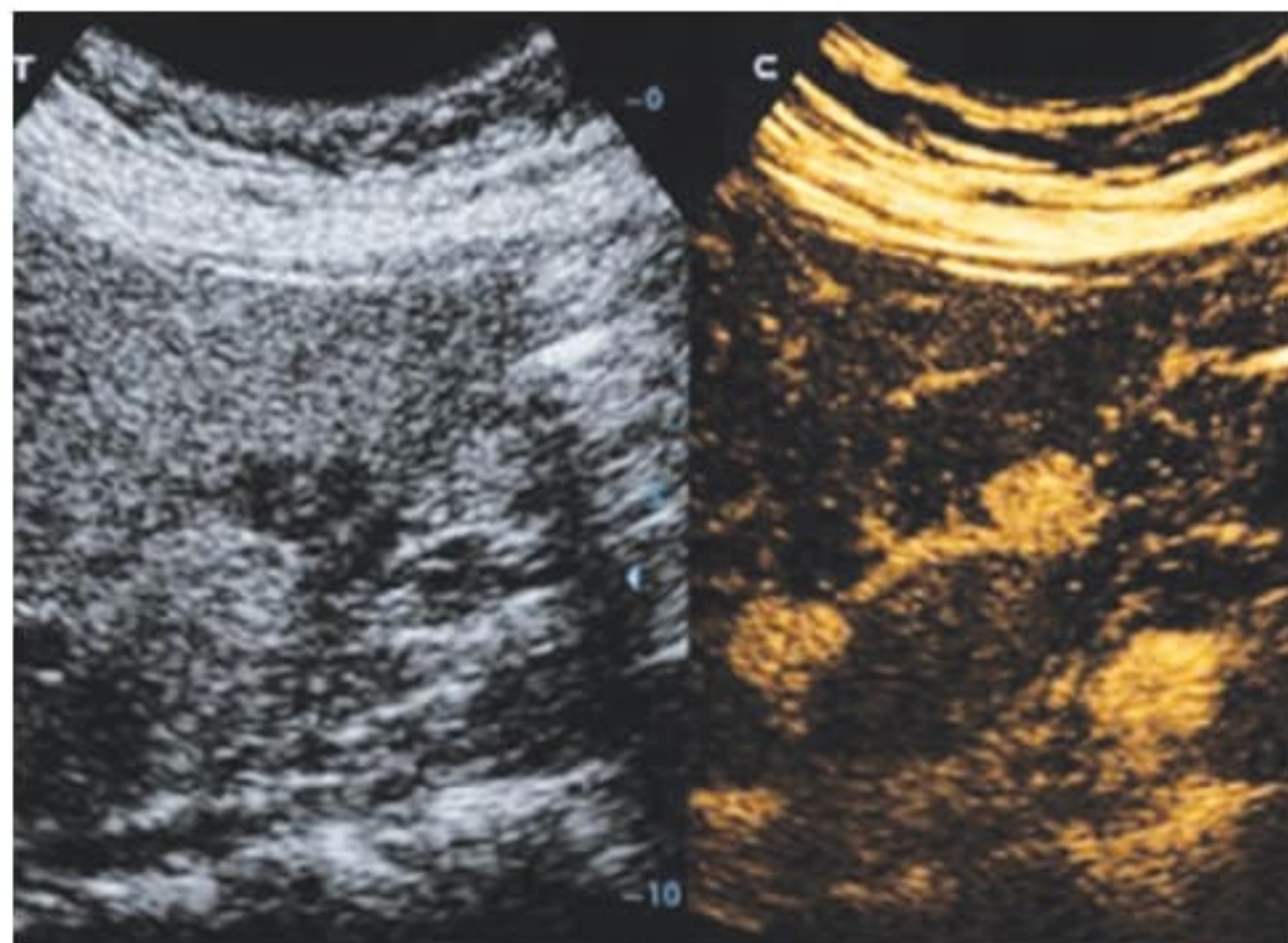
physical characteristics of all the piezoelectric crystal elements. Being a market leader in introducing advanced technologies, Mindray has introduced Single crystal technology in both convex and convex volume probes first time in this segment. These single crystal transducers give excellent penetration in high BMI and technically-difficult patients especially in Abdomen & OB examinations. Availability of UWN Contrast Imaging and Natural Touch Elastography empowers the clinicians to



diagnosis. With CB Test Certificate, DC-40 has the highest anti-interference level assurance, which ensures the stability of its imaging quality.

Many social challenges aggravate the difficulty of imaging diagnosis in primary healthcare, including (1) increase of obese population (2) trend of ageing population etc. As an innovator, who keeps on providing the progressive solution to various clinical needs of healthcare industry, Mindray introduces DC-40 Crystal to you with Pure Crystal Experience. Single crystal technology provides image uniformity throughout the image, because of the similar

Crystal



make decisions on differential tumour diagnosis. Malignancy can be ruled out in various applications like Liver, Thyroid, Breast etc., DC-40 with loads of automated tools, advanced features, innovative technologies and simplified workflow helps the users in delivering better care to more patients with increased efficiency and throughput. It's a full-featured, multi-purpose diagnostic ultrasound solution which is easy to learn and use. Due to COVID-19 pandemic there is a market requirement to have user-friendly, portable, feature-rich, easy to clean Ultrasound machines. We at Mindray meet this growing demand and serve healthcare community in a best possible way.

DC-40

Diagnostic Ultrasound System

Scanning with Exceptional Capability

FullHD)))



www.mindrayindia.com

mindray
healthcare within reach

mindray

Meet the Revolutionary A9/A8 Anesthesia Systems



Mindray's brand new integrated A9/A8 anesthesia systems ensure an "All-round Safety" during the peri-operative care.

Introducing the New Safety

A8/A9 allows clinicians to administer accurate, stable, and safe anesthesia to patients with leading technologies - high flow nasal cannula, automatic controlled anesthesia, and protective ventilation tools.

Innovation leads to exceptional experience

The A9 and A8 eases the stress of busy anesthesiologists and optimize perioperative workflow with intuitive user interface, up to 10 customized profiles, automatic pre-use system check and many more easy-to-use features.

Greener, Better

A9/A8 employs anesthetic gas reduction strategies such as the Optimizer and e-AGSS, help advice clinicians of the most efficient solution to reduce waste and save costs.

**Available in selected areas*



Experience more at

<https://www.mindray.com/en/product/a9.html>

